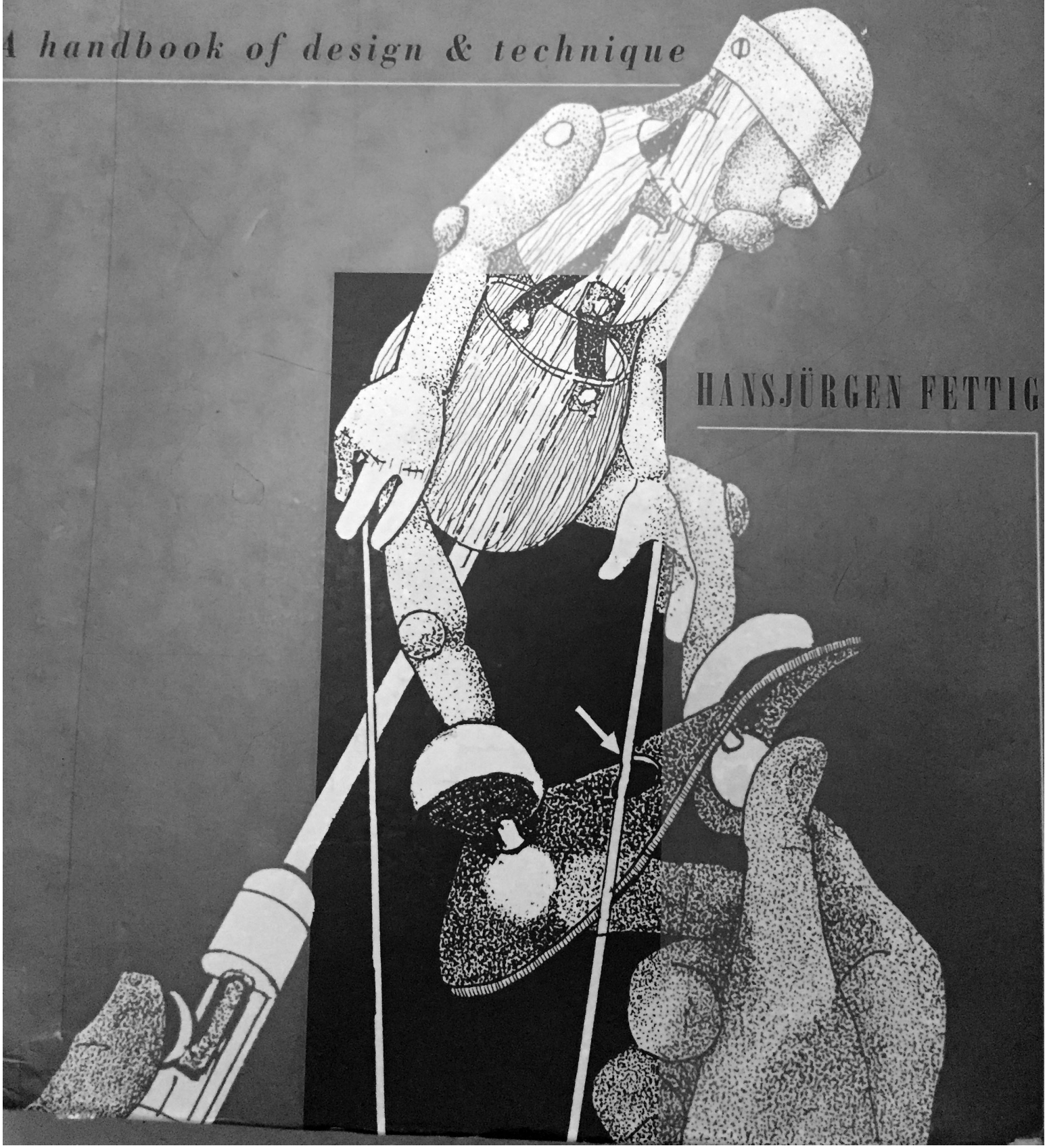
ROD PUPPETS & TABLE-TOP PUPPETS

A handbook of design & technique



HANSJÜRGEN FETTIG

Rod Puppets and Table-Top Puppets

A Handbook of Design and Technique

Hansjürgen Fettig

English version by
Rene Baker

DaSilva Puppet Books

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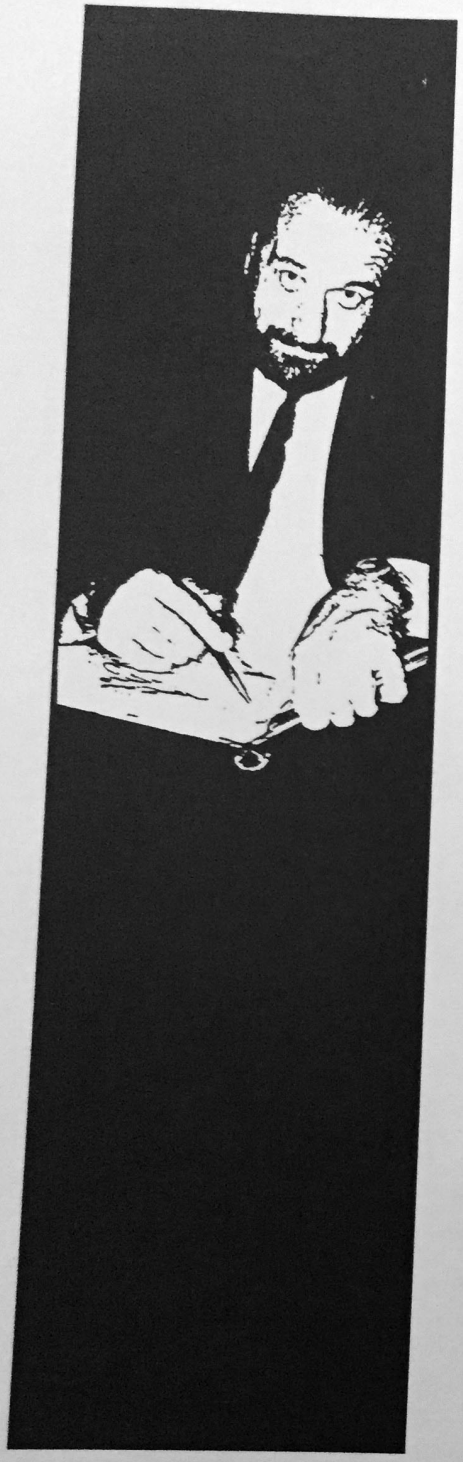
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THE FETTIG FILE

Addresses of certain manufacturers and suppliers of puppet-making materials have changed since Hansjürgen Fettig wrote the original version of this book; therefore, in view of inevitable future changes, the sources of these supplies are not included in these pages. However, the publisher intends to provide further information in *The Fettig File* to be supplied free to purchasers of new copies of this book and to issue updates annually.

Introduction



Author's Foreword

My first book, *Hand- und Stabpuppen* (English version *Glove and Rod Puppets* by Susanne Forster and John Wright), published in 1970, and my second, Kleine Bühne grosser Spass (1977), have both been out of print for many years. Nearly a quarter of a century has passed until this, my third book, during which time I have continued to explore the subject of puppet theatre and have gained many new experiences.

A new generation of puppeteers is now quite rightly trying to shape the future according to its own ideas, as we did in our time. However, it would be unwise of it not to take note of valuable previous experience and to needlessly start again from zero. As a witness of the development of German puppet theatre since 1947, I have collected everything I could find on the subject, tried it out, reflected on it, altered it as I thought fit and, I believe, enriched it with many of my own ideas. In this book, wherever possible, I have indicated those who have inspired and helped me and, in gratitude, hope to pass on their knowledge as well as my own.

That which I report, describe and surmise has been tested during many years of teaching and in my personal professional practice. However, there are so many good methods and possibilities in this form of theatre that it is too great a task to present them all. I therefore only describe a fraction of all that is possible using puppets directly operated by hand and what, in my subjective opinion, is the correct way to play with them.

Experimentation, with its successes and failures, is necessary to develop an art form. However, if someone maintains they are presenting puppet theatre then that is what I expect to see. In my opinion, it is perfectly legitimate and acceptable for the puppeteers to be visible and the performance style open as long as the figures and their manipulation have quality and remain essential to the piece.

I would like to end my introduction with the kind permission of the following authors, who speak on my behalf through their respective

articles. The piece by Ludwig Krafft reflects the situation at the time it was written and, in my opinion, is still valid today.

Enno Podehl describes his relationship and attitude to puppet theatre. On first reading his article, I immediately had the feeling "he thinks like me". The only difference is that he approaches the subject from a performer's point of view whilst, in my work, I am primarily concerned with design. Our conclusions, however, agree. The goal we strive for is, and will always remain, the total work of art called 'Puppet Theatre'.

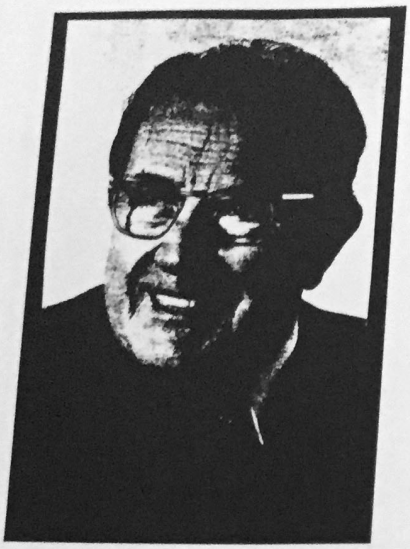
The report by Professor Röttger called *Form in Movement* describes marionettes he developed with his students at the Craft Academy in Kassel, inspired by Kleist's essay *On Marionette Theatre*. Towards the end of my student days I saw a performance with these figures and they greatly influenced the glove puppets I made shortly after for the free choice element of my final craft exams in Karlsruhe in 1952. Through this work I discovered what I still regard as my personal style.

I have never exactly planned a puppet through drawing, nor do I work from a diagram when making a puppet's head, because the nature of the materials themselves inspires different ways of working. Barbara Scheel describes her experiences in this respect, gained during our work together in 1983.

The process of learning is subject to many influences, interrupted by other priorities and often completed at a later date. For the sake of clarity I have organised the material according to subject rather than in chronological order and a description of the prevailing circumstances has, in most instances, been omitted.

Throughout this book I use extensive visual material to make difficult problems easier to understand. The bulk of my observations lie in the pictures, which are mostly drawings, because in 1947 I didn't have a camera, nor did I yet have the idea to write a book. Photographs from that time were nearly all amateur snapshots, and this situation continued until 1958.

In most cases, I have enlarged the images with a photocopier, traced them onto transparent paper, shaded them with thousands of little brush-strokes and reduced them again to the right size for the book. I have used this method throughout the book to keep costs down because it is written for a relatively small circle of enthusiasts, and nowadays books such as this are only published by like-minded idealists.



Preface

Ludwig Krafft

From *Kleine Bühne grosser Spass* (Little stages — Lots of Fun) 1977

The present day is so full of problems that the most important one looks like an alpine panorama seen through the wrong end of a pair of opera glasses. This problem is the human being, made of flesh and blood, brain and heart. He may be tapped by psychologists, sociologists, ecologists, theologists, physiologists and similar 'ologists', like an engine being checked by MOT mechanics, but despite all positive results there is something more. This analysed and standardised object is provided with safety switches like a wiring circuit. Thankgoodness one of them fuses occasionally and something appears which looks more like a personality than a mere person.

It could simply be said that we are being levelled out by the unstoppable process of civilisation, that the success of science has made us unaccustomed to wonder and as a result we have become passive in many areas of our daily lives. Thus our spiritual landscape, which we also possess in a non-theological sense (no matter what is said to the contrary), is beginning to look as flat as the Steppes. In the past, family units belonged to communities of a higher order, ie the village community, to whom we owe many cultural treasures, such as fairy tales, myths and folk song. Nowadays, however, we endeavour to live in relative isolation, as can be seen from modern residential buildings.

As long as we are accompanied by the aids of civilisation we appear to be intact. However, if they desert us for some (often trivial) reason, we notice our poverty for having lost the inner creativity which cannot be replaced by inventiveness alone.

Who still believes in the unawakened creative forces within when the press of a button is enough to bring the world's intellectual wealth, as well as the Olympics, into the living room? This subject affects everyone, but especially parents, teachers and all our young. It is not a question of intellectual stimulation, as is so often demanded and

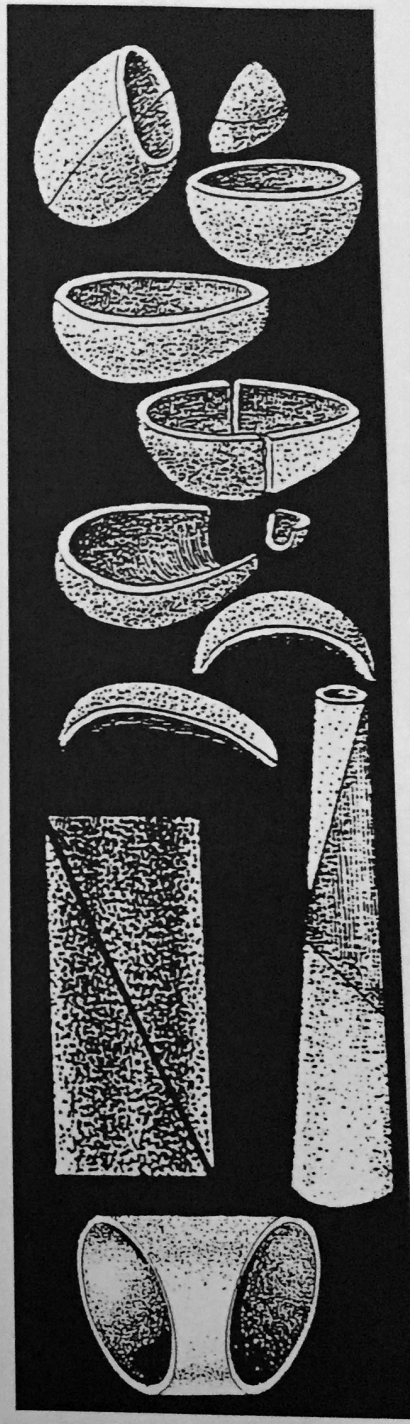
produced. We simply tap into a fresh and unused centre within.

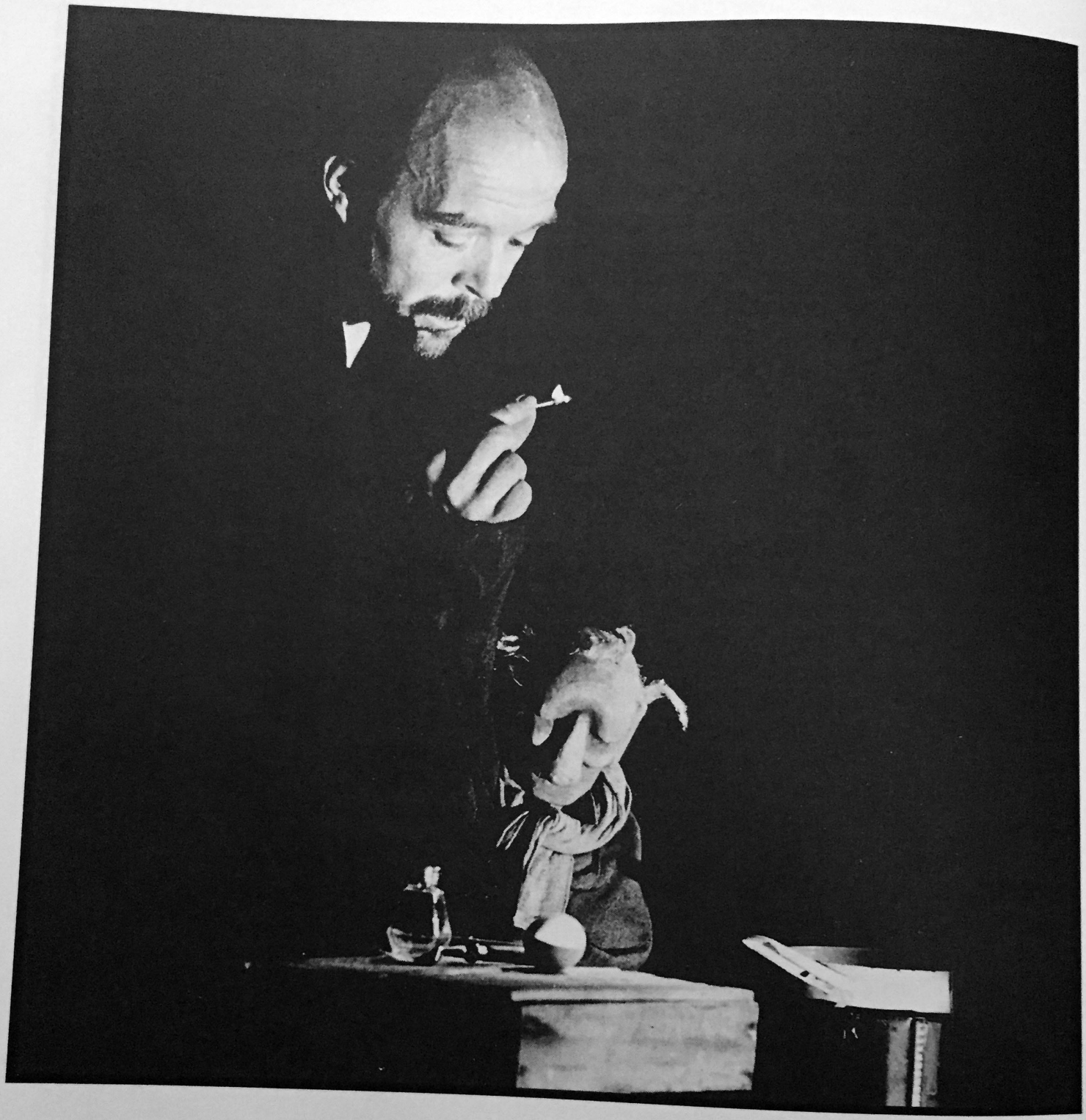
This creative centre serves no pressure to achieve, no higher purpose, it is quite free, completely at our disposal. We can play with it: and that is the key word. Play has long been recognised as essential to life. Whosoever regards play as a waste of time is sick. Creative play is a therapy for the mind and hands, for the disposition, for self-confidence. It is a joy to give shape to unformed matter, a pleasure to bring formed material into meaningful unity.

In our case this unity is the puppet; be it glove puppet, string marionette, rod puppet, or any one of the countless other variations on this theme. The proposition of this book is the play with forms such as spheres, pods, ovoids, cup shapes etc, which are split, rejoined at a different angle, arranged to create beings inspired by natural human forms, bodies, faces, and brought to life using devised, home-made control mechanisms. We can play with these creatures, make theatre, puppet theatre. And if we also incorporate the use of colour, light, costume, text, direction, we create a total work of art. Who believes themselves capable? Everyone can do it.

Written by a master in releasing hidden creativity, this book has developed into a veritable parade of forms and elements still to be shaped, and aims to be a handbook for the loner as well as the gregarious. It aims to show how a family, without any previous experience, can build their own theatre using simple methods and bring it to life for the enjoyment of themselves and their friends. It is a manual for those who seek to bring out the inner life of their young charges through creativity, and a readily accessible source of ideas for those who believe that craft is as important as sport. It is for everyone who wishes to address the whole human being in the best artistic and educational way — through puppet theatre.

LK 1974





Enno Podehl with Hermann

Puppet Theatre On My Mind

On the dramaturgy of puppet theatre

Enno Podehl

First published in *Deine Stadt: Kunst, Kultur und Leben in Braunschweig* 1985.

The 10th Week of International Puppet Theatre in Braunschweig is over: lively debate about the presentations, active and interested participation by the public, a warm, friendly atmosphere amongst the actors and UNIMA representatives who appeared from many different countries, plenty of sunshine... This unconventional form of theatre is marching ahead — in our town too.

As I actually plan, create and perform puppet theatre here, and see my personal path in this form of artistic expression, it has been a time in which to reflect on where I stand. The intensive experience of completely different performance concepts and numerous impressions and discussions throughout the week, have aroused thoughts in me about the current practice of puppet theatre and its prospects. I still expect a great deal from this medium and would like to experience and express the specific possibilities that bind me to it as extensively as possible ie translated into puppet theatre performances.

When rehearsing a new piece, I usually have an idea of the overall aim but for the individual scenes often no more than an image, a fragment of action or text, perhaps only a feeling or the outline of a character, or simply a few objects and the puppet to work with. Such rehearsals are like voyages of discovery through landscapes which are often pretty foggy. I know what I want — but ... I must find it first. If I arrive somewhere and fix a sequence, I can usually sense if I've hit bull's eye or between the rings, or have simply landed in the wilderness.

More and more I mistrust the straightforward translation of a script, be it text or plot-based, into the medium of puppet theatre. Cheap illustration threatens. On the other hand, I have something to say, clearly and understandably. Puppet theatre communicates not only with words and plot but often through little gestures, a silence, the use of light, the death and resurrection of a sculpted figure or the manipulation of space. Puppet theatre has its own language, its own dramatic rules and the more I get to know them, the more I prefer to let myself be surprised. I am led to an increasingly open method of working, where only fragments are consciously fixed in advance and image, sound, colour, dialogue, plot, construction, props, fabrics, materials etc can all affect the theatrical process.

Indeed, it is because the dramaturgy of puppet theatre, or so it appears to me, is not a closed system of guidelines for thought and action, but rather a landscape which constantly offers new views, paths and crossroads the further I advance, that I try to think about it systematically. I don't do

this to put it in a straitjacket (of which there are enough already) but to experience its diversity more consciously; for to wander through relatively unknown territory brings with it the danger that the seeker, which I am, merely sees what is already familiar and only takes paths which seem safe, or — made blind and naive to the outside by intoxicating fantasies of his own omnipotence — staggers about unconsciously in new surroundings. I am too young for one and too old for the other.

Debates about puppet theatre often begin by posing a fundamental question: is there something which can only be communicated through this medium? What is the specific characteristic of puppet theatre? A million-dollar question, central and justified, but which cannot be answered in a few sentences. It is the crux of the thoughts formulated in this article. Many maintain the puppet should be as dissimilar to the human as possible, this alone proves its independence!

I can immediately think of festival performances which support this view (eg *Piskanderdula* by Věra Říčařová and František Vítek, *Fear Not the Big Cats* by Theaterra or *Dream Cycle* by Vélo Théâtre). But are these not obvious examples, far too obvious? Because in these cases the independence of puppets, objects and toys is resolutely acted out, do other puppet theatre productions become less specific? Is a puppet whose form and language tends more towards the human thereby inevitably a cheap imitation of the original — an imperfect substitute for the live actor? Is it not possible to see in the above-mentioned examples close links with human movements and actions? Of course, because that is precisely the source of their excitement, their expression, their humour. Is it not therefore the relationship between the puppet and human which is special?

This brings me nearer to some answers — but first let's take a closer look at the puppet itself.

Much has been thought and written about it already. Heinrich von Kleist springs to mind and his hymn of praise to the marionette, which, by its very unconsciousness, outshines every dancer in grace. No tense force of will, no self-observation or any other interfering thought can make the marionette uncertain in its movements, which obey only the laws of gravity and pendulum.

Gordon Craig, the great 20th century reformer of theatre, saw in the marionette the ideal actor, unchained by the physical laws of human existence. Furthermore, each puppet can only ever be itself, that which is intended — the theatre role is not its apparent existence (as in the case of the live actor) but its true and only one. This, too, is to the puppet's credit. It is more difficult — but also more exciting — to defend its disadvantages.

I love, for example, the immobility of the puppet's face. (I am not a fan of built-in eye and mouth mechanisms, and lip-synch puppets are another matter entirely). In fact, it is precisely the deathly penetration of faces frozen into a particular expression which increases the expressive power of the action. Because the faces deny the passage of time, are not subordinate to it, they inevitably create an opposite pole which gives each action a barb: an alienation effect — in a totally Brechtian sense as well. Consider for a moment the effect of Buster Keaton — and how

startling the sudden change of expression evoked by the movement of a shadow.

Of course, a section about the puppet/figure should not omit to indicate the sheer unlimited possibilities of construction — caricaturing exaggeration, distortion of body proportions, the disintegration and mutation of the body as desired, as well as the possible presence on stage of Death and the devil and the whole collection of beings from the other side as can only be imagined from this one. We puppeteers will show everything, if necessary.

Furthermore, this form of theatre has for some time freed itself from the constraints of the puppet, reflected in the German language by the adoption of a broader term 'Figurentheater' (theatre of figures). An animated figure can now really be any object. It only needs a certain range of expressive means, and is differentiated by the fact that for a time it becomes an active force in a theatrical process. Roots, juice extractors and abstract wire constructions are already seasoned actors in this type of theatre. Thus symbols and feelings in three-dimensional form have taken our stage by storm.

Nevertheless, what are puppets and objects without movement — without the impulse given by the performer? In the same way that film cannot be understood as a sequence of photos but acquires its specific power by portraying movement in time and space, a puppet without movement is merely a dead object. The most beautiful figures say nothing about the quality of a performance. How wretched some expensively decorated but naively constructed marionettes appear as they take their first steps. How quickly they may lose any theatrical usefulness. And yet how mesmerising a ball of foam can be if, through masterly movements, it acts out a complete character.

The puppet is a central tool, but only through its movement does the final product exist, the theatre experience. In this respect, everything said about the puppet is relative. Puppet, movement and performer are an inseparable unit. The deeper my involvement in the performance, the less I notice the external features of the puppet and the more intensely I acknowledge its own inner life, the composition of materials, its joints, points of gravity, weight — and the more precisely I observe my physical relationship to it. I try to let my breath pass through my main control hand into the puppet — to breathe into it. A slight up and down movement of the arm develops into the expression of an intimate unity between puppet and performer. I no longer use my eyes to establish surface contact but sense the shifting balance of the puppet. I test the solidity of the ground, the frictional resistance of the legs and register the sensations in my hand.

At what angle can I hold the puppet? When do the legs drag, and how can I develop deliberate movements out of this information?

I tip the puppet to the side and give it a slight jolt: how does the free leg react? What character does it have? What counter-movement is possible, and what rhythms are thereby created? Now the control rods, strings and other transmitters of movement become meaningful. Their position, length and resilience, as well as method of con-

struction and directness, say a lot about the puppet and my relationship to it. They reflect the degree of my intimacy. Different sizes and points of transmission cause each of my movements to appear in the puppet in another place entirely, with a different direction, intensity, speed. And yet I must ensure that the tension which I intend the puppet to express is already contained in my own movement. Sometimes the puppet stubbornly opposes my plans. In another moment it quite unexpectedly shows me convincing gestures which considerably enrich the action and characterisation. So then I amend certain scenes, and occasionally a joint as well.

It thus becomes clear that the initial impulse of almost every puppet movement is consciously guided by the performer but during its course, the movement becomes the articulation of an intimate sensation which the performer must pick up from the puppet's physicality, and is convincing if it is allowed to follow its own natural laws — if it is released by the performer (who will, of course, take control again at any moment). In a way it is like an act of dressage which, if all goes well, is not supposed to be a violation of the animal, but an expression of mutual co-operation, the result of the tamer's sensitive acceptance of the nature of the beast. The training and many setbacks experienced on the way should not be visible during the performance. There is, however, one thing that sets the performer above his partner: it is he who gives the first impulse.

Sergei Obraztsov, the Russian father of modern puppetry, once wrote that the particular privilege of the puppet, as opposed to the live actor, is found in its very lifelessness. So it is. Because the puppet in principle cannot move itself, each of its movements is understood to be a conscious sign by the performer — free of coincidence, unintended subtext and dull naturalism. Obraztsov gives the example: "If an actor sits on a chair and pulls up his trouser leg, it is possible that the audience won't even notice. But should a puppet do exactly the same, they may burst into a storm of applause..."

A puppet can never be an individual person — but instead always has something 'super-personal', its appearance always means something more fundamental: these ridiculousnesses, such characters, those fates, these feelings... Puppet theatre has this fact in common with the use of masks, which is why these two forms of theatre are the oldest, the original. This is the core of its specific characteristic. In all the many individual dramatic decisions, large or small, I try to think of this.

Nowadays I place far more weight on the restriction of a puppet's movements rather than their (seemingly) unlimited diversity. There is only a limited range of impulses and guidance possible using my two hands/arms etc and I therefore aim for intensive movements within clearly defined limits rather than uncontrollable swinging.

A puppet's completeness is not achieved by faithfully reconstructing the external image of the human, neither by having the same number of arms and legs nor joints in a similar place. Why should a puppet have two arms if I predominantly

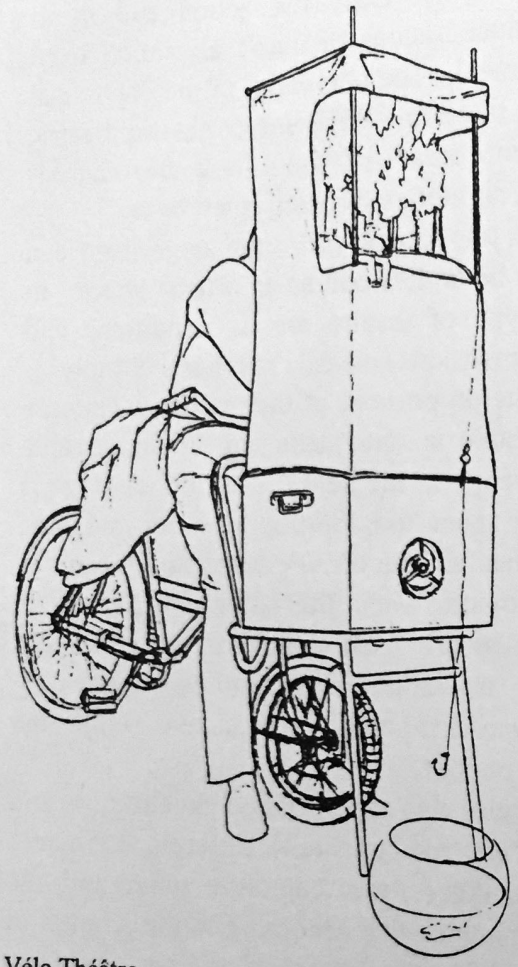
play with only one? A missing arm would soon be registered in a lifeless, stationary puppet. However, its absence is barely noticed if, during the performance, the puppet is not forced into situations where the missing arm would seem to be needed. On the contrary: any part which is not integrated into the total expressive apparatus of the puppet, and has no purpose in performance, is more often a distraction and undermines the concentration.

This would be the moment to go into more detail about the differences between the various types of puppet, control techniques etc. However, I am not able and do not wish to here. Let it simply be said that the above-mentioned experiences are for me decisive factors in selecting one technique or another, depending on the overall aim of the piece or individual scenes.

Because of its lifelessness, the puppet has a completely different relationship to the stage reality and props than the live actor. It is itself only temporarily removed from its representational existence, and cannot, nor should it, conceal the similarity of its nature to the rest of the material world. The unity of the stage world seems more complete than in the 'big theatre'. This is why a prop should not be used to illustrate a simulated environment, but as far as possible be comprehended in terms of its own reality. I hate plywood scenery and disguised polystyrene furniture. Each prop on the stage should be an equal partner for the puppet. Objects which are not allowed to reveal their material nature and particular function during the performance have no part to play on my stage. After all, this is also an area which is particular to puppet theatre: a theatre where the objects themselves carry the action and in so doing, produce visions of man's alienation from his environment. The perversity of the object can unfold and, like some Valentine or absurd theatre, transform the dream of controlling the environment into a nightmare of being ruled by it.

Like the puppet and prop, the stage itself can and should be understood as an artistic space. In no other type of theatre are its conditions and physical dimensions so easily resolved. Simply by changing the proportions of the puppet, a suitcase can be a table in one scene and an impassable mountain range in the next. The puppet stage is the idea of space like the puppet is an imagined human. This fact can convey surprising meanings if the moments when the naturalistic space is broken down are used with extreme precision. Ultimately, its volume and significance can only be experienced through manipulation — like the limbs of a puppet.

These rules also apply to time: theatre time and real time are fundamentally different. Theatre time is thinking time, cognitive time, and the hands of its clock tick according to the amount of time needed for the audience to process, or at least take in, what is shown on stage. The dramatic elements of puppet theatre can, of course, be developed in any imaginable direction.
General artistic principles such as 'tension of balance', 'rhythm' and many more, — things which apply to each dramatic element, as well as their relationship to each other and finally to the

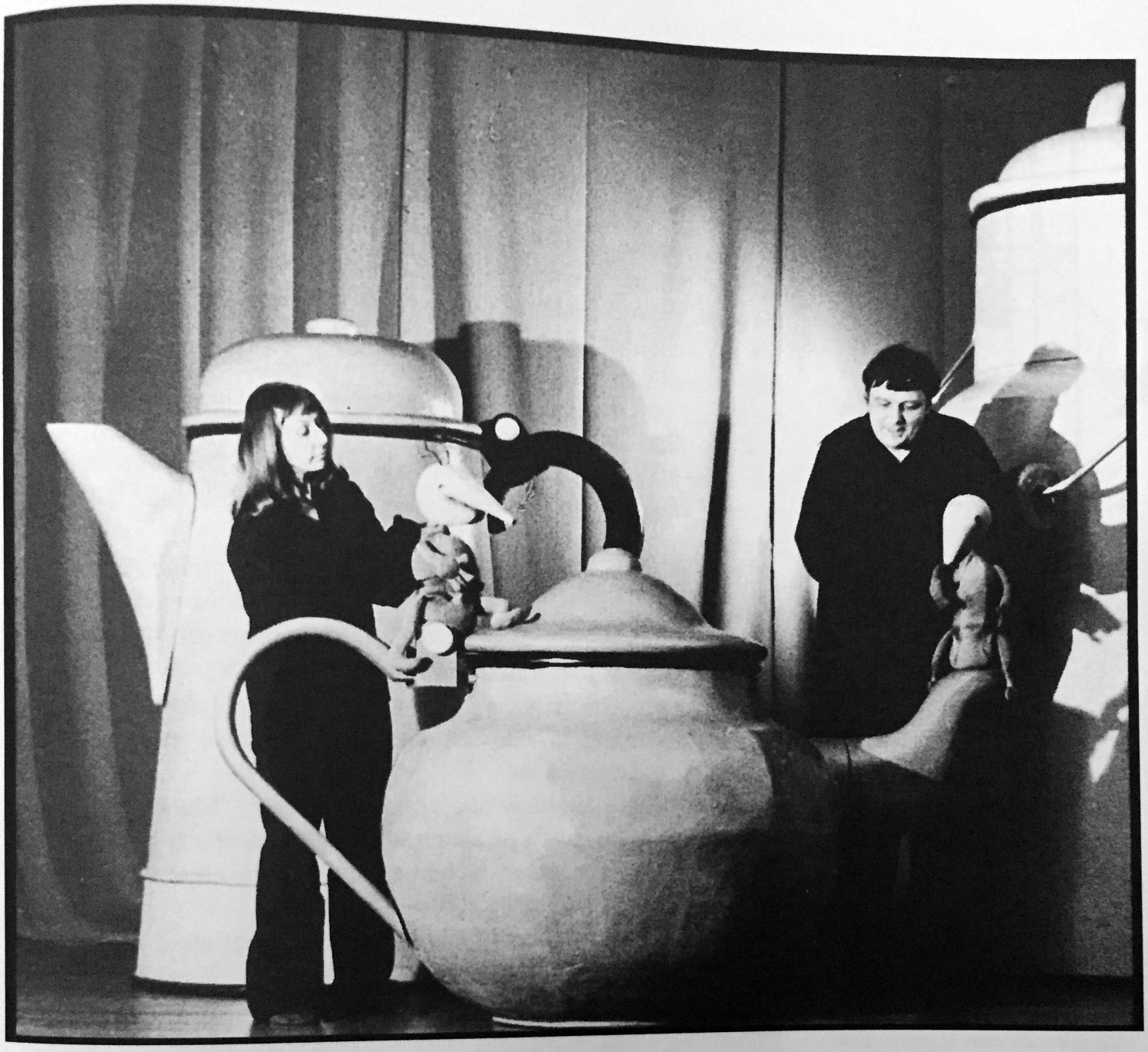


Vélo Théâtre

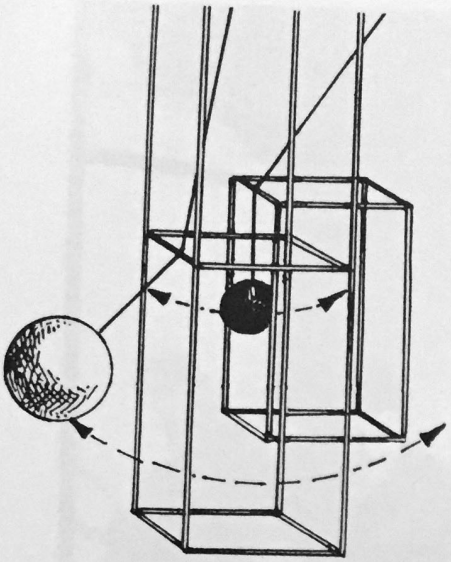
whole performance — I have had to leave aside.

There is also puppet theatre with a completely different dramatic concept. For example, traditional folk puppet theatre has a totally closed dramatic system, and rehearsal of a new piece is reduced to two or three days because the show is already clear for the performer who has grown up with it. The observations in this article do not call into question its right to exist. On the contrary: I am very happy that there is still theatre of this kind. They also have it easier than we do in our theatre. At some point, in the middle of the deepest rehearsal, it always happens: the loss of all feeling for all these performing conditions. Suddenly I don't know any more if and how my theatre will be received and understood. The piece has finally sucked me in, swallowed me up. My outer vision, desperately maintained for as long as possible, has been blinded. There is only one thing for it: to find the shortest possible way to the first public performance. Then the second phase of development can begin: slight alterations to the dramatic climaxes, elimination of the 'holes'... bringing all my imagined and intended content, feelings etc. closer to that which the audience perceives and experiences.

EP. 1985



Benita and Peter Steinmann in *Die große rote Teekanne* (The Big Red Teapot) 1975



Forms in Movement

Prof. Ernst Röttger
Craft Academy, Kassel
First published: *Schauen und Bilden* No. 3 / 1959

In these times, whose technical achievements make it possible to resolve the most complicated mechanical tasks, it seems at first surprising that the interest in puppet theatre is increasing. However, the perfection of our contemporary performing arts, particularly in film, cannot satisfy contemplative people in the long-term. They won't be forced into the passivity of being mere spectators. They wish to exercise their own imaginations and are therefore stimulated by the primitive play of marionettes. Totally unconsciously they participate in their minds, contributing to the performance events with their fantasy.

After many attempts using traditional forms of puppet theatre, we were inevitably led to solutions which brought out the essential of the puppet through limitation of its means. We dispensed with text and plot, and thereby with imitation of the human theatre. We recognised that the marionette is not a small version of a live actor but should perform according to rules determined by its own movement and possibilities of expression.

Kleist said in an essay about puppet theatre: "Marionettes know nothing about the inertia of matter, the quality most strived against in dance: because the force which lifts them into the air is stronger than any which binds them to the earth."

We began by hanging simple balls of different sizes and colours onto pendulums and letting them swing in rhythm. A row of the most elementary movements: to and fro, up and down, backwards and forwards, turning on an axis, were combined and made more expressive through noises and musical accompaniment. The moving forms in the first scenes developed out of the different materials: wood, wire, paper, cloth. The movement of the large pendulum was transmitted to the smaller pendulum attached, and thus the puppet was created.

Illustration from an article by Gustav Gysin about an experimental performance using pendulums by a Swiss group of students

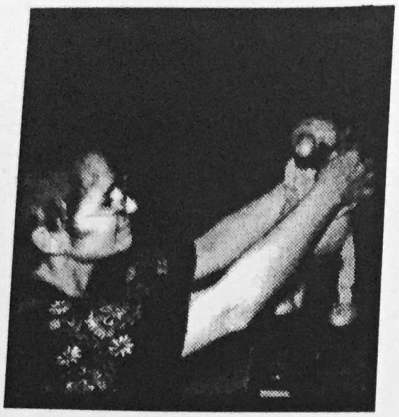
Altering the proportions and dimensions of the sections led to new possibilities of expression and movement. The control strings, in traditional marionette theatre made as invisible as possible, were now particularly emphasised by colour and knotted-in beads, so that the play of strings very effectively supported the movements of the puppet.

We were particularly interested to show how the puppet was created. For example, in an open scene, a tin can developed little by little into a grotesque figure. By often playing with the most diverse puppets, a programme emerged which didn't have a continuous plot but was simply a sequence of scenes. People and animals in abstraction, freed from the inertia of matter. Moving forms, alternately serious and amusing, supported by light and shadow, accompanied by rhythmic music played on various instruments. We called it a ballet on strings.

The success of the numerous performances for children and adults, both at home and abroad, confirmed the readiness of the audience to be receptive to true play, a play with the basic elements of design: form — colour — light — space and movement in pure mime.

ER 1959

Author's comment: I saw this performance in 1951 and was very impressed, in fact I still am. I have tried, as far as is possible, to transfer what is described here to puppets operated from below. I personally like to have everything 'in hand' and therefore prefer to form a single unit with the puppet. Strings and the laws of pendulum distance me too much from it. However, that is a purely personal decision and in no way a rejection of the string marionette.



Working with Hansjürgen Fettig

Barbara Scheel,
BABUSCHKA-Theatre, Eppingen
First published: *Puppenspiel-Information* Issue 51/1984.

Twice this year, I had the pleasure to work with Hansjürgen Fettig. With a beating heart, just before Christmas 1983, I accepted his invitation to visit him in Stuttgart. I had heard a lot about his irascible temper, and had met him briefly to talk about costumes for *The Canterville Ghost* figures, but I had great respect for his competence and was afraid my work would not be satisfactory. As a precaution, I took another look at his two books on puppet construction and puppet design and left Frankfurt far too early. I wanted to be punctual and so I was. He received me in his work clothes. A torrent of words fell over me, which made me feel even smaller, and it was straight to work.

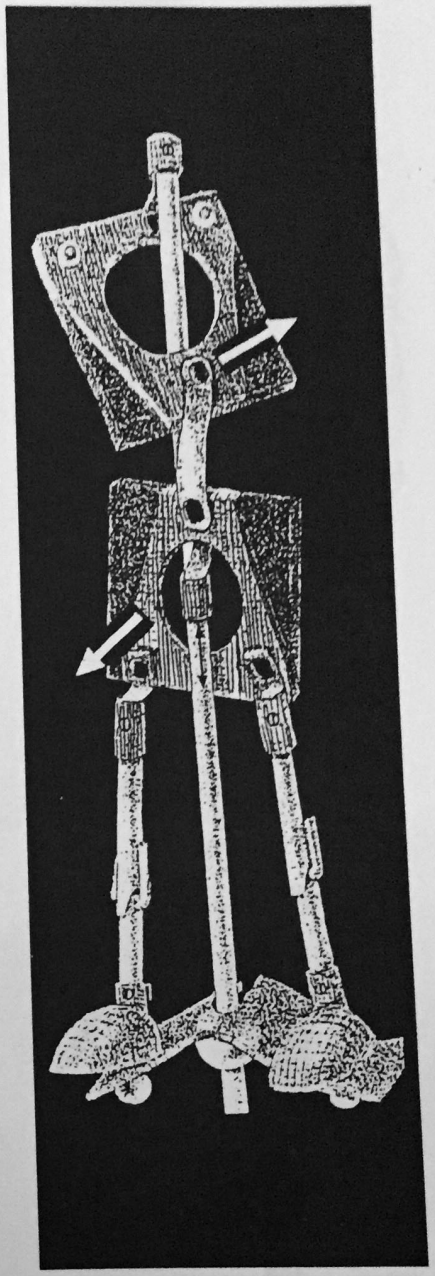
I was overwhelmed by the sight of his well-equipped studio. All around were figures, puppets, paintings, books, machines, materials and jazz music. I hardly had time to orientate myself when I found we were standing in front of his latest work: figures whose legs, bodies, head and arms could make very sophisticated and precise movements, operated from below. Hansjürgen Fettig took one after another from its stand, made them move, and the pleasure he felt in so doing was immediately transmitted to me. The ice was broken. We laughed and together took delight in the funny movements of his puppets. Time and again he protested he was still at the beginning, that all this was not yet fully matured. The arm control was still not thought out properly, the legs too should be easier to control. It was all still half-measures, he said. I couldn't comprehend what he meant. I liked the puppets and their mobility. Again and again they made grotesque movements and we were both amazed by how much a figure can express through one single turn of a knob. He also mentioned in passing that he wanted to write a book about this type of puppet.

But to only demonstrate was not enough for him. He assembled a new figure, showed me its joint connections: flexible strips of PVC fabric with snap fasteners on one side, the counter-pieces mounted on the body with *Agoplast*.* The advantage is that a number of snap fasteners can be attached in various places so as to try out the best position, as well as enabling the same puppet to produce different types of movement. An arm which sits high or back has different movement possibilities to one which is positioned low or forward.

As the head is not attached to the body but to a movable rod in the support tube, the range of horizontal and vertical movement can be altered depending on the length of the connecting strip which fixes the head. The body, which normally consists of two parts, is similarly only attached to the support tube by PVC strips. In this way the upper and lower parts of the body can move in opposition. Any pressure exerted on the legs is reflected in the pelvis. Thus the puppet can make very precise movements. If only one leg is moved, then only one side of the body moves. A balanced overall movement is created.

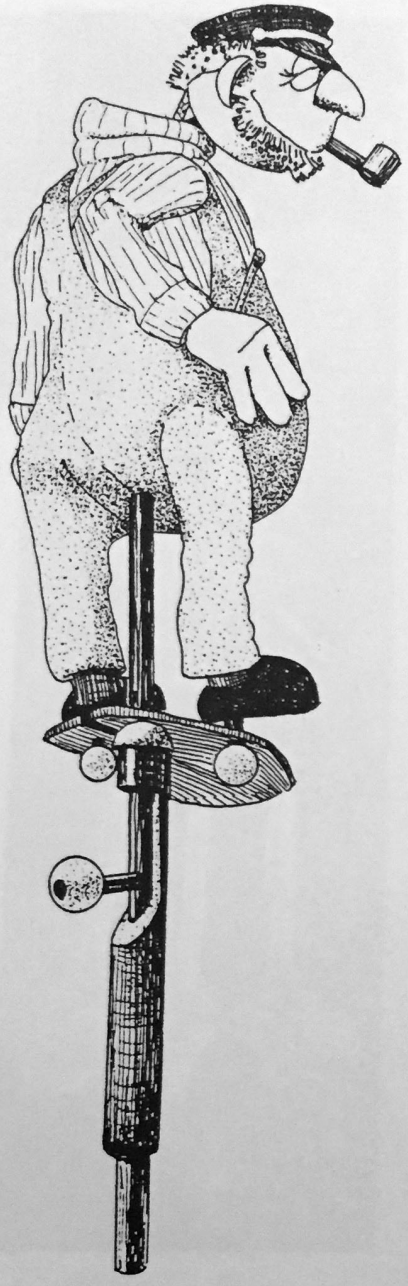
During my stay with Hansjürgen Fettig I learned to make controls out of plastic tubes which could be sawn, drilled, glued, bent (after being heated) and inserted into each other. Their advantage is that they can easily be made to fit the operator's hand. They are quiet and very light whilst still being functional and robust, and the slight pliability of the material helps prevent rigid and abrupt movements. Fettig also makes elbow and knee joints from plastic tubing.

When I had seen, asked and talked enough, he invited me to make a puppet using his system. A discarded body, a cardboard egg covered in *Agoplast,* as well as a large selection of ready-made parts of arms, feet, legs and half-finished hands, made the job of designing much easier. All that mattered here was the technique: fitting, sawing, glueing, bending, producing balanced movements, trying, testing, experimenting… At first it very much went against my way of working to be forced to try things out because it is usually only after much thought and consideration of all possibilities that I attach a part to a puppet. Now I found that I had been denying myself the process of discovery and of experiencing more possibilities than only those



Construction and movement possibilities of body parts connected by snap fasteners and PVC strips

*Agoplast — see publisher's note on page 65.



Long rod puppet by the author, costumed by Barbara Scheel

which I could imagine for myself. It was a salutary experience which would have far-reaching consequences.

After four days I left with many impressions and my own puppet. I was exhausted. We had arranged to meet again in February. I returned to Stuttgart with great anticipation - this time I had taken on the task of clothing some of his puppets. One figure was to be covered in a flesh-coloured jersey material, another dressed as a sailor. I brought patience with me, sewing materials were provided.

Hansjürgen Fettig made one very important condition: "It must be possible to undress the puppets for demonstration and repair purposes". We were agreed that the movement capability of the 35cm high figures would under no circumstances be restricted. The figures danced like rubber dolls before my inner eye and seemed to taunt me: "You'll never do it!" Every material gives a certain amount of resistance, I said to myself, it's pointless. But I experimented and considered, plundered my sewing box of tricks, modelled calf muscles and upper arms out of polyester wadding, dyed fabrics, cut out cloth, pinned parts of costume to the puppet, rejected it all again and waited for an impatient word from Hansjürgen Fettig. None came. After two days of trying, sewing (hidden stitches by hand!), testing, putting the costume on and off etc, the first puppet was finally dressed — although in effect totally naked — and I breathed a sigh of relief. The movements were all there, creases only appeared where they were allowed to, the mechanisms and *Agoplast* were hidden, the puppet was finished.

I would never have thought that costuming would require just as much trying things out as constructing. But the results were good. "It's a lot of work, a puppet like that!" was Fettig's comment. He explained that he hadn't become impatient because he had seen how I was working and he preferred precise work which took longer to deliver rather than a slapdash job. I believe that half-measures are something that Hansjürgen Fettig cannot bear. He demands of others what he demands of himself: to work until the results are perfect. This applies to puppet making, as well as performance and design, text and conduct.

When I had almost finished the second figure, I showed it to him. He stood before it, glanced over it with his eagle eyes and stopped at a

fold in the costume: "the puppet is not quite finished", he said. He had discovered this little shortcoming too, although he knew nothing about sewing. It was not a reproach but rather an observation, along the lines of "I won't put up with cheating". On the other hand, he originally wanted the sailor to have trousers which sat on the hips. I tried, but to my eyes it appeared unharmonious. I put him in a pair of dungarees and showed Hansjürgen Fettig, and he not only agreed but frankly admitted that it was the better solution.

During my first visit I had told Hansjürgen Fettig that I was looking for a 'Babuschka', a grandmother, no more than 60 years old, who should not be a little housewife but an endearing, somewhat critical old lady of whom it was possible to believe satirical and ironic stories as well as serious and funny ones. None of the grandmothers I had observed, nor any of the pictures I had collected, fulfilled what I had in mind. They were either too sweet or too strict or too careworn. Suddenly, whilst rummaging about, Fettig said: "You wanted a Babuschka! I'll make you one. You're sewing costumes for my puppets and I'll make you your Babuschka". In his hand was an *Agoplast* head with a snub-nose, bun and deep eye-sockets. I was sceptical. Was this going to be my Babuschka? But for him it was already decided. He first looked for a pair of glasses (his treasures are immeasurable, a veritable goldmine for curio collectors!) and found one. It suited the face perfectly and changed it in a strange way. The thick lenses altered the eye-sockets constantly so the expression was never fixed. Then he began to sand and smooth, he looked for an upper body part for the woman, gave the face a coat of white, mixed colours and began to paint. I was still sceptical. But as the painting progressed, I began to fall in love with this Babuschka: greenish hair, brown shadows, a sceptical-uneven mouth, a broad chest and typical Fettig-hands. For the costume he had chosen brown lace, which related to the colour of the shadows. Finally he gave it a simplified Offik-Three-Point mechanism. The puppet was hardly finished when he began to play with it. At first I didn't dare believe it was really my puppet. I still love it.



Babuschka with a 'three-point mechanism' (details on page 238)



The king before adding his carnival costume

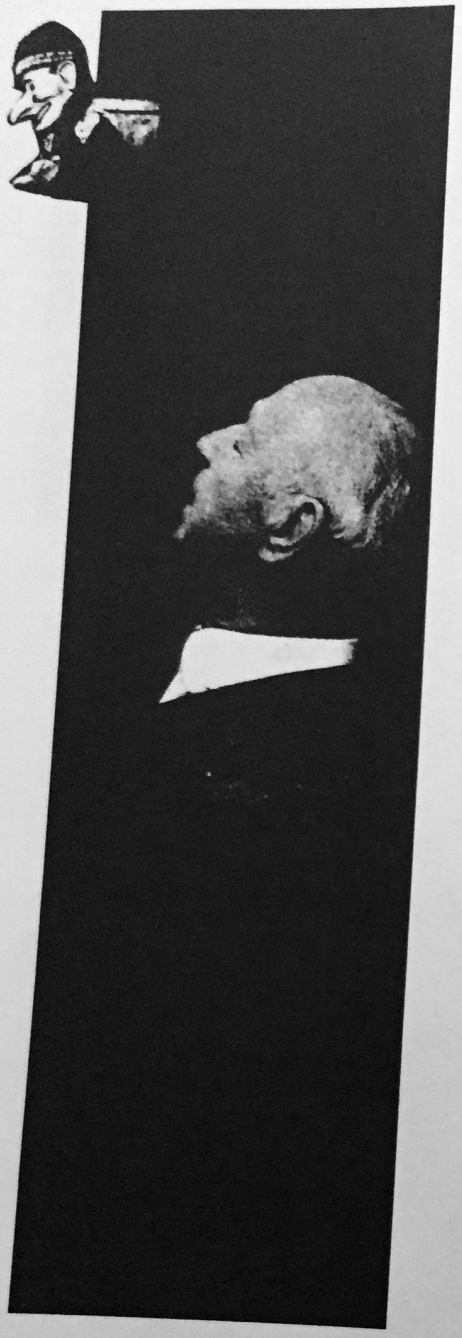
On the last evening, the night of *Fastnacht*, I stayed late in the workshop sewing the last stitches to Peachum's costume, and finally began to clear up. Everywhere were puppets which still needed to be dressed or have their costume changed: a fat king, a stupid merchant, a transvestite, a clown etc. There were also boxes of fabric. I took one puppet after another and dressed them up for the carnival ball: the king became a sheikh, the idiot a cook, the transvestite a Grande Dame etc. Then I went to bed. The next morning Fettig was back in the workshop before I could even open my eyes. When I finally joined him, I was able to share his pleasure. Not only did he accept my style of 'decoration' but wanted to have the final figures dressed that way. It was obvious to both of us that it couldn't be done in a day, so he photographed the puppets, I finished the work I had begun and it was then time for me to be on my way to the station.

I returned to Frankfurt loaded with photocopies and my Babuschka. Although Hansjürgen Fettig rather disparagingly says of himself that he only 'tinkers' because he is not professional in the technical field, I think it is pointless to pass judgement on his 'tinkering'. I very much like his way of making things. Every now and then he says, a little ironically, his figures are the Stradivari of the puppet world. Maybe. I am too fascinated by his way of designing puppets and his dogged determination to be able to make an objective judgement about that. For me it is beyond doubt that German — and probably international — puppet design and construction has been influenced by Hansjürgen Fettig. And I hope he will long continue to suffer from the 'puppetry virus' — for which there is only one cure, as Peter Steinmann always says: "Do it!"

BS 1984

Chapter One

My Course is Set



Early Childhood and Youth

My memory tells me that my first conscious contact with 'Kasper' puppets was when I was four years old — in 1928. My mother surprised me with one of the best presents I have ever received in my life. It was the magician from the corner window of Braun's bookshop in Heidelberg where my parents bought their books. I often went there with them and, as if magically attracted by the puppets, could hardly be torn away. Amongst all the other hand-carved and turned figures, the magician had impressed me the most but I didn't know, nor would it have meant anything to me then, that it came from Theo Eggink's workshop. He and Max Jacob, leader of the Hohnsteiner Hand Puppet Company, worked together and created a style which in Germany was famous until long after the Second World War.

My mother held the magician in the crook of her arm and he began to talk to me. I was fascinated. Then she passed him to me saying "So, I've played something for you, now it's your turn." In this moment the course for the whole future development of my personality was set. Not only did I develop an ability for free speech but also for role play, which required observation and imitation of behaviour patterns.

In time, more puppets arrived, which were just as loved and beautiful. The figures were the very best you could buy in a set at the time and cost, if I remember rightly, between RM3.50-5.50 (Reichsmark), which was a lot of money in those days. At best, one might appear at Christmas or for a birthday so it took a long time before I had a large enough ensemble to make a play. I would have preferred to make the missing figures myself but realised that I was not yet old enough, although even then I was already convinced that I would one day be able to make beautiful puppets such as these. That is why I began at an early age to observe how people looked and behaved, and made drawings of what I saw.

Max Jacob (1888-1967) founder of the Hohnsteiner Puppenspiele, president of the international association of puppet theatre UNIMA (1957-1967)



Hohnsteiner King

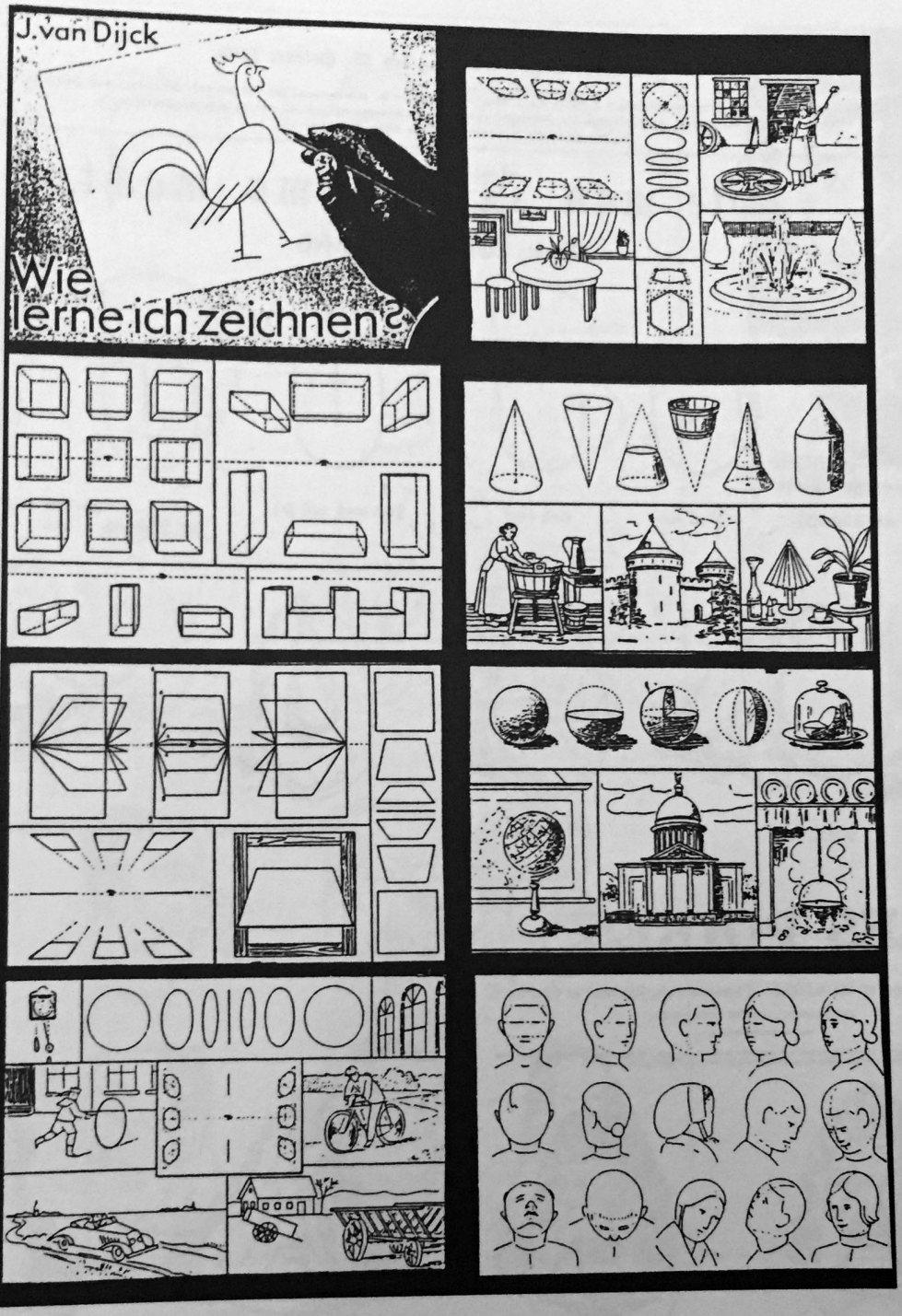


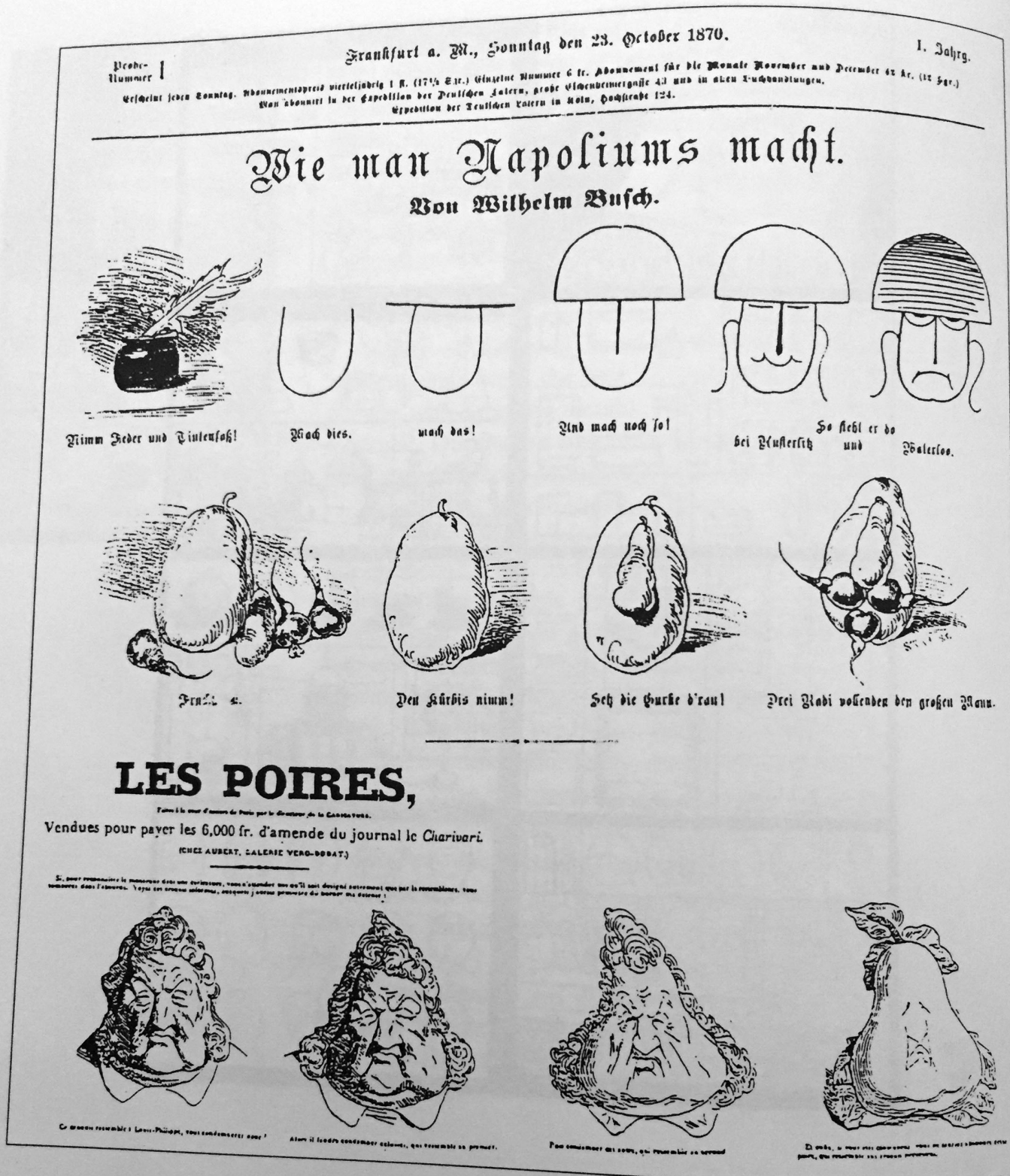
At last it was the first school day of *Das Jahr voller Freude* (Year full of Joy) as the title of my first reading book said. I was lucky because my first teacher knew how to fire our enthusiasm for learning. When we arrived on that first morning, he had drawn a large carousel on the board in coloured chalk. I admired his drawing skills and the pictures in the book. The one of the Easter Bunny painting faces on eggs buried itself into my subconscious. Finally I learned to read and thereby gained my intellectual freedom. Now I could read Wilhelm Busch myself and our two books illustrated by Gustave Doré, *The Baron Munchhausen* and Cervantes' *Don Quixote*.

Nearly all the children in the area had 'Kasper' puppets but I thought mine were the best — with one exception: a friend had a Kasper with a moving mouth! We soon decided to give performances together. Our theatre was the doorway of a laundry which opened out onto a yard and our honourable audience sat on a grassy embankment — provided, of course, they had paid the entrance fee of two pfennigs.

On my twelfth birthday, my father gave me a book called *Wie lerne ich zeichnen?* (How do I learn to draw?) by J. van Dijck. It promised no more than the title itself and with its help I taught myself the fundamental, practical ground rules of drawing. Artistic expression was not mentioned. When I proudly showed the book to my drawing teacher, he flicked through it and made only one comment: "Not like that!" With these words he totally lost my trust, and thereafter I executed his tasks effortlessly, turned to other sources and would only too gladly have transferred to his colleague Theodor Schück who ran an excellent puppet theatre at the school.

Die Porträtkarikatur (The Portrait Caricature) by Walter Sperling is another textbook, and it accompanied me everywhere between 1943 and 1946, throughout my military service and two years as a prisoner of war. Later, I studied in detail the work of important artists such as Adolf von Menzel and the excellent caricaturists Olaf Gulbransson, Honoré Daumier, Toulouse Lautrec, also the splendid illustrators of the Simplizissimus movement, and no doubt their traces can be seen in my own work.


J. van Dijck
Wie
lerne ich zeichnen?



Probe-Nummer 1

Frankfurt a. M., Sonntag den 23. October 1870. I. Jahrg.

Erscheint jeden Sonntag. Abonnementspreis vierteljährig 1 fl. (17½ Sgr.) Einzelne Nummer 6 kr. Abonnement für die Monate November und December 42 kr. (12 Sgr.)
Man abonnirt in der Expedition der Deutschen Laterne, große Eschenheimergasse 43 und in allen Buchhandlungen.
Expedition der Deutschen Laterne in Köln, Hochstraße 124.

Wie man Napoliums macht.

Von Wilhelm Busch.

Nimm Leder und Tintenfaß! Mach dies. mach das! Und mach noch so! So sieht er da bei Austerlitz und Waterloo.

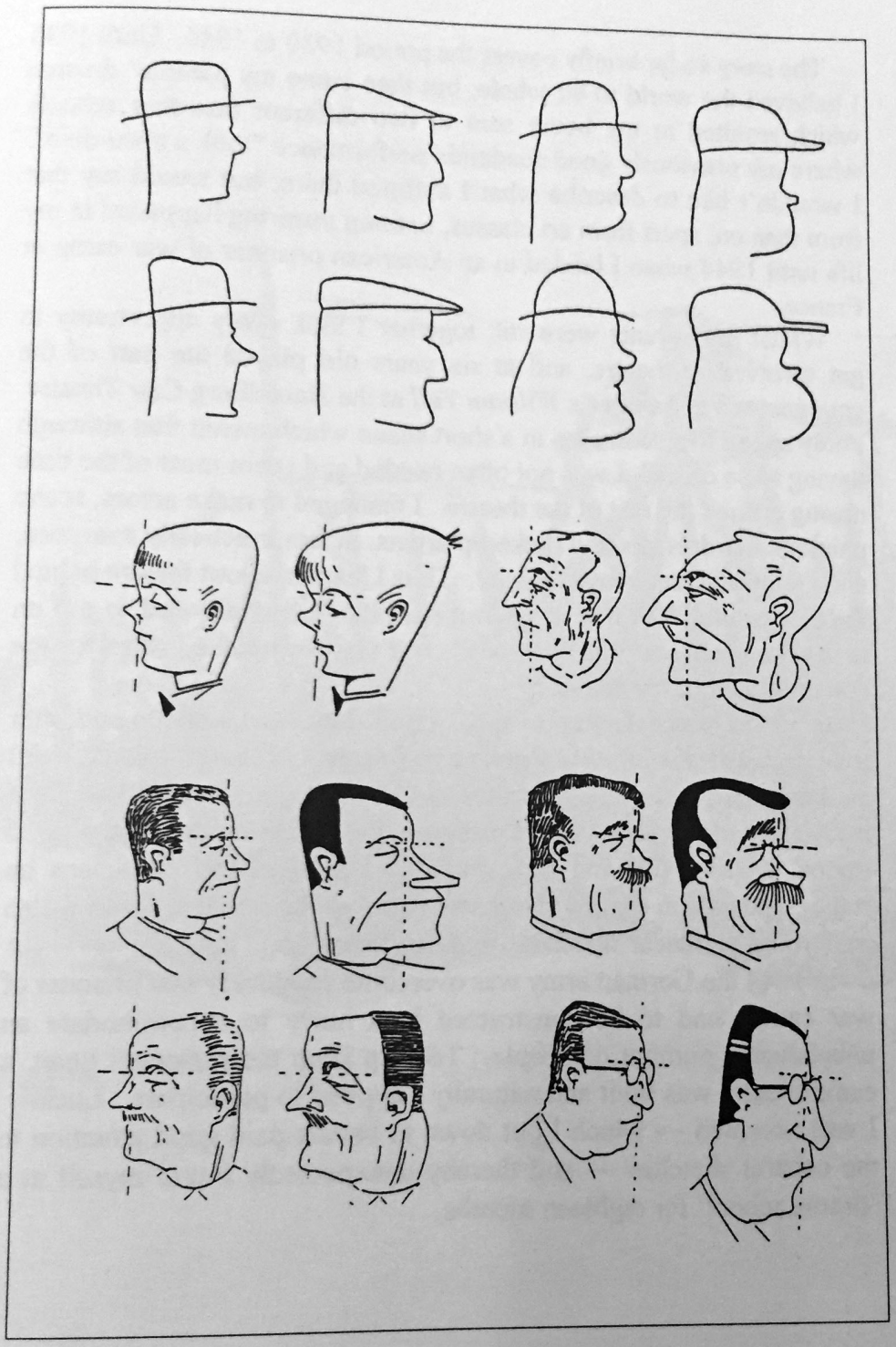
Fritz 2. Den Kürbis nimm! Seh die Gurke d'rauf Drei Radi vollenden den großen Mann.

LES POIRES,

Vendues pour payer les 6,000 fr. d'amende du journal le *Charivari*.

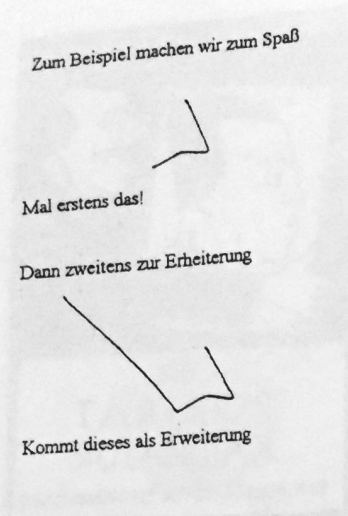
(CHEZ AUBERT, GALERIE VERO-DODAT.)

Above: *Napoliums* by Wilhelm Busch. Below: *Pear King* by Daumier.





A page from Walter Sperling's book *The Portrait Caricature*



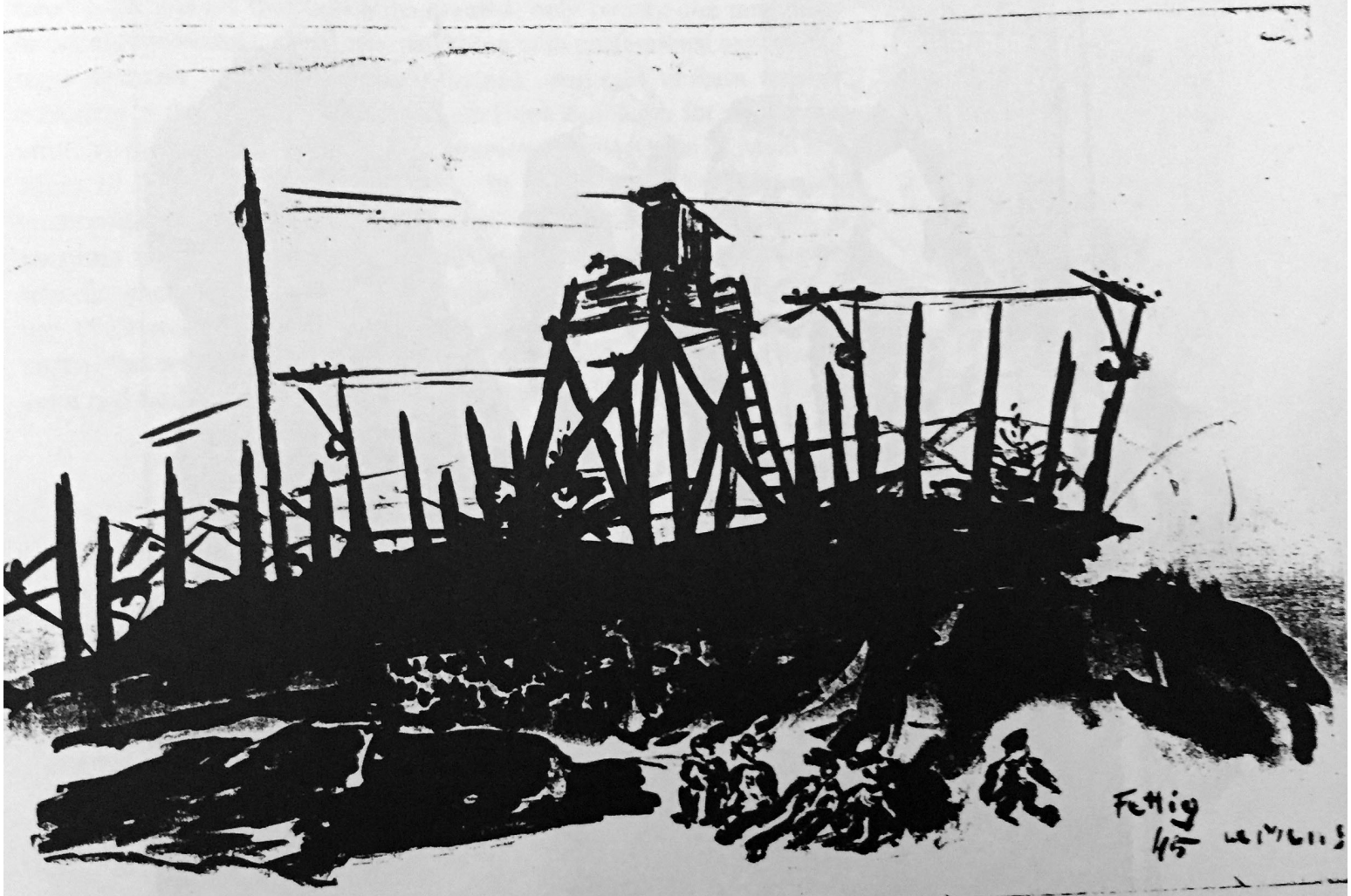
The story so far briefly covers the period 1930 to 1946. Until 1936 I believed the world to be whole, but then came my parents' divorce which resulted in my being sent to two different boarding schools where my previously good academic performance "took a nose-dive". I wouldn't like to describe what I suffered there, but would say that from then on, apart from art classes, nothing inspiring happened in my life until 1944 when I landed in an American prisoner of war camp in France.

Whilst my parents were still together I took every opportunity to get involved in theatre, and at six years old played the part of the youngest son in Schiller's *William Tell* at the Heidelberg City Theatre. I only spoke two sentences in a short scene which meant that although having to be on call, I was not often needed and spent most of the time nosing around the rest of the theatre. I managed to make actors, scene painters, hairdressers and make-up artists, in fact practically everyone, encourage and enjoy my curiosity. Thus I learned about theatre behind the scenes in a way that is seldom possible. I was allowed to put on make-up, wear costumes and wigs, and play improvised roles for the entertainment of the actors.

In 1943 I was called up to anti-aircraft duty in Mannheim and after training was transferred to Épernay in France. Although I could paint an interesting picture of the times out of my experiences, I will limit myself to mentioning that I became the lightning-cartoonist in a troops' cabaret, drawing caricatures of film stars and politicians on stage. The man in charge of our unit was a professional artist who also performed theatrical sketches, of which I took good note.

In 1944 the German army was overcome so quickly that prisoner of war camps had to be constructed in a hurry to accommodate an unbelievable number of people. To help keep the prisoners quiet, a camp theatre was built and naturally I applied to participate. Luckily, I was accepted — which I put down to having paid good attention to the cabaret sketches — and thereby unexpectedly found myself in a 'drama school' for eighteen months.

Above: *Der Alte Fritz* by Wilhelm Busch. Opposite: Sketch of the prisoner of war camp near Le Mans.



-gefangenen-Lager Mulsanne bei Le Mans

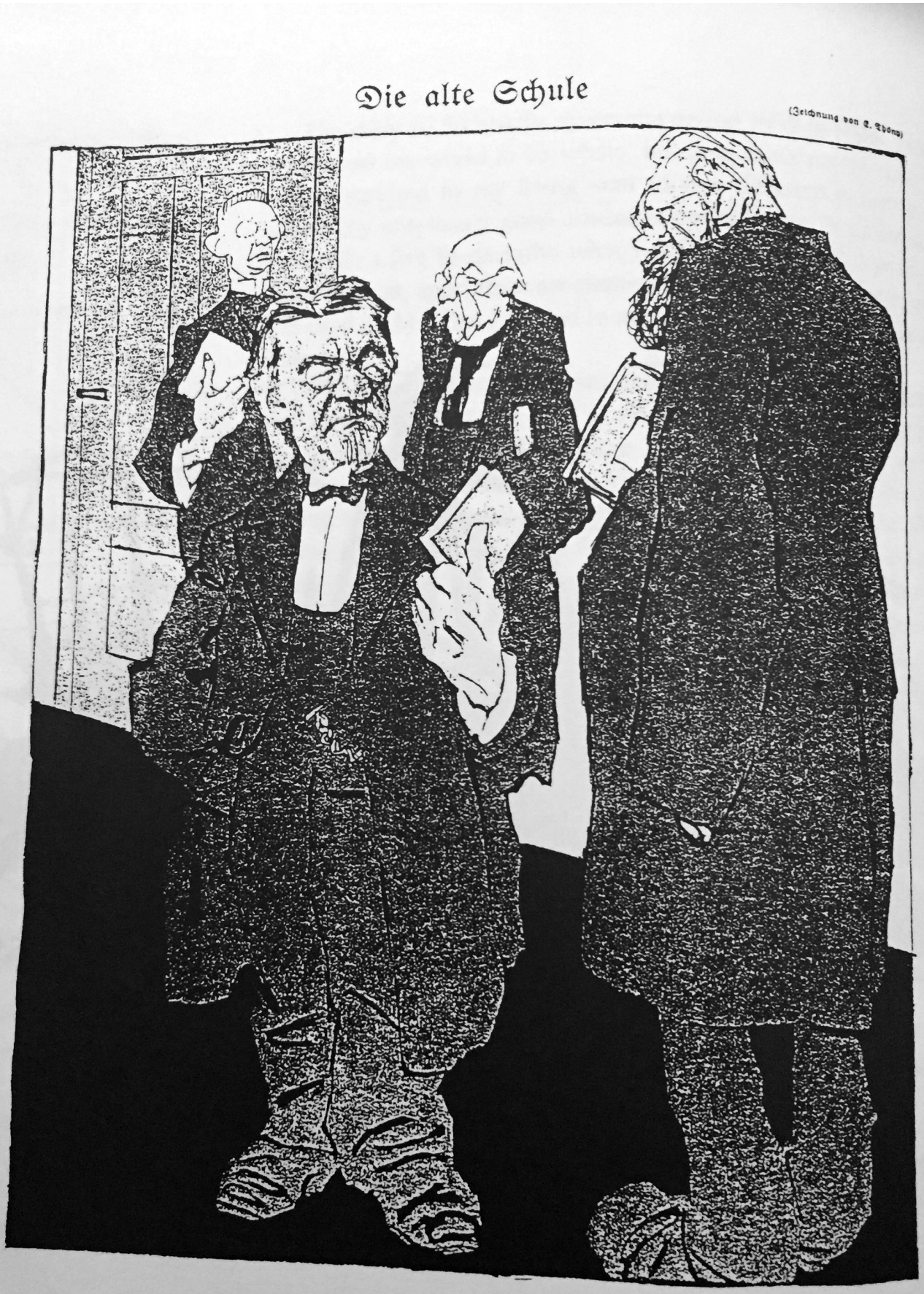


Illustration by Eduard Thöny

A year later the Americans decided to hand most of the prisoners over to the French and to reduce the camp to officers only. Of the two theatre companies that had been created, only twenty-one members, including musicians, could stay and those with professional experience were selected. We, the rejected laymen, managed to form another company in the French camp, of which I was a member for six months until, by luck and chance, I got a commission to travel to St Malo and Mont St Michel as a civilian artist. In this capacity I was to paint watercolours for the 'Région' (military administration) in Rennes to decorate their building. As my work was satisfactory, I got an early transfer back to Germany in an hospital transportation and in September 1947 was released home. Thus I had spent the most dangerous part of the war and my 2lst birthday in health and safety behind barbed wire and had learnt a lot from the experience.



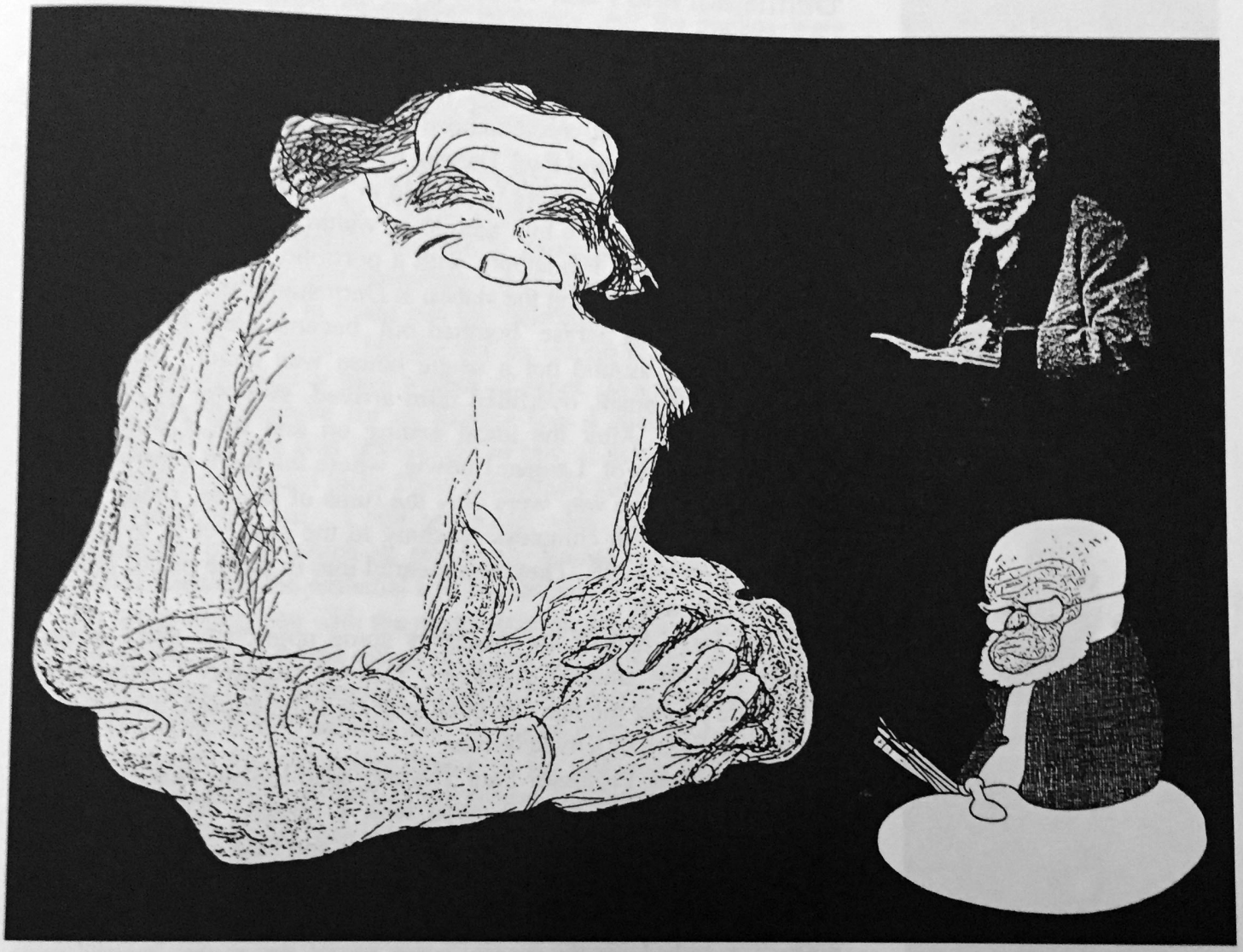
A sketch of the author as a civilian artist







Left: Two illustrations by Gustave Doré from *The Wonderful Adventures of Baron Munchausen*
Right: Portrait of a woman by Adolf Menzel (the portrayal of the eyes are worth noting)



Left: Caricature of Leo Tolstoy by Gulbransson. Right: Typical portrait of Adolf Menzel. Below: Caricature of Menzel by Gulbransson. These two artists were amongst my most important role models.



Darmstadt and Paul Thesing

I decided it was time to begin my studies. The Art Academy in Karlsruhe had not yet recommenced operations, but courses were to be run in Darmstadt and Paul Thesing had been appointed principal.

The entrance exams were to be held in February 1947 and I did a lot of drawing during the four months of waiting. I finally boarded the train at undestroyed Heidelberg with a portfolio full of sketches and watercolours. When I left the station at Darmstadt the full meaning of the newly-invented phrase 'bombed out' became clear to me for the first time. All around not a single house was intact. About five minutes later a small, overfilled tram arrived, swaying about on the damaged rails. After the usual getting on and off it trundled on towards the statue of Langen Ludwig, where the town centre used to start. All along the way were only the ruins of houses, many simply piles of rubble with chimneys reaching to the sky, yet at every stop people got on and off. They disappeared into or came out of holes in the earth, like ants.

In the large hall of the Academy some applicants were already waiting with the anxious question "Can we register?" Around the room were plaster models and other objects to be copied, including an anatomical figure of a muscle-man.

The principal, Professor Paul Thesing, who looked exactly like his self-portrait on page 42, appeared with a relaxed "Good morning, Ladies and Gentleman", introduced himself and said: "Show me what you can do! Choose an object and begin." He placed no further conditions on the task. He looked at one or two portfolios and left us alone. A little later he silently went round the room, looked over someone's shoulder for a while without saying a word, and puffed on his pipe. After about two hours he had seen enough and said: "If you have already applied in writing you can start immediately." Nobody was rejected!

It was liberating freedom, and everyone came to learn. We were used to hardship and cramped conditions. We decided ourselves who

would sleep where in the three and four-bed dormitories, although male and female were, of course, separate. All the studios were shared. We didn't have models and whoever wanted to do portraits or life drawing had to take their turn to pose; anyone who made a fuss or refused was not allowed in. We criticised each other's work and learned from one another.

Thesing came every day. He didn't make speeches but would point with the tip of his pipe to a weak point in our work. If someone already thought themselves halfway to being a master — as I did because of my previously-described experiences — he knew how to suggest a better way to bring out the essential, without cynicism or hurting anyone's feelings. He did this by asking if he could make a correction on the page or have a piece of paper. We soon learned that it was more informative for us to give him a sheet of paper even though in 1947 there was not enough to buy. Luckily I had a cousin who owned a cardboard factory and generously kept me supplied, so I could always help out. I still remember very clearly the example Thesing gave me in which he explained, almost without words, the difference between the essential and inessential.

We were struggling with the anatomical model of a muscle-man in body-building pose, trying not to omit any tiny muscle. The position of the legs on a rigid biological demonstration model such as the one we were using is not natural, and in concentrating so hard on the proportions and the numerous details of the muscles, ligaments and veins, we had not noticed how our drawings had lost the balance.

As it is easy to correct charcoal drawings, Paul Thesing recommended we at first use this medium rather than pencil. To achieve straight lines we were to lay the piece of charcoal flat onto the paper and pull it in the desired direction. In doing this, tangential lines were created which gradually encircled the object. We were impressed because this produced good 'effects' which we perceived as the beginning of our personal 'artistic expression' and therefore exaggerated more and more. It was similar to practising flourishes and underlining as a teenager to try and make your personal signature unique and impossible to imitate.



Caricatures from October 1946 to February 1947, before my time at college





Sketches from my student days

For a while Paul Thesing let us carry on in the belief that he hadn't noticed. He asked for a thick piece of charcoal and laid it flat on the page but didn't draw a tangential line. Instead he drew the charcoal, which was about 5cm long, breadthways down from where the spine begins, in a slight S-shape, to the point where the back loses its respectable name and goes into the thigh, and a wide black line for the pelvis. Then he turned the charcoal in the direction of the thigh of the supporting leg, took hold of the bottom of the piece of charcoal and made little circular movements until the black mark was the width of the thigh. From here he turned it in the direction of the heel and ended the line. Finally, he used the same method for the bent leg and arm. All the essential elements were there in seconds, without any decoration or frills — and it was exact. With these kind of examples, tips and comparisons he calmly and silently brought us down to earth without hurting our feelings or making us appear foolish in front of one another.

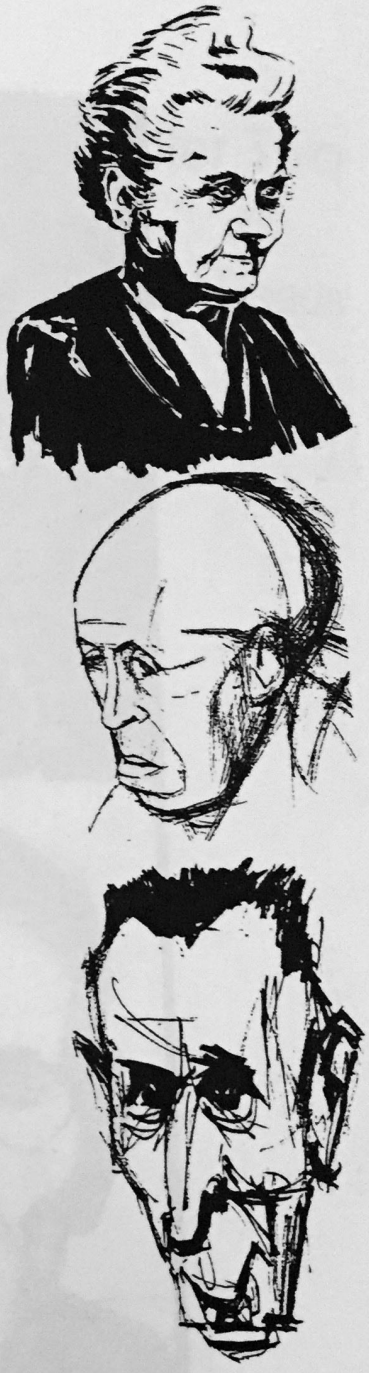
Paul Thesing guided us to achieve simple clarity through omission and precision. He didn't let the slightest fault pass without letting us know that he had seen the mistake we were trying to hide. A little understanding smile and we would know. Thus we were quickly cured of showing off, he made us honest to ourselves and others. He had no time for pretentious 'artistic genius' and exposed it with pleasure. He coined a not very delicate but apt phrase to describe people who paraded their 'I am an artist' wherever they went: he called them "Geniefurzer"(genius-farters). From Thesing we learned to see and develop genuine skills and uncompromising honesty. Since that time I have been immune to fashions, trends and 'the emperor's new clothes'.

In the first quarter of 1948 Hans Amann, a new lecturer in art history, suggested forming a student puppet company and thereby threw sparks into my powder-keg! It was through him that I first met Hans Walter Wohmann, the chairman of the then German Association of Puppeteers which was, by coincidence, based in Darmstadt. I became a member and, through the newsletters and information I received, made my first contacts with puppeteers.

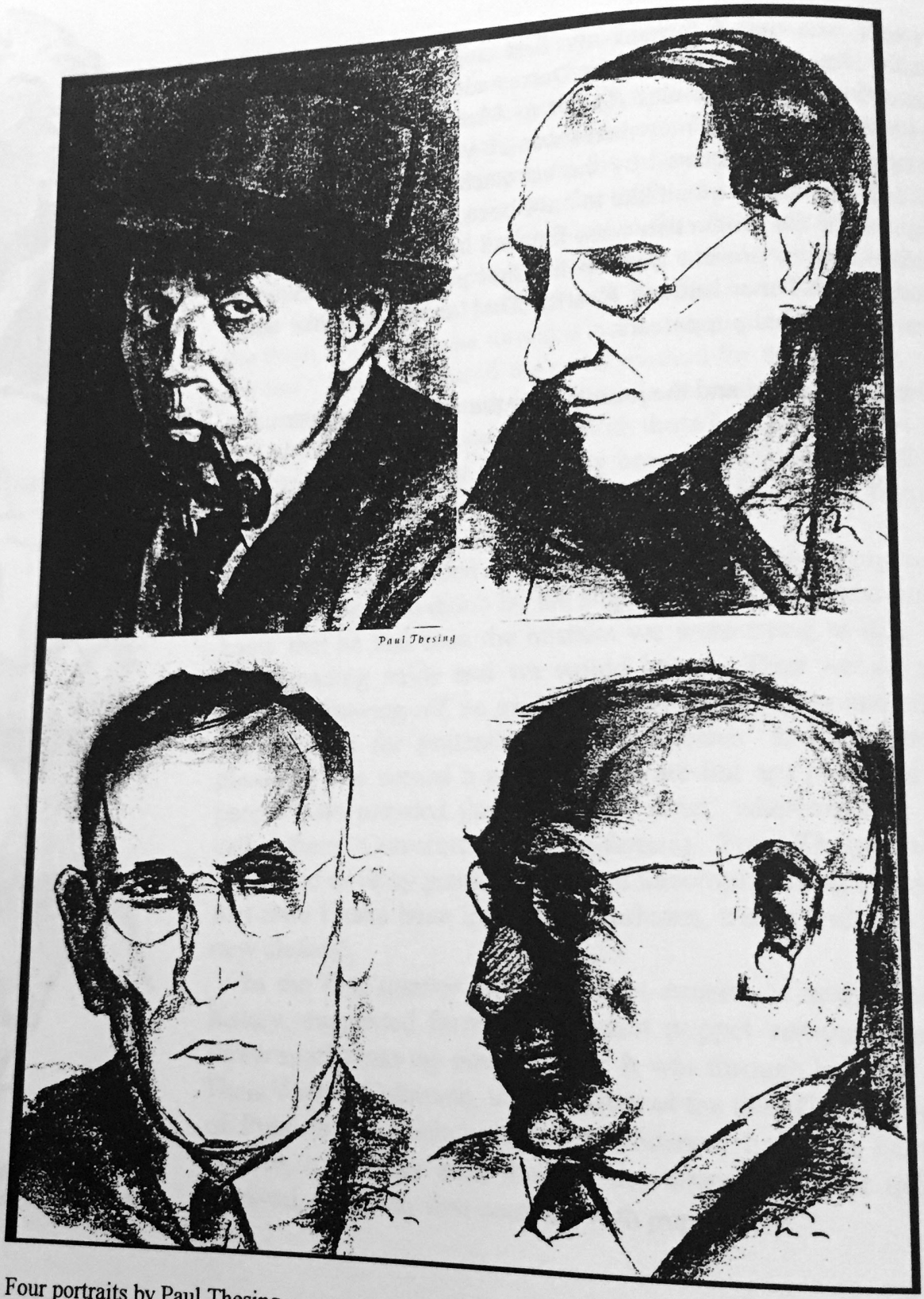
The result was that I formed my first puppet company, *The Darmstädter Handpuppenspiele* (The Darmstadt Hand Puppet Players), whose first production was *Rocket to Mars*. It was the same piece that had so impressed me when I was 12 years old and saw the school puppet company created by the art teacher Theodor Schück, whose student I would so much like to have been.

The figures for the production were finished in autumn 1948 and I was therefore able to present them at the first post-war Association Conference, where I met Ludwig Krafft, Dr Hans R Purschke and many other professional puppeteers.

Thus the course is set and the journey into the world of puppets can begin.



Three portraits from before, during and after my studies



Four portraits by Paul Thesing

Chapter Two

Designing and Making Puppet Heads



A Learning Experience

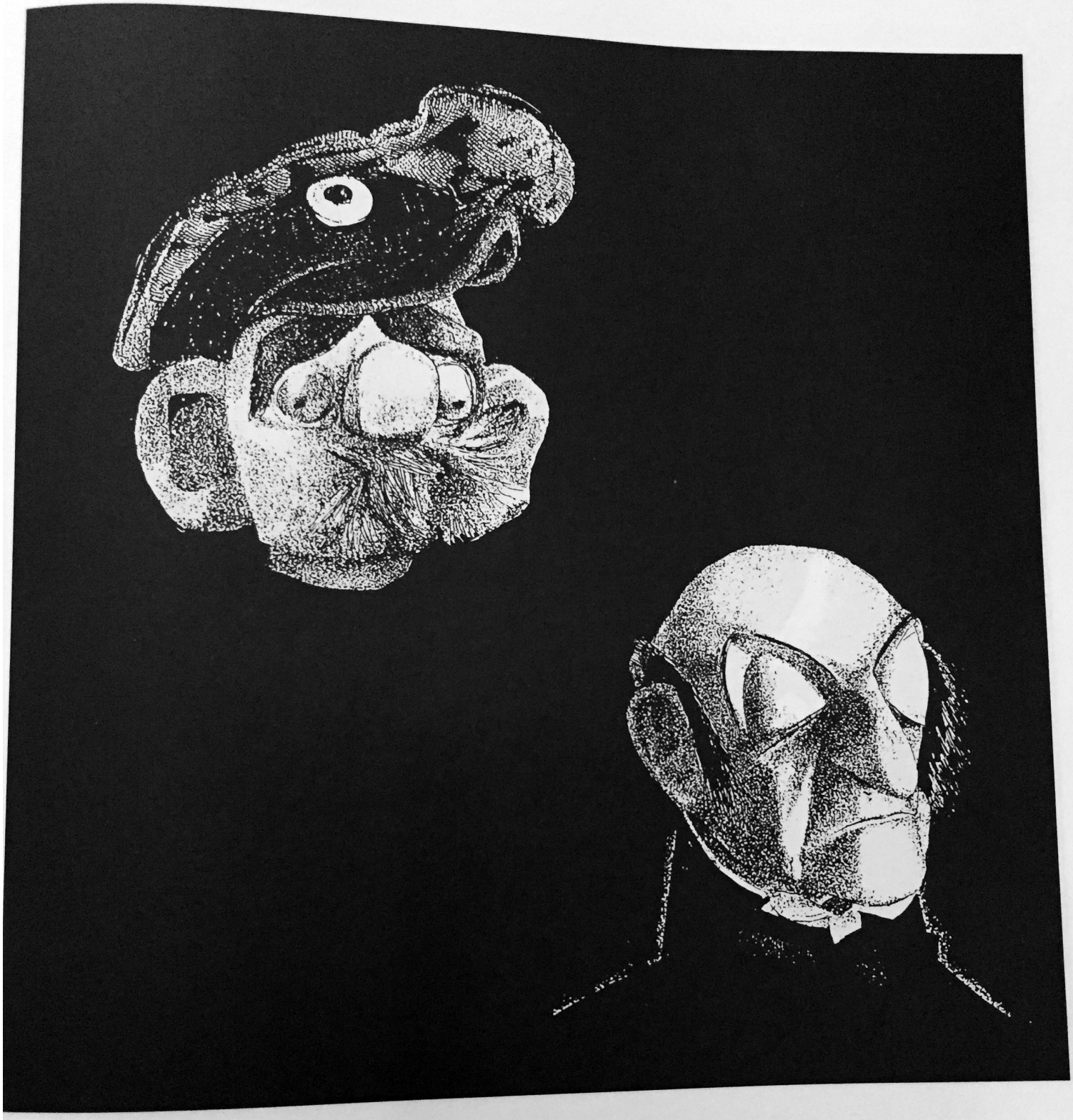
My first set of eighteen glove puppets were made for the production of *Rocket to Mars*. The heads were modelled from a home-brewed mash of newspaper snippets which, after being drained and cooled, I mixed with wallpaper paste to make a papier-maché. This modelling material is heavier than one would imagine and is fibrous and rough to work with — not to be compared with the smoothness of clay or *plasticine*. I therefore soon abandoned this method and would not recommend it. Once painted, I covered the heads with a thin coat of candle wax to create a skin effect.

To show my progress, the first and last heads of the set are compared on the opposite page. The policeman has many faults. His cap is too big which means the viewer's eye is drawn to it rather than to the face. Under spot-lights the cap throws such deep shadows that the face can hardly be seen, and the result is a hat with large, thick ears. The nose casts a shadow over the eyes, making them hard to distinguish from the moustache. Without the moustache, all that remains is a badly-executed squarish head which, in my opinion, has no charm or expression and only serves as a negative example.

The English Butler was made only three to four weeks later but with him I was already beginning to understand what PK Steinmann formulated so well in his essay *Entwicklung einer Figur aus der Synthese* (Development of the Puppet Through Synthesis), first published in *Information* Nr.14 1970.

"The creation of a puppet's head as a free exercise, ie without reference to the text, runs into difficulties when leaving the framework of character-cliché. As working conditions become less differentiated, it is more difficult to define a character type and it is therefore necessary to analyse the character in terms of its specific role. This is normally connected to the text, without which the character *in itself* must become the role."

Three scenes from *Rocket to Mars*



Policeman and Butler from *Rocket to Mars*



Characters from *Rocket to Mars*

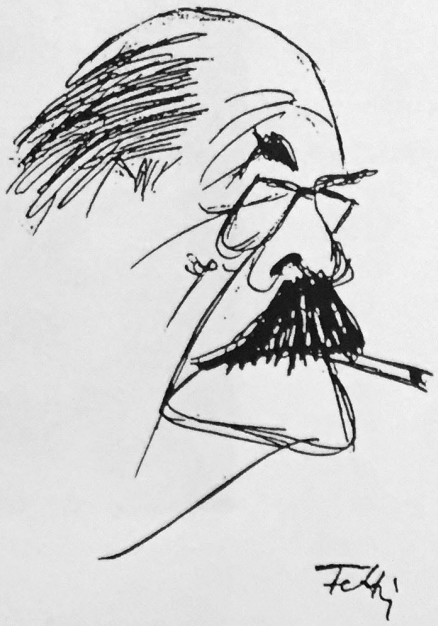
The first heads I made were influenced by the Hohnsteiners. They were bad copies of good glove puppets because I didn't have a specific aim and lacked a style of my own. With the exception of the Butler, the puppets had staring eyes, which were not able to create the illusion of changing expression during performance. The eyes of the Witch and Devil look like road signs; the result of my insecure attempts to achieve an effect.

It is important to take care when designing eyes and constantly ask oneself if they appear to be blind, squinting, dead, lively, angry, friendly etc, or even a combination of such traits. To this end, I have highlighted the eyes of the *Rocket to Mars* puppets on the left. The subject of eyes will be discussed in more detail later.

In this chapter I propose to take a look at various techniques of making and designing effective puppet heads. This information is based primarily on my own experience, supplemented by relevant writing from other sources.



Hohnsteiner Princess



Turned Heads

Dr Hans R Purschke

First published: Perlicko-Perlacko
Magazine for Puppetry Issue 4, II/1952

As puppet theatre developed, it began more and more to turn its back on the faithful imitation of nature — on naturalism. Scenery and puppets should not simply mirror nature but portray it in a refined, condensed and sublimated way. The puppet shouldn't pretend to be a little person — ie replace the live actor with an inadequate surrogate — no, a figure is a puppet-like symbol of the human which should, so to speak, portray man's inner expression in just a few pertinent strokes. In order to achieve this, the puppet must be stylised.

How to stylise? The form is simplified, everything superfluous, ie all detail, is omitted. An extract remains which shows only the most important aspects, the essential. The more concentrated the form, the more pertinently and distinctively the content is expressed. And this distinctness which shapes a figure's character is stressed in a puppet-like way. However, one should guard against exaggeration and extremes. We don't want to make caricatures but characters. It is best to go back to the basic shape, ie get as close to it as possible, creating clear, concise lines and large, unbroken areas. However, it is important to extract the essential core and not simply create empty, abstract forms. The puppet should be a full-blooded embodiment of a creature of this world or of fairy tale; it can appear grotesque or

absurd but not empty. One should be able to recognise what it represents and not have to puzzle and guess as with a surrealist painting. A certain amount of realism is therefore indispensable, particularly for glove puppets.

There are other reasons apart from a 'puppet-like expression' which speak for stylisation. From a distance all the beautifully worked details of a naturalistic head cannot be seen. In fact, they blur into a nondescript grey and the puppet's head becomes an indistinct spot. A simple, bold, clear sculpture will always have a more powerful effect than one which is complicated and elaborately worked because the number of superfluous details deaden the receptiveness to a work of art.

This is also the case with the puppet mask. Furthermore, the puppet's face only comes to life through the changes of light and shadow generated by movement. If the face is very detailed, the numerous furrows and bumps cause too much play of light: it becomes blurred and the effect of being enlivened doesn't happen. Advanced lighting equipment which primarily uses spotlights ie concentrated light, also requires that the puppets be stylised. The hard light of the reflectors reveals the false deception of flat, painted scenery; it demands three-dimensional, architectural forms, simply designed in terms of shape and colour. Trees and other movable items of vegetation can remain flat but by omitting the painted leaves they become large areas of single colours which match the sculpted buildings and rocks when positioned in many, partly-overlapping, layers. However, only simple and clearly designed puppets will fit with the simple shapes and clear lines of this type of stylised scenery. Stylised puppets are also necessary for open glove puppet booths without a proscenium, where it is only possible to work with spotlights.

A reliable way to achieve a stylised puppet is to use a turned shape for the head. Such forms can produce most expressive puppets. There is no risk of becoming caught up in detail and falling into naturalism, which all too often happens with other mediums despite good intentions. It is a mistake to think that the turned head is a desperate measure for someone who can't carve, doesn't know someone who does or can't afford to buy carved heads. Turned shapes are consciously selected because they inevitably lead to stylised heads which are aesthetic and harmonious in form.

Incidentally, turned heads are nothing new. They are mentioned — albeit marginally — in the writings of many authors here and abroad. Puppeteers in America, France, England and Holland have used them, however, they reached their artistic height in Prague with the Puppet Theatre for Artistic Education, Liebener Sokol and Malik's PULS. The industrial manufacture of turned puppets helped spread them throughout Czechoslovakia; a 50cm marionette, unclothed, cost DM 3.50. Here at home, puppeteers have been playing with turned puppets for many years ie Iwowski in Berlin. More recently, Kurt Sellier (Munich) and Hansjürgen Fettig (Darmstadt) have demonstrated notable results.

In general, however, there is a certain aversion to turned heads. For many they bear the odium of a primitive craft. It is also said that turning leads to a certain schematisation which prevents artistic

creation. The theoreticians, who pass judgement without trying the practice, find these puppets too naked and dead to adapt to a lively style, in particular that of glove puppets. However, a turned head can and must be just as artistically designed as a carved one. It can also appear more alive because is it not only often more puppet-like and therefore more unrealistic than a carved head, but it is also better picked out by the reflector spotlights used in modern stage design, which need calmer and smoother shapes than the scattered light used in the past.

As already stated: a turned head should also be 'designed'. One should not reach the wrong conclusions because a master such as Obraztsov gives such effective solo performances with only simple balls on the end of his hands; this represents an experiment and not the rule. The raw, smooth, basic shape is not suited to playing action and will need to have a nose, eyes, mouth, ears and hair added, or at least some of these features, even if only suggested with paint. The turned shape won't always be used in its original form; for example, eye sockets may be hollowed out, the neck slimmed, or maybe the chin-line or top lip will need to be corrected. And not only can wood be taken away from the basic form but additional pieces can be glued on, eg cheeks or eyelids.

Some people go to extremes. They maintain that if the head has been turned then the nose and ears should also be turned, and that its basic shape should not be altered in any way; that subsequent alterations to the head, cloth ears and carved noses are not faithful to the medium. However, it should not be our endeavour to make puppets which are 'faithful to a medium'; our only aim is to create puppets which are effective on stage and faithful to their role. And to this end every medium is justified, every material, every technique, every intervention if it goes to achieve the best effect. Turning should simply be the medium used to achieve effectiveness on stage through strong stylisation. Anything else that is needed to complete the mask should be added using whichever material and whatever process leads to the most effective results; anything which lessens the mask's effectiveness, is unnatural or gets in the way, should be omitted. We don't want to play with a darning-egg which looks like a darning-egg, but with a true puppet. How we achieve this is unimportant, it is only crucial that we achieve it.



Turned head by Kurt Sellier

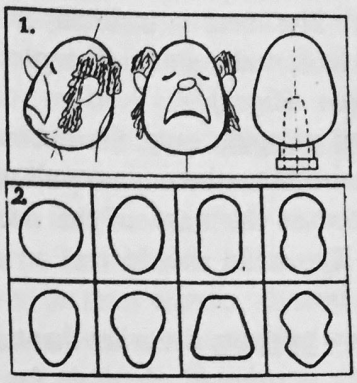
Turned Heads II

Perlicko-Perlacko Issue 5, III/1952

Naturalism doesn't leave any room for the imagination because its reflection of nature is too true. It inhibits illusion. Illusion can only exist if the imagination is working. Art begins where reality ends. Things which are created true to reality never really work in theatre, ie they never seem true. The strictly naturalistic puppet remains empty and lifeless, it is too much like nature, not enough of a mask. It lacks internal excitement and the ability to radiate or fascinate. It is as flat as a waxwork doll, it has no power of interpretation, ie it cannot rise above reality and soar in the realm of artistic dreams - its wings are lame. Naturalistic theatre is an unexciting, 'dead' theatre.

However, the stylised puppet, ie one whose substance is simplified and symbolic, which depicts the essence in extracted form and without detail, is full of illusion, effective on stage and, by being further removed from reality, is truer to theatre reality - even more so if the puppet's world is a far away, unreal world. Such a puppet is full of suspense, it has an aura of the unusual, it has vitality and, because it goes beyond reality, it has expression, ie it can give richer expression to the inner, spiritual side of our being and make it vibrate. Only the stylised puppet can succeed in giving reality to the imaginary and unrealistic world of puppet theatre. Theatre with stylised puppets is 'lively' theatre, it is puppet theatre, a theatre which also communicates in purely visual terms.

The easiest and best way to create stylised puppets is by using turned basic shapes. If the woodturner is to make them to our satisfaction, he needs an exact drawing with measurements. First of all, the desired head is drawn from the front and



the side with clear rounded lines. The next stage is to bring out the rough basic shape from these sketched outlines, ensuring that it corresponds to the side view as well as the front, ie the contours of the head are corrected and smoothed out until the closed line has a symmetrical shape which can be turned. The character of the puppet should remain unaltered (fig 1). The basic shape is then neatly drawn in the correct size and is turned. For glove puppets which represent adults, the head (without neck) should be approximately 8-10cm high. For marionettes, it will be about a fifth of the overall height.

In principle, the following turned forms are possible: ball, ovoid, rounded cylinder, pinched cylinder, egg, flattened cone (fig 2).

For marionettes which need to move their head there are two possibilities:

1. The neck is turned at the same time (the joint is then in the body).
2. Only the head is turned and is partly hollowed out from the back. The neck is either a separate piece, or attached to the body and jointed inside the head. The head is inclined, ie the head axis and body axis make an acute angle, which leaves the chin free. (fig 3).

For rod puppets only the second solution is applicable because there is no pull upwards and a head jointed at the base of the neck would fall forward. The head should rest on a fixed tenon (fig 3b).

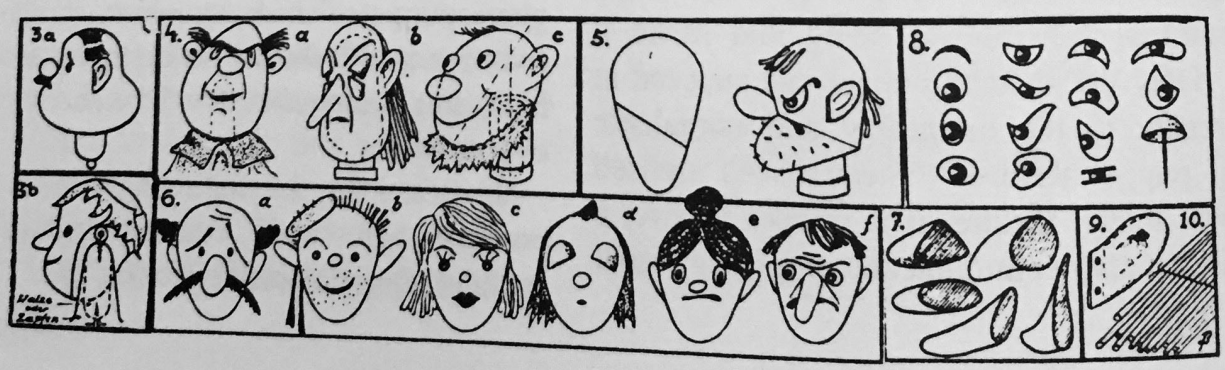
For glove puppets there are three possibilities:

1. The neck is omitted, the hole for the finger is drilled into the head and the costume is nailed or glued to the head.
2. The neck is turned at the same time as the head, with a hole for the finger and a groove or bulge around which the costume can be attached.
3. The neck is made separately and glued in at an angle to the head axis (first published in *Kasperl*). This is how to give turned puppets a chin but, unfortunately, it means they then often have an undesirably fat neck. Different angles between the neck axis and head axis change the bearing of the head. (fig 4). It is also better if the weight of the head is to the rear. A neck joint which consists of a wire axle running left to right through the head and neck is not recommended for glove puppets; they never stop nodding.

With the turning method it is not possible to make a very prominent, brutal or pointed chin. However, I would now like to present a technique which will remedy this deficiency. If a cylinder or egg-shape is sawn through at an angle and the two parts glued back together the wrong way round, the result will be a shape with a protruding lower part. With an egg-shape, however, the edges won't match exactly and will have to be smoothed with files and sandpaper. (fig 5).

It is better to hollow glove puppet heads to make them lighter. The head is sawn through and both halves are hollowed out and glued back together again (fig 4b).

The drawing (fig 6) shows how the same form can become various different heads, each with its own character, by simply adding different eyes, nose, mouth and hair. Any alterations which may be necessary, ie hollows (eye sockets, sunken cheeks) and removals (neck fat) should be carried out first using chisels, files and, if available, a

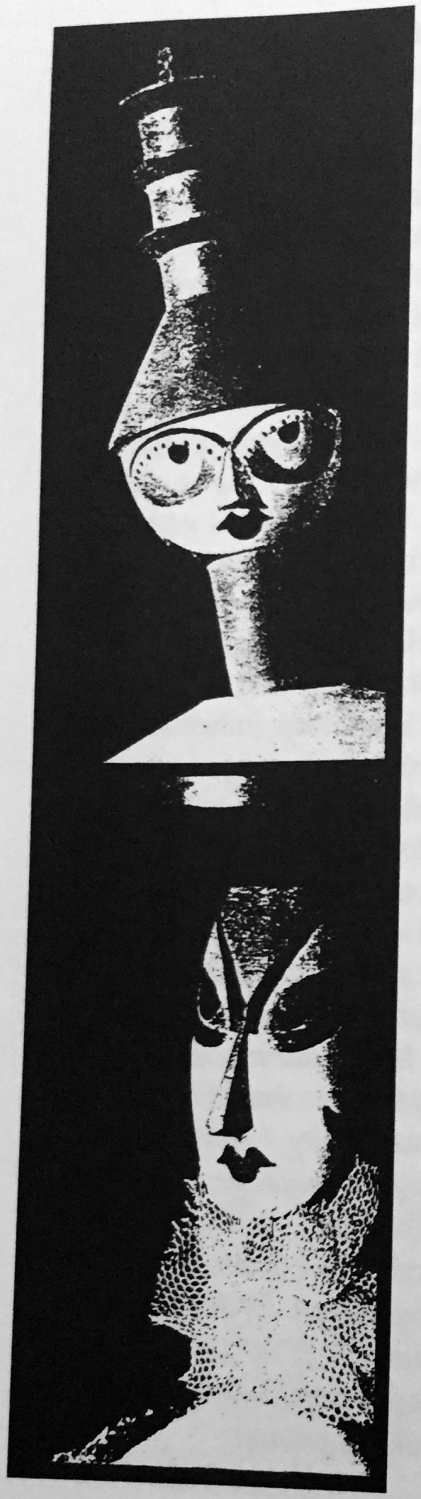


hand-held milling machine. Parts made of wood, such as noses, eyelids (fig 6d), bulging eyes and possibly ears, are made with a tenon — a hole of the same diameter is drilled into the head and the tenon is inserted and glued. As far as possible noses are turned, unless the desired shape cannot be achieved by this method (hooked nose, one with a pointed bridge, or very flat nose, fig 7) and then they are carved, although in such a way that they match the turned character of the head. To this end, they are carefully smoothed with sandpaper. Don't make any nostrils or sides to the nose! Ears are made of stuffed little sacks of cloth (cotton, jersey, ladies tights) or felt, and are nailed to the head with small pinhead nails (fig 9). Eyes are gouged out if they are slits, larger eyes have the outer contour carved out and the level of the eyes sunk back into the head. If desired, the pupil can stay at the same level. However, it is perfectly adequate to simply paint an outline round the centre of the eye and make the pupil from a shiny or black lacquered round-headed tack. Some characters, especially youthful types, don't look right with lines round the eyes and so they only have tacks. With each movement the light reflects off the rounded head of the nail and makes the puppet come alive (fig 8). Don't paint any natural eyes! The usual, almond-shaped painted eyes look fixed and dead. For devils and monsters, sequins or glitter can be glued into the eye sockets, which makes the eyes flash and sparkle. The mouth is either simply painted on or gouged out, or red patent leather can be glued on (good for young ladies). It is also possible to put a coat of varnish over the painted mouth and eyes, or use enamel paint, to make them shine. Everything else which gives the mask expression, eyebrows, lines around the mouth, creases, are not carved out or glued on (with the exception of eyebrows for bearded characters) but simply painted. However, be economical — even when painting!

After priming, the head is painted with distemper or tempera; both are matt. A light flesh colour is better than a dark one, although the latter is appropriate for robbers and people who spend a lot of time outdoors. Supernatural creatures can be painted in unnatural colours. The normal flesh colour is mixed from red, yellow and white and is broken by just a hint of blue. Cheerful characters have a little red on their cheeks, shaved men a little blue. The distinctive lines are added when dry.

Finally, we come to the hair. Naturalistic materials and those which are indistinct from a distance are to be avoided, eg crepe and possibly fur. Instead use wool, silk threads, raffia or cellophane. The material is glued on in tufts and cut afterwards, or wigs are sewn and glued on later (eg strands of wool are laid close together and sewn through with a sewing machine, fig 10). Beards and moustaches are made of the same material as the hair. If they are made from jagged pieces of leather then the hair should also be made from leather to maintain unity - although this can be overcome by giving the character a bald head or some kind of head covering. A stubble beard is the most effective and is best made by glueing in little pieces of elastic thread. Afro hair can be made from a pan scourer.

All types of hands are suitable for turned heads, but they shouldn't look too natural.



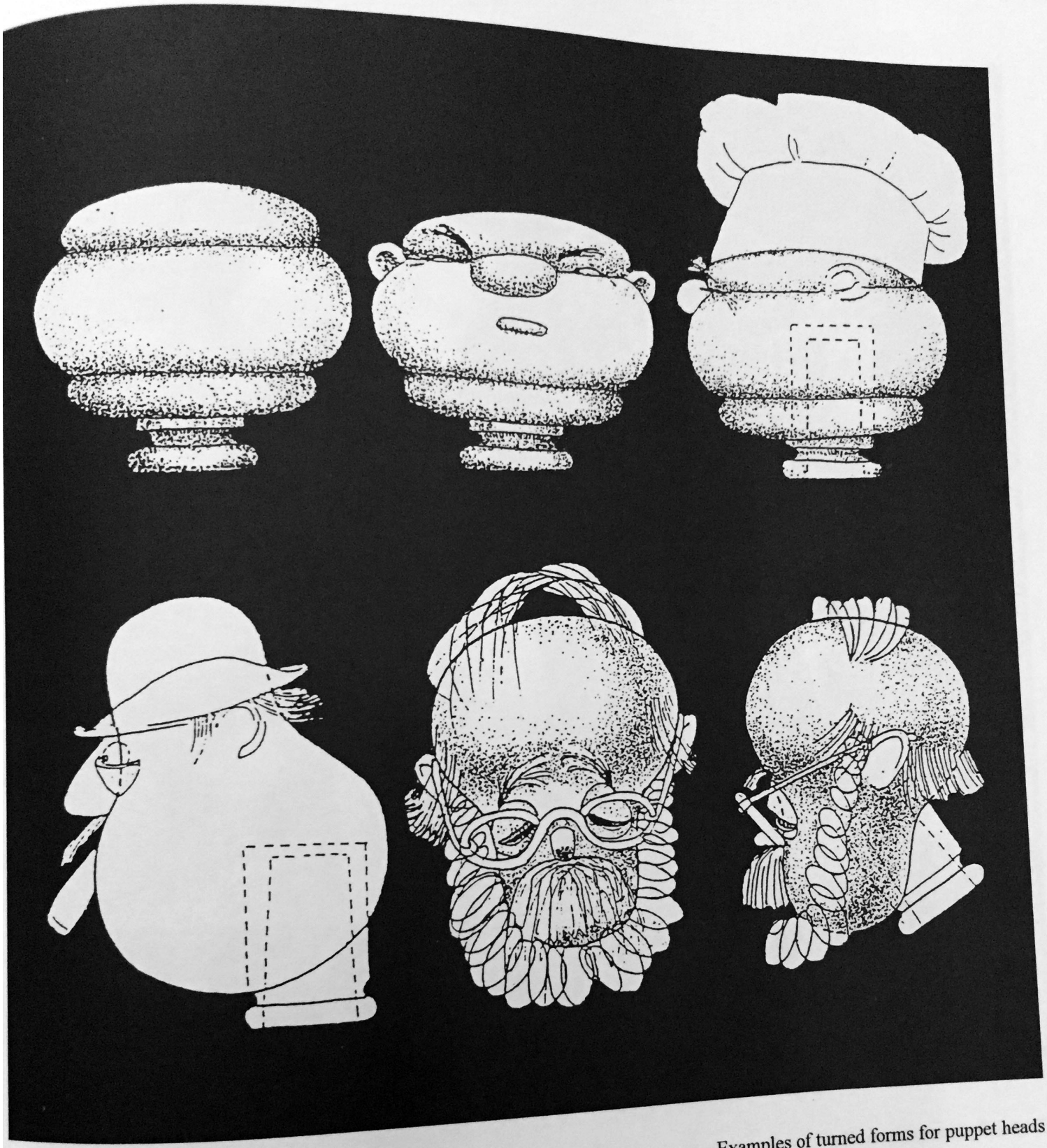
In his article, Dr Purschke mentions being 'faithful to the medium', which means that materials should not be used in a way that goes against their structure or mixed with other materials of a conflicting nature.

When making turned heads, I always tried to adhere to this principle and not make any alteration to the turned form by cutting into it afterwards. I limited my freedom voluntarily and resolved to find turned shapes which would not need any further adjustment — see, for example, the cook's head on the right. The first of the three drawings shows a turned form which suggests the top of his head, chubby cheeks (also the back of his head) and a roll of fat to enhance the plumpness of his neck. These three sections are the same from the front and side views and have only had ears and a nose attached.

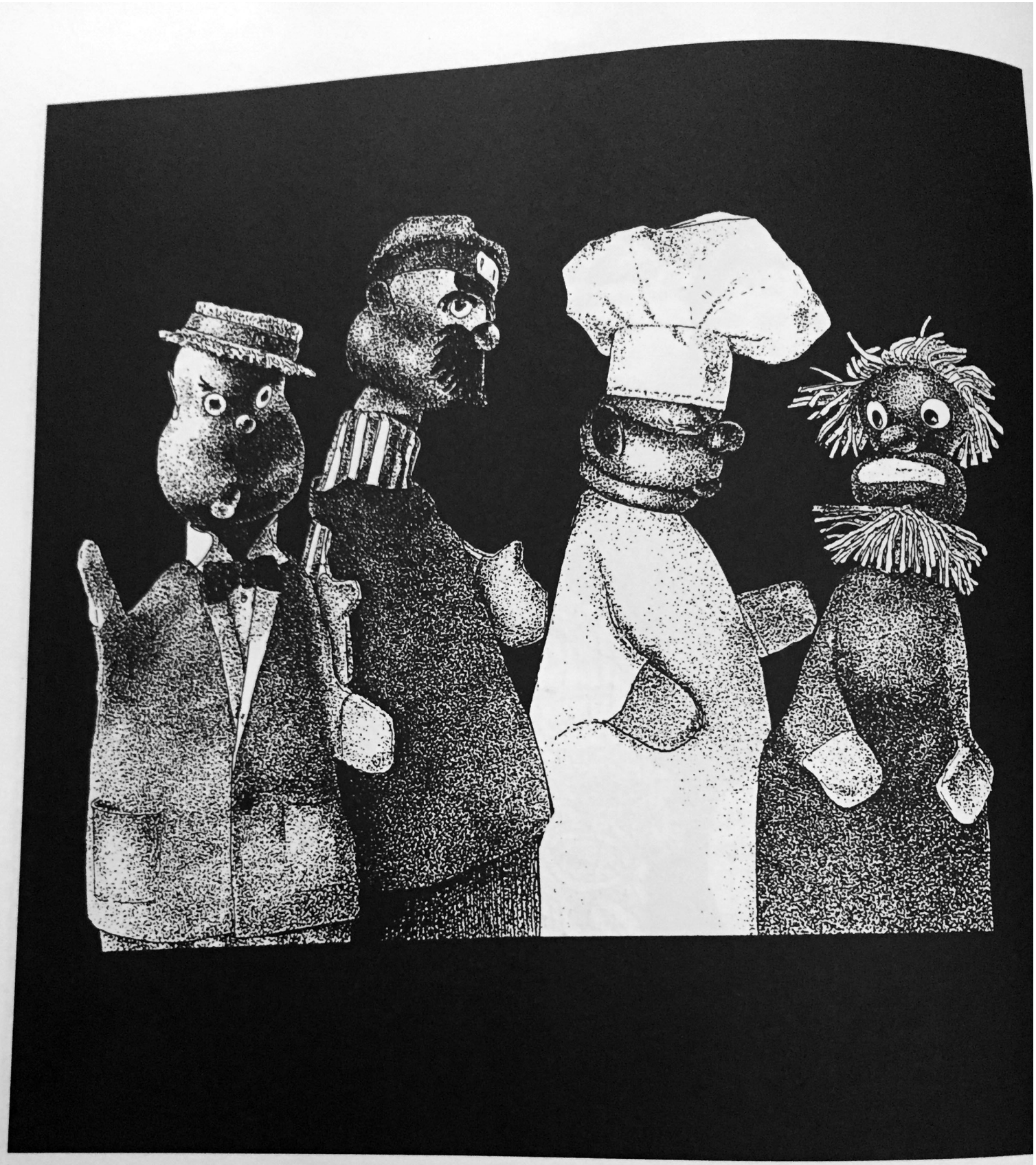
Different expressions can be created with pear shapes or by changing the angle of the head, which can be seen in the bottom row of drawings and on the goat by Dr Jan Malík overleaf. On the following pages are examples of turned heads by various people, which show how everyone creates their own individual 'signature' by adding beards, hair, glasses and head coverings etc to basic forms.

The turned heads on the left were made in 1918 by Sophie Täuber-Arp for the Swiss Marionette Theatre, founded by Max Altherr and based at the Art Academy, Zürich. These marionettes were revolutionary at the time, and were made previous to the founding of the Bauhaus which is generally considered to have revived formal thinking and design in all areas of 20th century art. The smooth geometric forms, and the fascinatingly mysterious gaze of the symmetrically painted faces have an unearthly beauty — unforgettable.

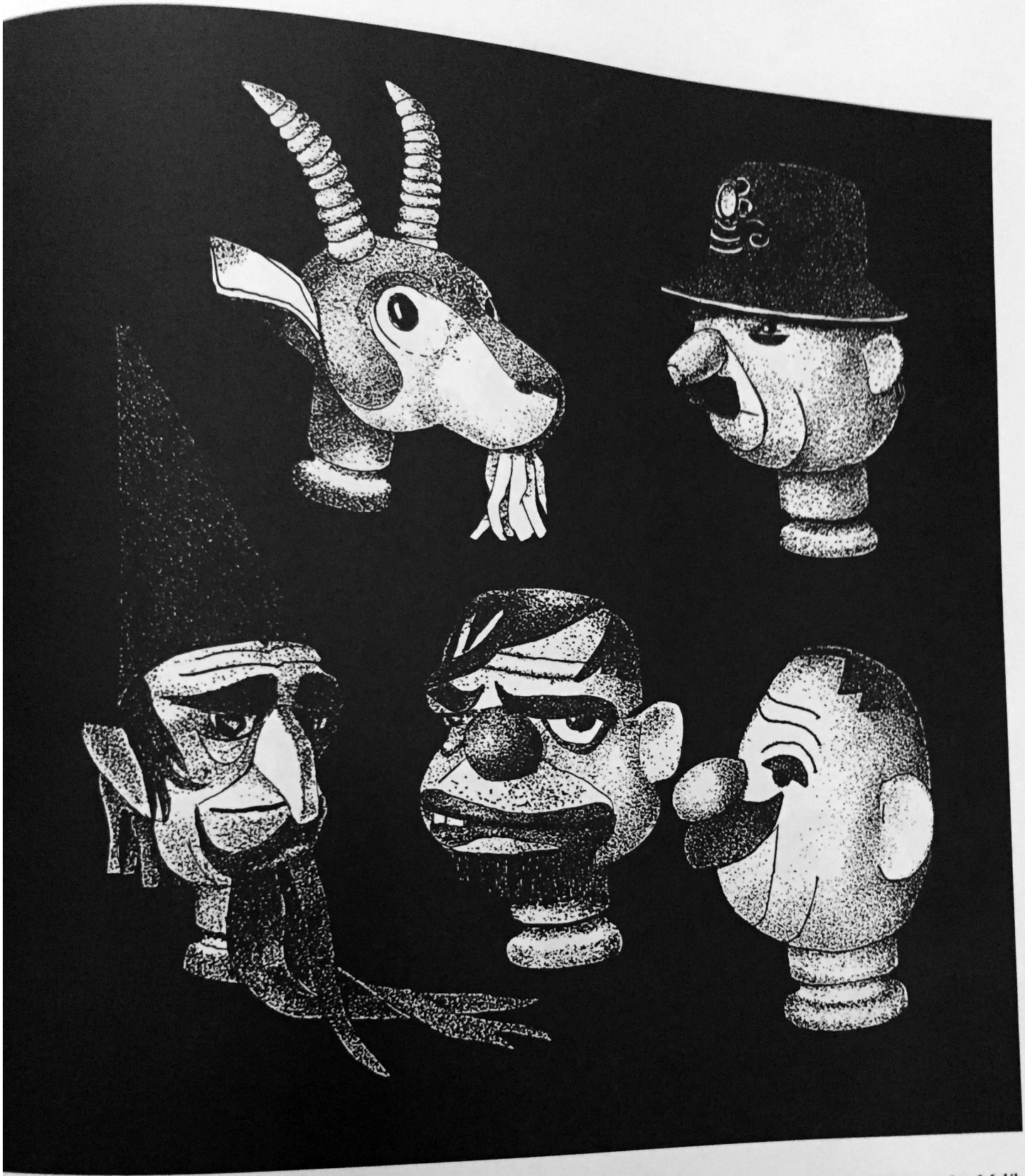
Marionettes by Sophie Täuber-Arp for Carlo Gozzi's *King Stag*



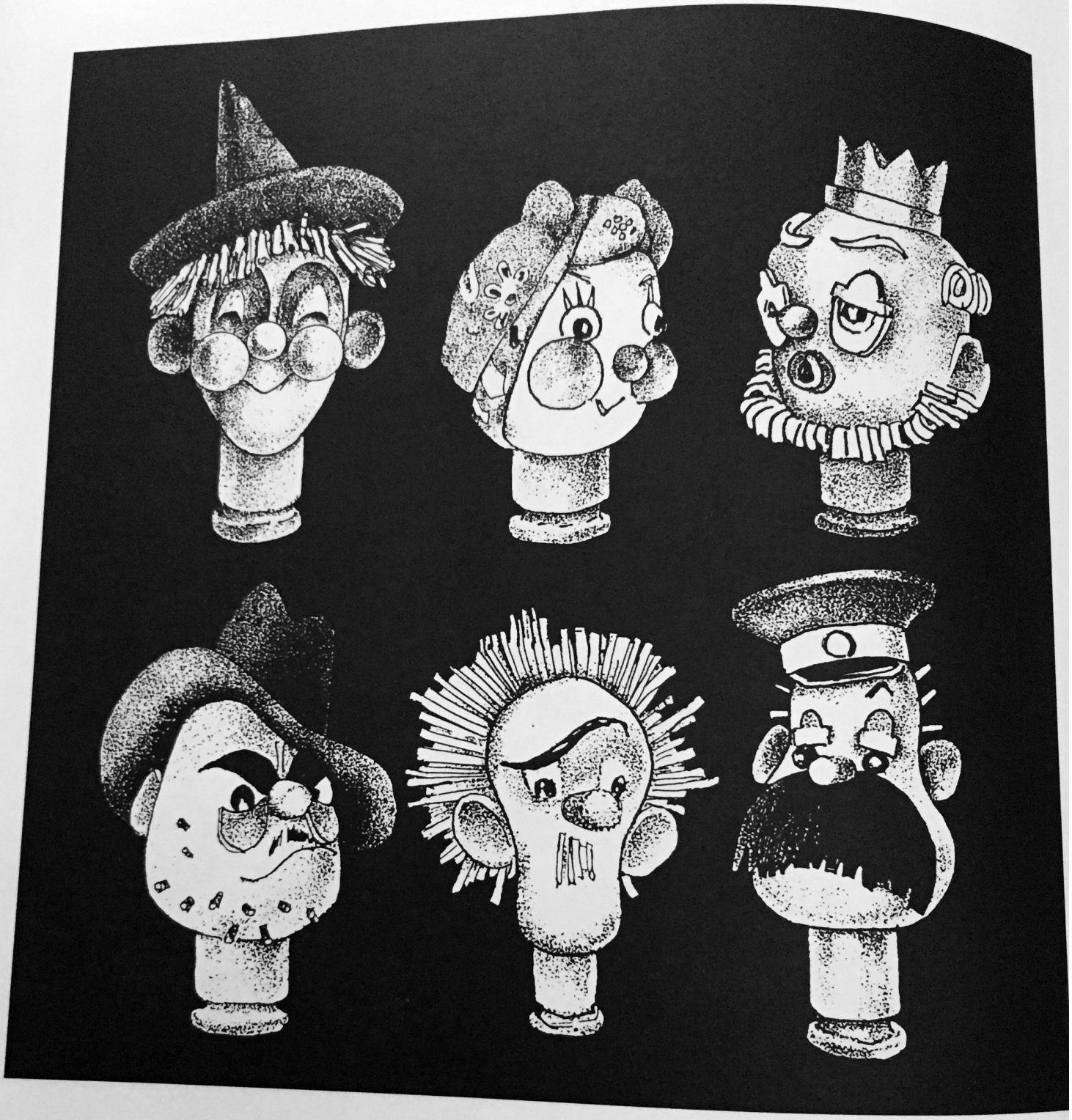
Examples of turned forms for puppet heads



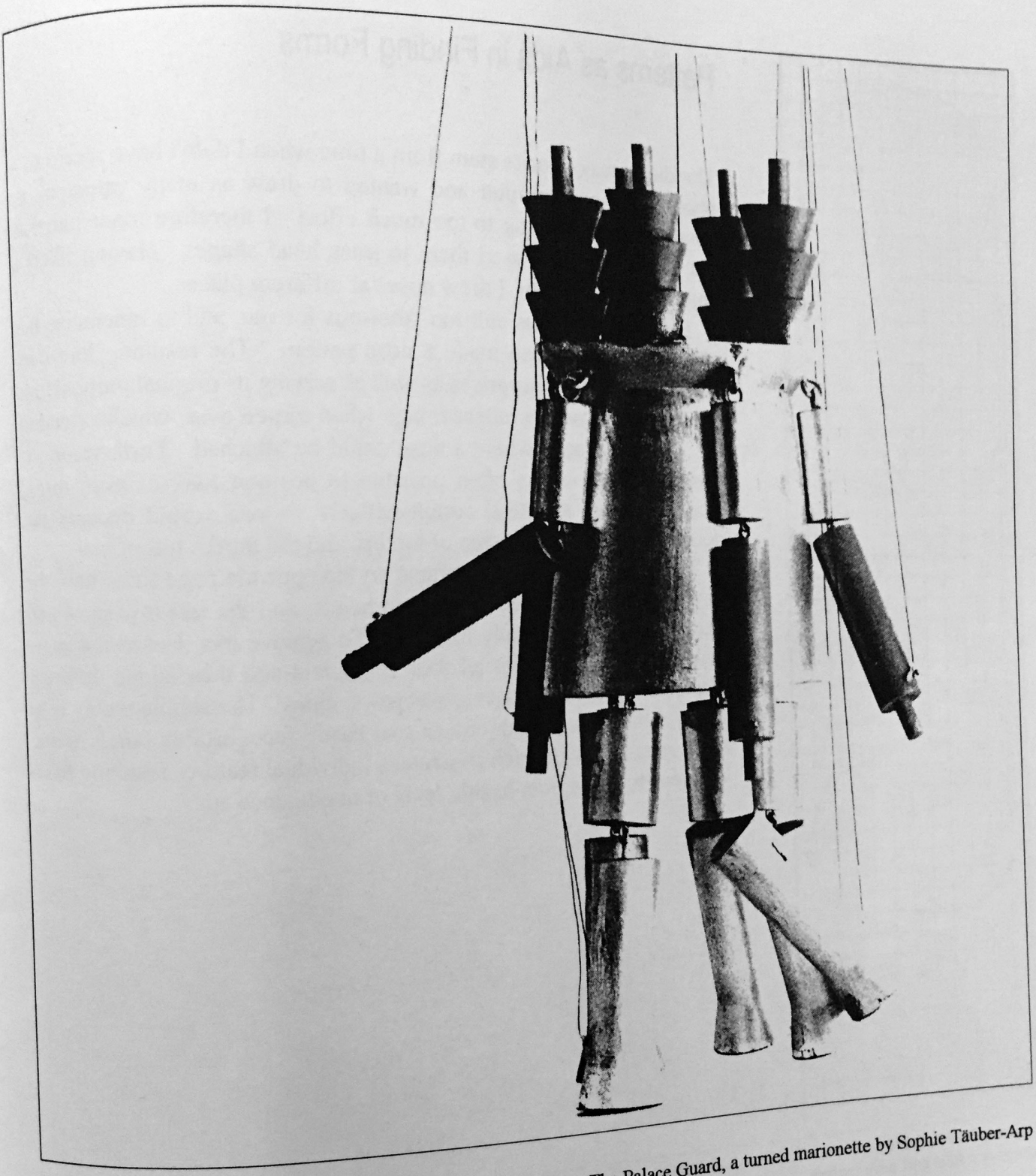
Turned figures by the author



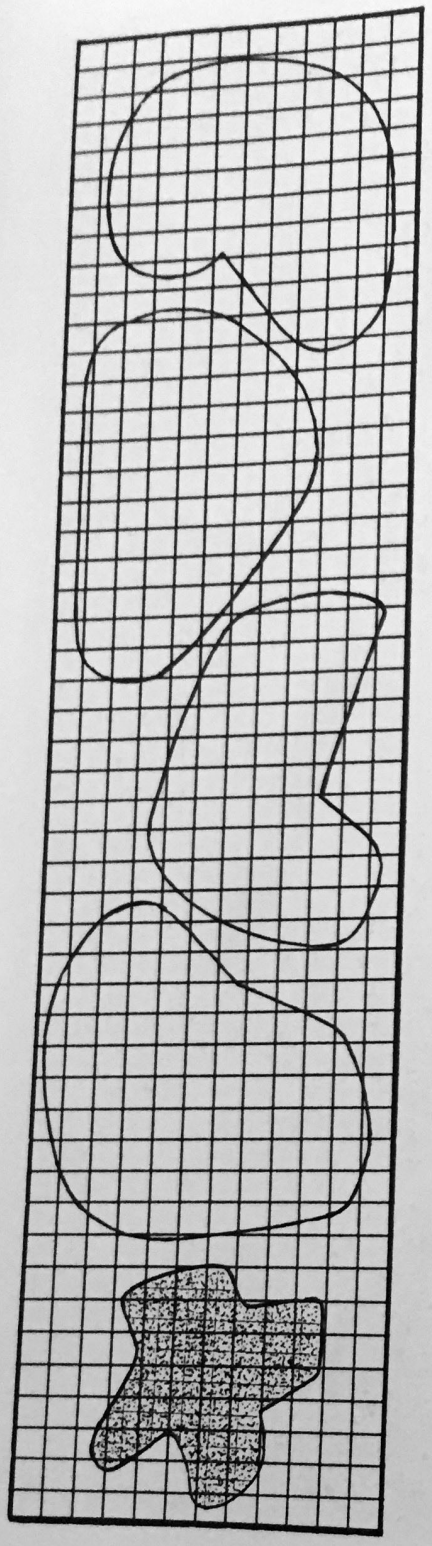
Turned figures by Jan Malík



Turned heads by Kurt Sellier



The Palace Guard, a turned marionette by Sophie Täuber-Arp



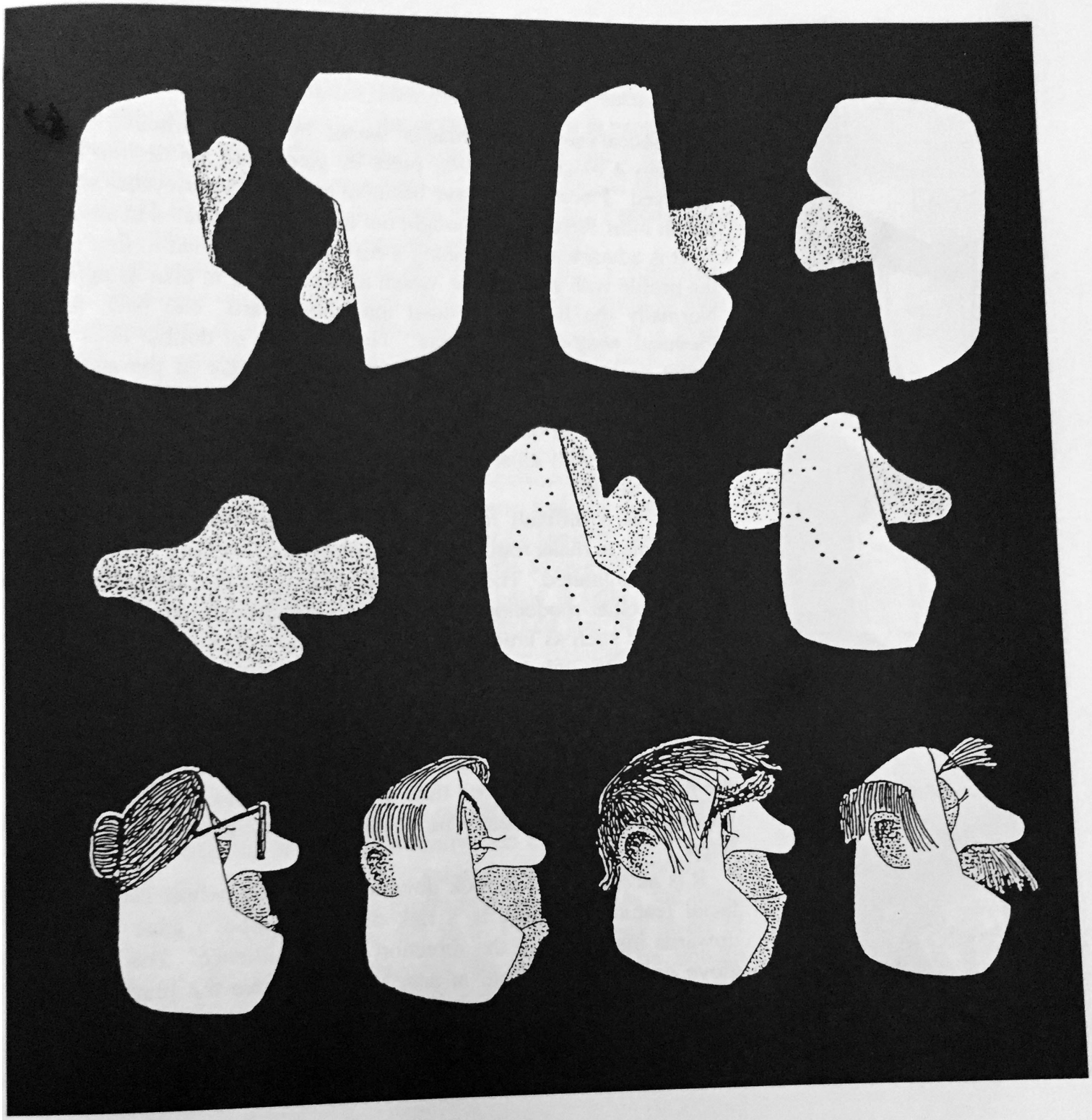
Patterns as Aids in Finding Forms

The diagrams opposite stem from a time when I didn't have access to a photocopier or computer and wanted to draw as many variations as possible without going to too much effort. I therefore made patterns out of plywood and used them to trace head shapes. Having filled a page with one pattern, I drew noses at different places.

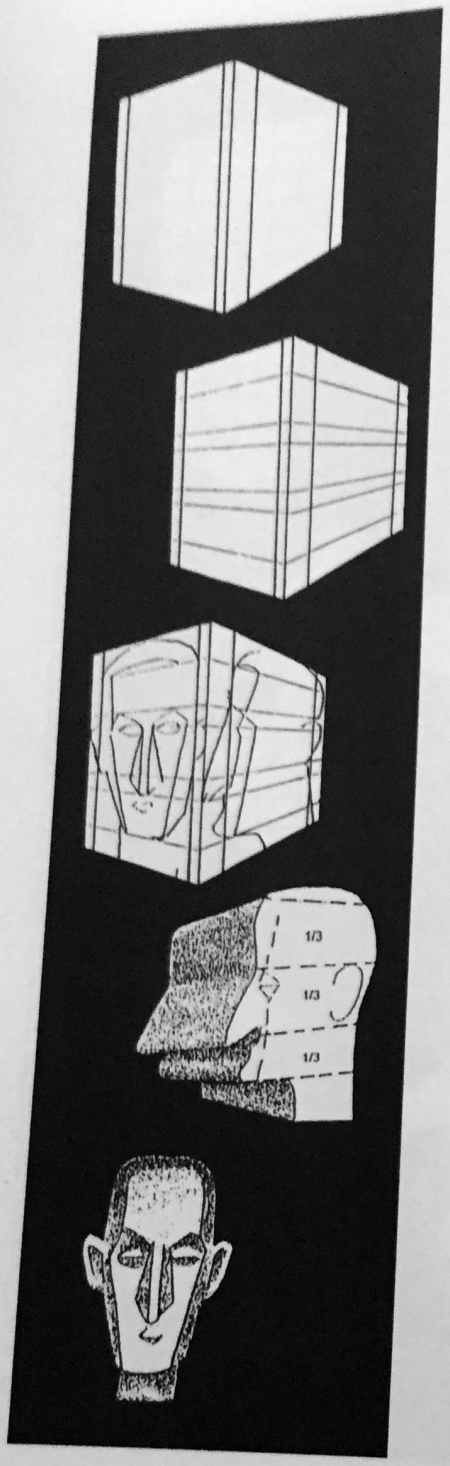
However, this was still too laborious for me, and to rationalise the process further, I also made a nose pattern. The resulting four-part shape caused some surprises as well as serving its original purpose: for example, it became a mirror image when turned over, which extended the range of places where a nose could be attached. Furthermore, it transpired that it was often possible to position two, or even three, 'noses' against the head simultaneously — one would become the actual nose, another the chin or top lip, and the third a tuft of hair.

The first two rows of diagrams on the opposite page show how the patterns have been used to develop heads, and the last row shows an attempt to create a family likeness. To achieve this, I used the same head shape and nose for all four characters and then added different elements: eyes, hair, glasses, eyebrows, chins. The simple theory is to create a basic form with one or two easily recognisable family traits, and experiment with each character's individual features resulting from differences in age, job, health, level of intelligence etc.

Patterns (each square represents 1 x 1cm). The white shapes are freely-drawn head forms to be rotated as desired. The darker shape is a four-part nose pattern.



Using patterns to develop heads



Subtractive and Additive Methods of Making Heads

A woodcarver or stonemason works by the subtractive method, whereby a block is cut away piece by piece until the desired form is achieved. Pieces which have been cut away are irretrievable and each action must therefore be thought out exactly and planned in advance.

It is advisable when making a carved wooden head to first cut out the profile with a band saw, which may be easier to plan using a grid. Normally the head is divided into three parts, one each for the forehead, nose and chin areas. The two sets of double lines in the centre section show the distance from the middle of the eye to the eyebrow and the size of the top lip (which may be hidden under the tip of the nose). The outline of the front view is then cut out, rounded off and worked with chisels, rasps, files and sandpaper to achieve the finished result.

This is a difficult method of construction because it is almost impossible to make retrospective changes, and freedom to experiment is therefore limited. The head can, of course, be first designed in clay or some other modelling material and subsequently copied in a suitable wood such as lime. However, as I know from my own, painful experience, the copy is almost never as good as the original.

An easier method of sculpting a head is to use an additive process in conjunction with the technique of overcasting. The desired basic head shape is modelled from clay, *plasticine* or similar material and the nose, ears and neck are then added. The advantage is that these elements can subsequently be re-positioned or have their shape altered.

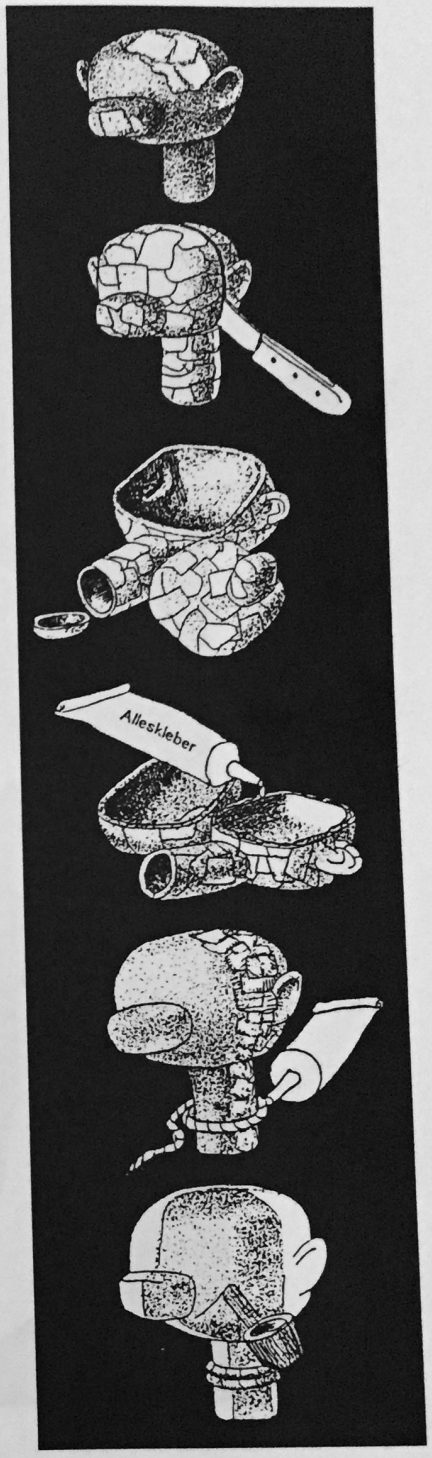
It is advisable not to look down on the model whilst sculpting the facial features as there is a risk that the puppet's gaze will point upwards instead of in the direction of the audience. The head of a glove or rod puppet held at arm's length above the playboard may reach 220 to 230cm from floor level, whereas the head of a seated adult spectator would be at approximately 120cm (assuming that the auditorium is not raked). Therefore, in order to make eye contact with

the audience, the gaze of a glove or rod puppet should be angled down during performance. It is important that the puppet look the audience in the eye — think, for a moment, how you feel when speaking with someone who never looks at you. I am uncomfortable with people and puppets that never make eye contact because I don't know where I stand with them. This is one example of the psychological relationships that play an important part in human intercourse and I endeavour to make my puppets also express themselves in this way.

I begin the overcasting process as shown on the right. For the first layer, small scraps of paper are carefully glued onto the model so that they overlap three or four times. To ensure the final shell is of even thickness, it is useful to use different coloured paper for each layer, building to a thickness of at least 1mm.

I prefer well-glued typing or parcel paper, which is recognisable by the crisp sound it makes when crumpled. The cut edges are torn off and the rest ripped into smaller pieces with uneven edges. The pieces are painted on both sides with wallpaper paste and put aside for a while to soak. They are then screwed up, gently kneaded so that the glue penetrates the paper and finally carefully smoothed out again without making any holes. The amount of paste is right when the paper is no longer too shiny or slimy — it should feel like a damp chamois leather. Good results depend on the consistency of the wallpaper paste. In my experience, it should just about drop from the brush. All these preparations are important because cut edges are later very visible and too much wet paste causes the paper to shrink and make wrinkles on the surface.

When the overcast head is dry, it is cut through and the two shells are re-joined once the modelling material has been removed. The opened shell can be strengthened by putting a layer of *Agoplast** or further layers of paper inside the protruding parts such as the nose, chin and ears. Experience shows that 10 to 15 overlapping layers of 80gm paper is the minimum required for stability. The bottom drawing shows the possibility of making radial cuts and removing the shell like pieces of orange peel, which enables the model to remain undamaged so that a duplicate head could be made, if needed.



* Agoplast: see note on next page



The author with Kasper, a puppet with an overcast head

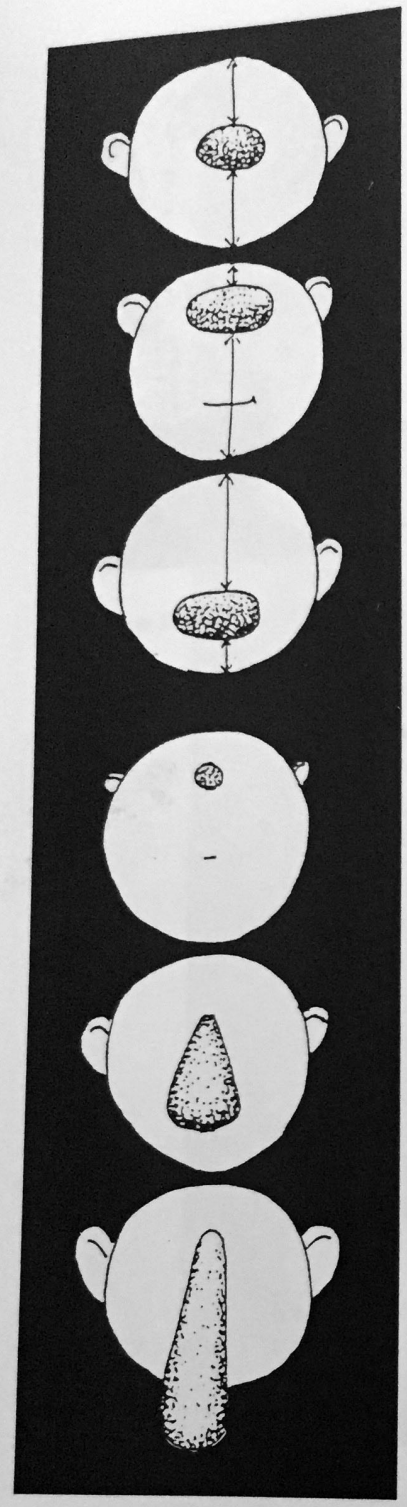
This detailed description of the overcasting process should give an idea of the mind-numbing and time-consuming work involved. Once practised in modelling, overcasting is the job which will take approximately 80% of the total time needed to make a head. I hate it but have always gritted my teeth and put up with it because it is unavoidable and needs to be done with utmost care.

Rolf Trexler showed me a quick method of creating very strong results. Instead of paper and wallpaper paste, scraps of cloth are painted on both sides with PVA adhesive. Once dry, any cracks are filled and the head is sanded smooth.



Head overcast with fabric

Publisher's note: *Agoplast*, originally produced for the shoe industry, is a very similar material to *Celastic*, also known as *Samcoforma* and *Sculptofab*, used for the same purpose. All of these have been phased-out because of alleged toxic properties, and shoe manufacturers are now using a thermoplastic process. Other products are being developed but as these are as yet untested for puppet making, no details are given here. As new information becomes available, it will be added to *The Fettig File* distributed with new copies of this book.



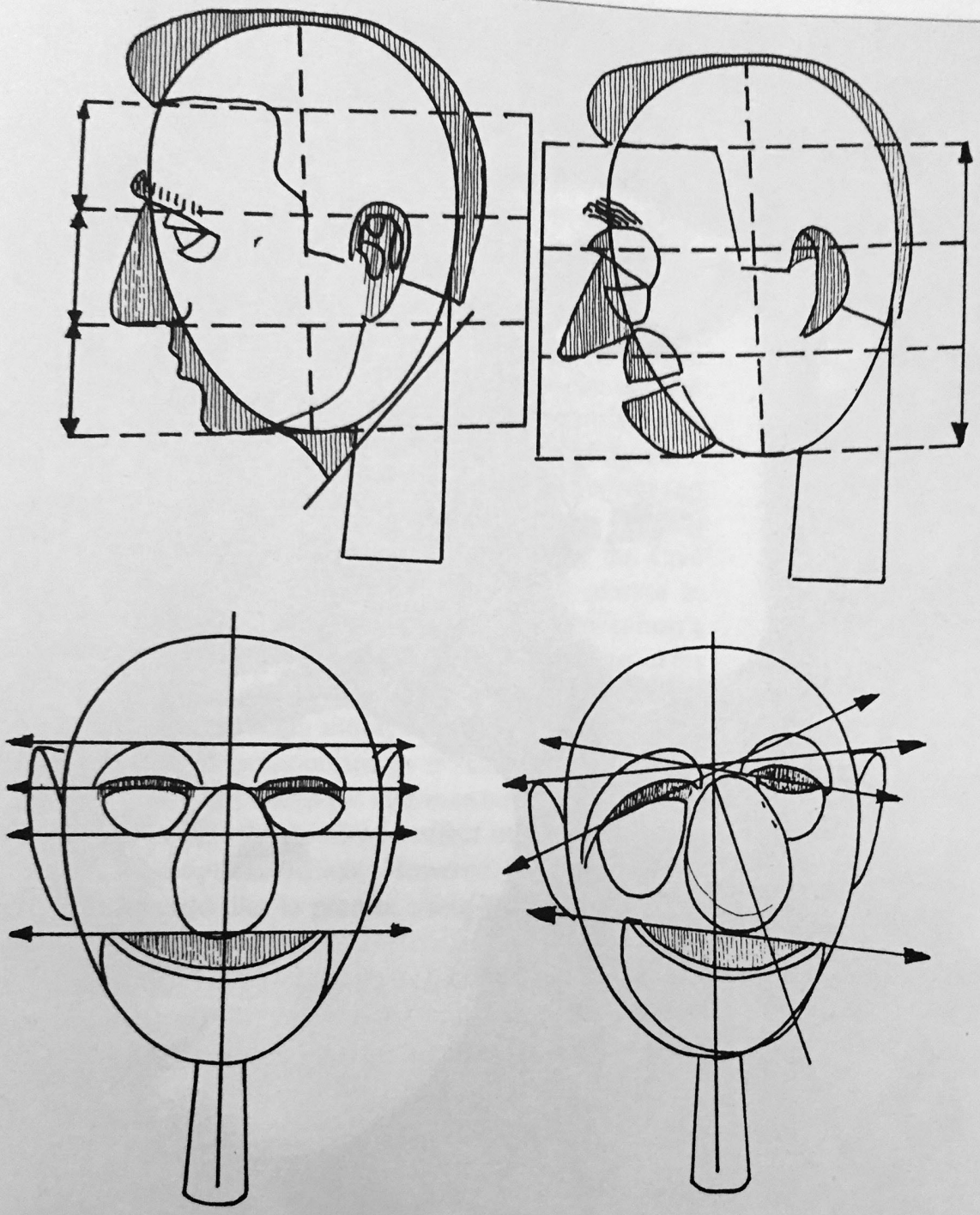
Symmetry and Asymmetry

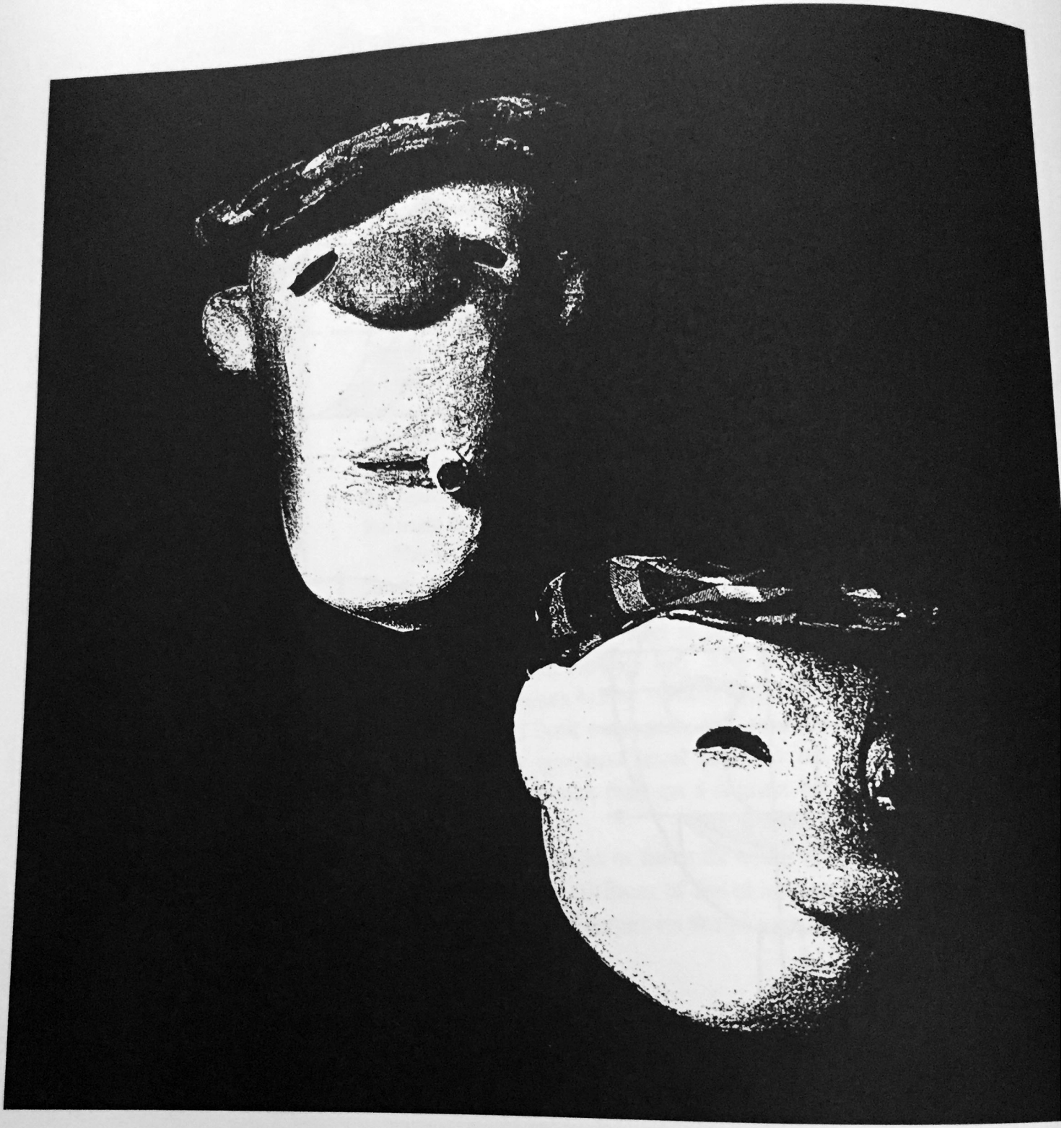
I believe that the word 'Art' (Kunst) is derived from the concept artificial (künstlich) rather than art as skill (Kunst). Even if an artist tries to create a perfectly realistic figure, the result can never be a real human but will always be artificial. An artist reflects personal experiences and discoveries concerning the real world as a symbol of them, and although he/she should possess the necessary skills to do this, the art lies in the quality of the feelings and thoughts, not in the means used to portray them, which can be learned as a craft.

When making puppet heads, I find a face that is evenly divided into three parts often lacks character and simply provides a range of elements for me to play with. I alter the proportions or change the position of each element until the face begins to speak to me — see, for example, the column on the left, which shows the effect of moving the nose up and down or changing its shape.

The axial symmetry of the bottom left-hand head on the opposite page, makes it seem general and boring. The head next to it has all the same elements but they are not of equal size and are positioned asymmetrically. Neither head is pretty, but the latter has something about it which I am looking for. The left side of the face is friendly, the right seems more brutal, almost aggressive. The two profiles, too, are different. In both examples, the ears are positioned in the centre section between eyebrow level and the tip of the nose. They are positioned further back than on a human head to give prominence to the puppet's face.

As the puppet moves or turns its head, the play of light over the convex and concave surfaces of the changing forms creates the illusion that the puppet changes its facial expression.





Workmen from *The Brass Beetle* by Alexander Pepusch

The Brass Beetle

During my teacher training in 1953/54 at Kant High School in Karlsruhe, I planned to stage the play *Der Messingkäfer* (The Brass Beetle), and wrote to the author, Alexander Pepusch, which was the pseudonym of Theodor Schück (the drawing master whose pupil I had so much wanted to be). He immediately replied in very friendly terms, and an exchange of letters began which lasted until his untimely death.

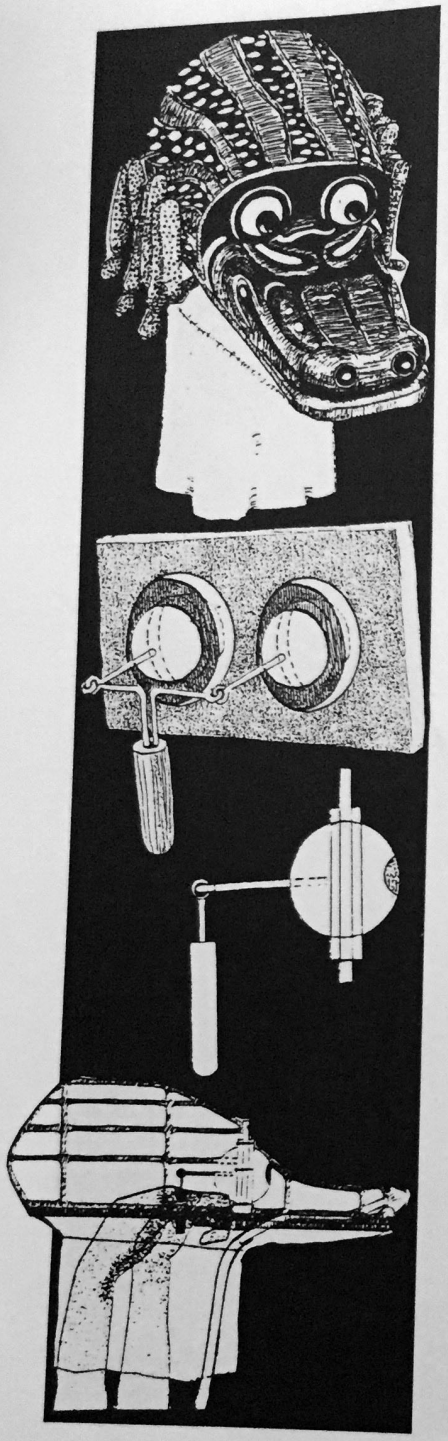
On the right are simplified drawings of the heads made for the production, in which I aimed for strong expression using simple forms. From top to bottom are the Policeman, the Civil Servant, the Chemist researching the case, a female Newspaper Reporter who puts on airs, and the Nosy Neighbour. On the left are the two Workmen.

It is again worth noting the eyes. The Policeman, Civil Servant and Reporter have no eyes at all, which was a conscious design decision influenced by their respective characters. For example, the Civil Servant's eyes are represented by the shadows of his glasses to suggest his position as a faceless functionary, and the Policeman's eyes are hidden under his cap, which emphasises the brutishness of his chin.

The eyes of the other puppets are simply round holes, slits or darkly painted hollows. I prefer impressionistic eyes such as these, ie eyes which do not actually exist but which the audience believes it sees, and try to suggest them through the combined effect of modelled form, light, stage direction and optical illusion. However, before explaining this in more detail, I would like to present some mechanical alternatives.



Characters from *The Brass Beetle*



Mechanical Eyes

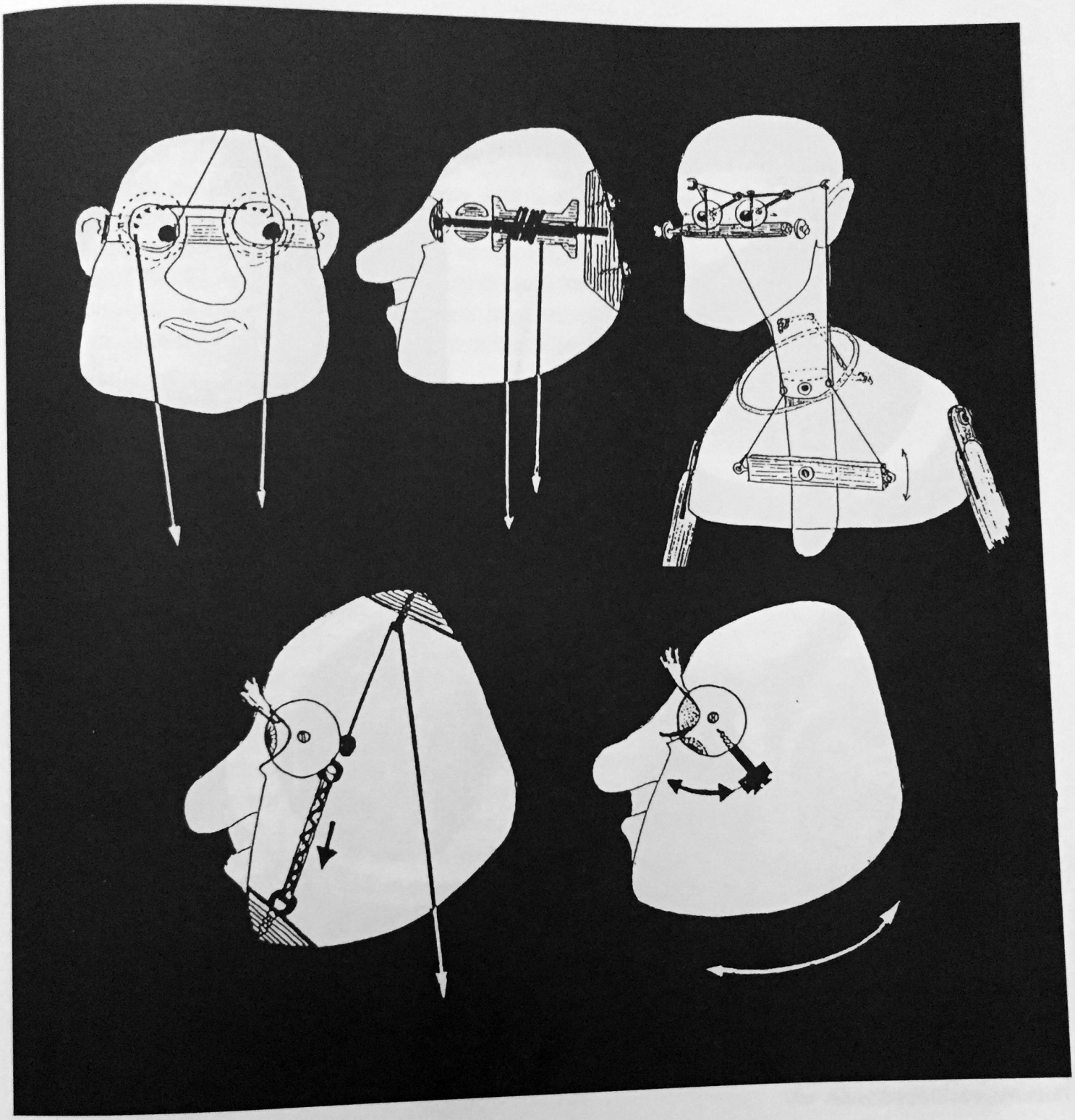
All the eyes on the opposite page move in one plane only — either to the left and right or up and down — which, in my opinion, doesn't seem enough for the amount of technical effort required. They also have the disadvantage that the whole head needs to be taken apart for repair purposes.

For the 'sleep eyes' opposite bottom left, the inside of the head is fitted top and bottom with pieces of wood into which screw-eyes are mounted. By pulling on a control string (which passes through the upper screw-eye and is attached to the back of the eye) a piece of elastic or a spring is stretched and the eye closes. When the string is released, the contraction of the elastic pulls the eyes open again. In time, however, the spring or elastic may become slack and will need replacing. Another idea is to use a weight attached to the eyeball to make it swing when the head is tilted (see drawing bottom right). This requires less maintenance but is neither much to my liking.

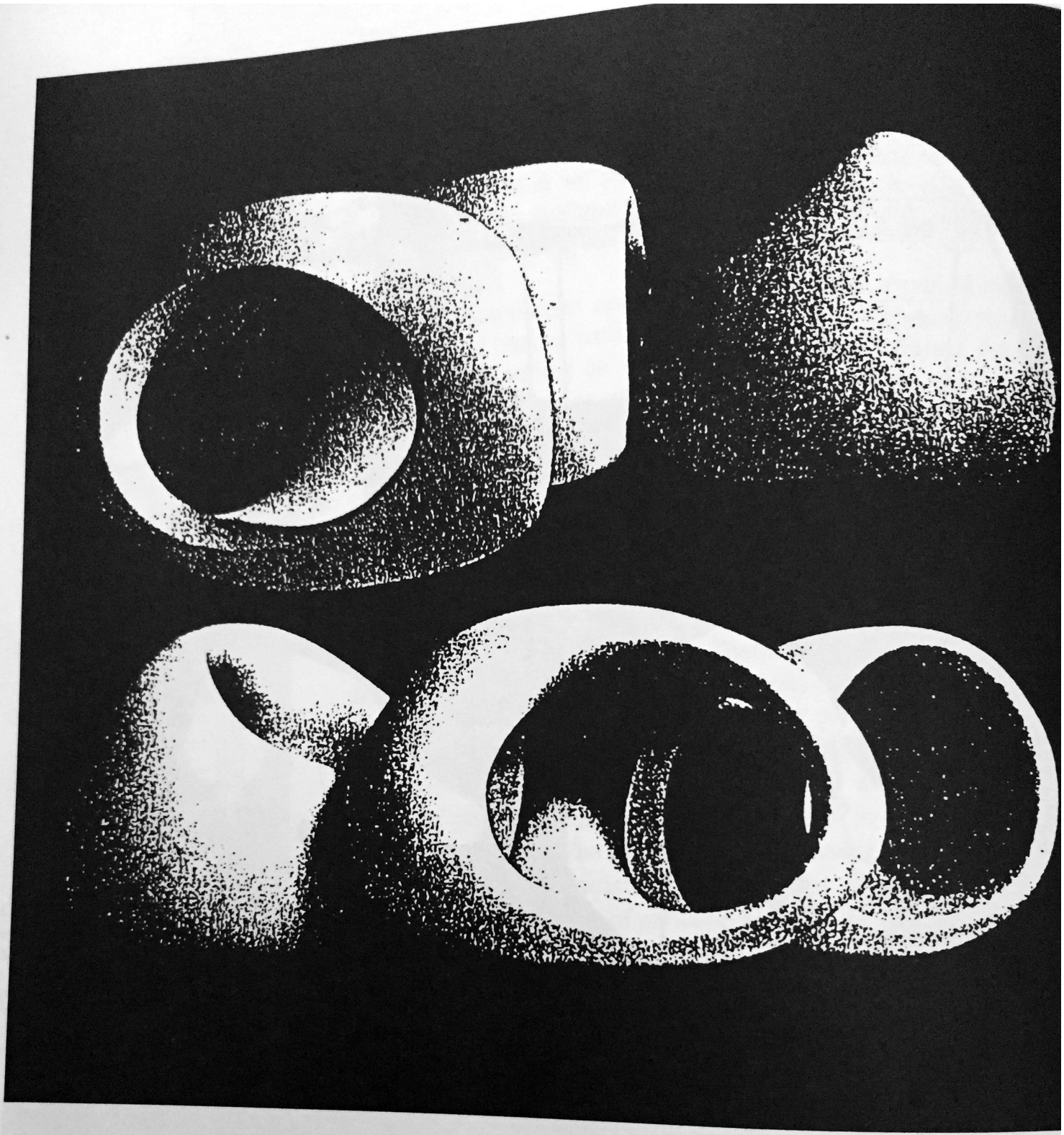
Good mechanical, yet extremely simple, eyes are those on the dragon from the *Brass Beetle* by Theodor Schück, the oft-mentioned drawing master (see column on the left). The eyes are turned in synchronisation and in any direction using a type of stirring contraption. The eyeballs, which comfortably turn in all directions and can remain in any position, are held in place by a block made of three pieces of plywood, each with a hole drilled in it, screwed together around the eyeball. The middle piece of plywood holds the eyeball in place and has a hole measuring the diameter of the ball. The holes in the front and back pieces of plywood are slightly smaller and have been chamfered to loosely fit the eye-ball. With the appropriate tools, the construction of this eye mechanism is relatively easy.

Eyes which can look from left to right, or even roll in a circle, may at first seem amazing and funny but soon become boring unless the effect is used extremely sparingly and makes sense in terms of the character's role.

Eye mechanism for the Dragon from *The Brass Beetle*



Mechanisms for moving eyes



Three Rings by Henry Moore

Impressionistic Eyes

As an introduction, I would like to present Henry Moore's sculptures *Three Rings* and *Helmet Head* to show how optical illusions can be created through the play of light and shadow, and how shapes alter their appearance through movement, ie when the viewer or light source changes position. To get an idea of the effect, rotate the illustration of *The Three Rings* opposite slowly through 360°. Even in two dimensions, the sculpture looks different from every angle because of shifts in the direction of the lines and in the balance of light to dark.

When looking at *Helmet Head* (on the right) in this way, I get the feeling of being watched, of his gaze following me. Peering through the mysterious darkness, he seems out to get me — or could it be an anxious woman secretly observing me from the shadow of her headscarf? The first impression is suggested by the cold, smooth surface, and the second by the soft curves that arch away from each other and back again in contrast to the angular mouth. The small patch of light makes the mouth look slightly contorted — or could it be a hand held in front of the face, like in Fred Schneckenburger's Kasper?

Schneckenburger's Kasper (see page 75) comes alive through the play of opposition in the convex and concave forms, together with the controlled pendulous movements of the suspended elements. Artistically it is a masterly balancing act between figurative and abstract.

I would now like to introduce the five puppets I made for my State exams in 1952 and which I consider to be some of the most important heads I have ever made. My main concern with them is the variety of facial expression possible using movement and light.

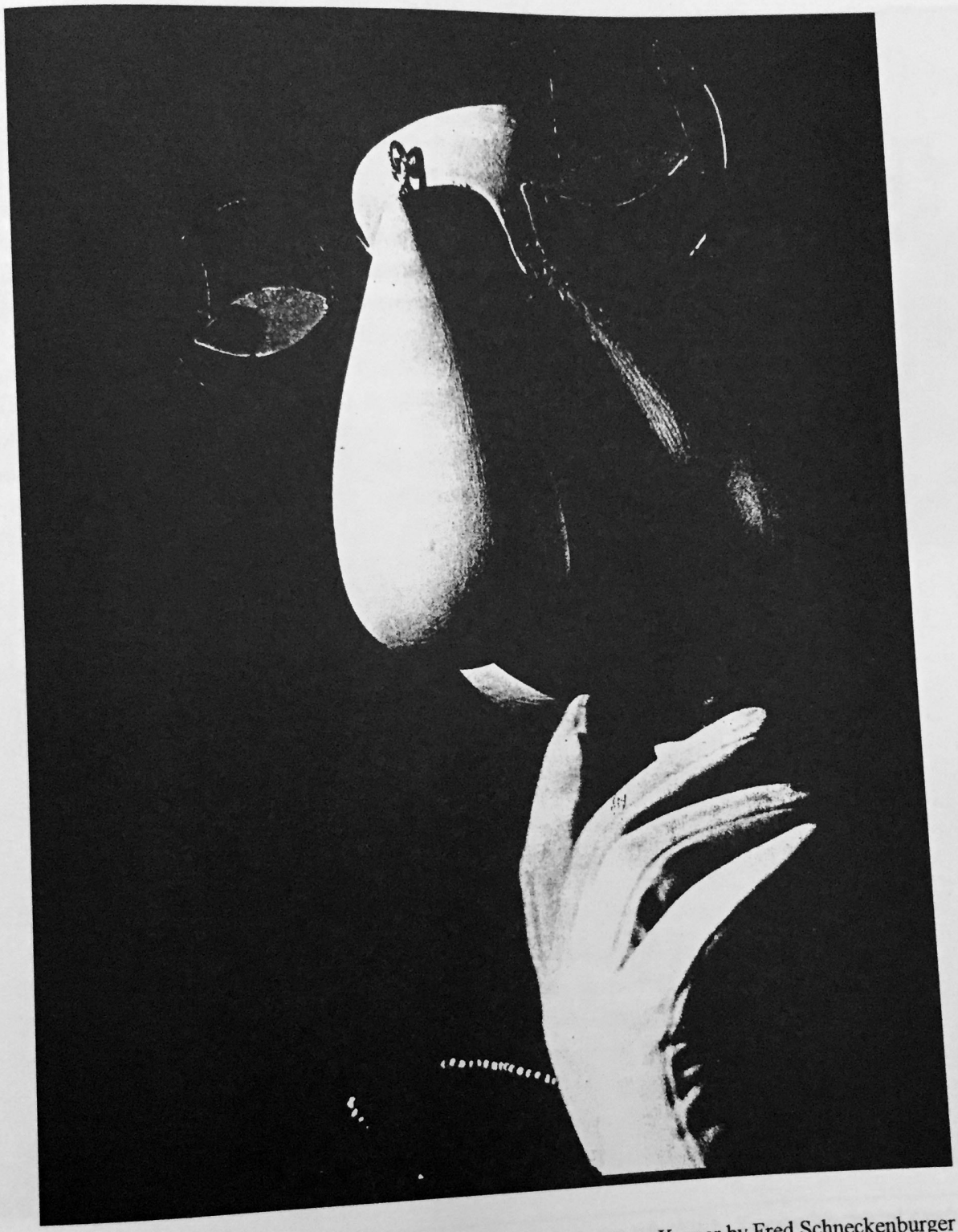
Whilst talking to Ludwig Krafft about the puppets, he described them as a "bridge between tradition and modern", and mentioned Fred Schneckenburger and Harry Kramer. I felt I had finally discovered my own distinctive 'handwriting' through these figures, and with his words Ludwig Krafft indicated a place where I still feel at home.



Helmet Head
One of a series by Henry Moore



Two figures from *Das Mechanische Ballett* (The Mechanical Ballet) by Harry Kramer



Kasper by Fred Schneckenburger



My Exam Figures

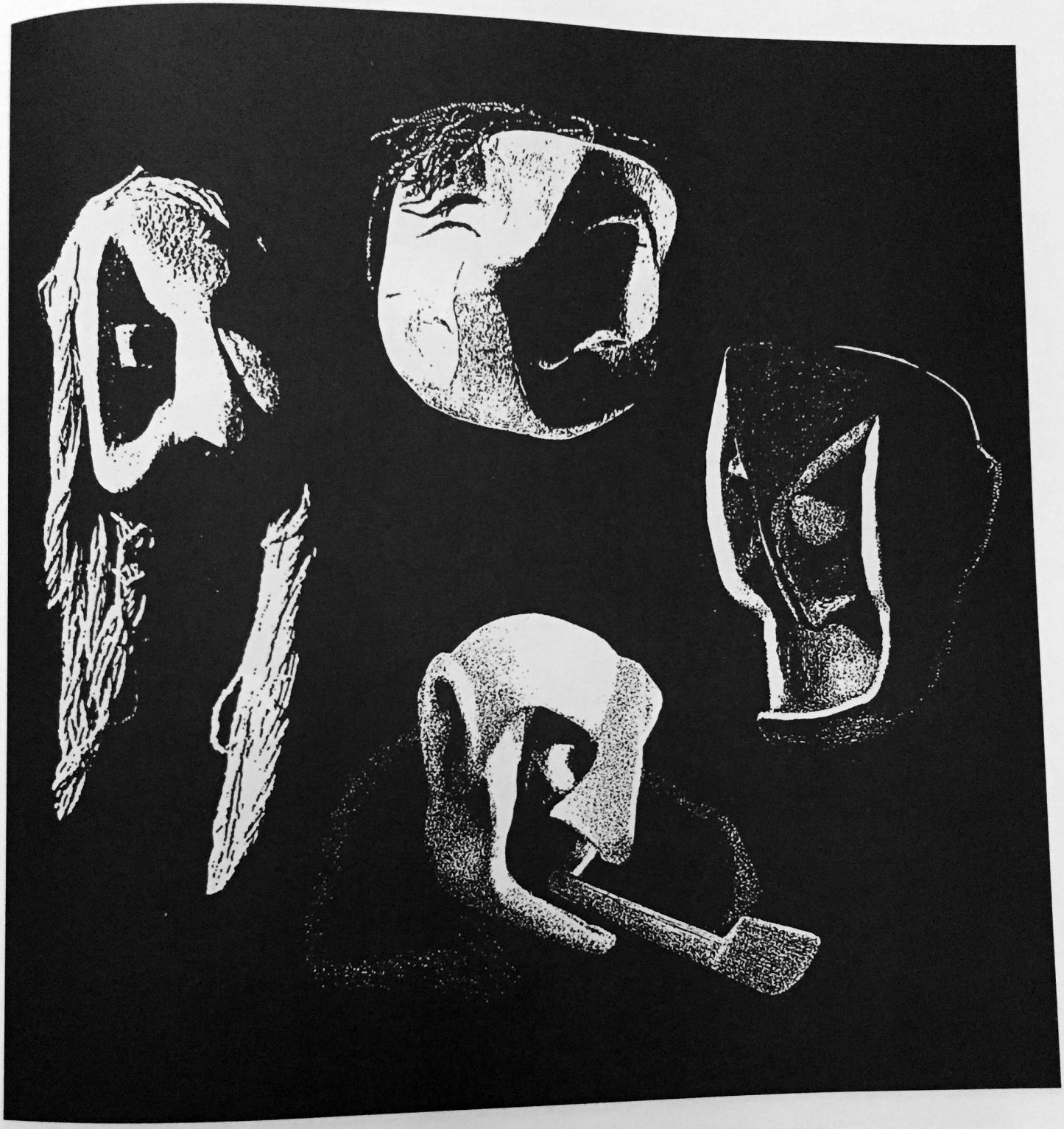
With the exception of Kasper, all the figures on the right have a hole behind the bridge of the nose. On Sherlock Holmes (see left) this hole is seen through the shadow on the wall, whilst the actual eye lies in darkness, thereby drawing attention to his pronounced jaw. The various images of this same head on page 78 show how full of nuance a puppet's facial expression can be as it changes little by little, depending on how the light falls.

My fundamental idea of using light and shadow in combination with a hole behind the nose is clearly seen on the Mephisto on page 79. Some parts of the face which normally have an outward curve (cheeks, eyeballs), and should therefore be convex, have been made concave. The hollows create deep shadows, whose shape is more radically altered by the movement of the light (or of the puppet in relation to the light) than those cast by the convex parts.

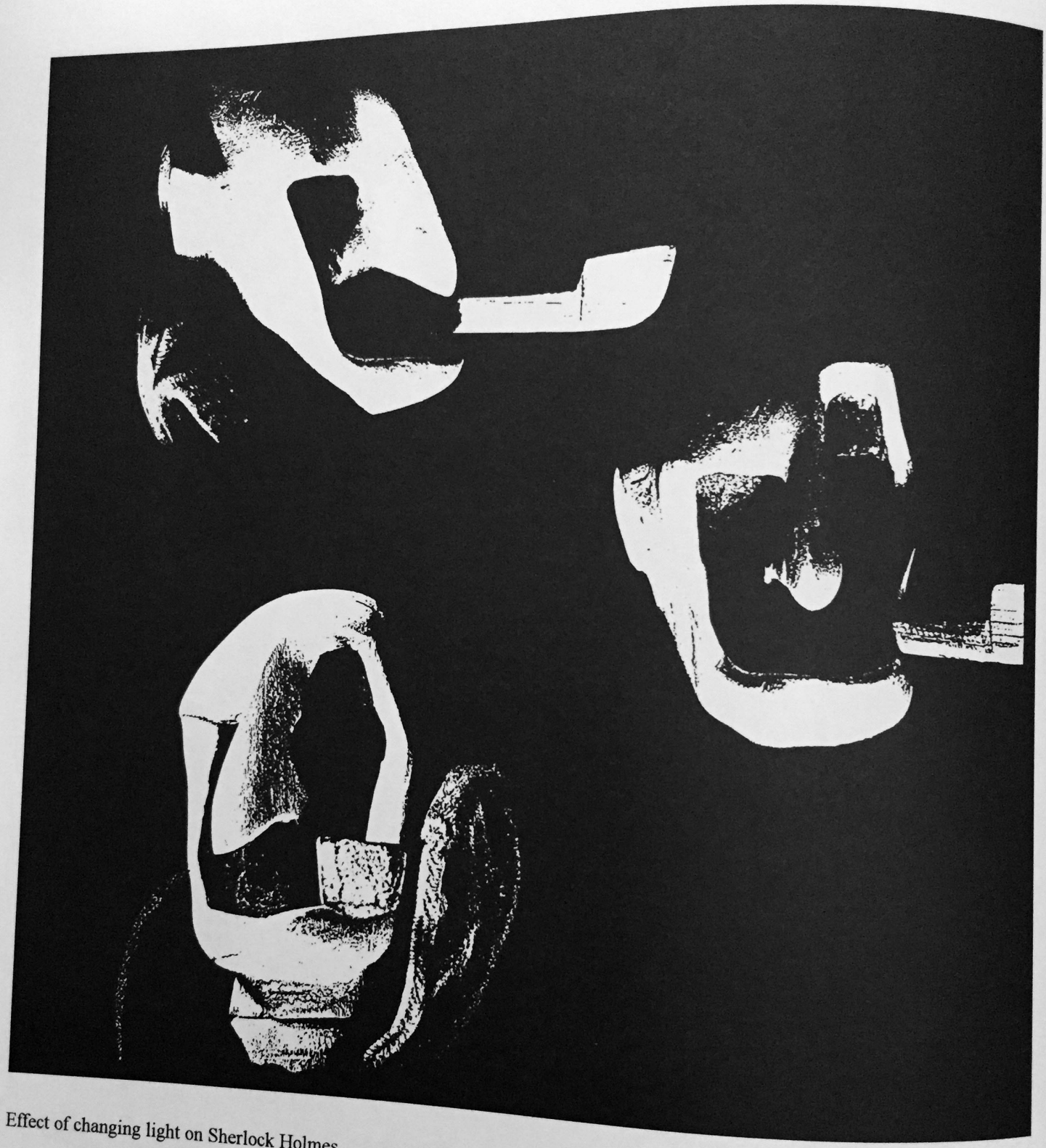
This conscious use of light and shadow in a puppet's face increases its power of expression. Thus, for example, a beam of light shining through a hole behind the bridge of the nose onto the darkened half of the face looks like an eye that opens and shuts. This dramatic expression, which I find very 'Mephistophelian', appears in all the views of this puppet, no matter how the light falls.

The Witch has had a square fragment of mirror glued to the back of the almost completely hollowed-out skull. Depending on the lighting, it is either totally invisible or sends out a flash, which creates a powerful effect. On pages 80 and 81 are three further images of the witch. In the two outer pictures, the reflection — and thus her gaze — has moved from one eye to the other. The central image, without reflection, shows the eyes of death. On the left and in the centre, her mouth-chin area is engulfed in shadow. On the right, it pushes itself into the light.

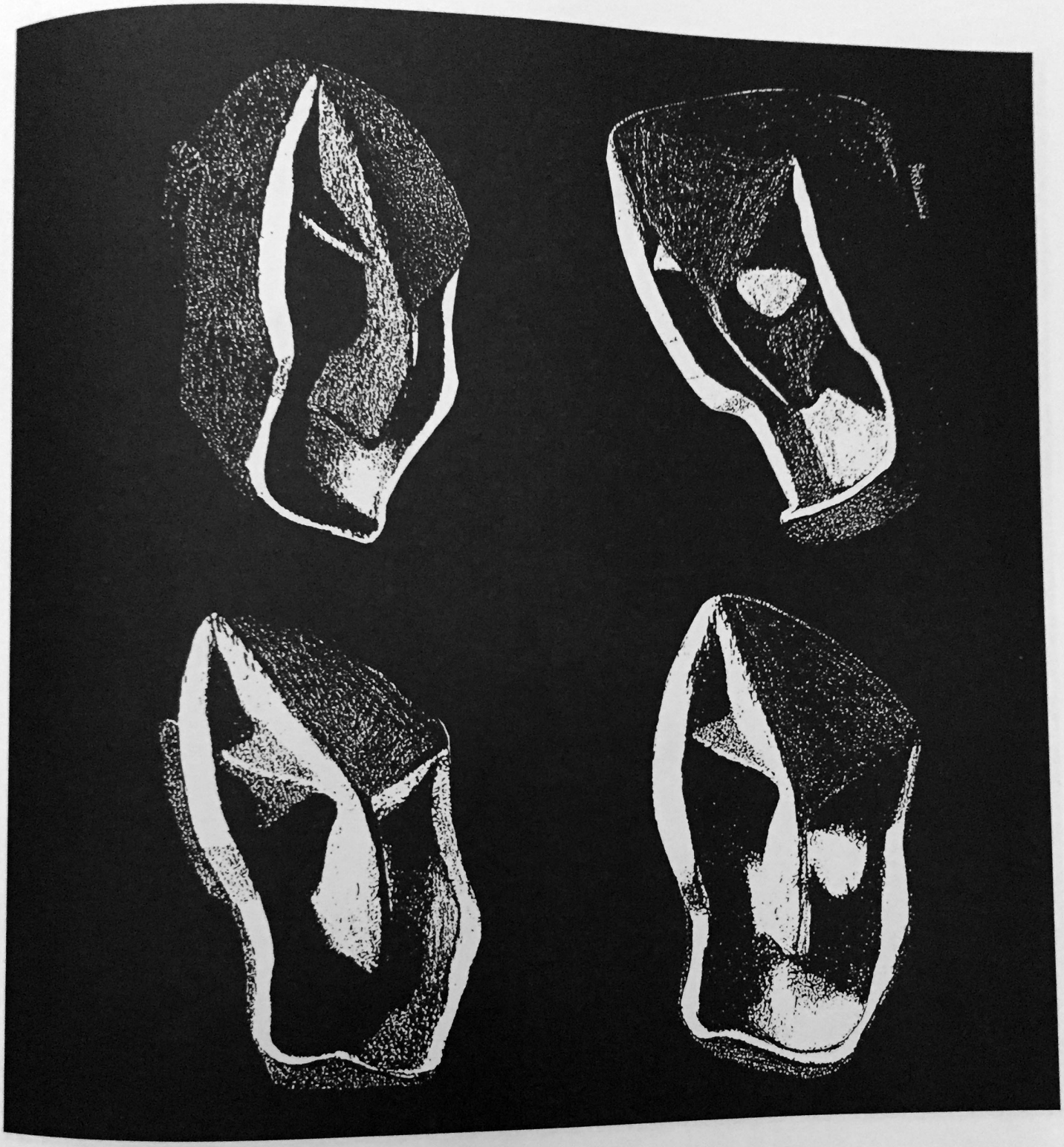
Sherlock Holmes by the author



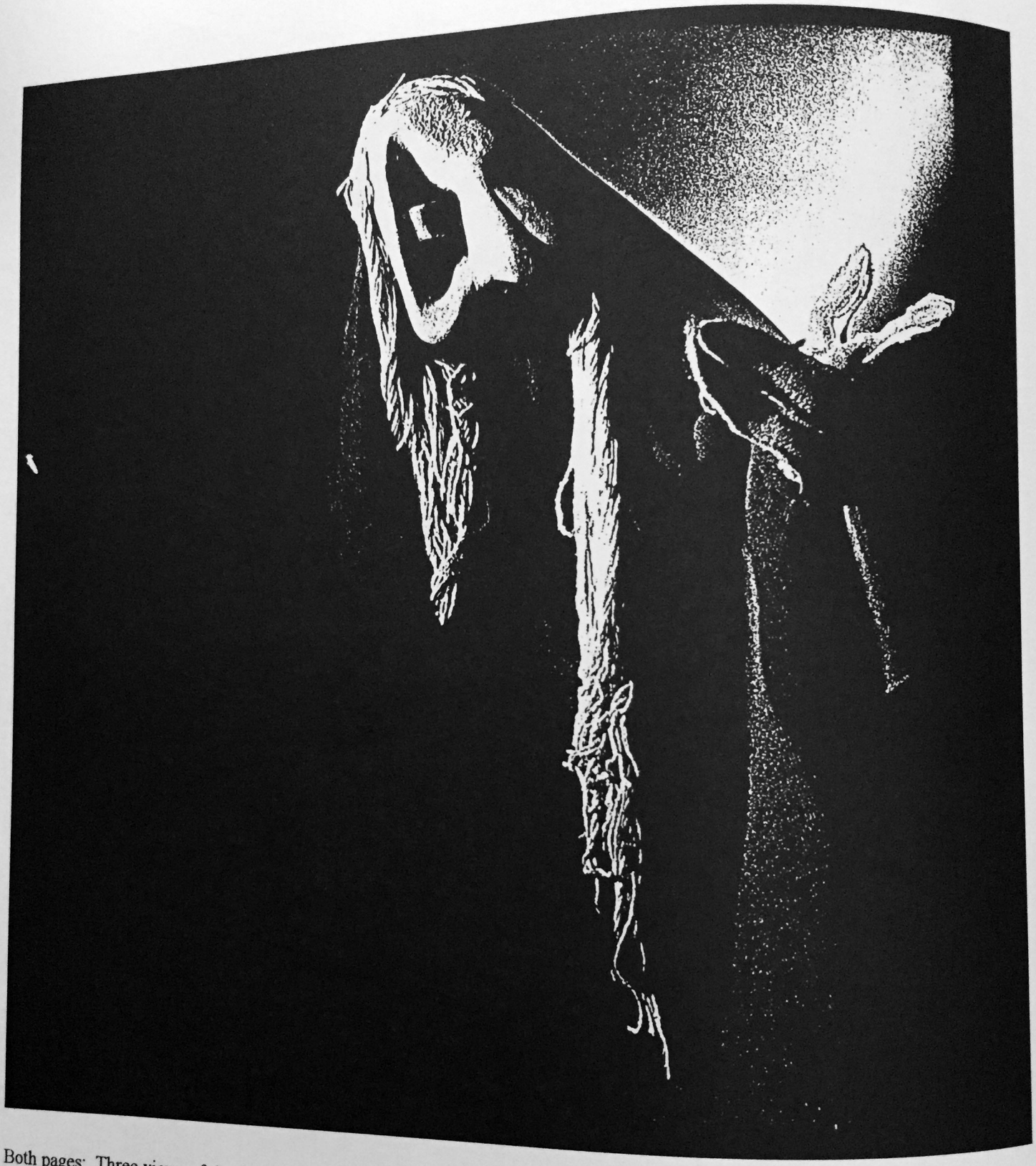
Heads by the author. Clockwise from top left: Witch, Kasper, Mephisto, Sherlock Holmes



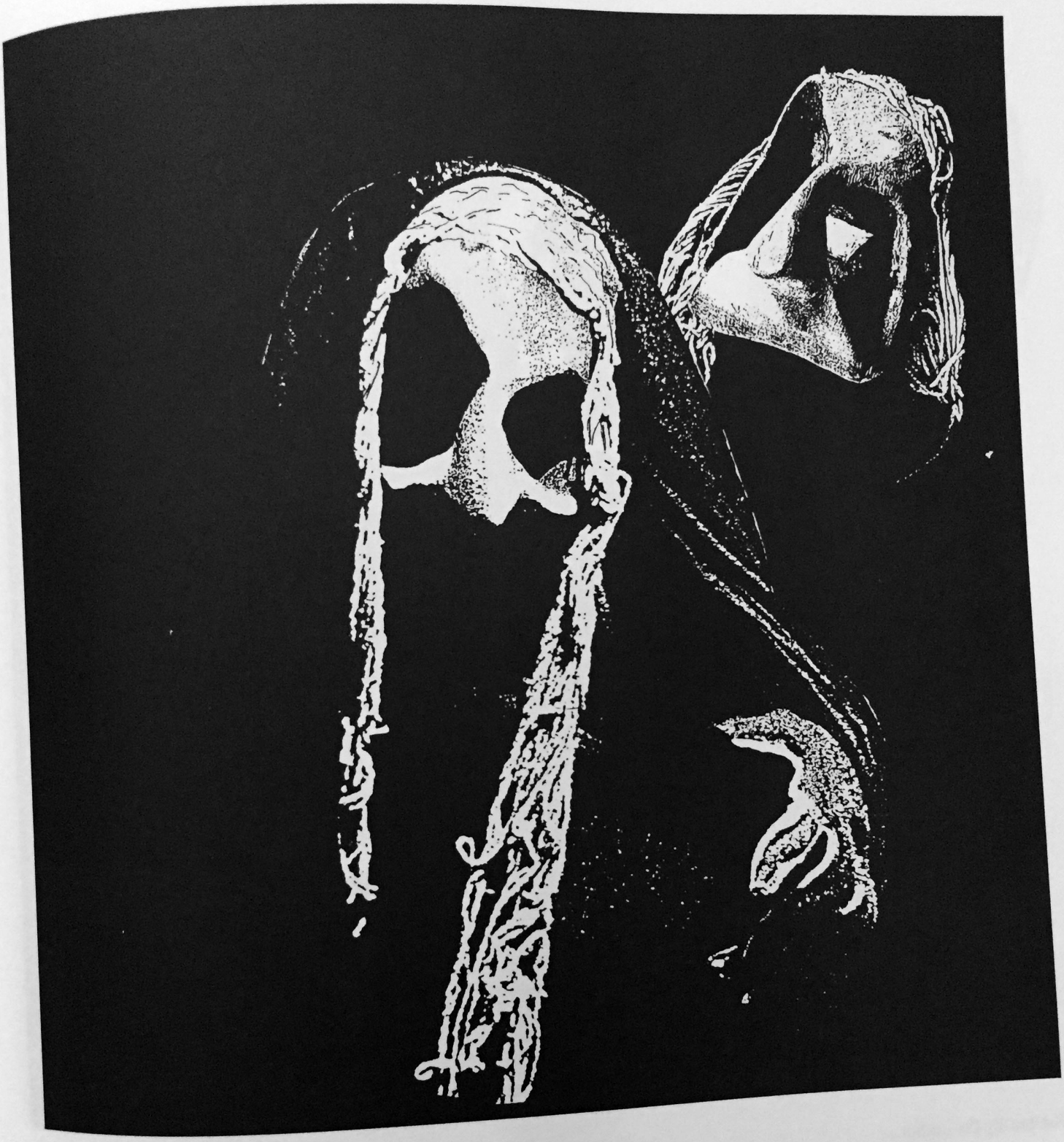
Effect of changing light on Sherlock Holmes

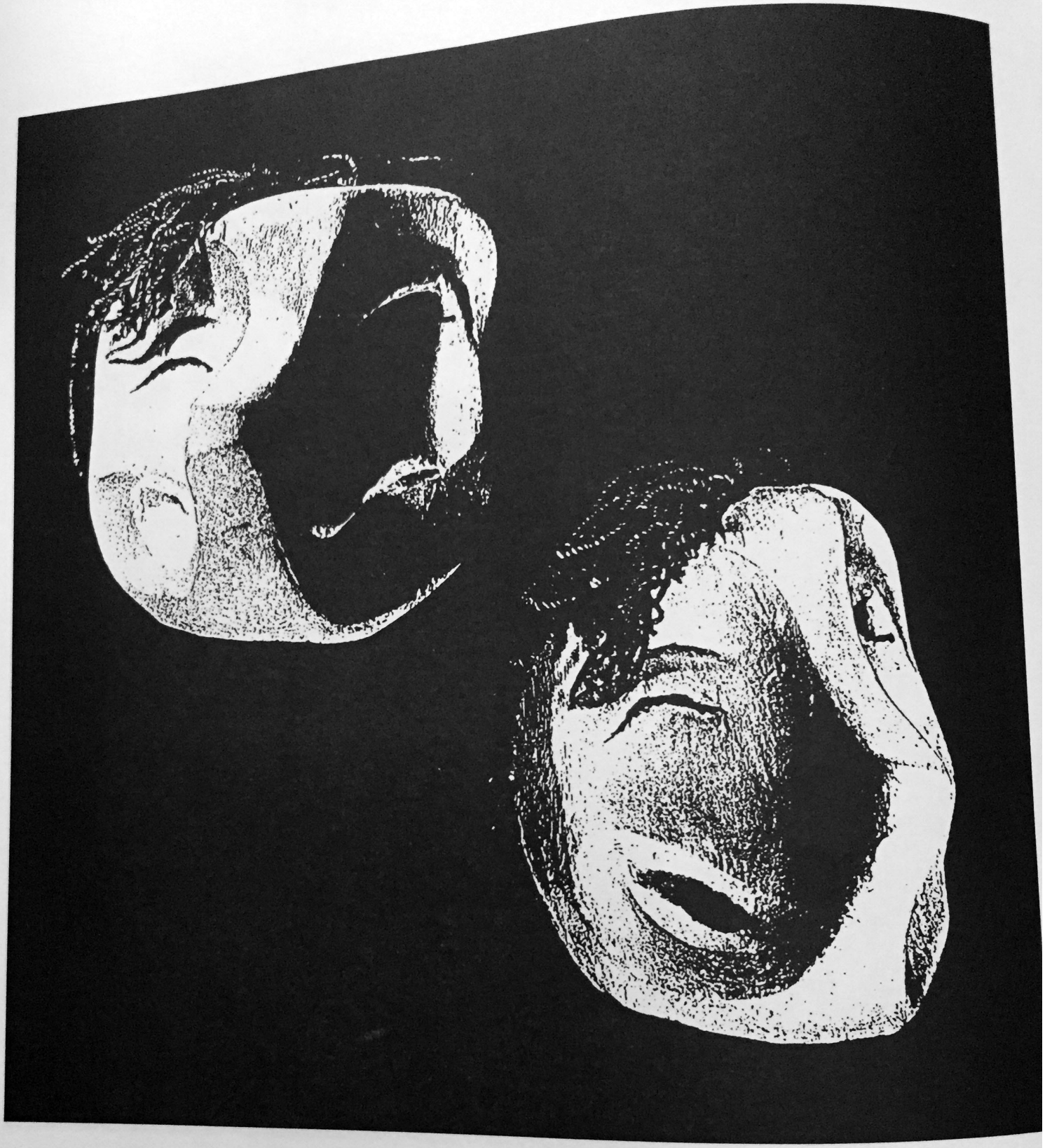


Four views of Mephisto by the author



Both pages: Three views of the Witch by the author





Kasper by the author

The Kasper on the left is a happy mischievous character. His face is less craggy than the others in the set, and it is the arched surfaces and curved lines which make him look so cheerful. The image at the top shows him winking, an effect caused by the curve of the eyelid against a background which is sometimes light and sometimes dark. He has two mouths which change according to how the light falls — in the drawing below one appears as smiling lips.

On first sight the professor on the right doesn't seem to belong to the other characters, however, he and the Kasper are related by being the two more human characters. The professor's moustache is white and has obvious chisel marks. It stands out against the colour of his head, which is dark above the moustache and gets progressively lighter from the rim of the glasses to the forehead until it is nearly white. A golden spectacle-frame and ring of white hair (not yet attached in this picture) complete the figure.



Professor by the author



Organ Grinder by the author for *The Threepenny Opera*

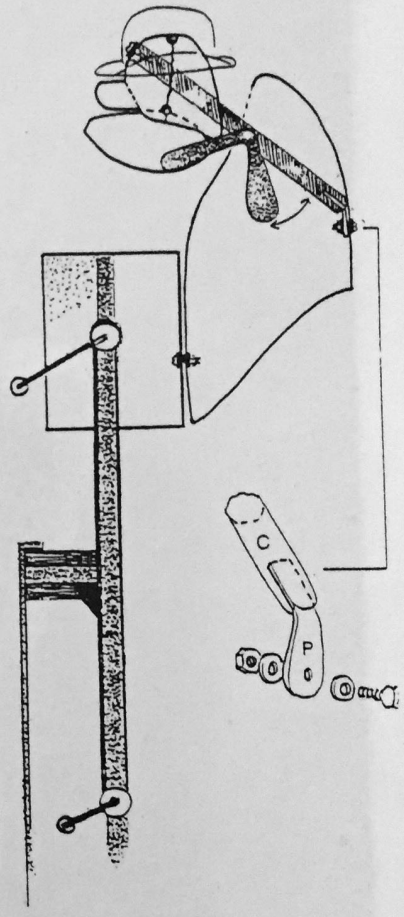
The Threepenny Opera

During the 1966 UNIMA conference in Munich, I met Jef and Louis Contryn from the Mechels Stadspoppentheater in Belgium and they invited me to run a course at their theatre. Our collaboration continued when they borrowed my puppets and set for *Ladykillers*, redirected the play in Flemish and performed it with great success. We then wanted to produce together *The Threepenny Opera* by Berthold Brecht, using figures and sets designed by myself, and I decided to make rod puppets in a similar style to the aforementioned exam figures. Unfortunately, it later transpired that the cost of performing rights and the size of the orchestra were too high, and in the end the production was never staged.

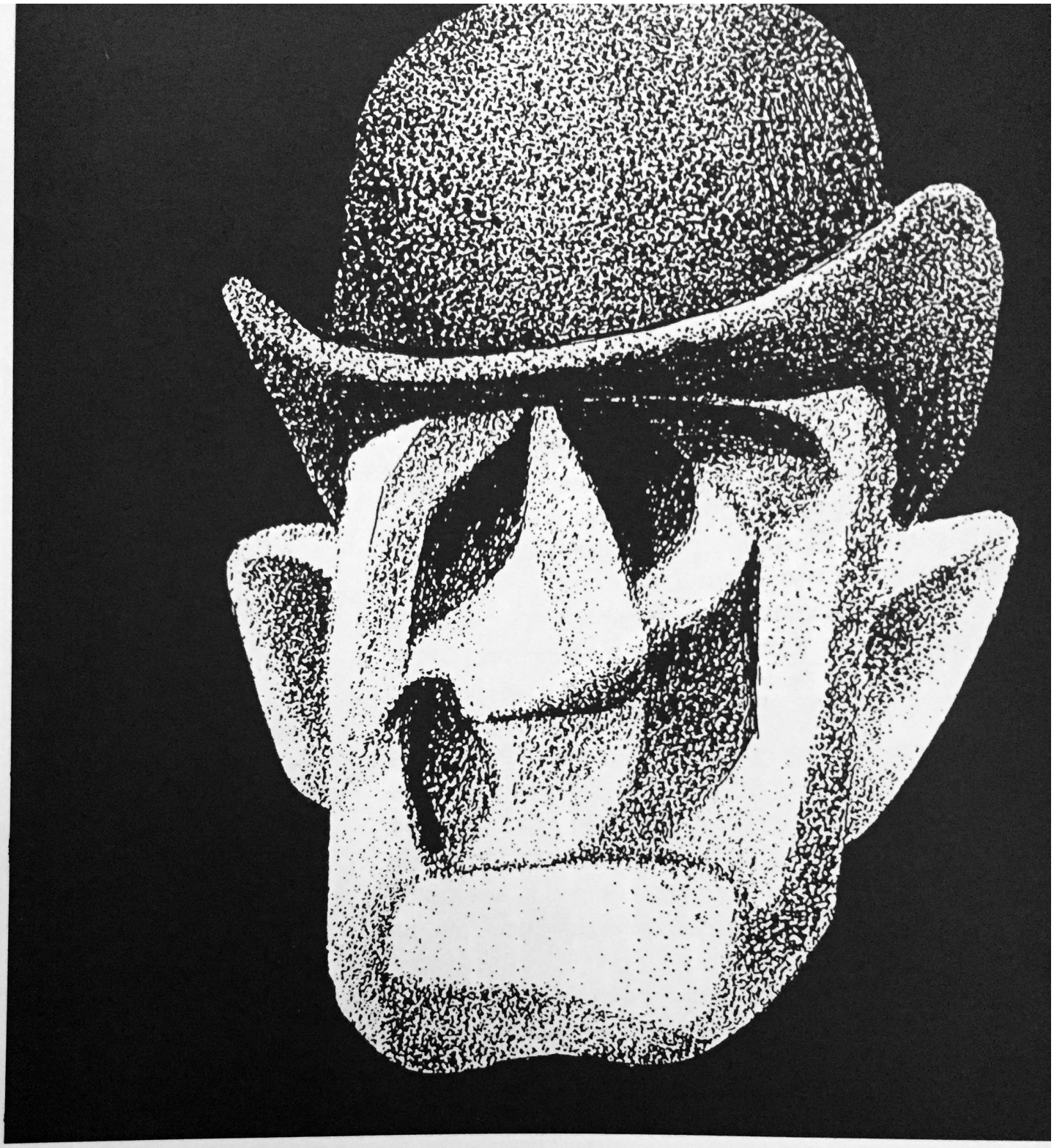
Pictured opposite and on the following pages are some of the figures I had already made: The Organ-Grinder/Street Ballad Singer, one of the Mack the Knife figures, his war colleague and friend Captain Brown, Jonathan Jeremiah Peachum and his Wife.

On the right is a diagram showing the construction of the Organ Grinder. The head consists of two independent forms. A rod, firmly attached to the forehead and neck, runs straight through the head to the shoulders, and is attached with some flexibility by a loop of leather. The lower jaw is attached to the back of the neck using a joint made of two strips of leather. A metal L-shape, rounded off on all sides, is inserted into the lower jaw through the gap between the leather strips and is connected to the rod with a pivot joint. The rod is held between the operator's thumb and forefinger, and when the hand is closed (bringing the back part of the lever to the rod) the front part of the lever presses the chin down. A rubber band or spring connected inside the top of the head, snaps the chin automatically back into its original position.

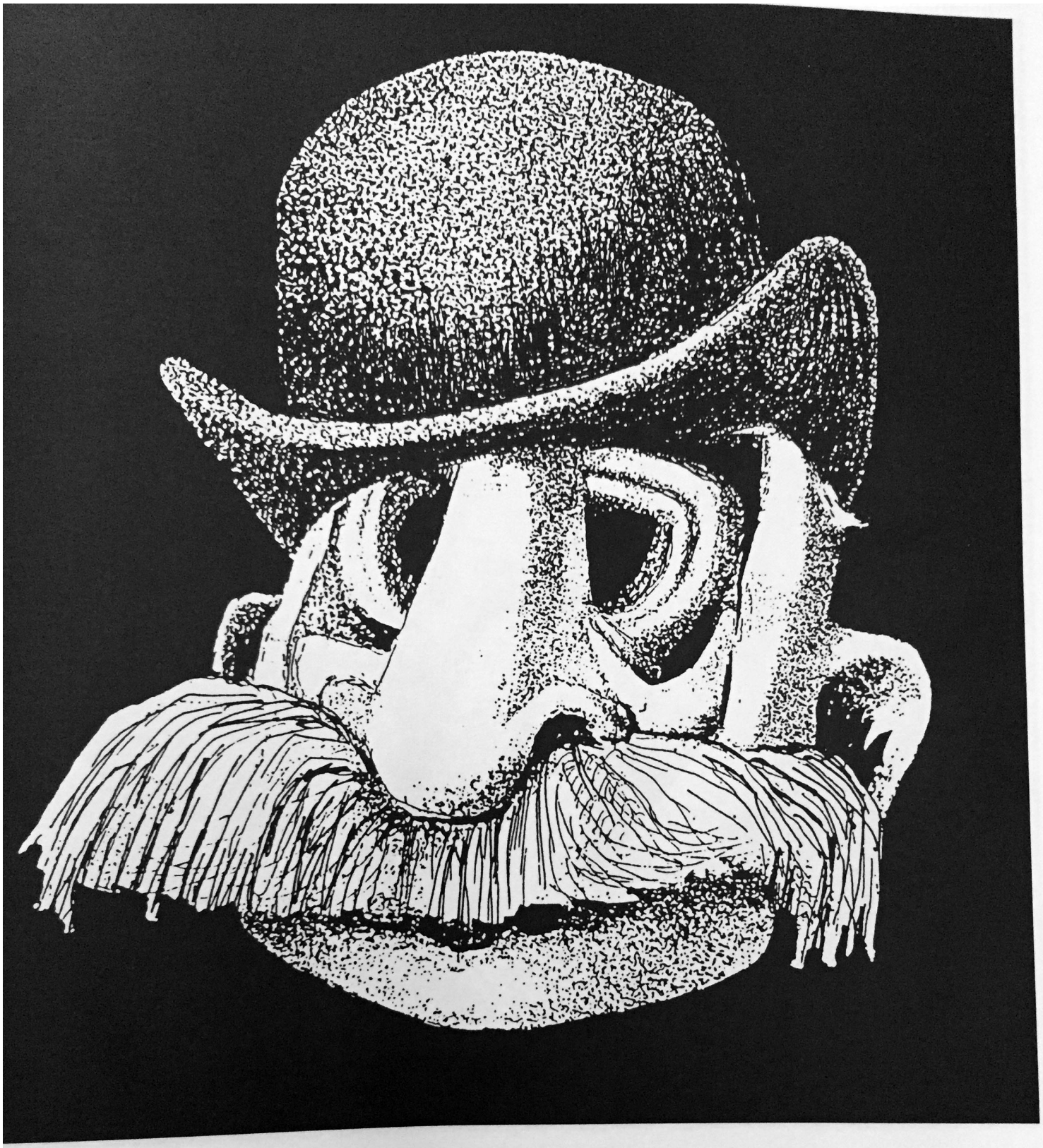
One of the puppet's hands is loosely attached to the handle of the organ. Two drive wheels and a band or chain are attached to the wooden support. By turning the lower wheel, the puppet's arm moves in such a way that it looks like as it is turning the handle.



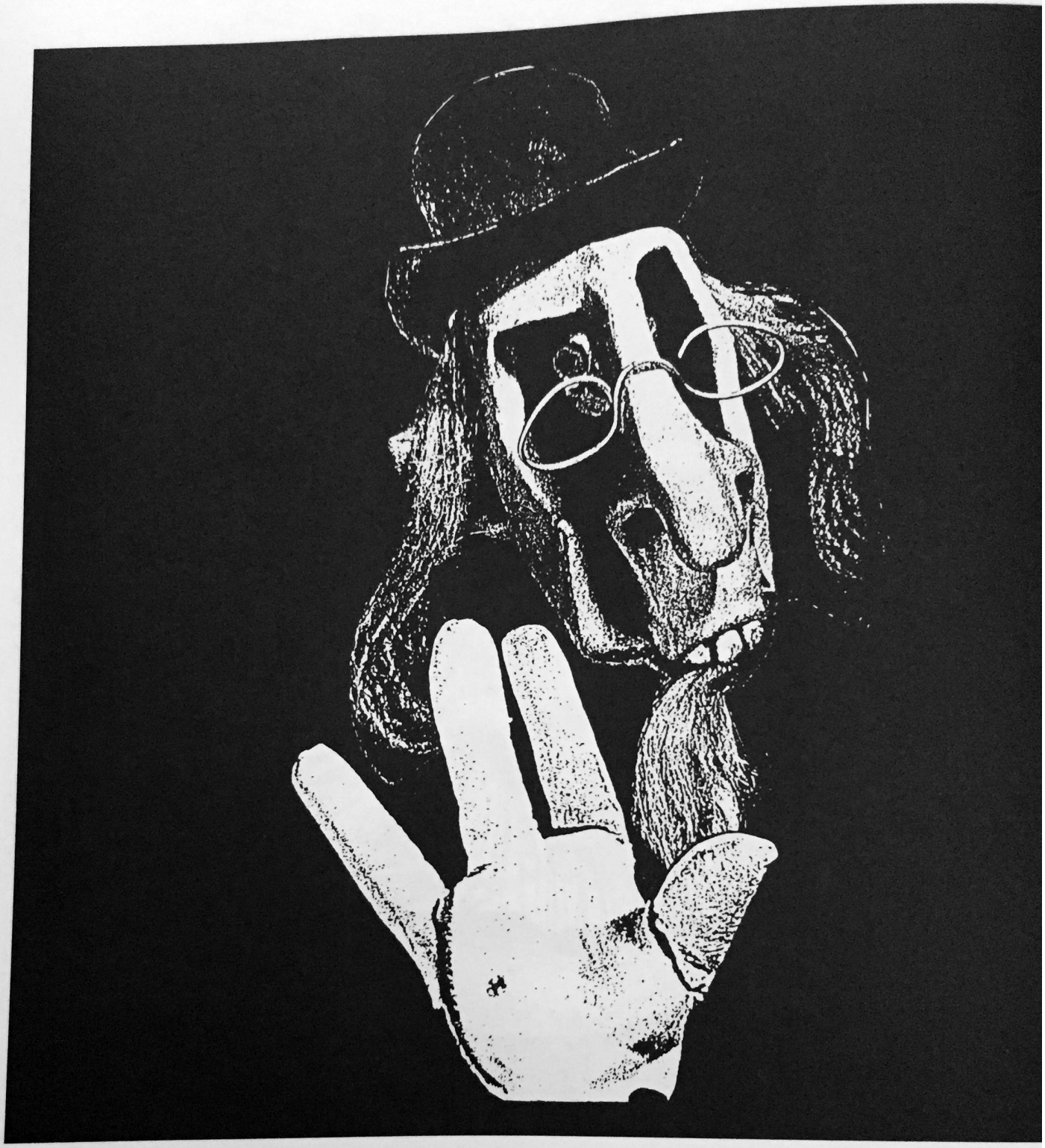
Organ Grinder's internal mechanisms



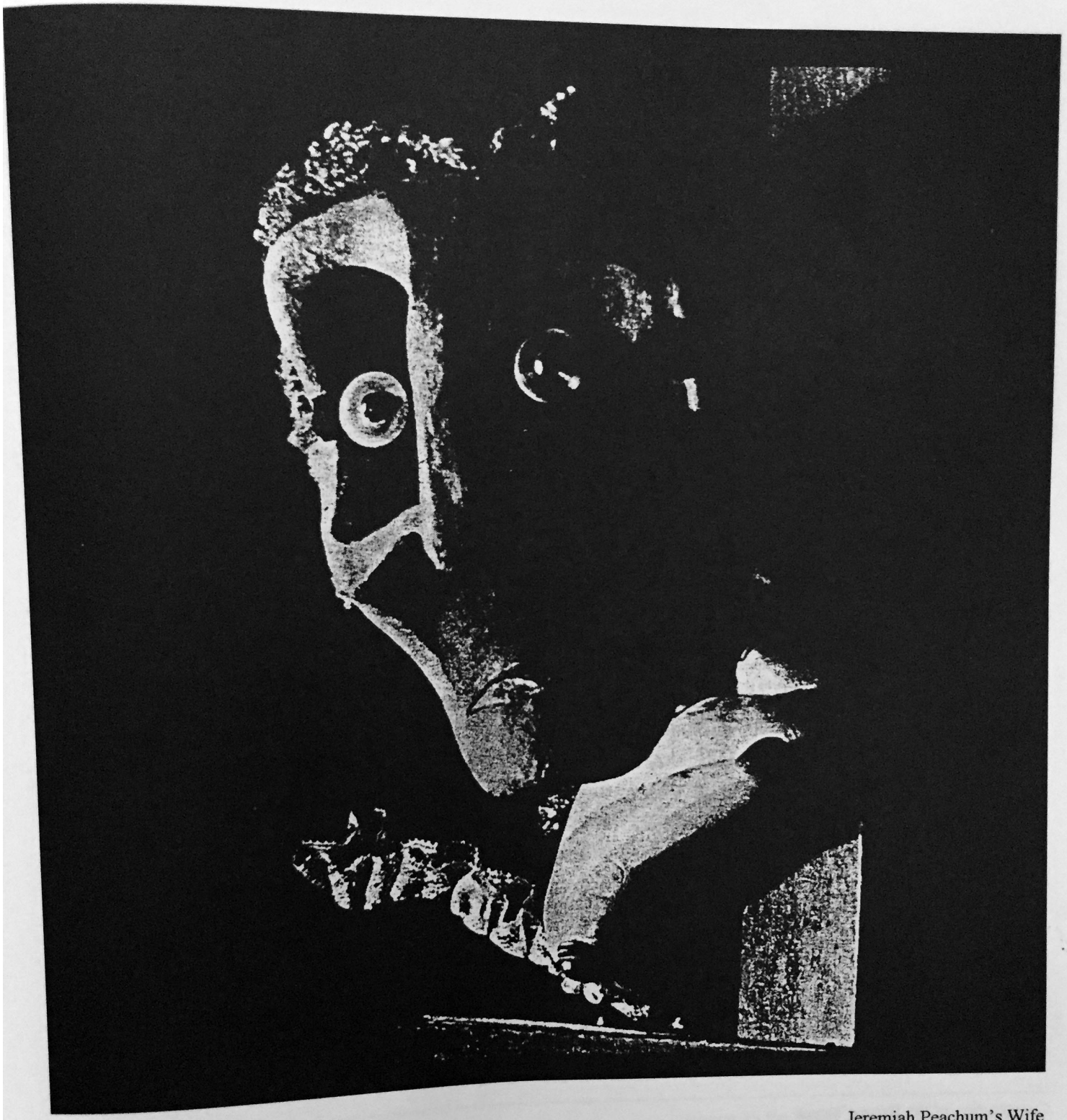
Mack the Knife by the author for *The Threepenny Opera*



Captain Brown by the author for *The Threepenny Opera*



Jeremiah Peachum by the author for *The Threepenny Opera*



Jeremiah Peachum's Wife

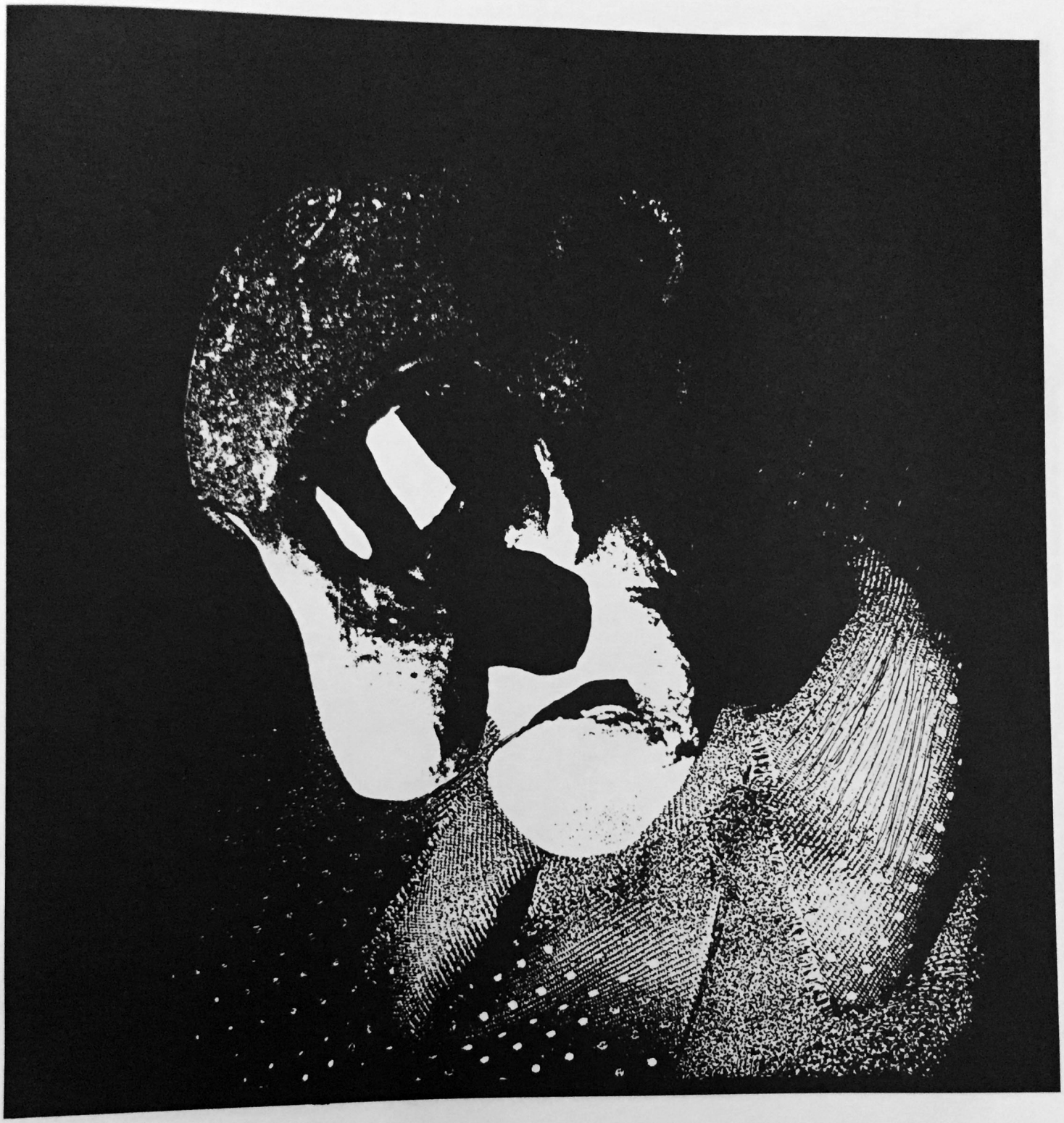


Peachum has a relatively small hole behind the bridge of his nose and two small washers for eyes. The first version of his wife (see previous page) has eyes made from larger washers attached with round-headed screws to a small strip of black rubber, made from the inner tube of a lorry tyre and hung by thread to dangle in the eye sockets. Two additional threads, attached to the back of the sockets, limit the play in movement.

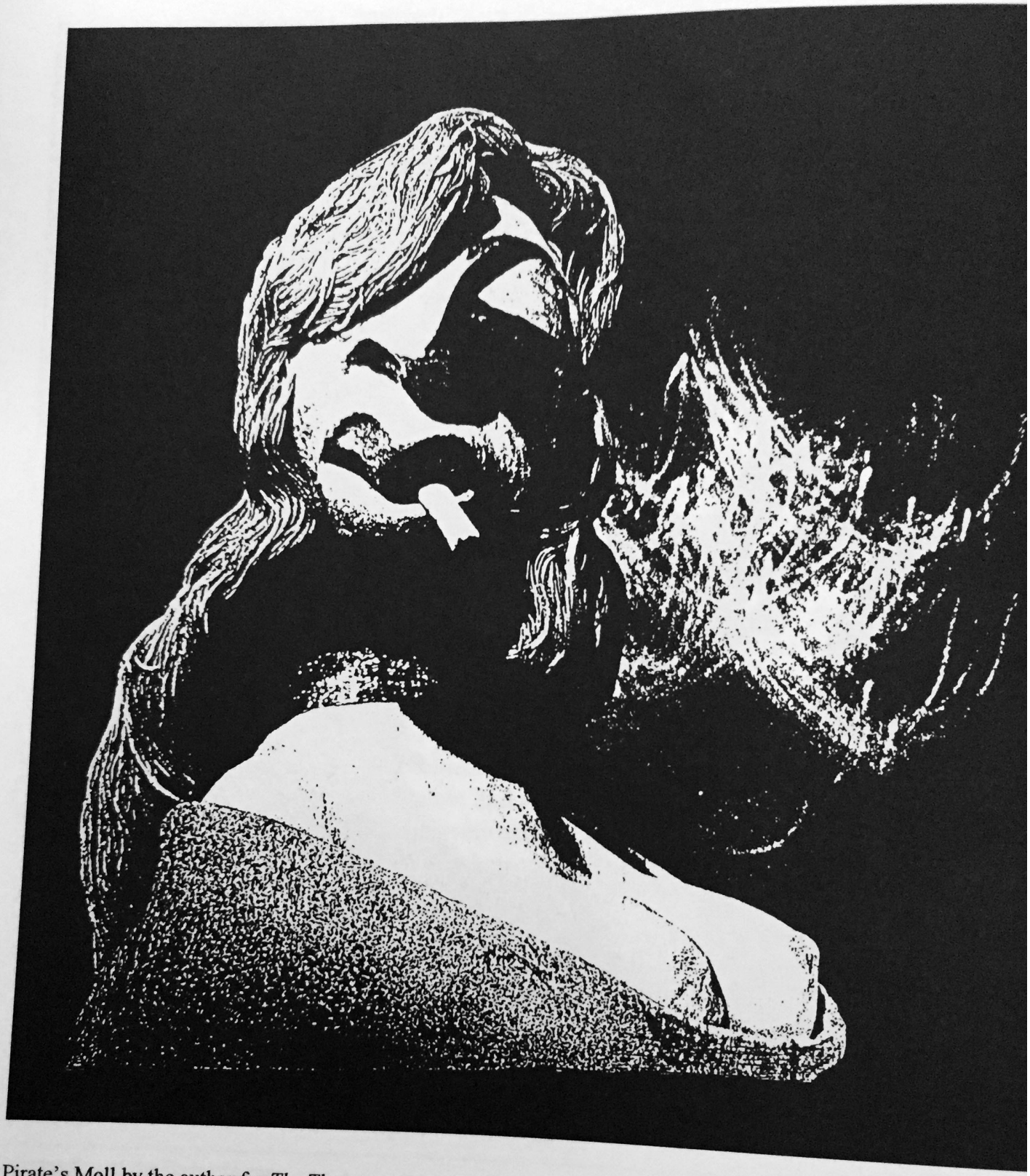
The Beggar on the right has evil eyes that always seem to follow you wherever you go. The drawing top left shows how they are made. Behind the bridge of the nose is a hollow with a cube inserted into it. The hollow and the front of the cube are painted white, the sides of the cube are black. This black continues as a thin strip around the front edge, running parallel to it. When the head faces forward, only two black 'cat's eyes' can be seen, surrounded by a more or less light colour. If the head is turned to the side, one of the black surfaces of the cube becomes visible, which gives the effect that the puppet is looking out of the corner of its eye. The sloping sides to the Beggar's hooked chin create shadows which make the mouth appear to talk and give the puppet a bad-tempered look.

You may ask why I make so many shady characters, however, these design techniques need not necessarily produce negative personalities, even if they do happen to be easier. My more cheerful characters created in this way are nearly always comical or clownish-burlesque; caricatures in which I strive for the same quality Gulbransson achieved. Through caricature I also like to make 'inflated egos' laughable and try with negative characters to draw attention to and expressively emphasise the distinctive features of unpleasant character traits which people often try to disguise.

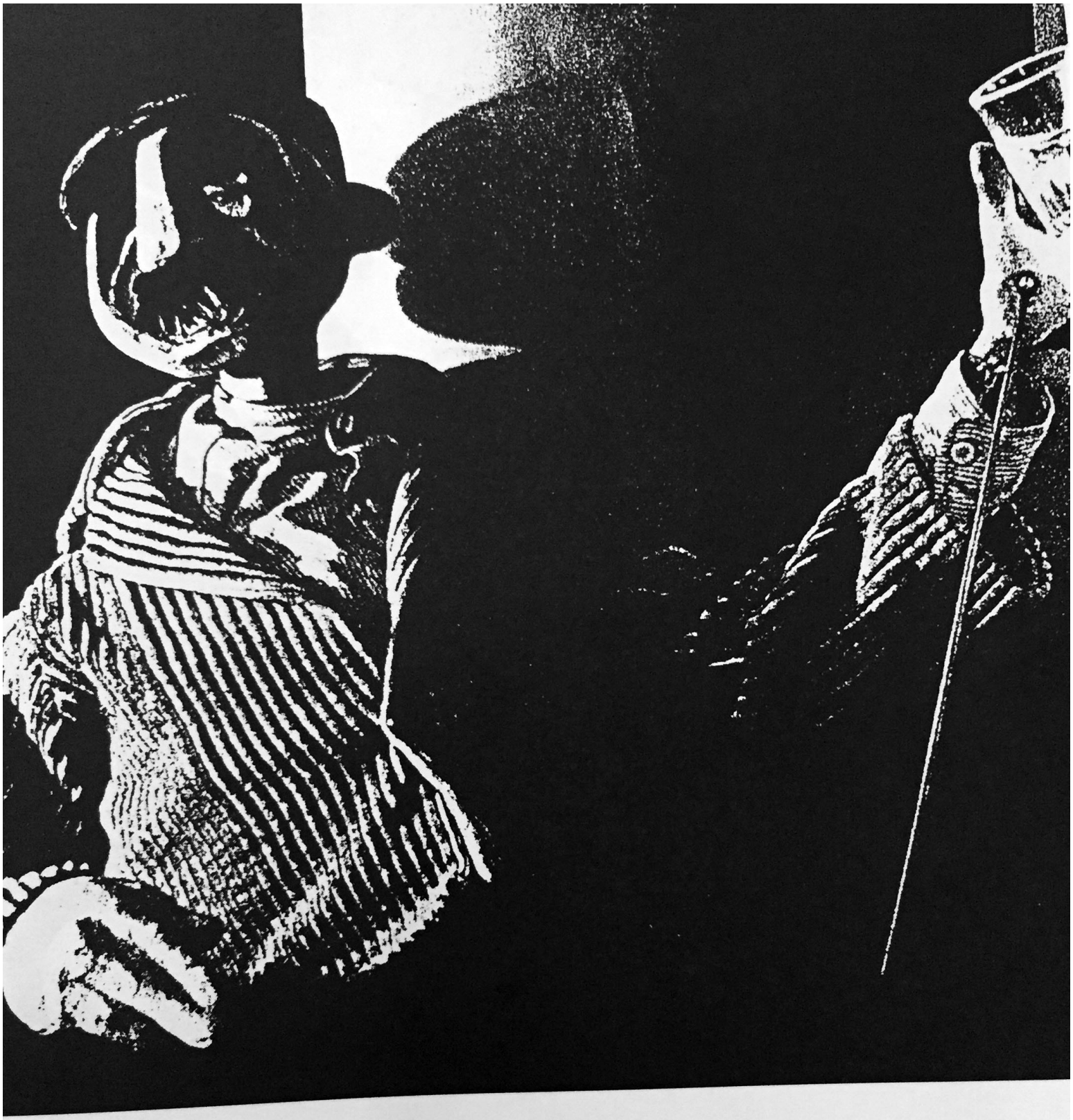
Construction of the Beggar's eyes



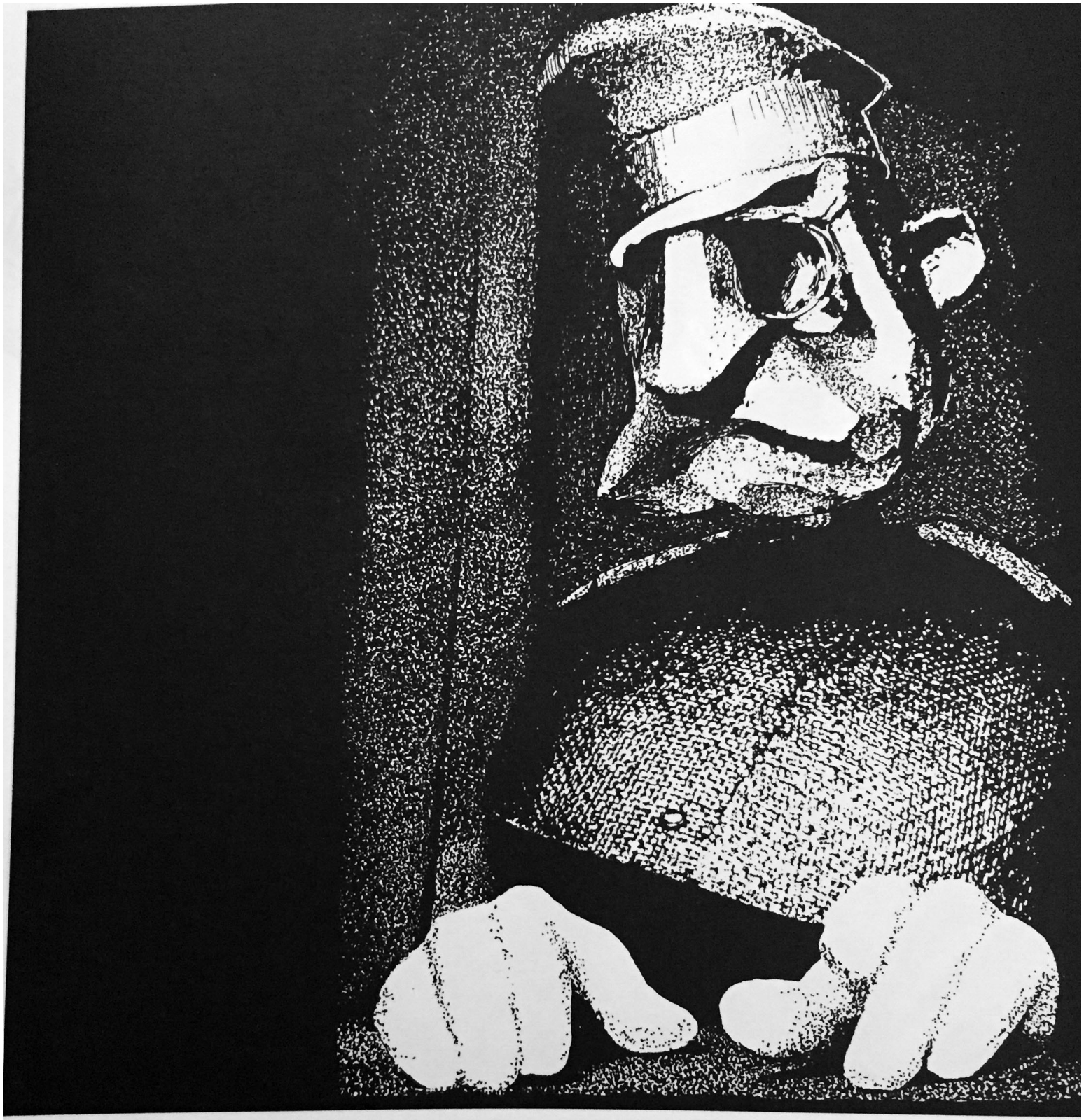
Beggar by the author for *The Threepenny Opera*



Pirate's Moll by the author for *The Threepenny Opera*



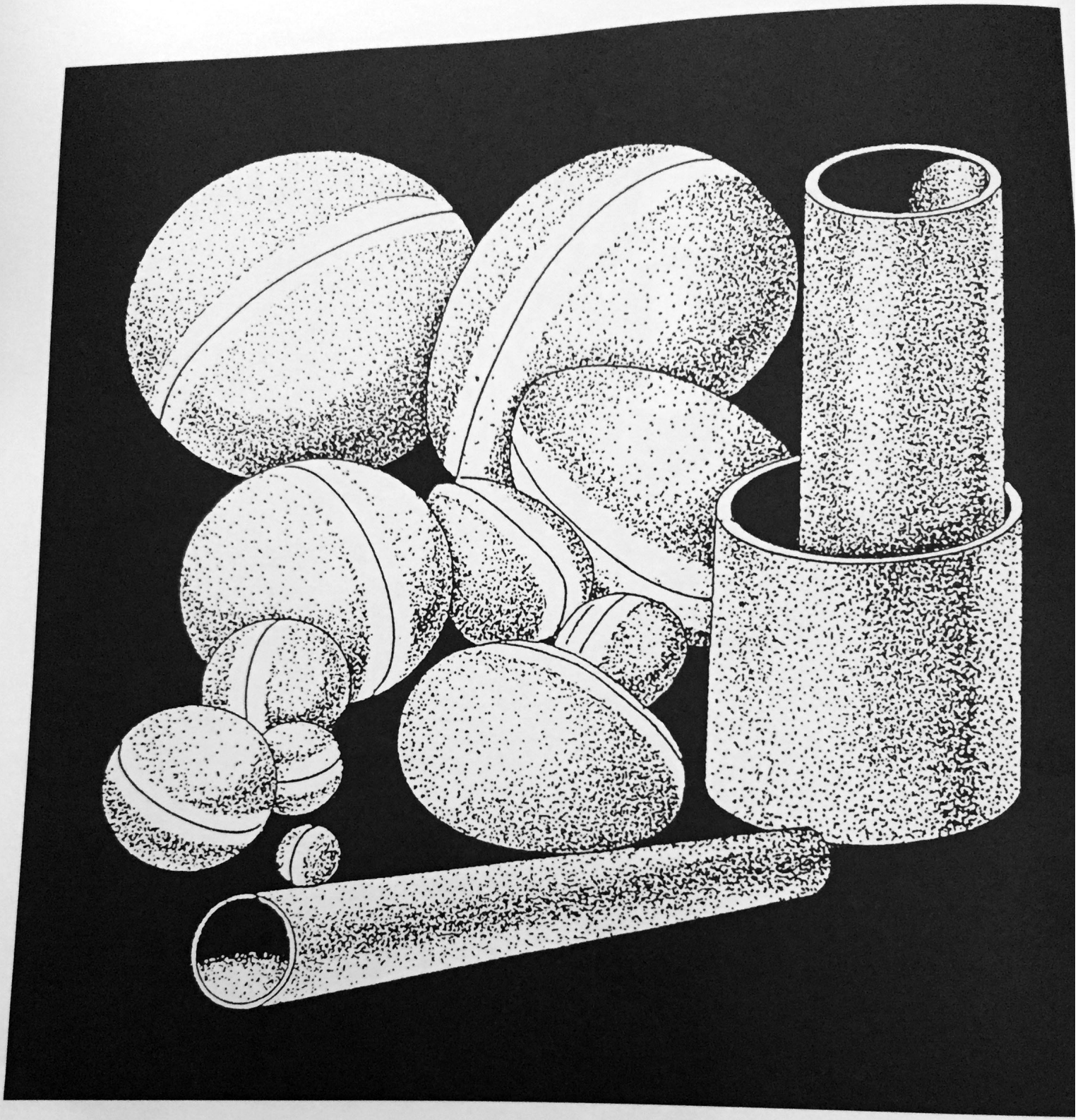
The Concièrge by the author for *The Threepenny Op*



Early version of Captain Brown by the author

Chapter Three

Working With Pre-formed Shapes



Pre-formed cardboard shapes

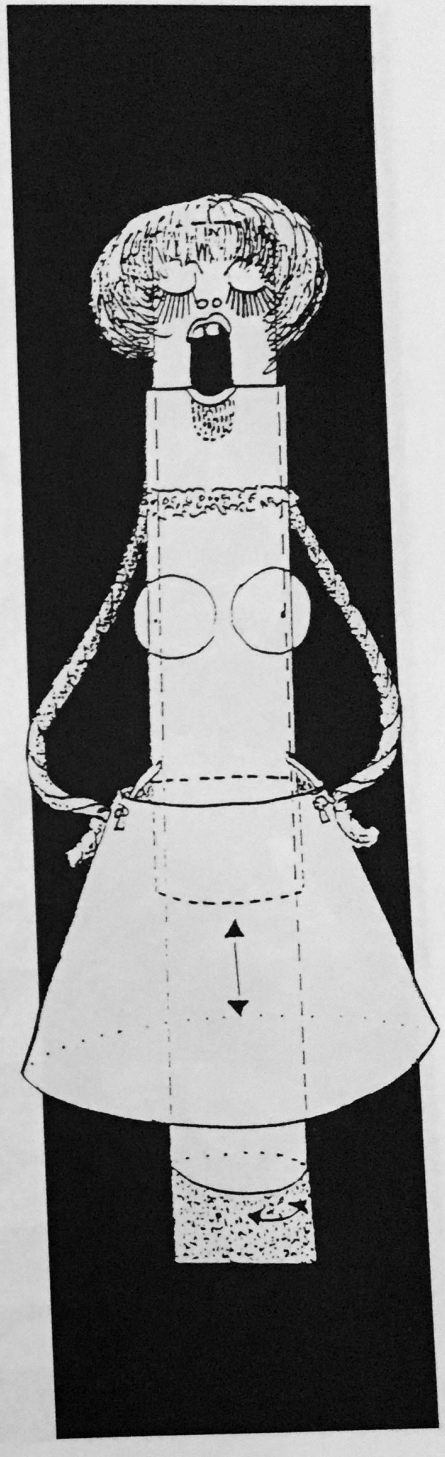
Anni Weigand and the Tube Puppets

After completing my teacher training, I was transferred to Stuttgart to take up a full-time teaching post. When I arrived, the town was already a notable centre for puppetry, and by the early seventies there were four permanent puppet theatres, if I count my own amongst them.

One of these was La Plapper Papp, under the direction of Anni Weigand. I first saw this company at one of the get-togethers of puppeteers so excellently organised by Beate Paulus, where they presented a show called *Röhrenpuppen* (Tube Puppets). What's that? I thought. Then came the surprise — a puppet cabaret, played at an incredibly snappy pace.

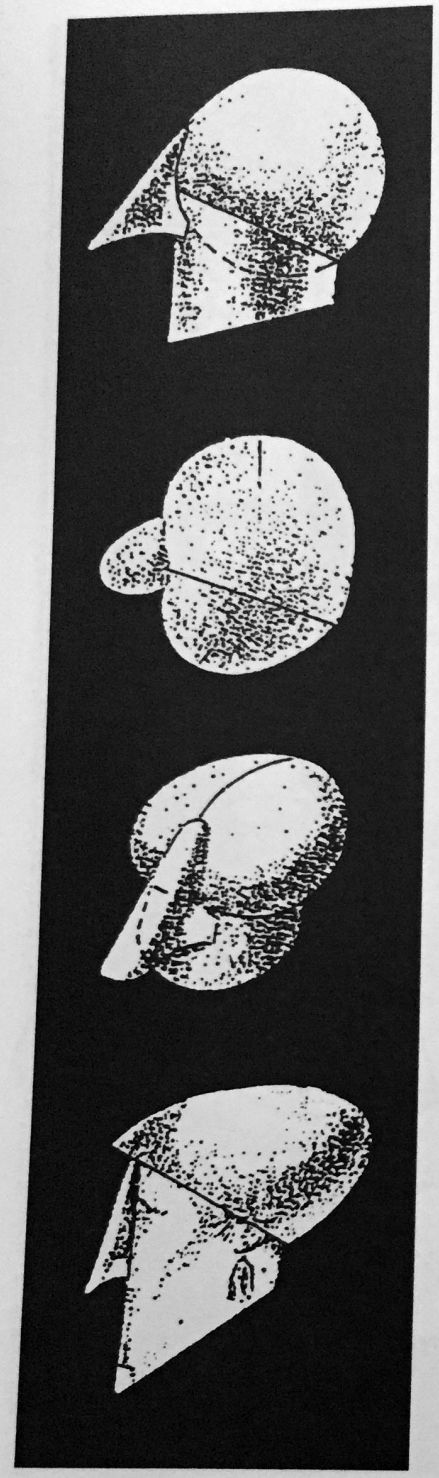
Each figure was made from two cardboard tubes, one fitting inside the other, which were cut so that the outer, thicker tube became the puppet's torso, neck and chin. In the example on the right, a cone-shaped cardboard skirt, fixed to the outer tube by two strings, covers the supporting hand. The other hand pushes the inner tube up and down with rhythmic circular movements, thereby making the mouth open and close whilst the arms and skirt automatically swing to the beat. The audience was thrilled by the company's style and humour!

This performance was the inspiration for an extensive programme of work with cardboard shapes that I developed over the years for myself and my students. I suddenly remembered the Easter eggs filled with sweets my parents had given me as a child, and how they were made of cardboard covered with silver paper. Many years later, I discovered similar eggs in the Gerstäcker catalogue* and ordered a small quantity with which to experiment. Little did I know how far this initial exploration would develop.



Rohrpuppe (tube puppet)

*Johannes Gerstäcker-Verlag, 53774 Eitorf/Sieg, Germany— suppliers of arts and crafts materials



Head forms made from cardboard shapes

Tubes, Spheres and Egg-shapes

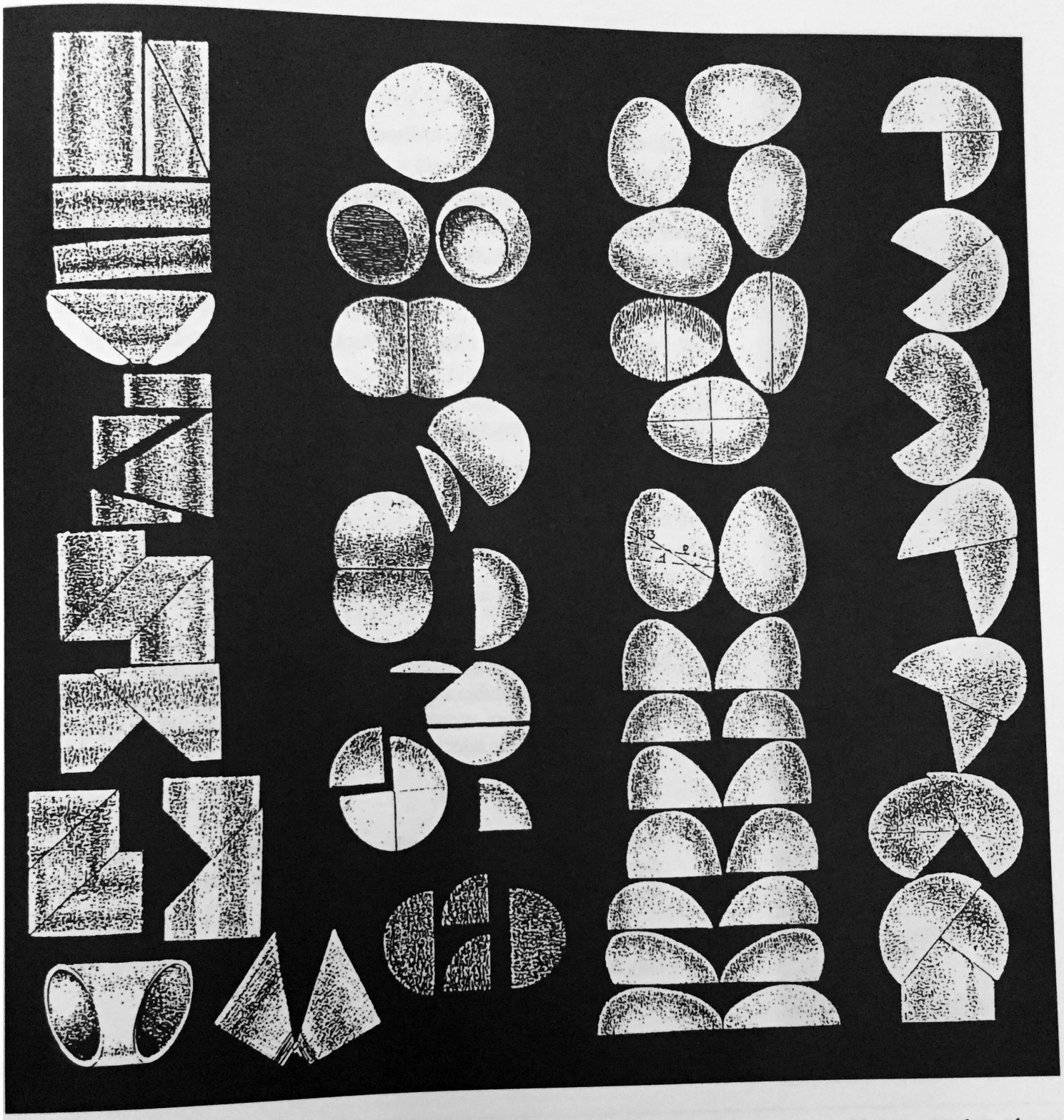
The drawings on the right give an idea of the cardboard shapes which constitute the working materials, and on the left are some examples of how they can be used. Ready-made cardboard forms are available from good craft shops. The spheres and eggs are made in two halves, lightly held together with paper tape.

It is advisable to take all spheres and eggs apart, even if they are to be used without alteration, in order to clean and sand the edges. This is best done by laying a piece of sandpaper on a flat surface, pressing the half-shape against it with a little pressure and rubbing the edges against the paper in circular movements. After sanding, the two halves are carefully fixed together with an all-purpose adhesive. The form is then ready for overcasting.

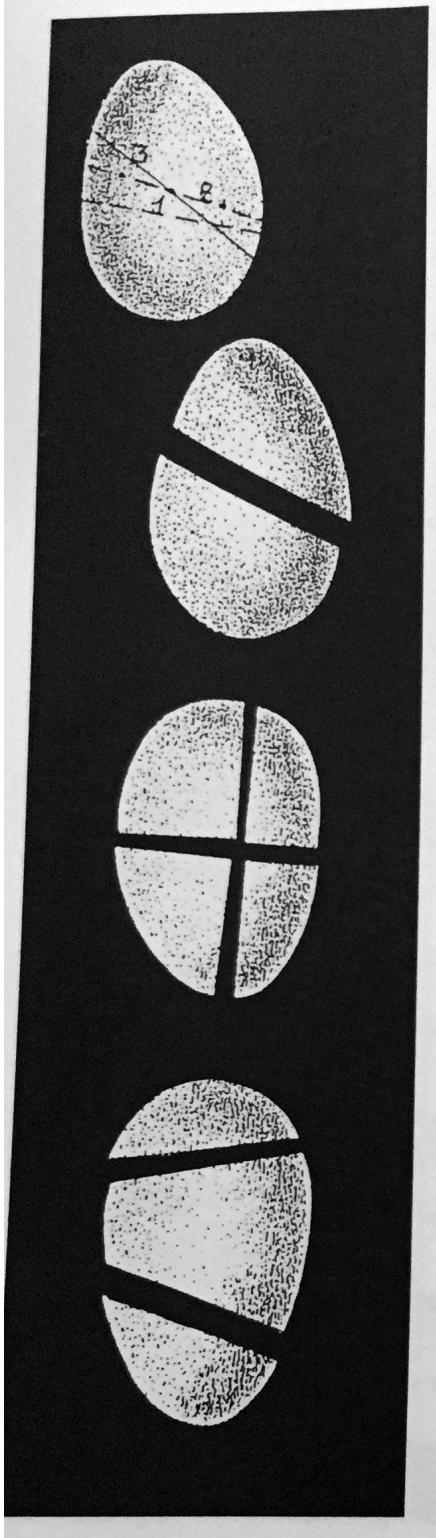
Cardboard tubes may be obtained free of charge from companies who use fabrics or plastic sheeting that comes supplied on a roll, as they are often glad for someone to take this waste product away.

If you have already used cardboard shapes, you will know how to work with them in order to preserve the smooth geometric surfaces, and what is not possible because of the nature of the material. This being 'faithful to the medium' soon becomes second nature, like riding a bicycle.

The diagrams opposite show different ways a tube, sphere or egg can be divided, which is best done with a fine-toothed bandsaw. It is a useful and interesting exercise to work out the maximum number of different cuts that can be made before the various shapes start to be repeated.



Various ways of dividing and combining tubes, spheres and egg shapes



Playing with Pre-formed Shapes

Working with pre-formed cardboard shapes offers so many possibilities that it is helpful to impose a certain discipline in order to achieve the greatest effect through the simplest means. I therefore devised the rules below and found them very useful, both in my own work and when conducting workshops.

Rules of the Game

1. Closed, ie whole, pre-formed shapes may be divided by simple cuts in order to make two, three or possibly four elements of any size.
2. Each element should be used, without any further alteration to its form, either as a new head or as one of the parts in a composite head.
3. There should be no wastage.
4. Shapes may be cut at any angle. Elements can be rotated through 180° and re-joined.
5. Elements may also be turned or rotated in any direction in order to select the most suitable side. Turning and rotating is an important part of the game because asymmetrical forms then change their appearance. The best position is selected for further work.
6. Symmetry is best avoided.
7. Basic elements can be combined with quarter, half and two-third elements as desired, so long as the size of the finished result relates to the other puppets in the set.
8. Holes in the top of the skull and bottom of the chin resulting from cuts may be closed.

'arious elements created by cutting a pre-formed egg shape

Ideas for Working With Groups of Children

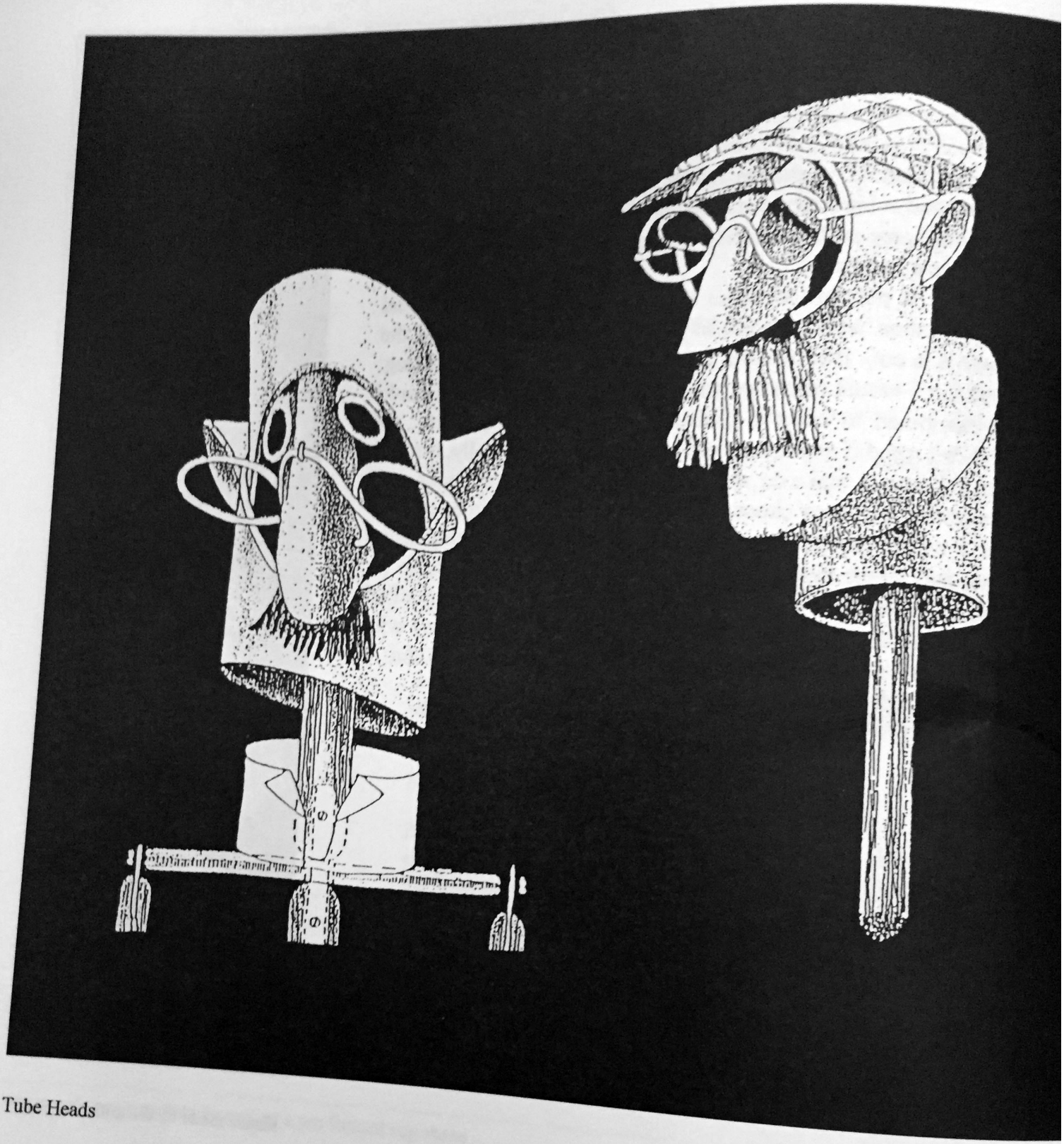
If you are a teacher or workshop leader wishing to work with cardboard shapes and achieve good results quickly, it is wise to prepare a large supply of spare parts yourself. It is, of course, too dangerous to let children use a band saw.

Basically, it is possible to make vertical, horizontal and diagonal cuts in combination with a choice in the size of the element and the place where it is cut. But beware, too much choice can be confusing. For this reason, I would often decide in advance which elements could easily be combined to make a head and marked them as sets. Of course, I didn't mind if elements were exchanged occasionally, but did advise the children to make do with a minimum number of pieces.

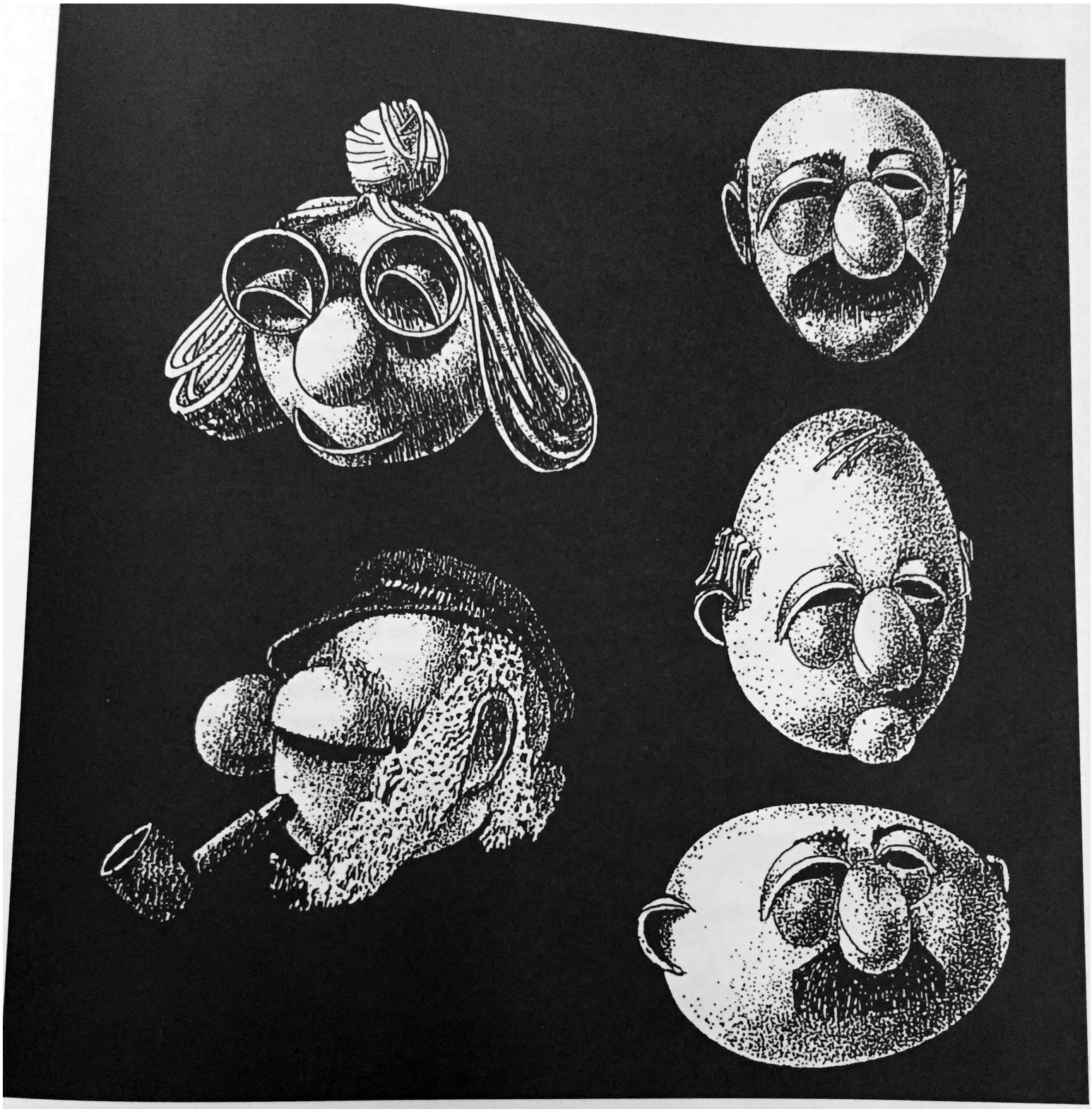
Before letting the class choose their elements and begin to assemble heads, I would explain the rules of the game. I would emphasise Rule Two, and stress that using scissors to make adjustments to an element to alter its shape was as out of order as playing with marked cards. This was almost always accepted — in fact, when those who didn't follow the rules compared their results with those who did, it was easy to see why it was better to do so.



Heads made by the author's pupils

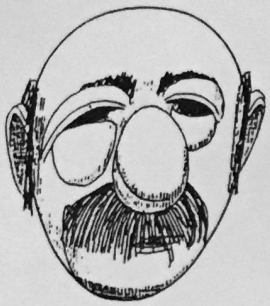


Tube Heads



Round Heads and Egg Heads









Tube Heads, Round Heads and Egg Heads

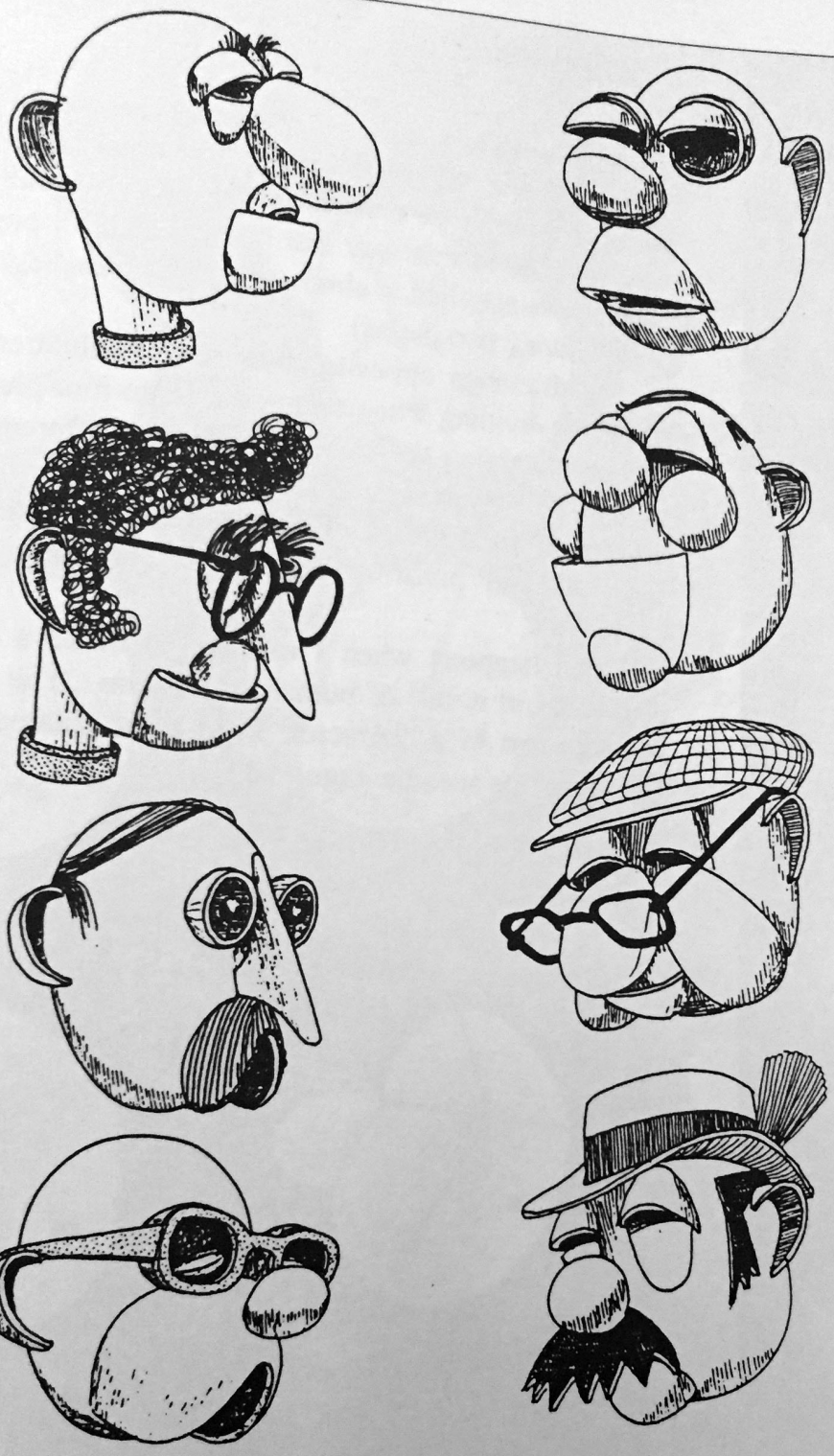
The previous pages show various examples of simple Tube Heads, Round Heads and Egg Heads. I use these terms not to be amusing but in the hope that the name will also serve as a description of the material or method used in the making process. This principle is applied throughout my work with pre-formed cardboard shapes.

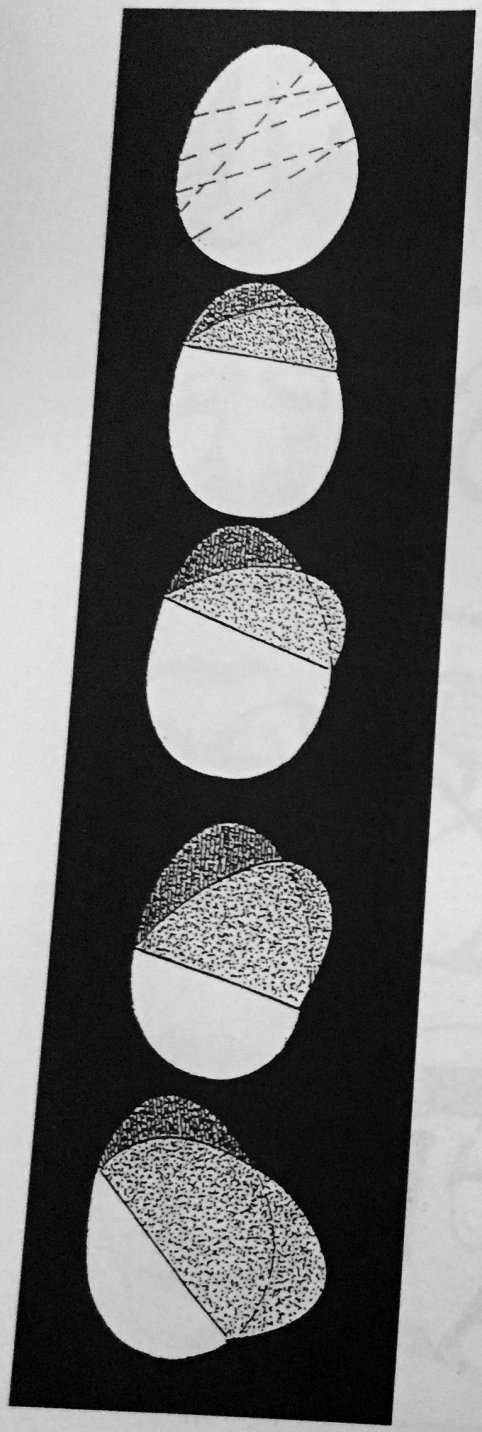
The three Egg Heads on the previous page were given identical facial features, thereby creating a definite family likeness although the basic shape of each head is different. Another way of making individual members of one family is to use different hairstyles, moustaches, glasses etc on the same head form (see left). The 'black sheep' of this family was created by putting a different nose between familiar eyes.

Observation of people and an interest in anatomy helps to develop an understanding of bone structure and how muscles and tendons work together. Such knowledge is useful when making facial features — such as sagging cheeks, or droopy eyes — from half or quarter egg-shapes.

Please note the shape and position of the eyes — both in terms of their relation to each other and to the nose, as well as to the direction of their gaze. In these examples, the eyes are formed from parts of spheres and egg-shapes, and care should be taken when attaching these elements or the eyes may end up looking in completely different directions. If the gap between the top and bottom lid is too wide, eyes can look empty and dead, whereas a dark, narrow slit will usually suggest an animated eye.

Above and opposite: Egg Heads



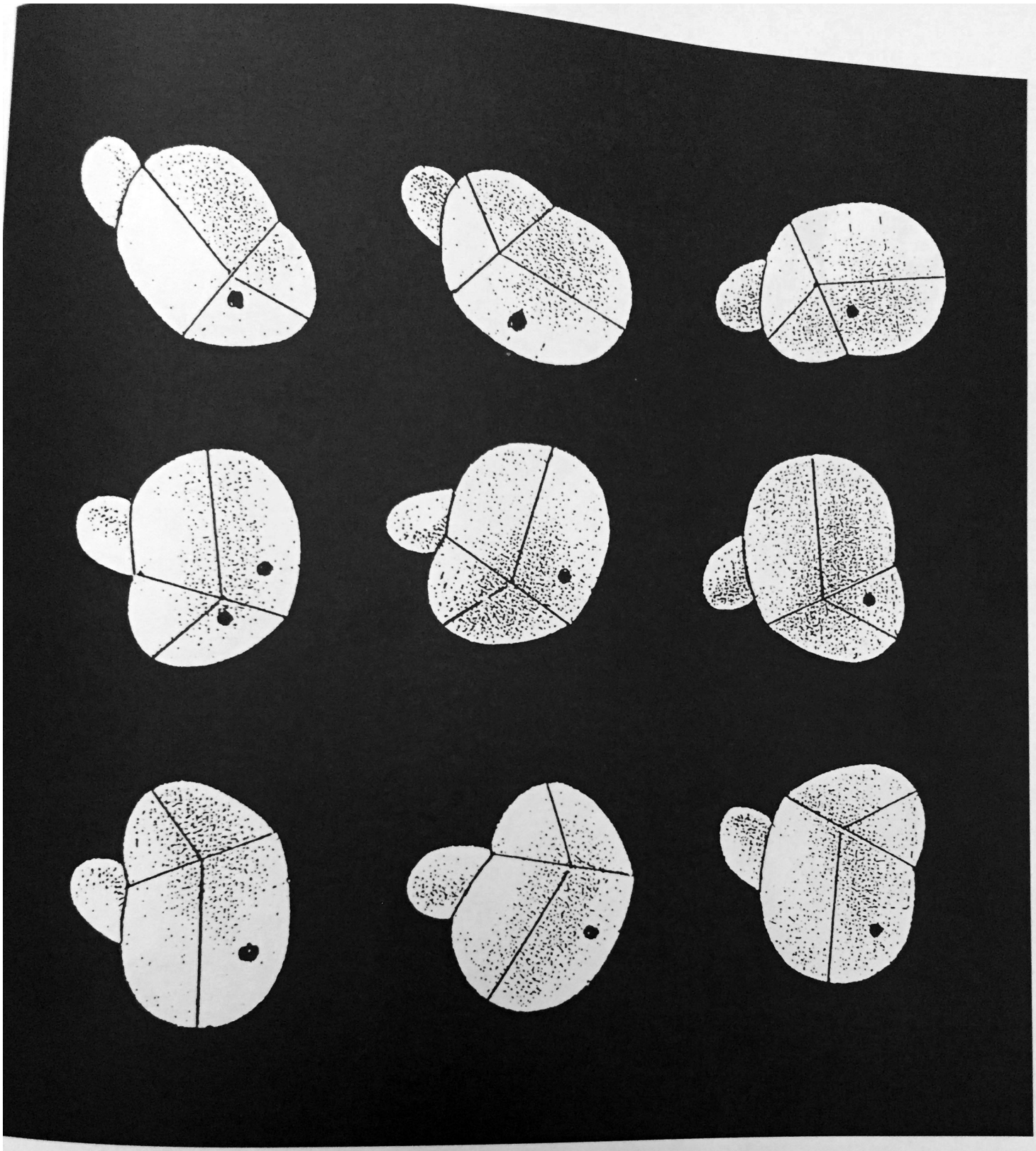


Rotated Heads

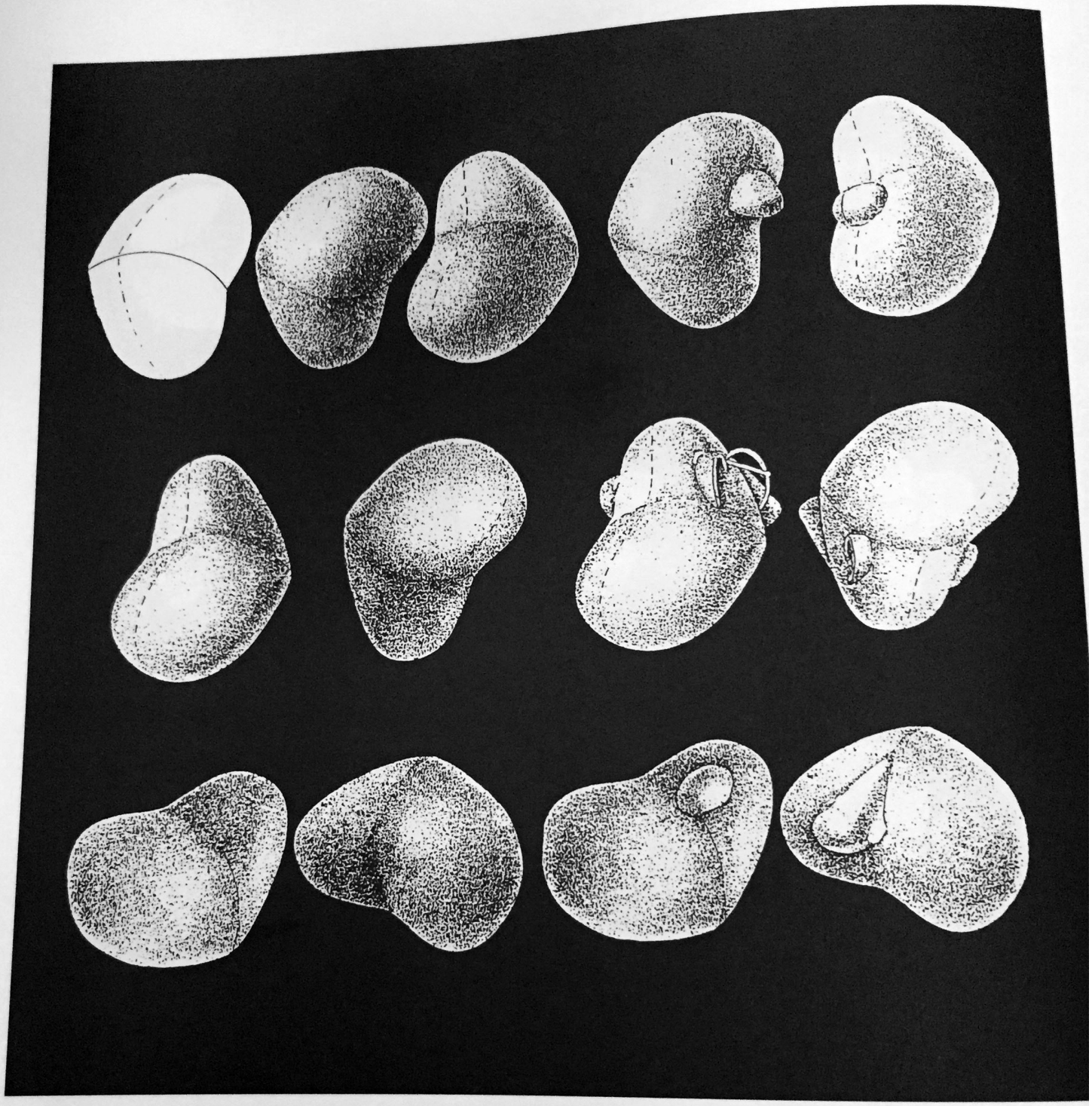
This name seemed appropriate for two reasons: firstly, because the two parts of an egg-shape cut through on a diagonal are rotated 180° before being re-joined (see column on the left). Secondly, heads which have been composed this way can be turned in all possible directions and have a nose attached at almost any point (see diagrams opposite and on the following two pages).

The drawings opposite show the possibilities of asymmetry produced by dividing a basic egg-shape into four pieces and then rotating and reassembling the elements. Totally different character types can be created by turning the resulting head shapes and by attaching the nose in different places. The large black dots suggest suitable points for the head pivot. Each place will create a different type of movement.

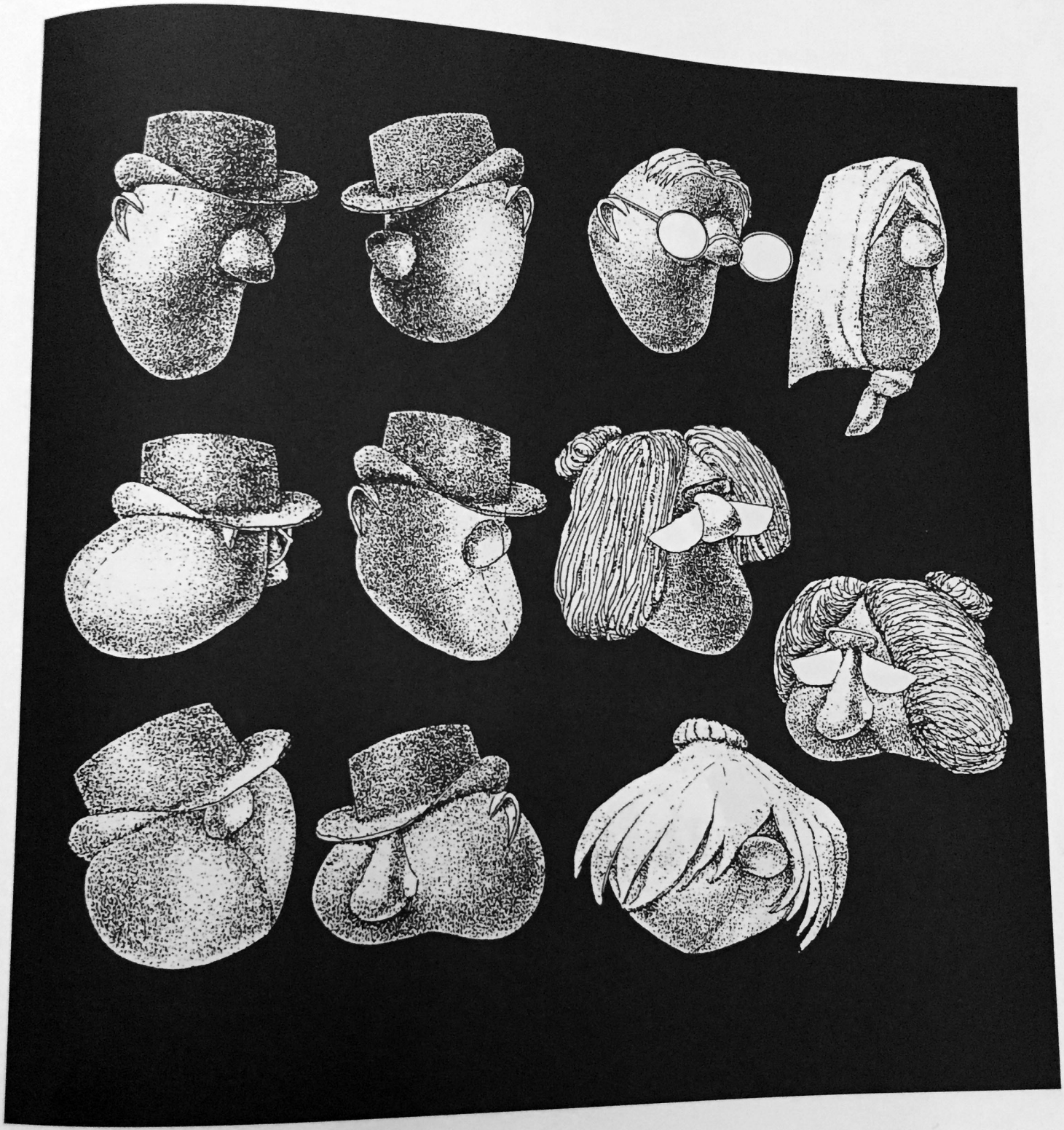
I feel happiest when I manage to make a head which has few elements but is full of human expression. The various stages in the development of a character, from basic rotated head shape to final figure, can be seen on page 110.



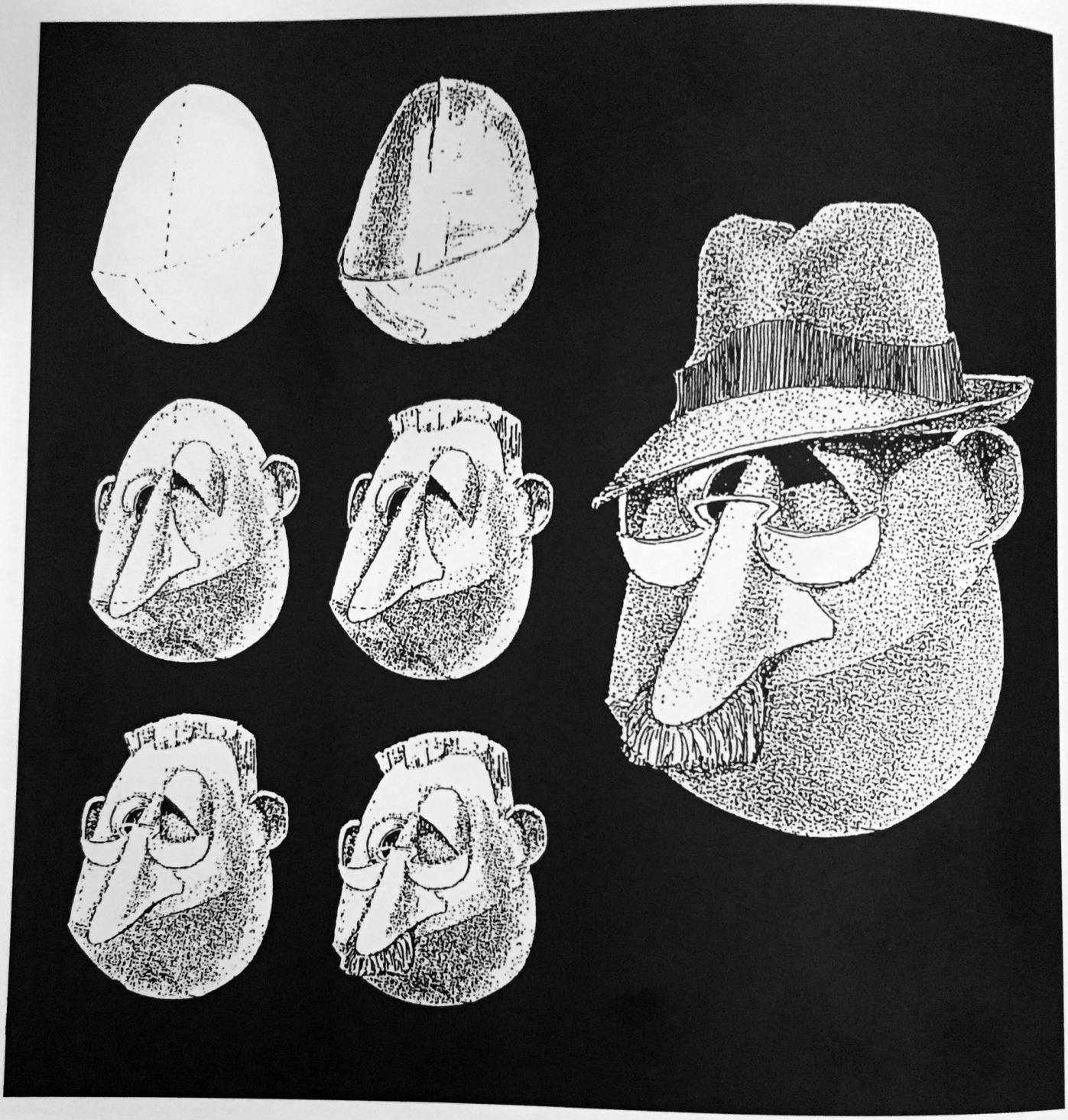
Various heads using one rotated form



Experimenting with a Rotated Head



Rotated Heads



Building a character from a Rotated Head

Rotated Heads with Cut-Out

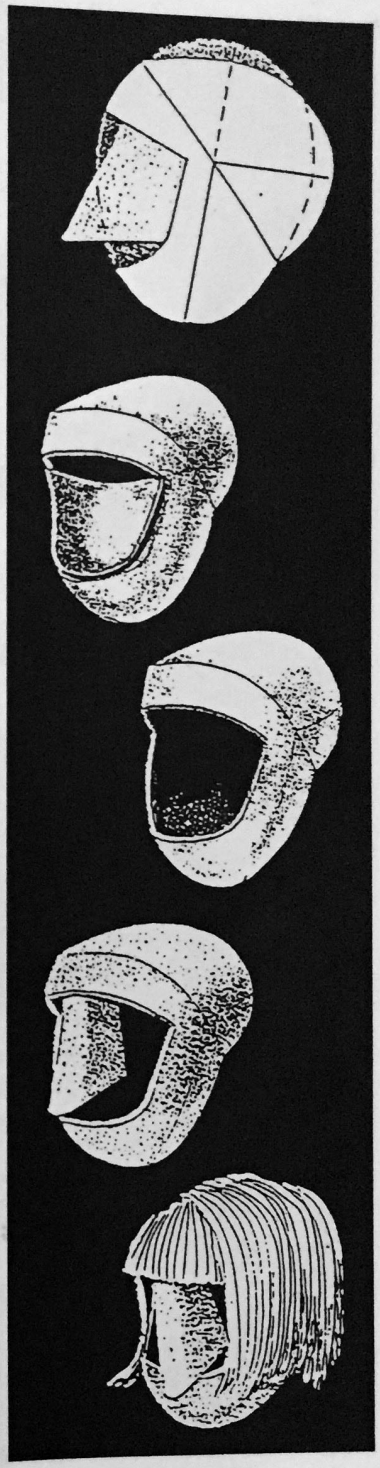
It was a long time before I dared break my Rule No.2 and cut a 'window' out of a rotated head. As an experiment, I made two cuts — the first below the forehead, where I imagined the bridge of the nose to begin, and the second to meet the ends of the first as exactly as possible. The finished result is shown in the diagrams on the right.

This basic form gave rise to the possibilities shown in the first six drawings overleaf. The cut-out section appears to float in front of the hole, and looks like an over-sized nose. As the cardboard has a certain flexibility, it can be bent to make different nose shapes.

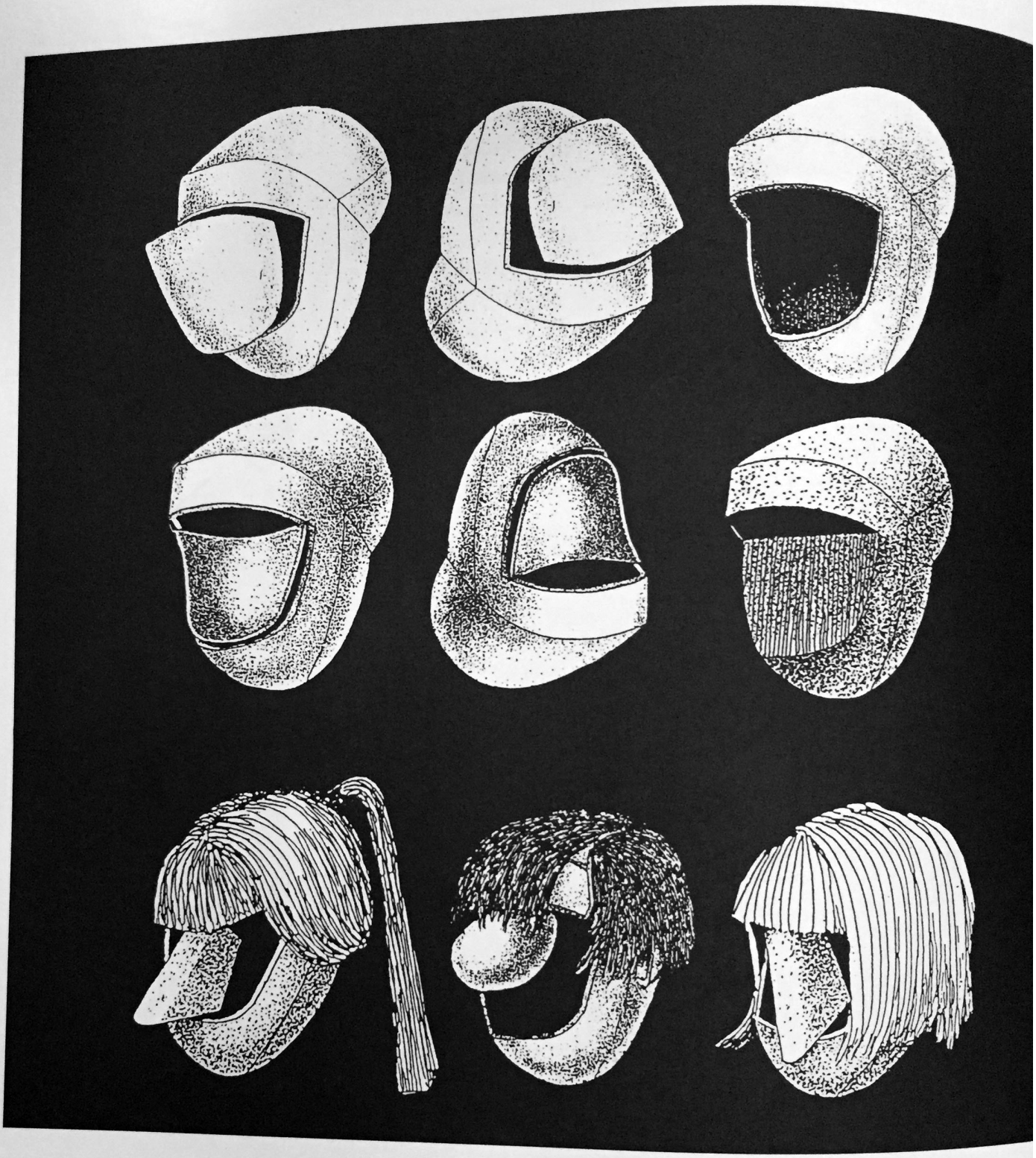
The biggest problem is often how to make a durable connection for free-floating parts such as these. The problem was once solved with *Agoplast,** but nowadays I would have to use fabric soaked in PVA adhesive.

The head on page 113 was developed from a Rotated Head with cut-out, whose opening has been closed with pieces of card.

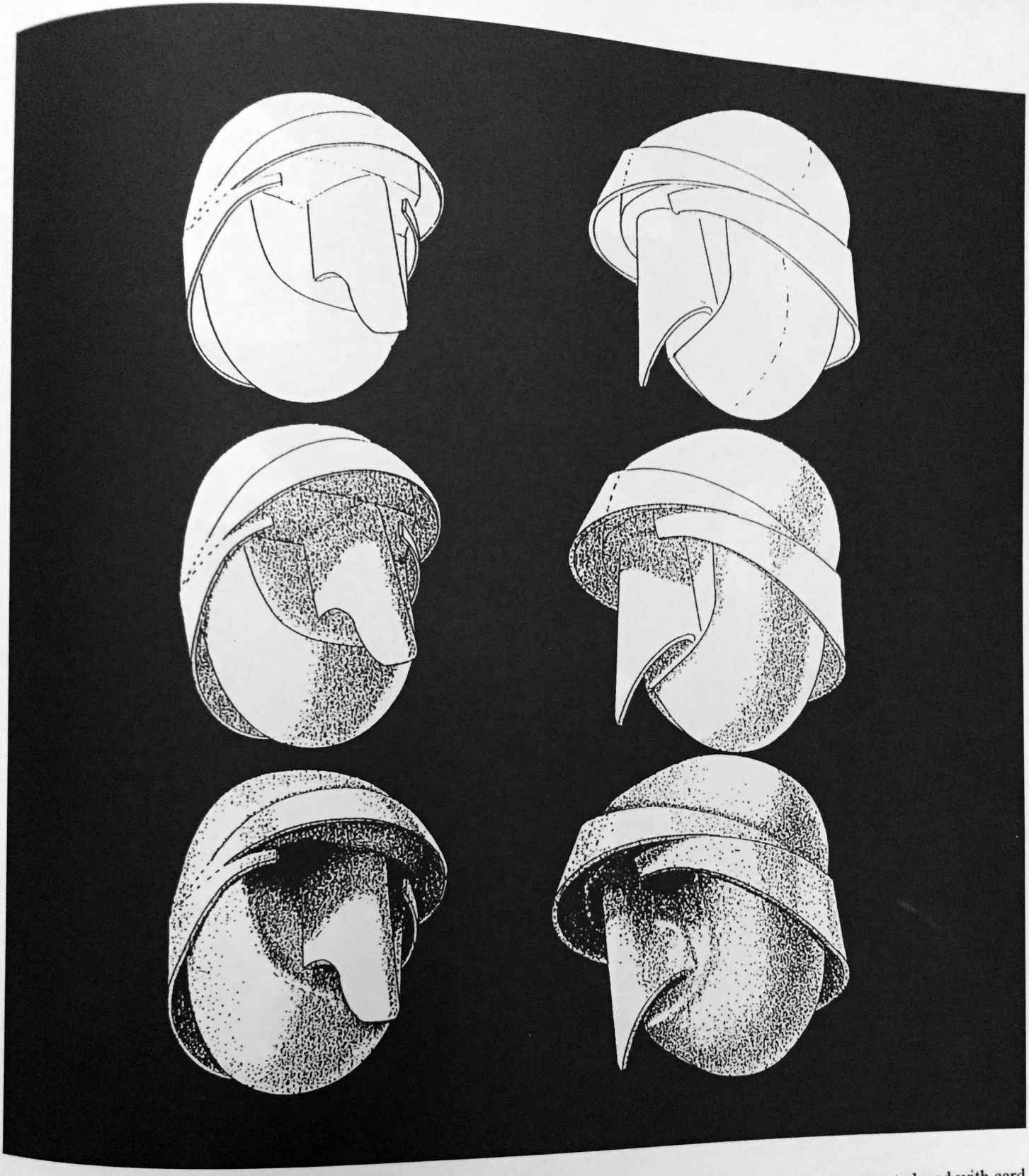
* Agoplast: see publisher's note on page 65



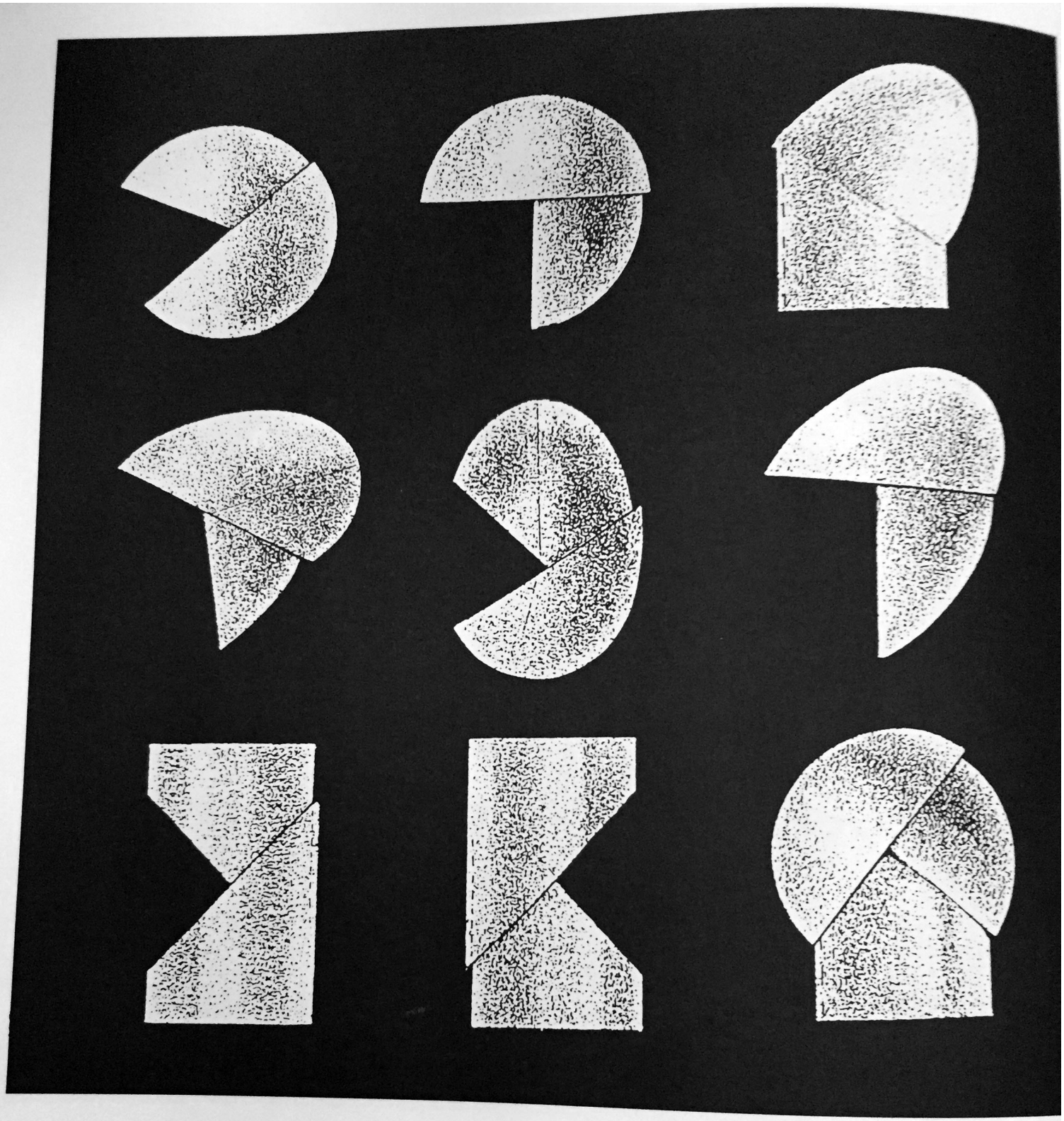
Making a Rotated Head with cut-out



Rotated Heads with cut-out



Rotated Head with cut-out closed with card



Principle of Wedged Heads

Wedged Heads, Percenters, Squeezed Heads and Owls

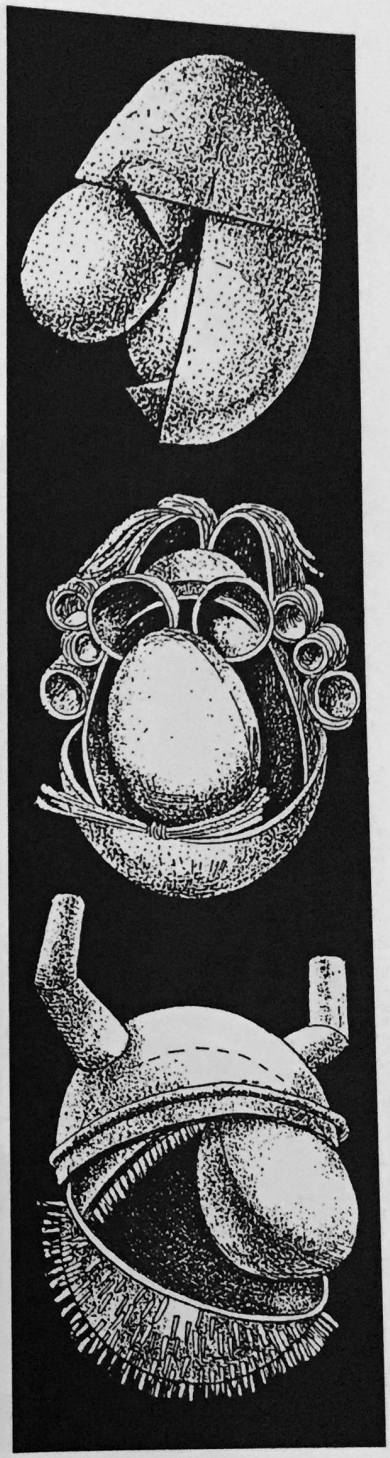
On the right and overleaf are examples of Wedged Heads, so called because the two parts of the original shape are wedged into each other before being fixed (see left). Holes can either be left open or are closed with a lid made from card, depending on whether you want to see into the hollow of the head or not.

The heads shown on page 117 have been made with two eggs of the same size, each cut asymmetrically. I couldn't think of a good name for them and therefore describe them according to how much of the original form is used in their making, ie the two on page 117 are 70-Percenters and the three heads at the top of page 116 could be described as 150-Percenters.

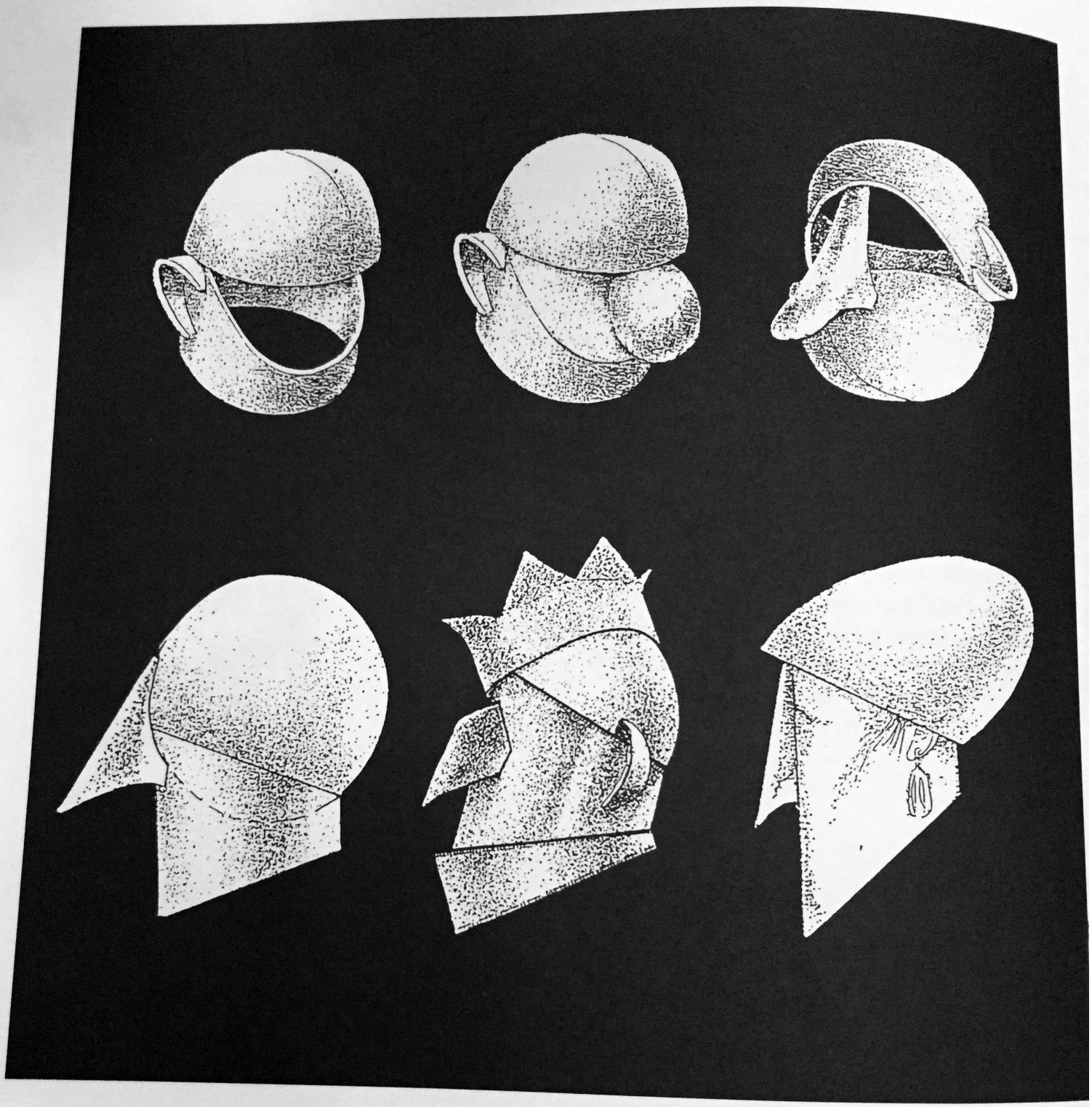
Overleaf are further examples of Wedged Heads in which elements from different shapes have been combined.

Page 118 shows the stages of making a Squeezed Head, which got its name because the largest of its two parts is squashed a little before being glued to the smaller.

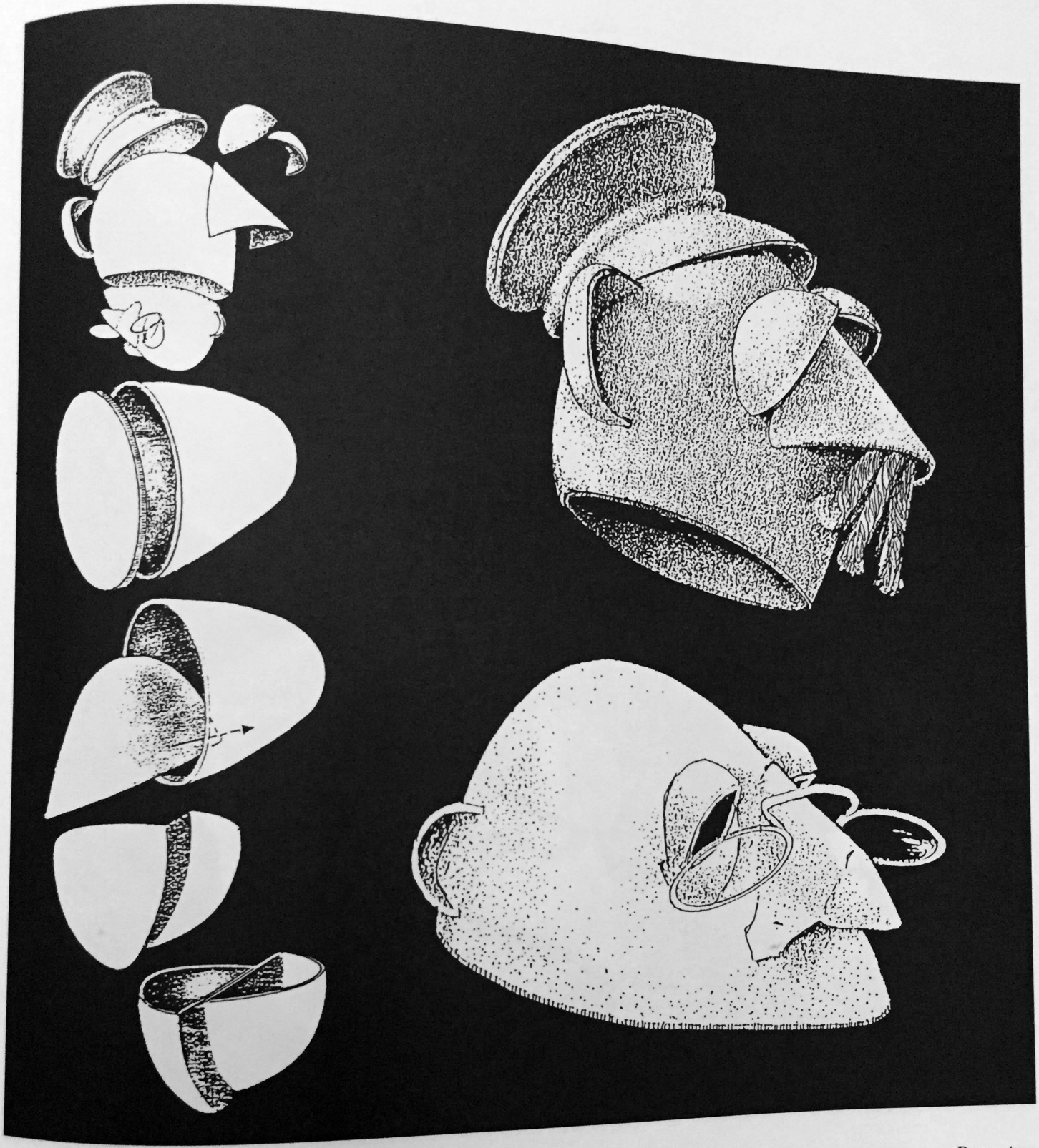
The Owls on page 119 were inspired by the exam figures described on page 76, which have a hole behind the bridge of the nose to affect the play of light and shadow.



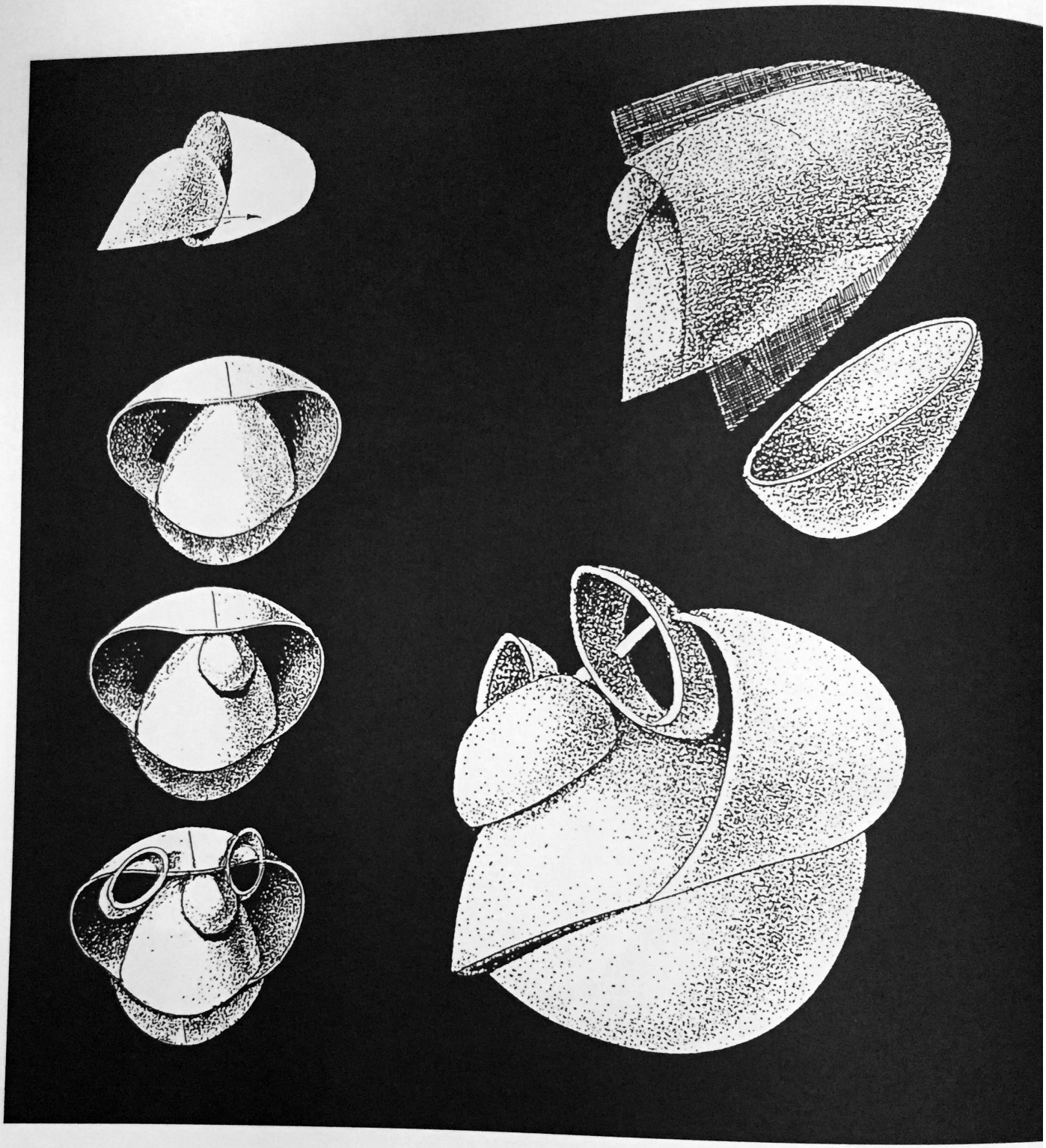
Wedged Heads



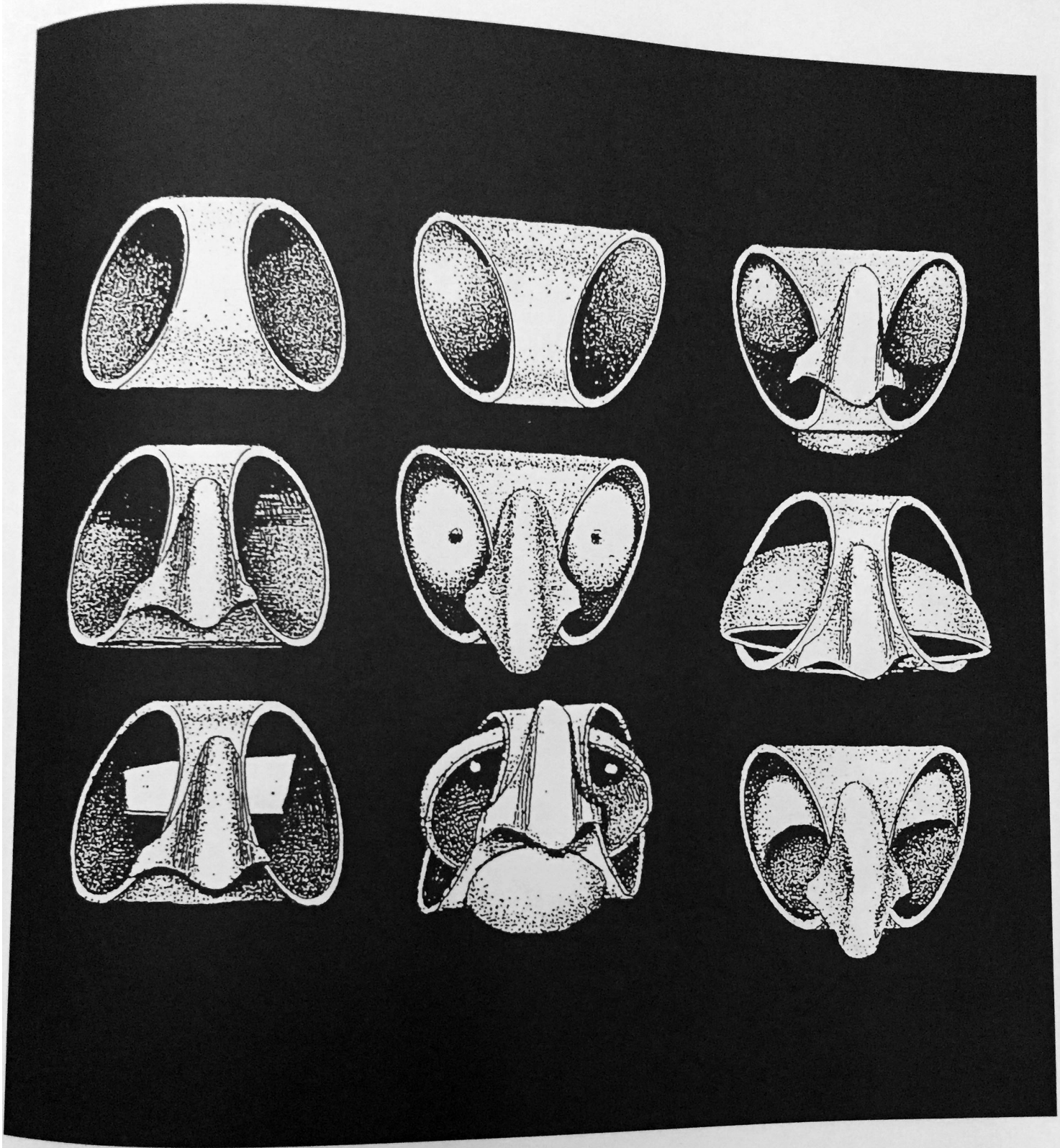
Wedged Heads



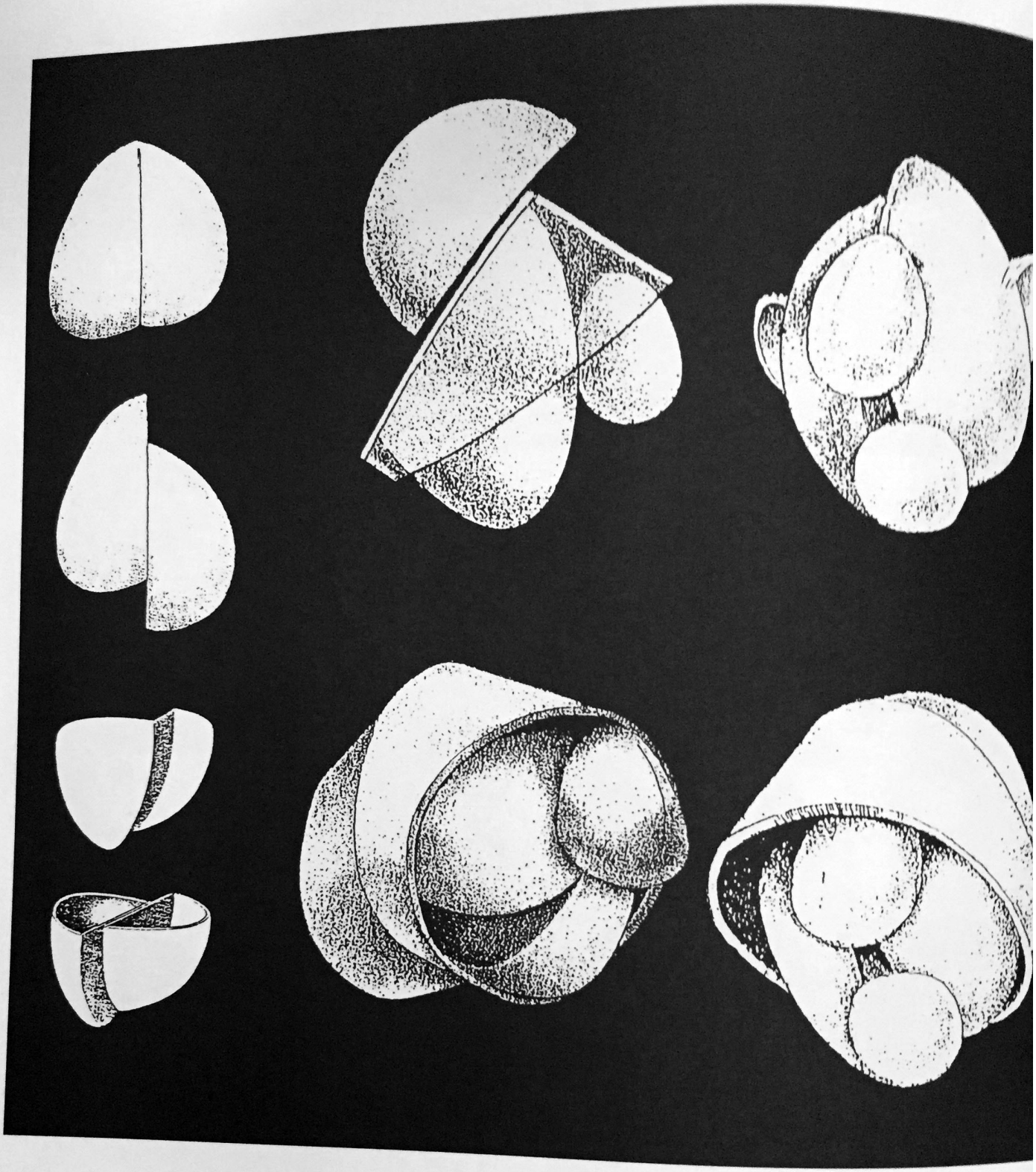
Percenters



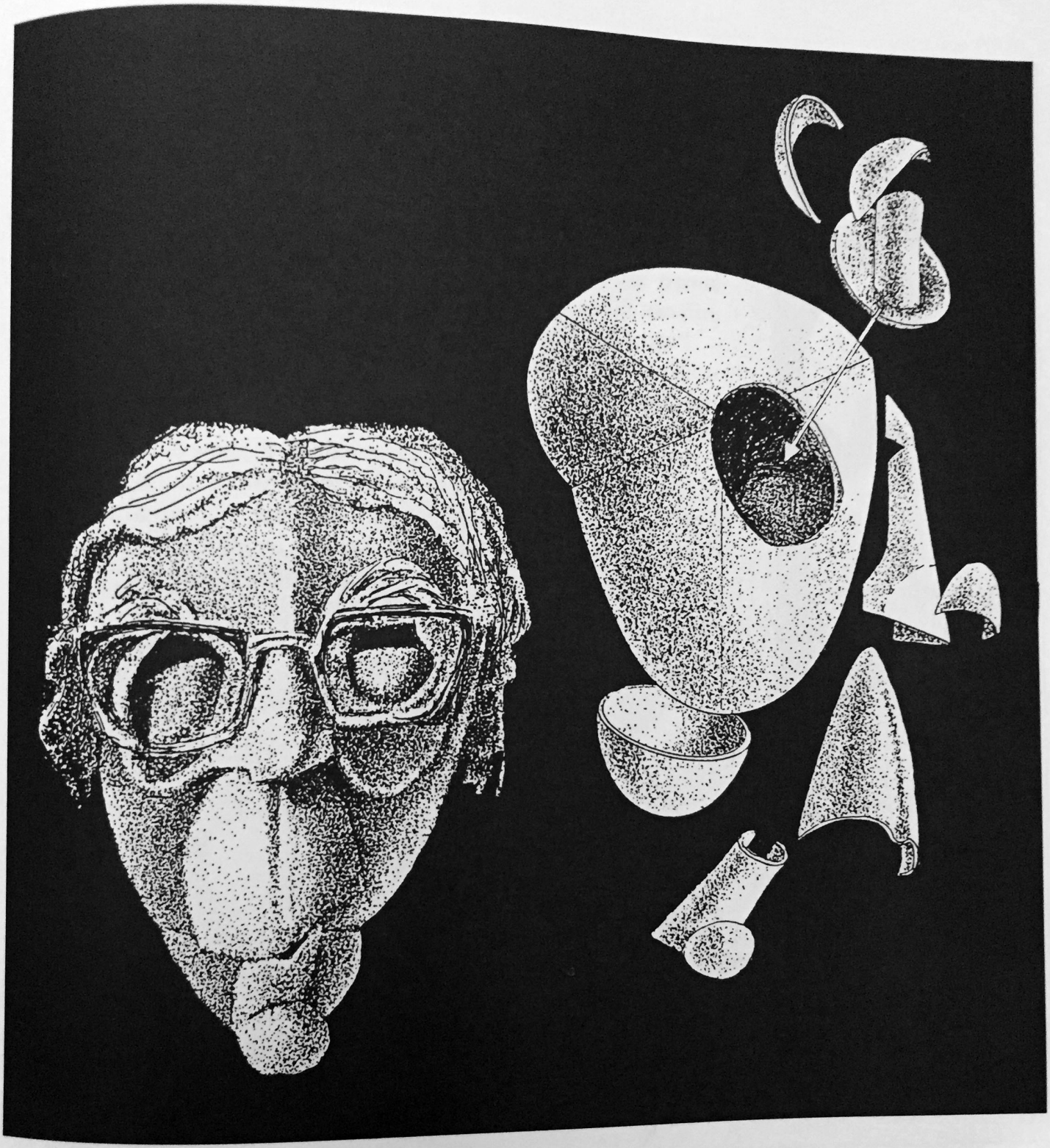
Making a Squeezed Head



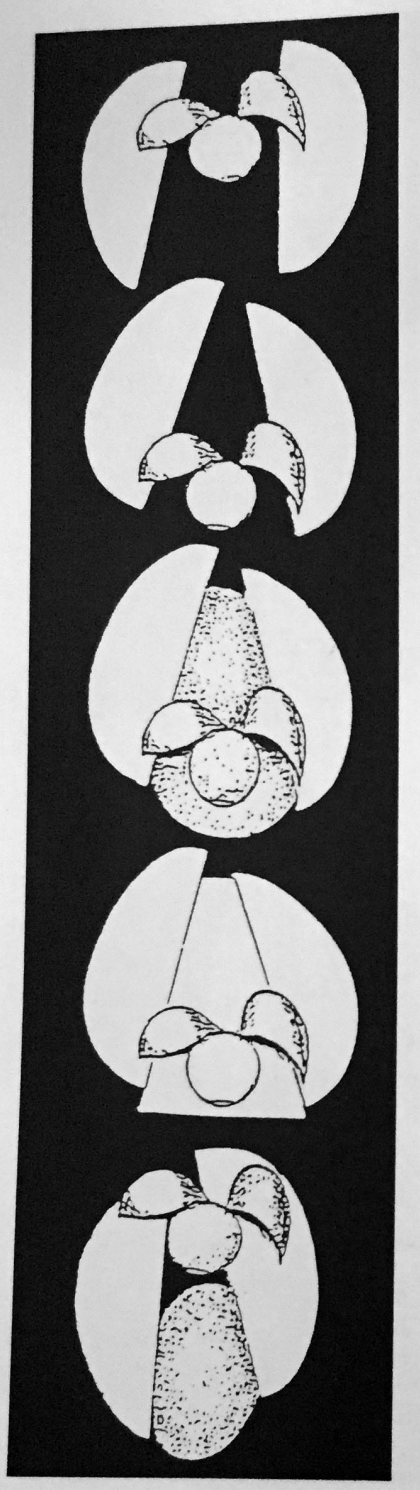
Owl Heads



Heads made from displaced elements



Grandmother made from a Rotated Head with cut-outs, together with a diagram of its parts



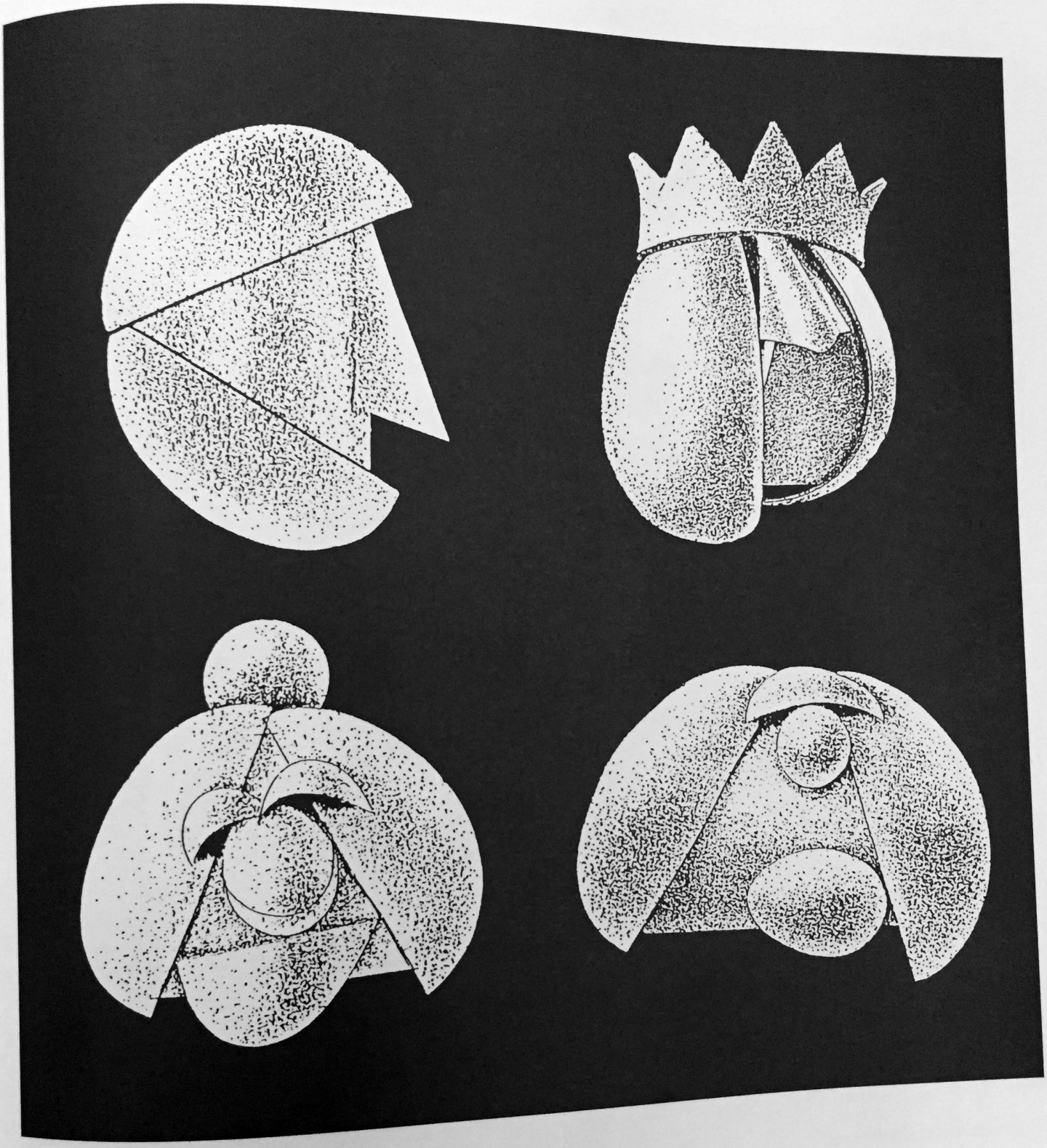
The Cardburger

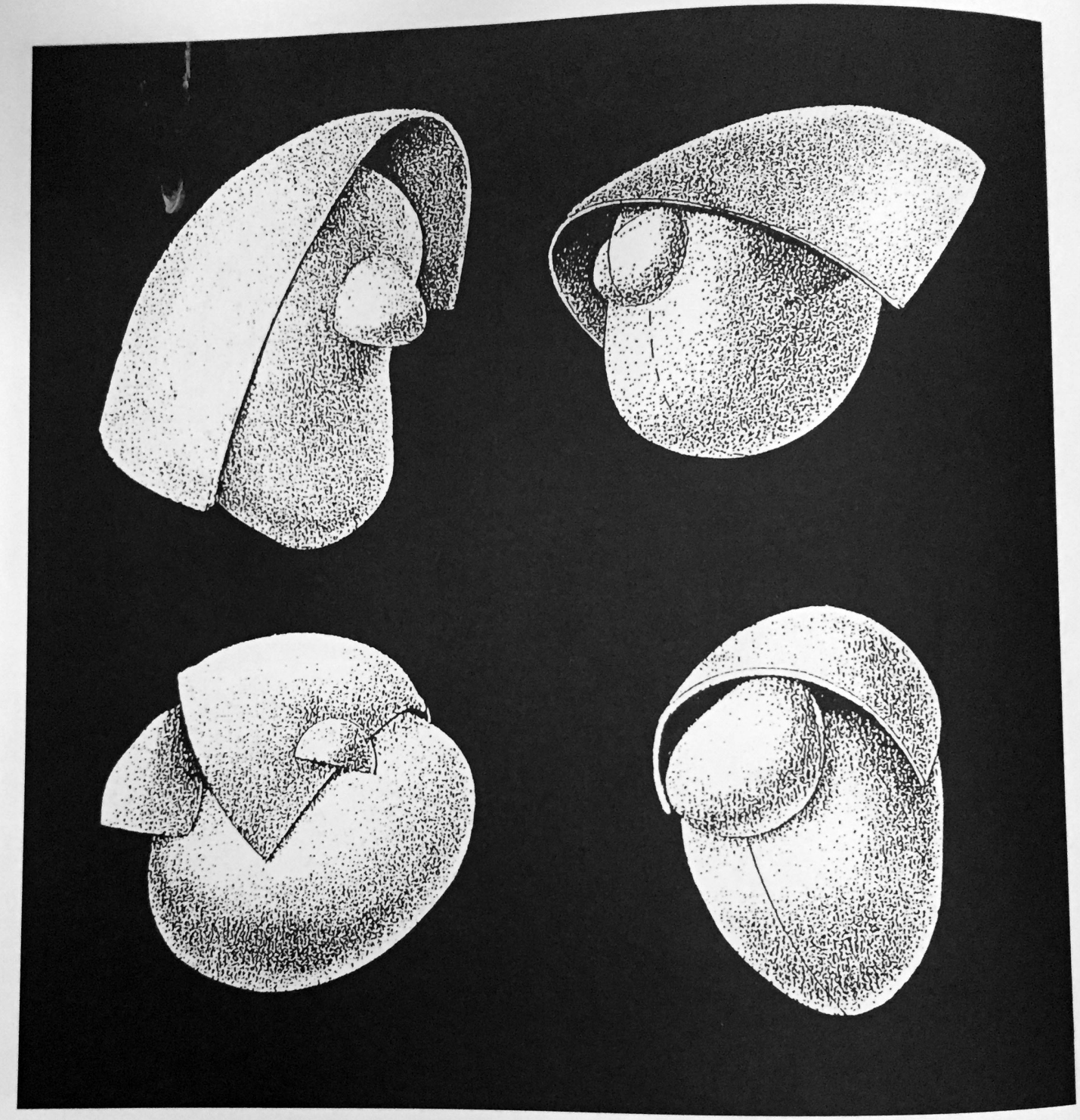
I used to call this type the Sandwich, but following the publicity by a well-known fast food chain, and because 'burger' reminds me of 'Bürger' (the German word for citizen), I now prefer the name Cardburger. As you can see from the diagrams on these two pages, almost anything can be stuck between two shells or lids to create different forms and effects.

Page 124 shows variations of a model similar to the Cardburger, which is basically made with one whole form, a large quarter sphere or egg-shape, and a nose. The simplicity of these 125-Percenters is what makes them so captivating.

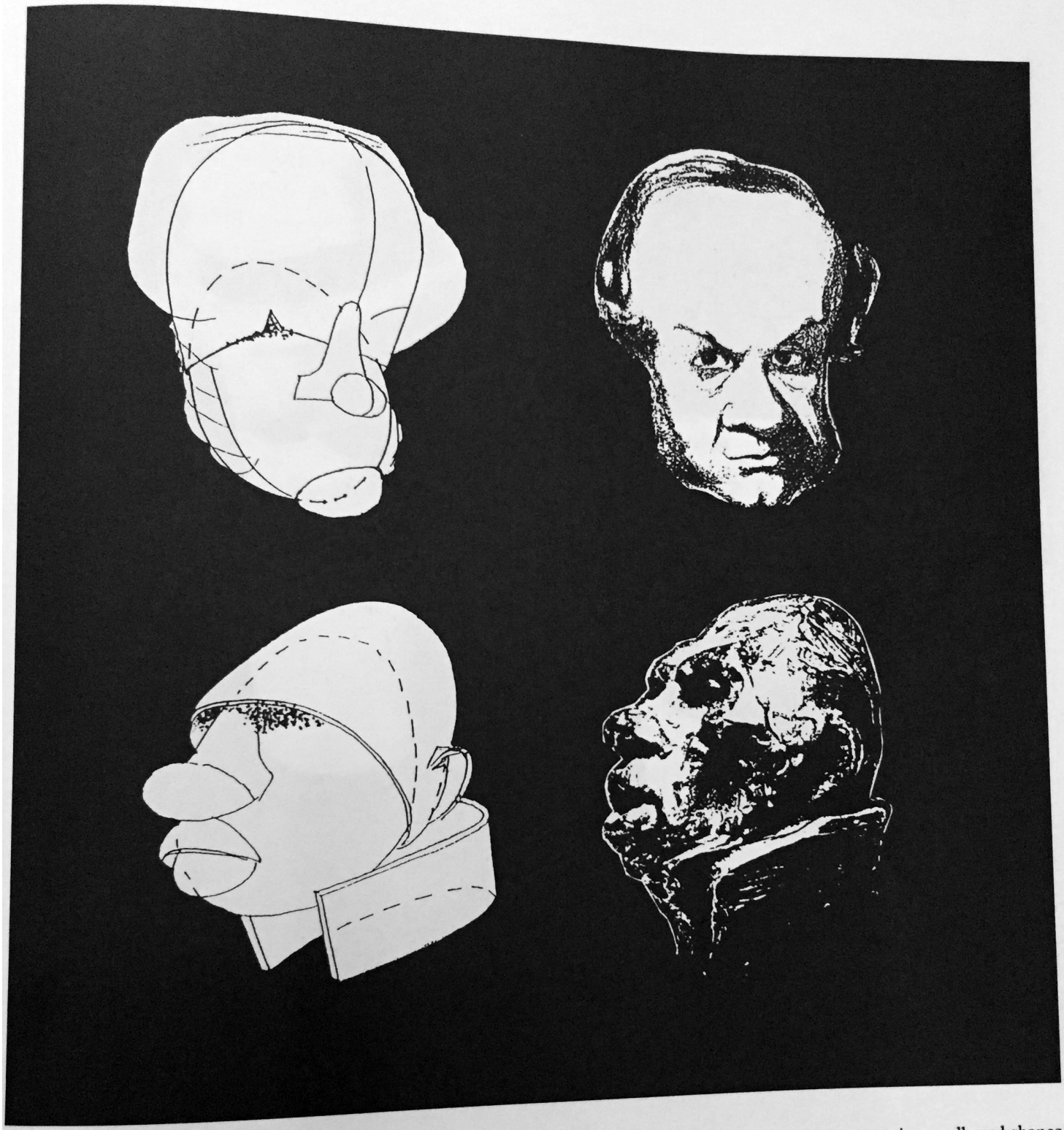
Before we leave this section, I would like to show how it is possible to use cardboard elements to create heads which can be acceptable portraits and caricatures of people. On page 125 are a print and a bronze by Daumier, together with sketches by myself in which I try to capture the character of the faces using cardboard shapes.

Above and opposite: Cardburgers

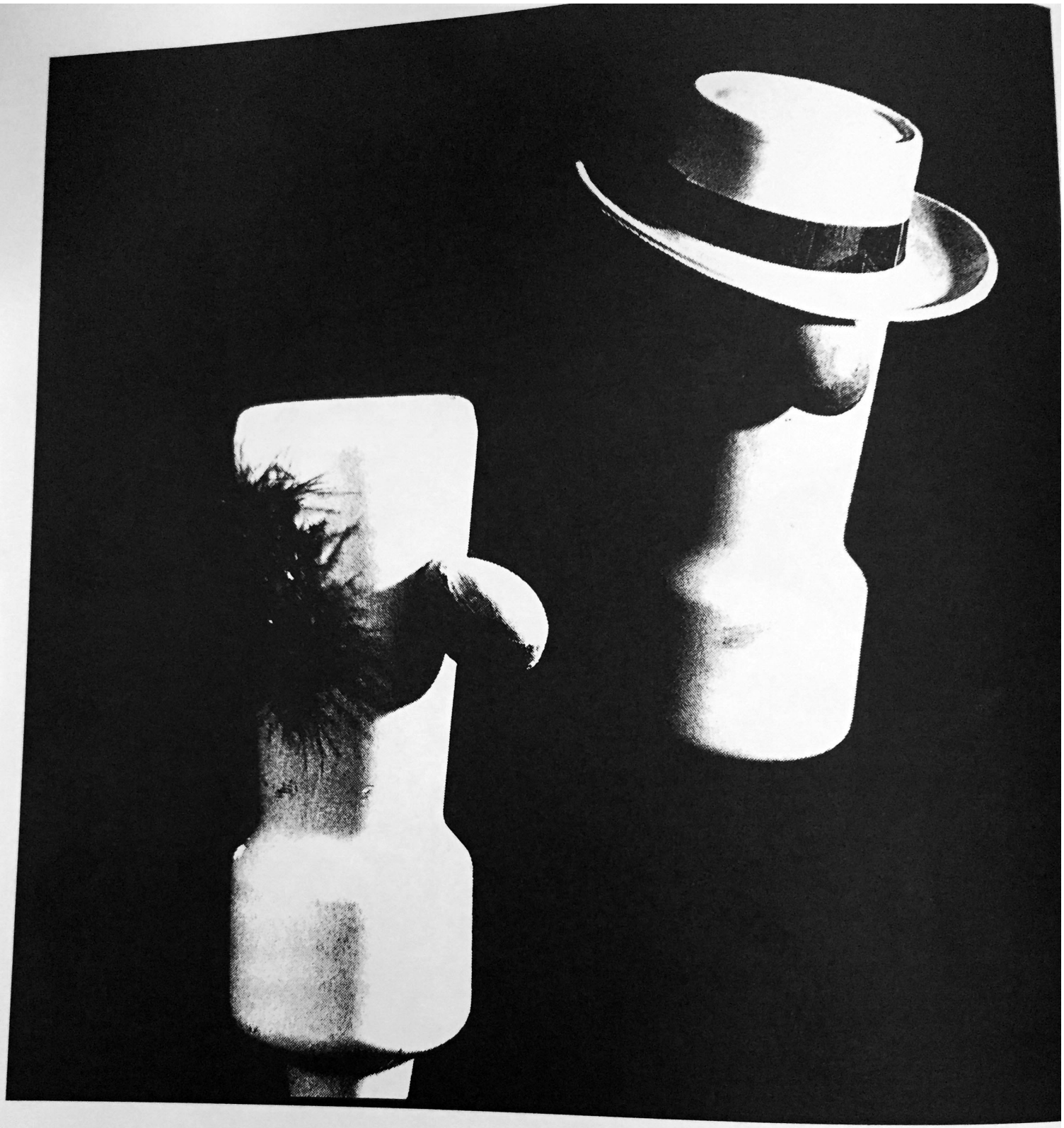




Variations on the Cardburger



Portrait caricatures using cardboard shapes



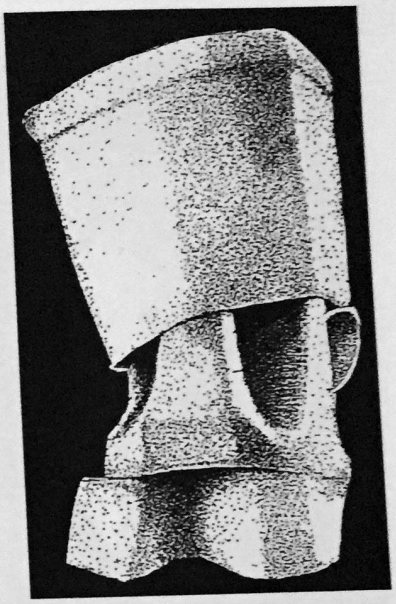
Heads made from plastic bottles

Puppets from Plastic Bottles and Household Utensils

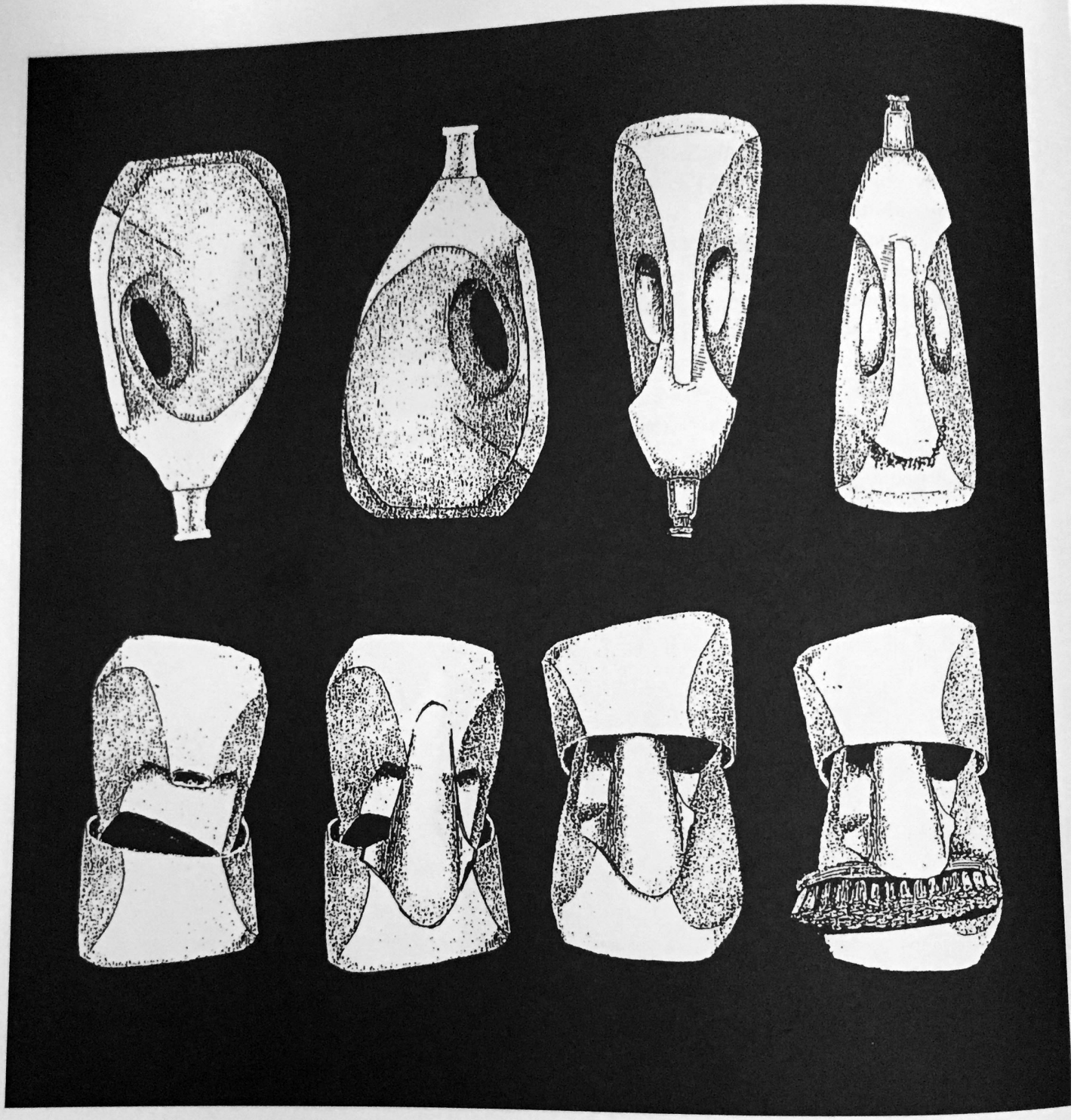
Picasso once made the head of a bull by putting together the handle bars and saddle of a bicycle. It hangs in a museum and, despite the negligible value of its individual parts, is a recognised work of art.

Everyday objects can be used to make effective puppets. In my book *Kleine Bühne grosser Spass* (which was never published in English and is now out of print) I explored, in passing, the subject of making puppets from plastic bottles. Many years later I moved to France and discovered the large two litre *Candia* milk bottles made of thin, translucent white plastic. Their suppleness and adaptability inspired me to make new experiments. Opposite and on pages 128 to 131 are some of my earlier results using *Lenor* and other washing up bottles. Pages 134 to 138 show various heads made from the softer French bottles.

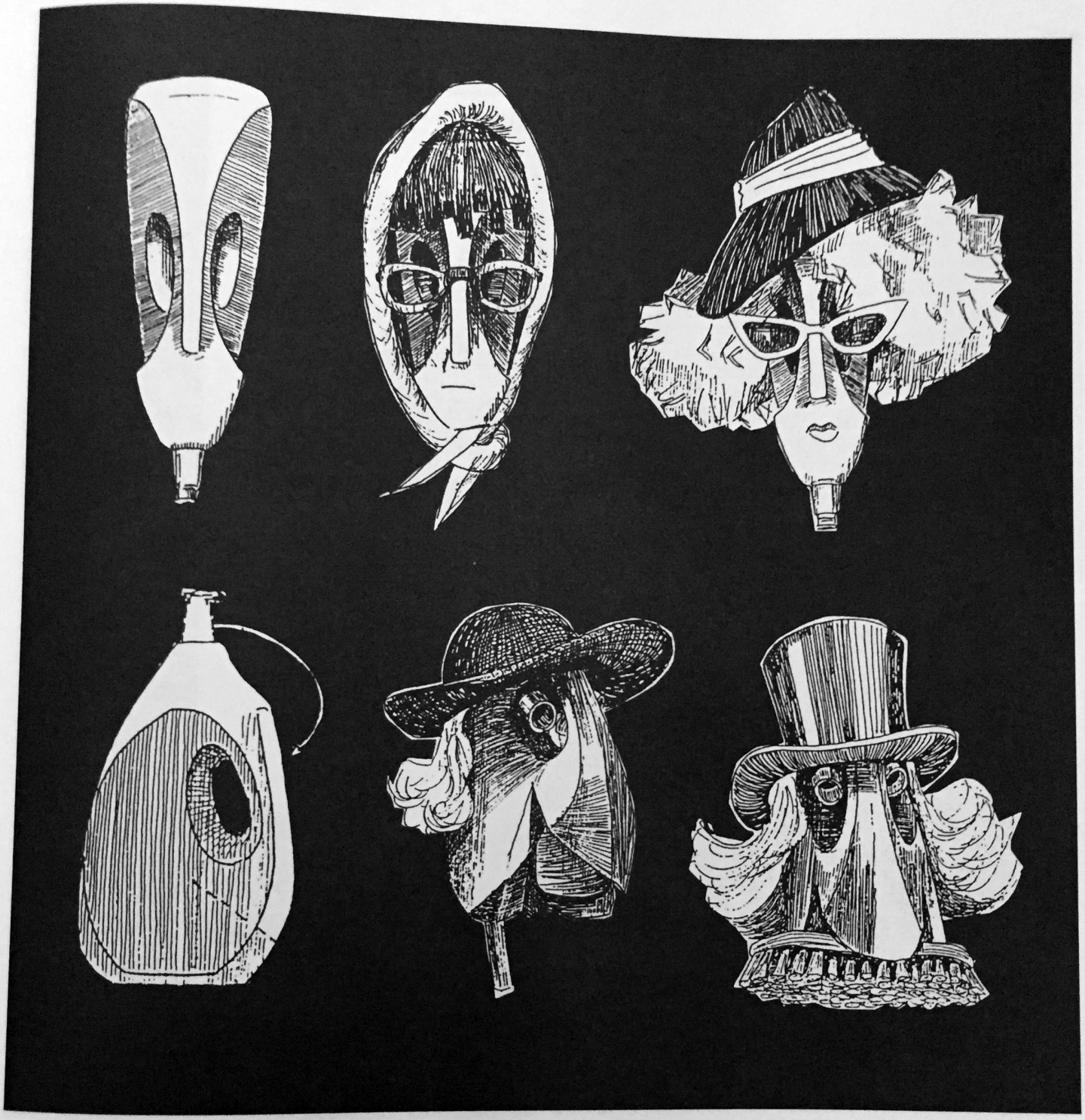
Before I throw anything away, I always consider if it can be used somewhere in the construction of a puppet. For example, when making the man with top hat on page 130, I halved the sawn-off neck of the bottle and attached the pieces as eyes.

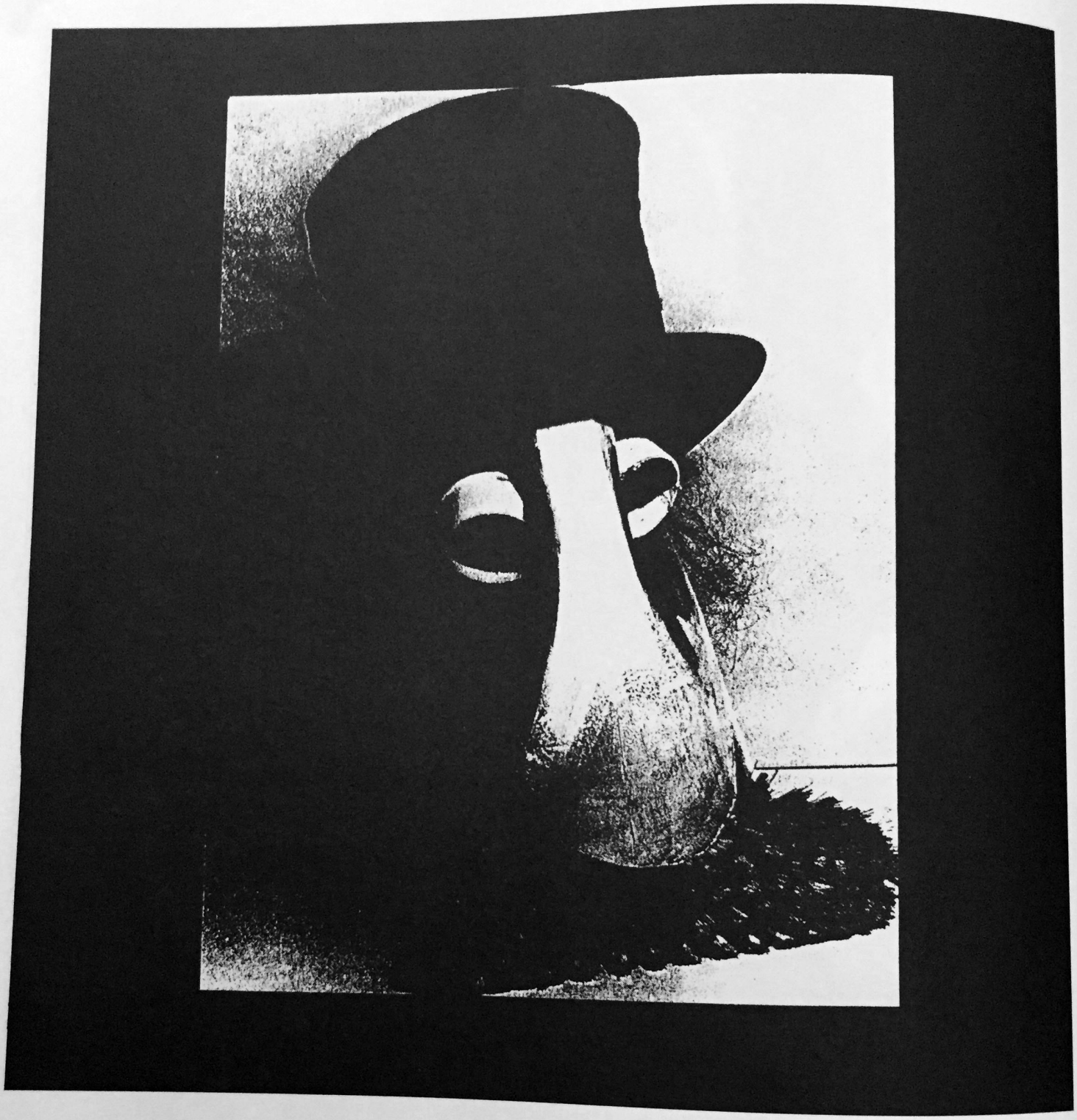


Head made from a cut and folded plastic bottle

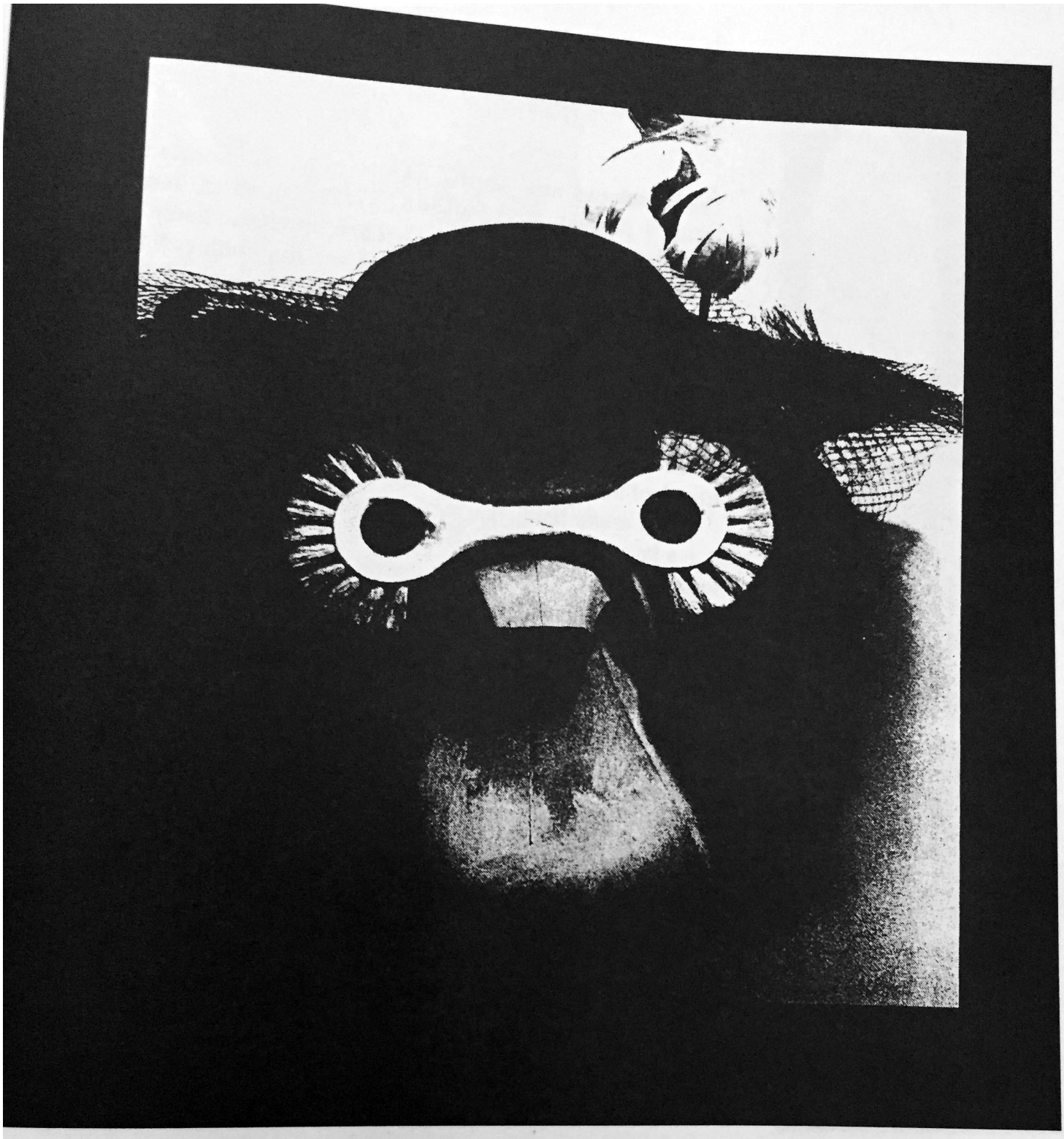


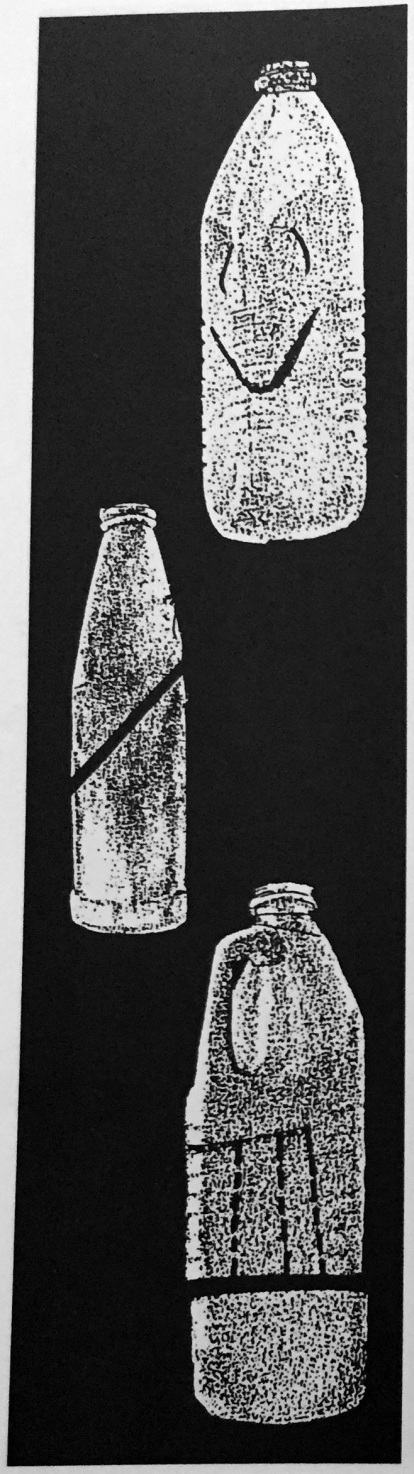
Both pages: Using plastic bottles to make heads





Both pages: Heads made from plastic *Lenor* bottles and household brushes



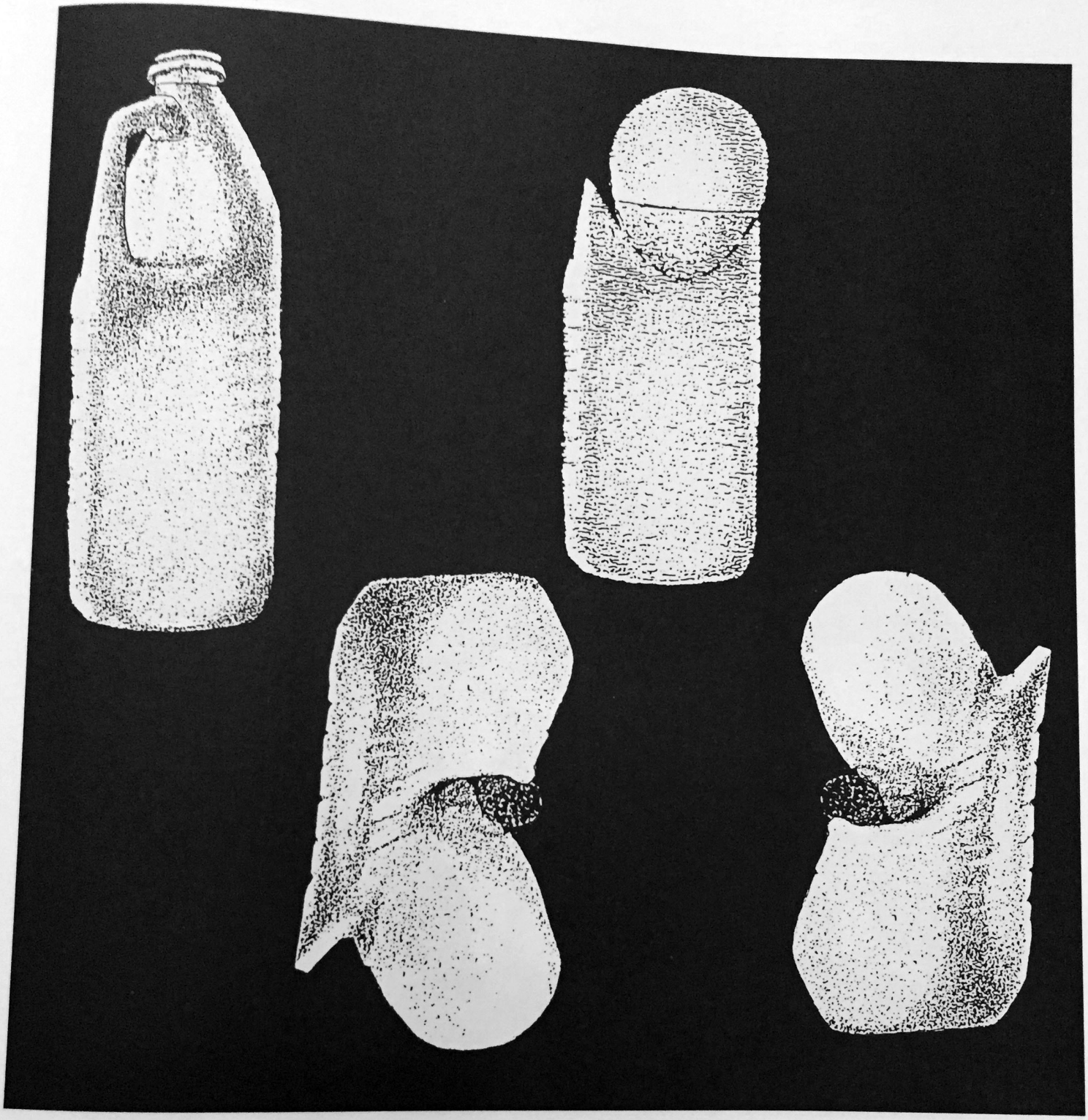


Four-Faced Janus made from one two-litre plastic milk bottle and a cardboard egg

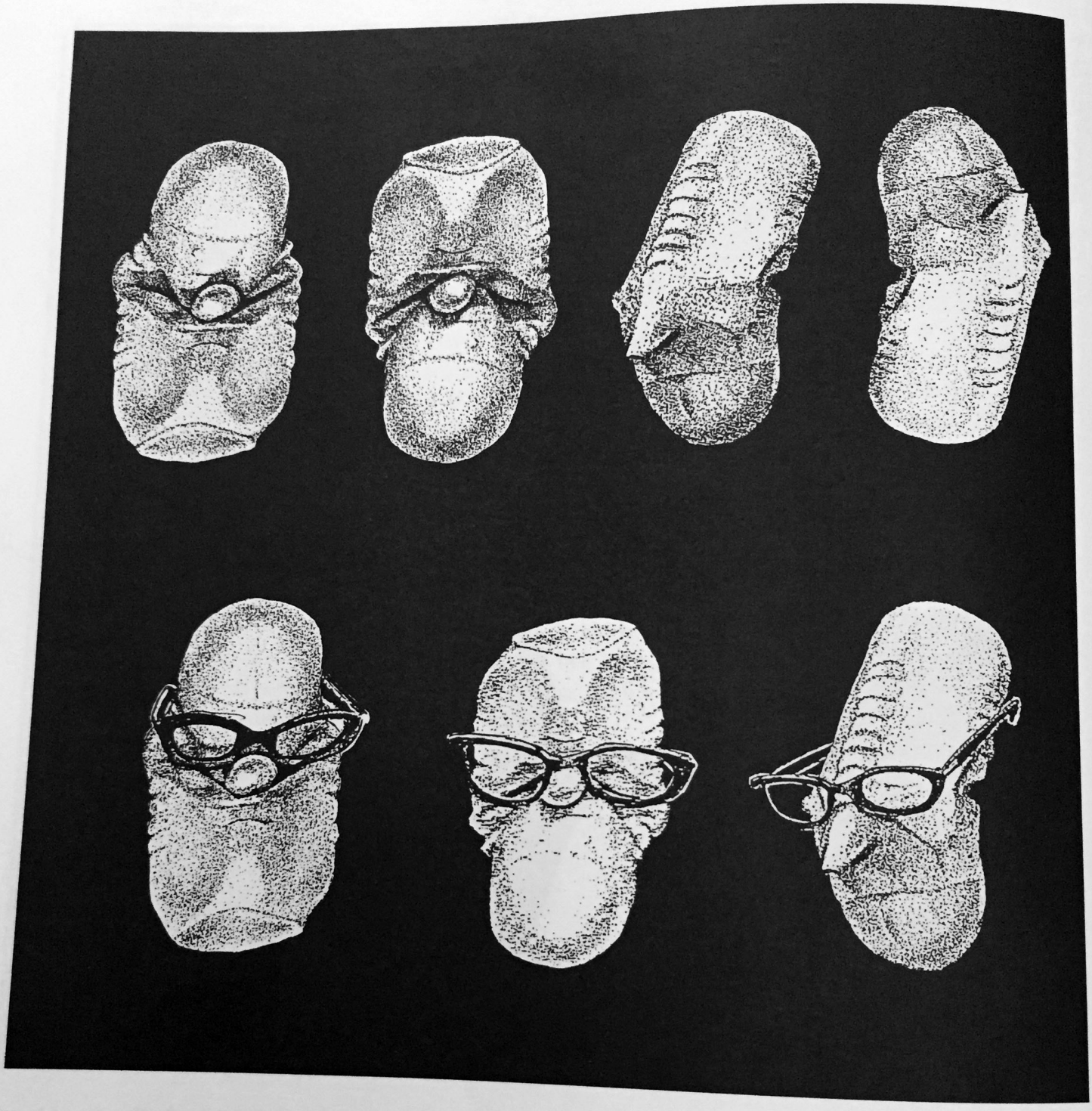
The French two-litre *Candia* milk bottle I used to make the four-faced Janus is probably not available in other countries, but it should be possible to find a similar white translucent plastic bottle. The column on the left shows basic principles of working with soft bottles — the continuous lines indicate cuts and the dotted lines show folds.

The basic construction of the four-faced Janus is shown on the right: I first sawed off the top part of the bottle, together with the handle, and fitted a large cardboard egg into the hole. The rounded end became either a chin or the top of the head, depending on which way up the bottle was held. The egg was fixed with small screws. Finally, I squashed the whole bottle into the shape shown bottom right.

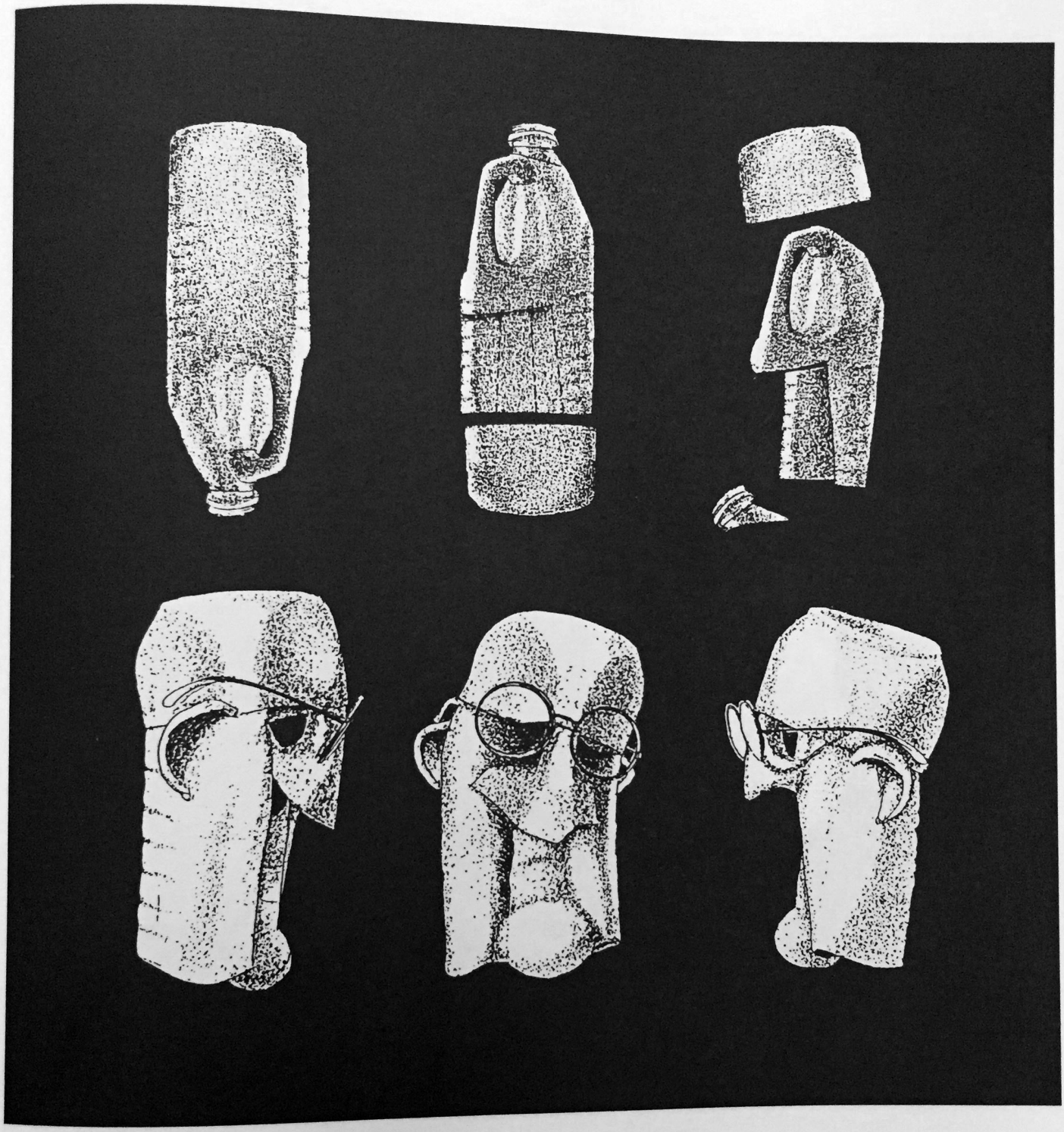
The *Candia* bottle is very thin, and to strengthen the head I covered it in a layer of paper followed by *Agoplast*. Once hardened, the whole form was covered with PVA glue and sprinkled with the fine sand used in bird cages — a trick Barbara Scheel showed me — which gives a very photogenic surface. On other puppets, I have used fine sawdust instead of sand as it is lighter and quieter if the puppets' heads happen to bang together. When I turned the final form around, I discovered to my surprise that there were in fact four possible heads, as shown on page 134.



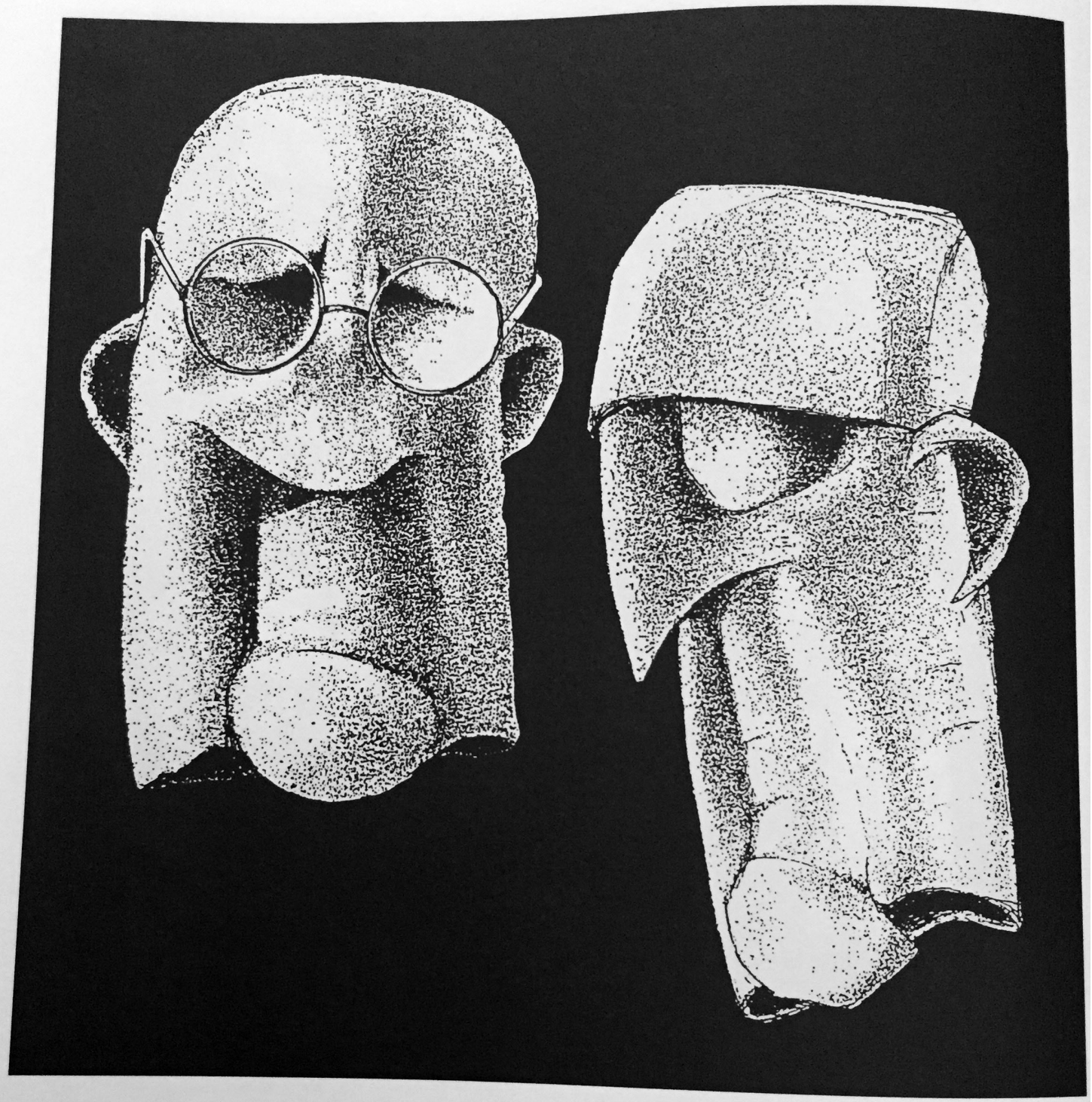
Stages of making the Four-Faced Janus



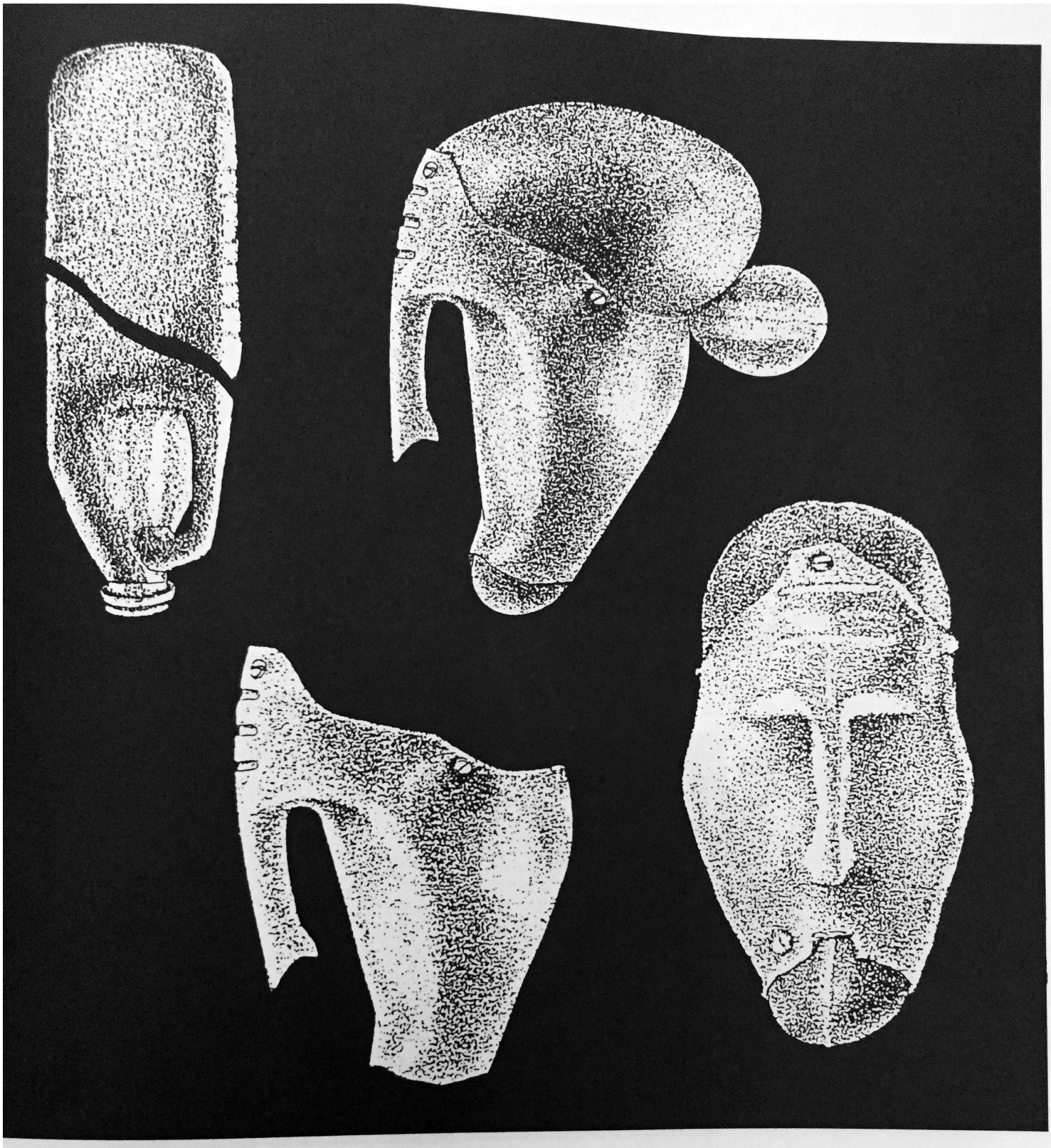
The four faces of Janus



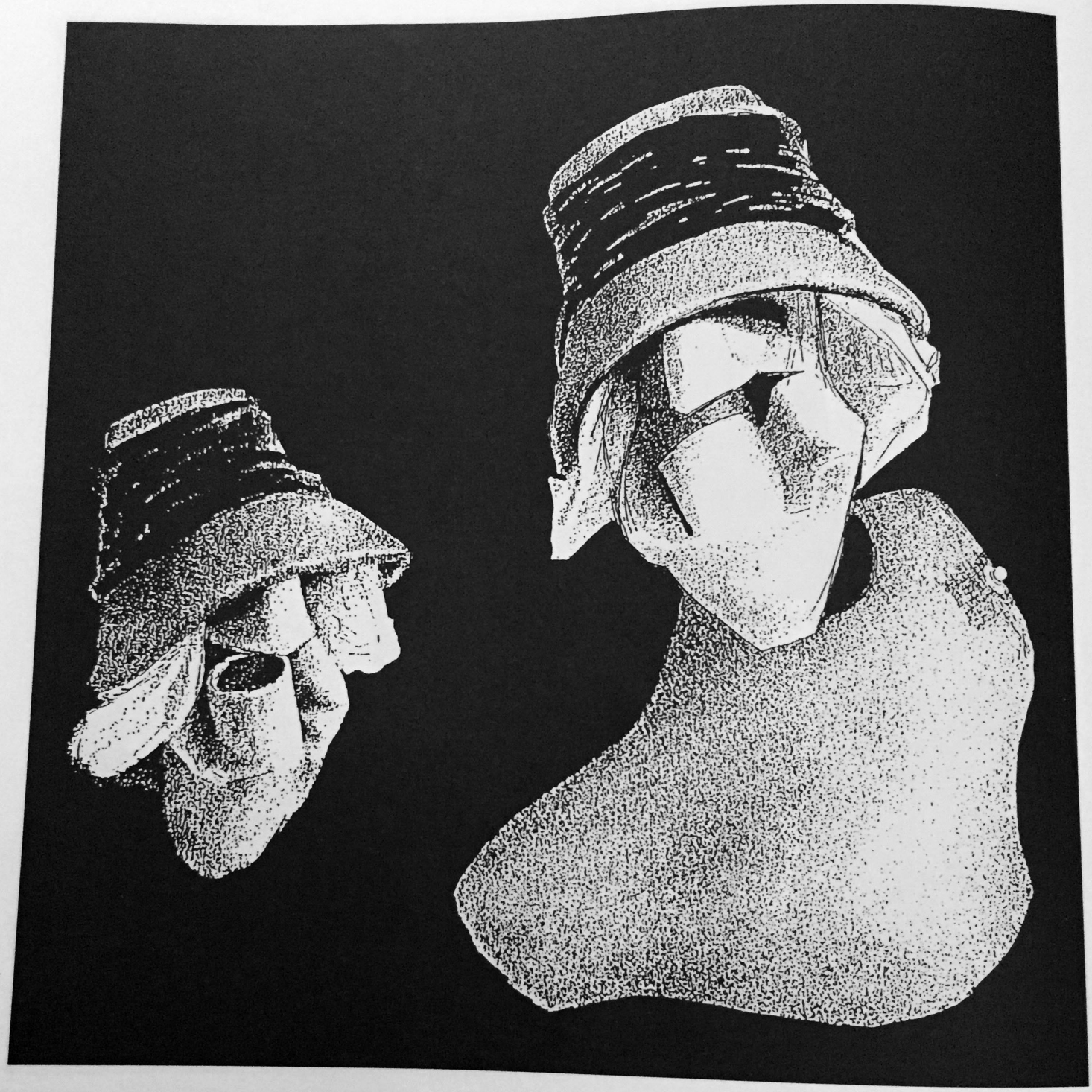
Head made from a *Candia* milk bottle



Two views of a head made from a *Candia* milk bottle



Head made from a *Candia* milk bottle and a cardboard egg



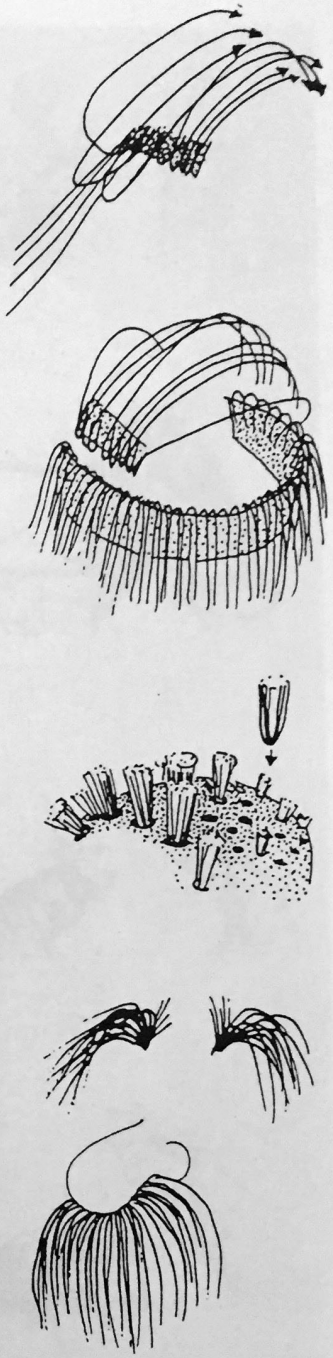
Miss Marple; head made with a *Candia* milk bottle and a plastic bag for hair

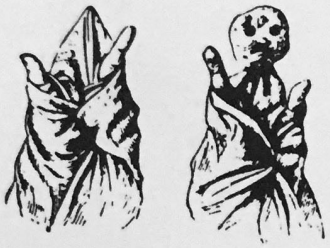
Suggestions for Hair

Miss Marple's head (see left) is also made from a plastic *Candia* bottle, and her hair is a scrunched-up white translucent plastic bag. As plastic bags do not hold their shape very well, they may need to be reinforced, however, they can provide a cheeky solution for hair.

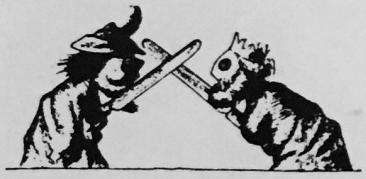
Almost anything can be used for a puppet's hair (although real hair is not recommended), but truly interesting and puppet-like results come from bold experiments with household brushes, plastic pan scourers, coloured fruit and vegetable nets etc — in the past, I have even used rubber bathing-caps! More well-known materials for hair are wool, string, raffia, leather and felt.

The arrows in the top diagram on the right show the direction in which each individual strand of hair falls when using wool or string. To give the effect that the hairs grow out of the head, they are glued on 180° in the opposite direction to how they will eventually go, and are combed back over the patch of glue once it has hardened. It is best to leave the hair longer than will eventually be required and, depending on whether it is to be thick or sparse, the lower strands are either long and close together or shorter with gaps. The hair is only cut, and the desired style fixed with glue, once all the individual strands are securely in place. For figures which never remove their hat or other head covering, it is enough to suggest hair at appropriate points around the edges.











Fruit and Vegetable Puppets

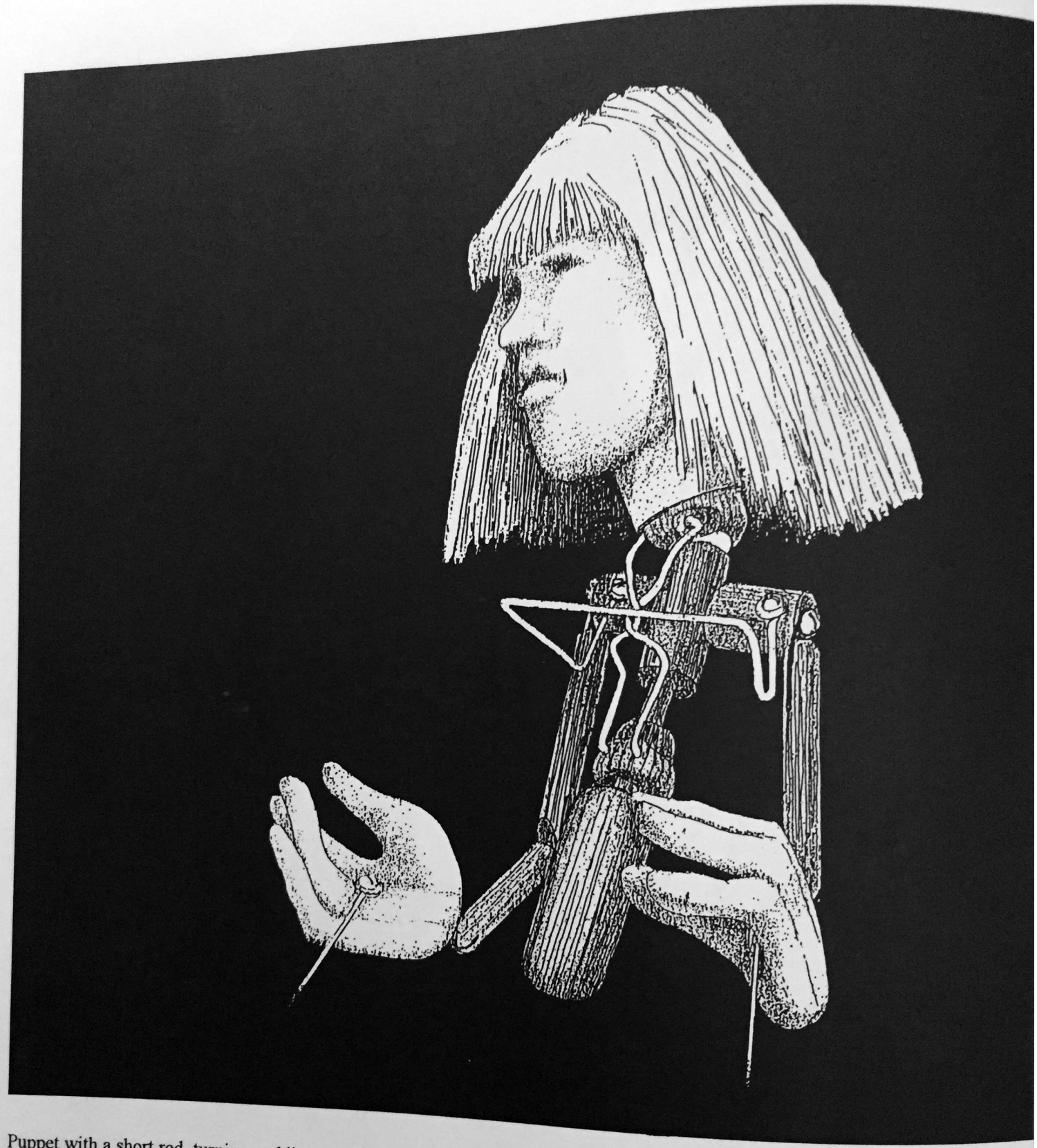
The idea to make the fruit and vegetable puppets on the opposite page came about by chance during a visit to a friend who owns a fruit farm. As he was showing me round, I remembered the *Kartoffeltheater* (Potato Theatre), a popular form of home entertainment when I was a child. In these improvised shows, the puppets' heads were made from potatoes, which were sliced into pieces with table knives during sword fight scenes.

The puppets on the right were made from various vegetables and have cocktail onions, plastic bottle tops and corks for eyes. Hair was made from parsley and lettuce leaves, attached with pins and wire. The heads were stuck onto forks for handles, and tea cloths became improvised clothes.

Kartoffeltheater scenes from a nineteenth century calendar



Puppets made from vegetables



Puppet with a short rod, turning-nodding mechanism and interchangeable head

Chapter Four

Construction of Puppets with a Short Rod



The Development of a Technique

After the Second World War, puppet theatre in Europe underwent a renewal — largely due to the revitalisation of UNIMA (*Union Internationale de la Marionnette*), an international organisation founded to promote contact between puppeteers all over the world, which has a regular programme of festivals and conferences. The spread of ideas and techniques was also helped by puppet magazines such as *Loutkář* (from former Czechoslovakia) and *Perlicko Perlacko* (Germany), as well as puppet centres such as the *Deutsches Institut für Puppenspiel*, which were able to collect and disseminate information.

One of the techniques to become popular in Europe after the war was the puppet with a short control rod to the head, generally thought to have been inspired by the Wayang-Golek from Java (see left). Rod puppets were not totally unknown in West before that time: puppets on sticks have been used in the Hänneschen Theater of Cologne in Germany since the beginning of the 19th century, and by the 20th century there were extensive collections of Javanese Wayang Golek throughout Europe. It was, however, their development in Eastern Europe during the mid-20th century that had the greatest influence.

In Russia, a direct predecessor of the rod puppet was the hand-rod technique, a development of the glove puppet in which the head was still manipulated by the performer's fingers but the arms were controlled by rods attached to the wrists or hands. In this way, the size of the puppet was no longer limited by the proportions of the performer's hand, and this freedom permitted more expressive possibilities. The two rods to the arms were at first disguised by hiding them in the costume, but as the technique developed, attempts to mask them were abandoned. A third rod was also incorporated to control the head.

Above: Wayang Golek from Java. Opposite: Hand-rod puppet from Russia by Ivan and Nina Efimova.

In this chapter, I will present and compare various systems for controlling puppets with a short rod to the head, ie where the performer's hand is inside the body of the puppet, using examples which are known to work well. The techniques I describe come from various sources, and one memorable occasion was towards the end of the fifties, when Ludwig Krafft of the Munich City Museum allowed me to lift the skirts of the rod puppets in the collection to examine their secrets. I have also learned a great deal from the magazine *Perlicko-Perlacko*, published by Dr Hans R Purschke, and from the puppeteer Rolf Trexler and my colleague Leo Uttenrodt – as well as developing some ideas myself, which have since proven successful.





The Basic Rod Puppet Mechanism

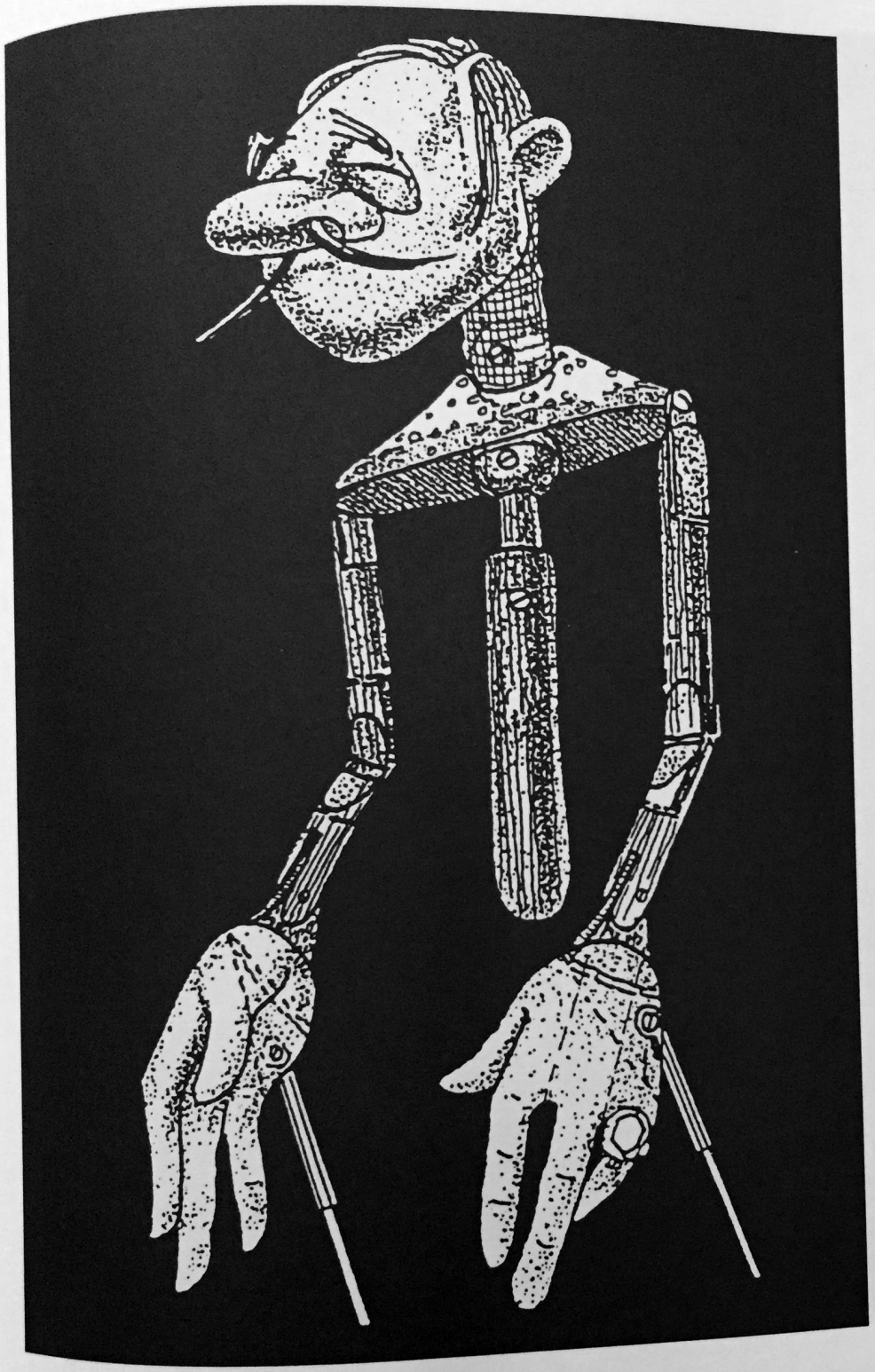
The basic mechanism shown on the left is similar to the Javanese Wayang Golek. It is one of the easiest to make, and is simply a head on a stick around which the shoulders can turn. In the hands of André Tahon, a virtuoso in using this type of puppet, the interplay between the puppet's arms, head and body creates movements which are often more expressive in their simplicity than those produced by the complex system of muscles and joints in the human body.

A rod (or tube of any preferred material) is fitted with a wooden ball that has a hole drilled through it the same diameter as the rod. The piece of wood for the shoulders, drilled with a slightly larger hole, is slipped onto the rod and rests on the wooden ball. A second wooden ball is sometimes fixed above the shoulder piece to prevent it slipping up the rod (see diagram right). The head is attached to the top of the rod, either rigidly or jointed (examples of which will be shown later).

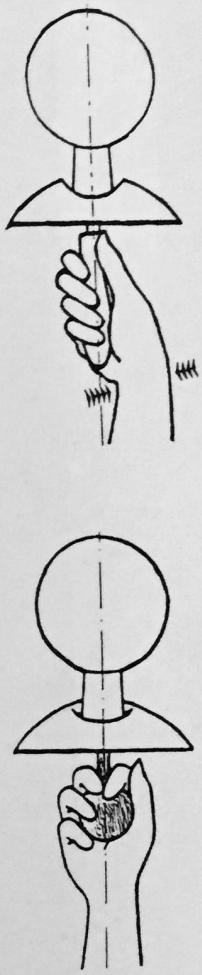
The system described so far has one small weakness: when gripping the control rod, the performer's wrist is held in an unnatural position, which can become tiring or painful (see diagram top right). This problem is easily solved by attaching a wooden ball to the base of the control rod, which then sits comfortably in the palm of the hand. For figures of the size shown on the left, the performer's wrist becomes the puppet's backside.

A ring screwed to the underside of the wooden shoulder piece (see left) enables the performer to turn and shake the shoulders using the thumb and/or forefinger whilst holding the support rod with the other fingers. The control rods to the arms can also be used to either move the shoulders or hold them still whilst the head turns in isolation. This technique was used to great effect on the Woman and Dog by the Obraztsov Theatre (see page 150) – as the dog ran circles around her, the woman's body revolved but her head stayed still.

Basic technique for puppets with a short rod



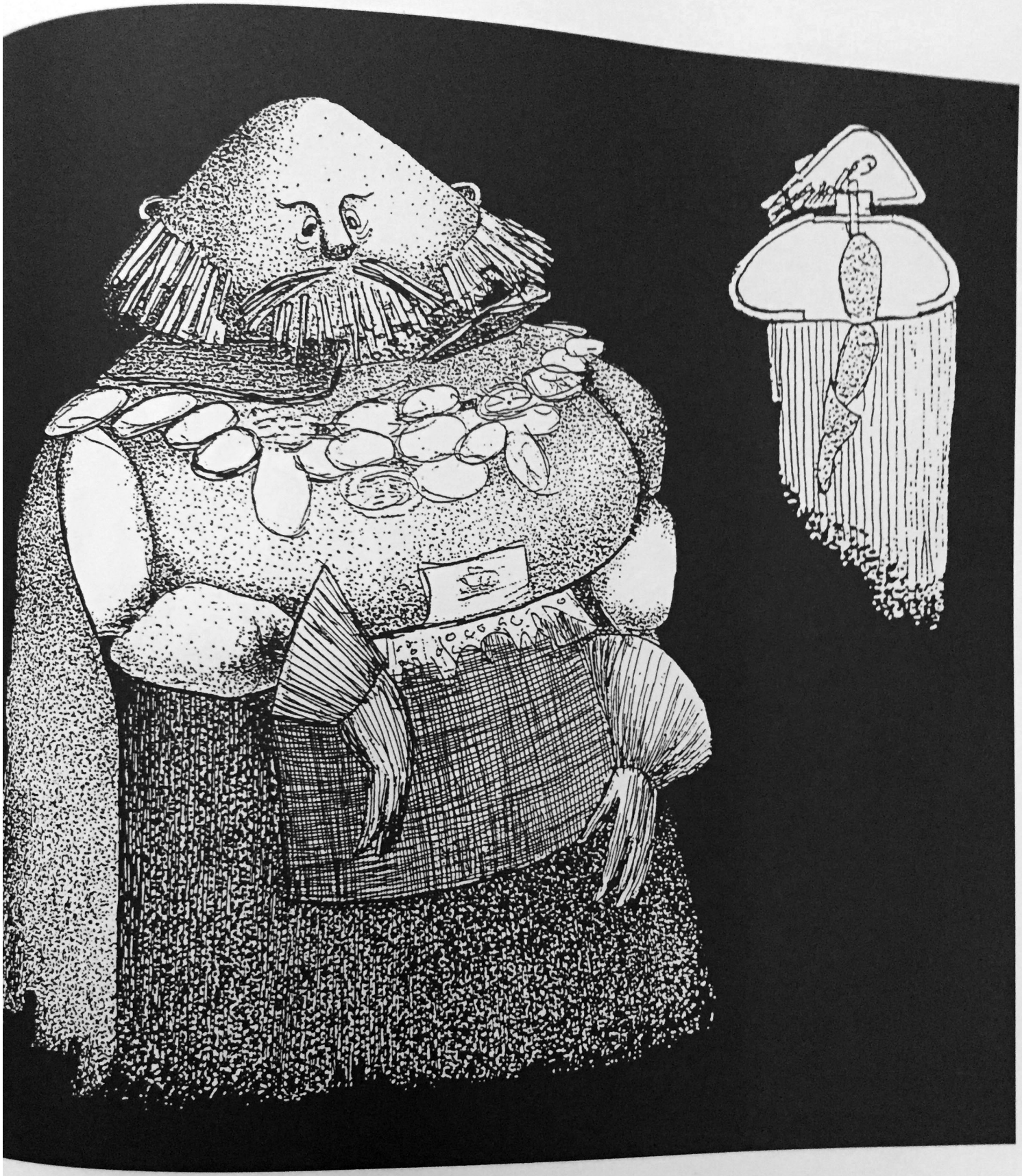
Puppet with simple short rod mechanism



Reducing wrist strain with a ball grip



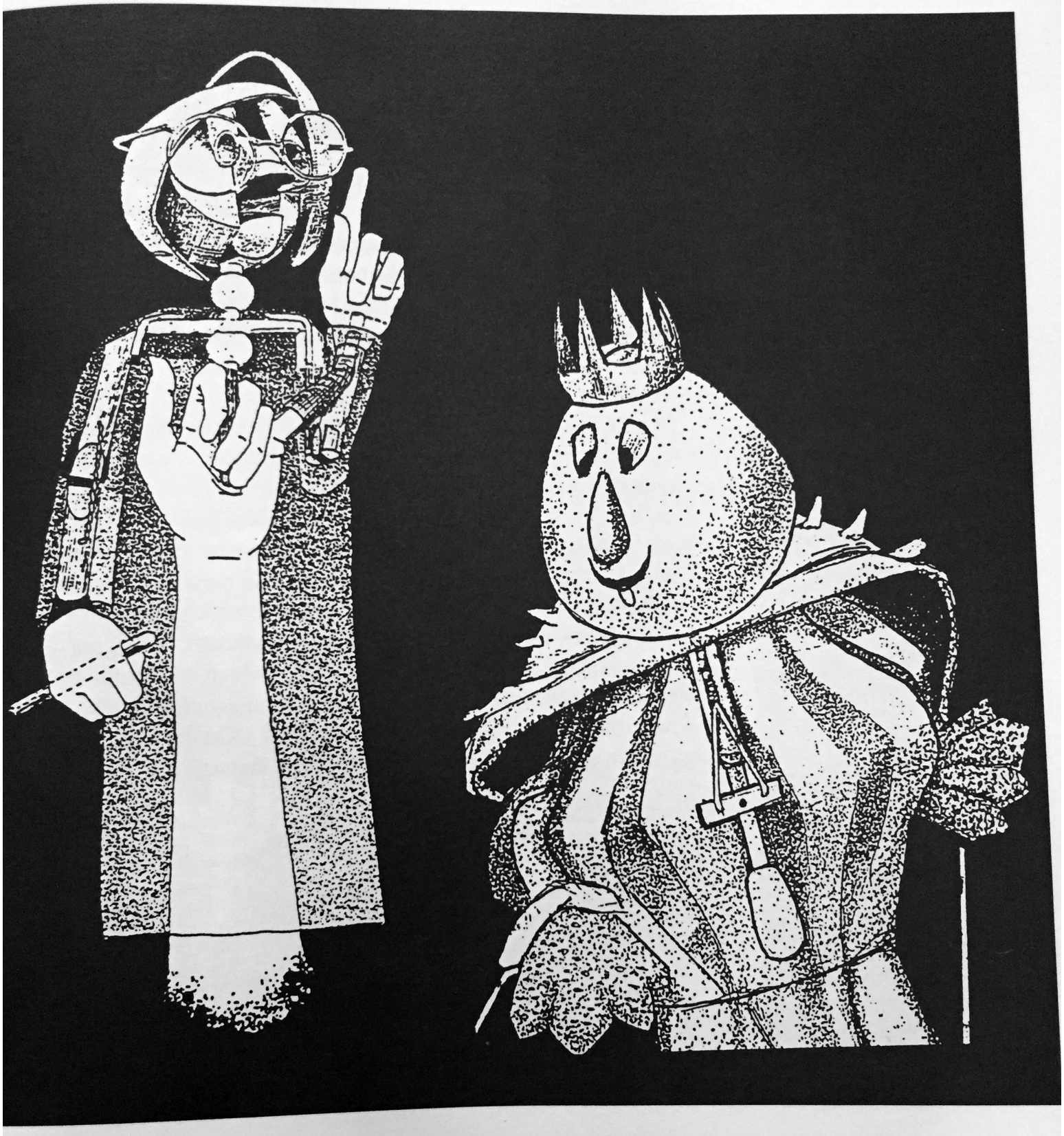
Hungarian soldier by Dezső Szilágyi



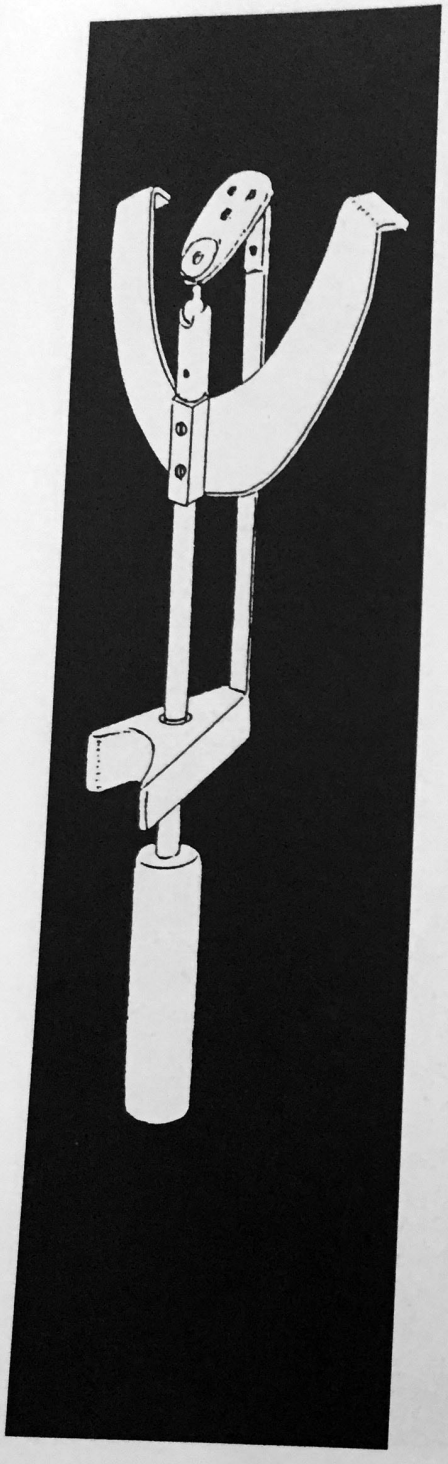
Falstaff by Carl Schröder



Left: Woman and Dog, Obraztsov Theatre, Moscow. Right: The Beautiful Galathe, Bolshoi Puppet Theatre of Leningrad.



Left: Hand and rod technique combined. Right: King by Karlov, Bolshoi Puppet Theatre



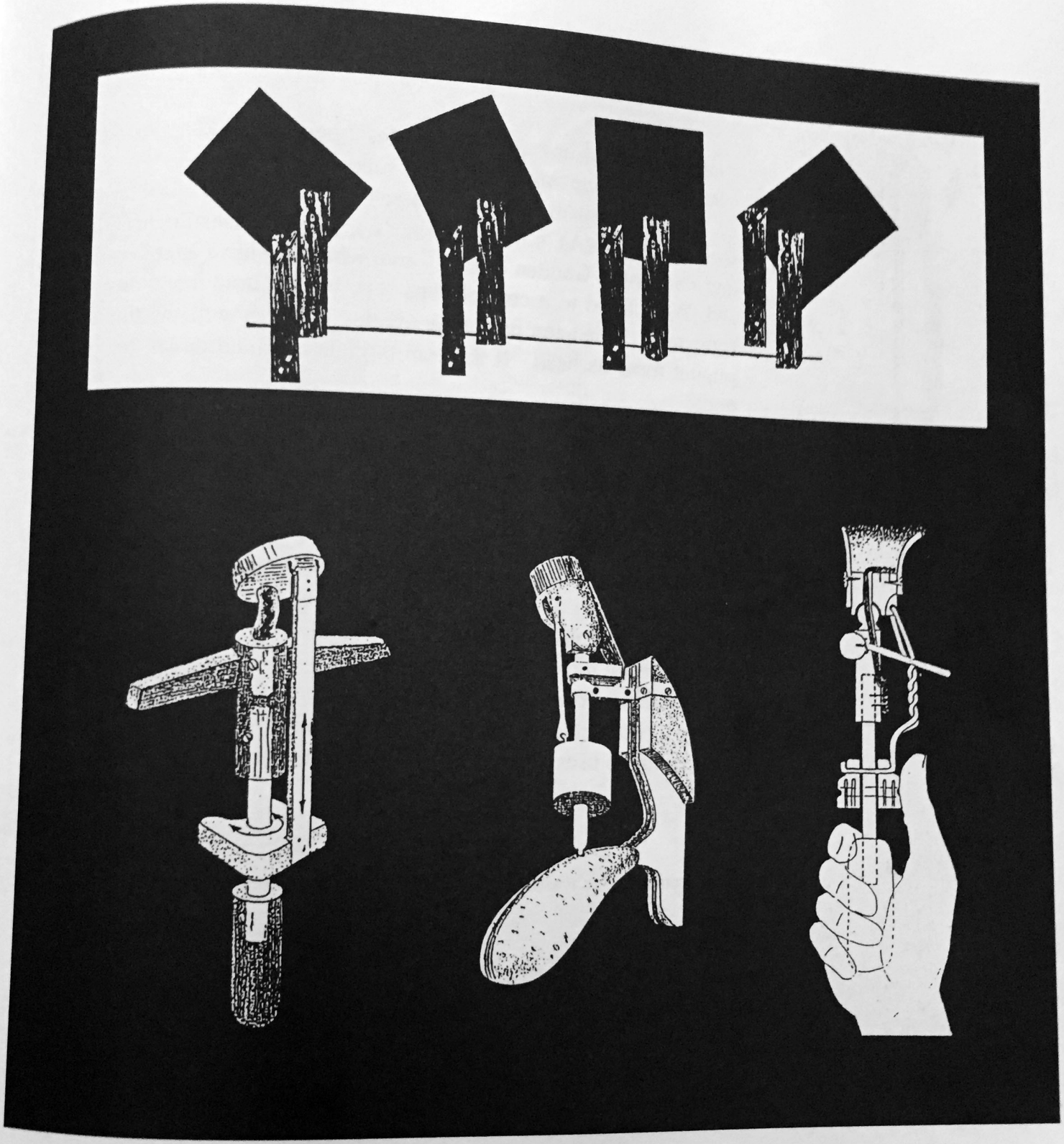
The Turning-Nodding Mechanism

The principle of using a jointed parallelogram to incline a puppet's head is fairly common, and many of the rod puppets I have examined have this system – although sometimes fashioned in the most bizarre way. Basically, the head is secured with a flexible joint to the top of a short rod, and another rod is attached to the base of the head, also with a joint. When the second rod is pushed upwards, the head inclines forwards.

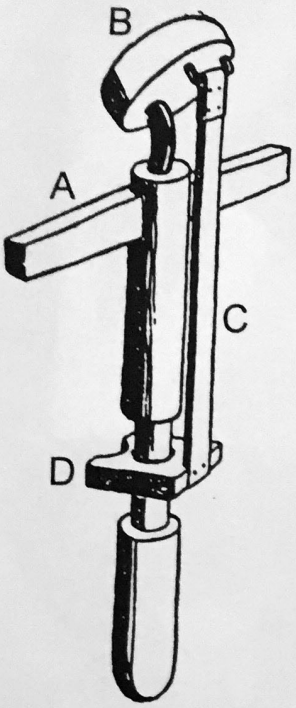
I call this device a 'turning-nodding mechanism', and although it certainly works well, the movements it produces are sometimes not as sensitive as I would like. Over the years, I have therefore always searched for something better, and eventually found one or two solutions, which will be described later. However, there are situations where the turning-nodding mechanism is still most appropriate.

The first row of diagrams on the opposite page shows how a parallelogram can be used to generate movement. Keeping the right stick stationary, the left stick is pushed up, which affects the position of the black square. Below are three different mechanisms which use this same principle to control a puppet's head. On the following pages, eight turning-nodding mechanisms will be discussed in detail.

Turning-nodding mechanism by Günter Schnorr



Above: Using a parallelogram to generate movement. Below: Variations of the turning-nodding mechanism.



Turning-Nodding Mechanism by A J Fedotov

The turning-nodding mechanism described by Fedotov in his book *Technik des Puppentheaters* * is as follows:

"The mechanism consists of three parts: a rigid rod connected to the shoulder piece (A), a movable rod (B), which causes the head to turn and nod, and a wooden disc (C) onto which the head is attached. The rod (B) is fixed to a control plate (D), which turns freely around the rigid rod. When the performer rotates the ring with the thumb, the puppet turns its head. If the control plate is pulled down, the puppet nods.

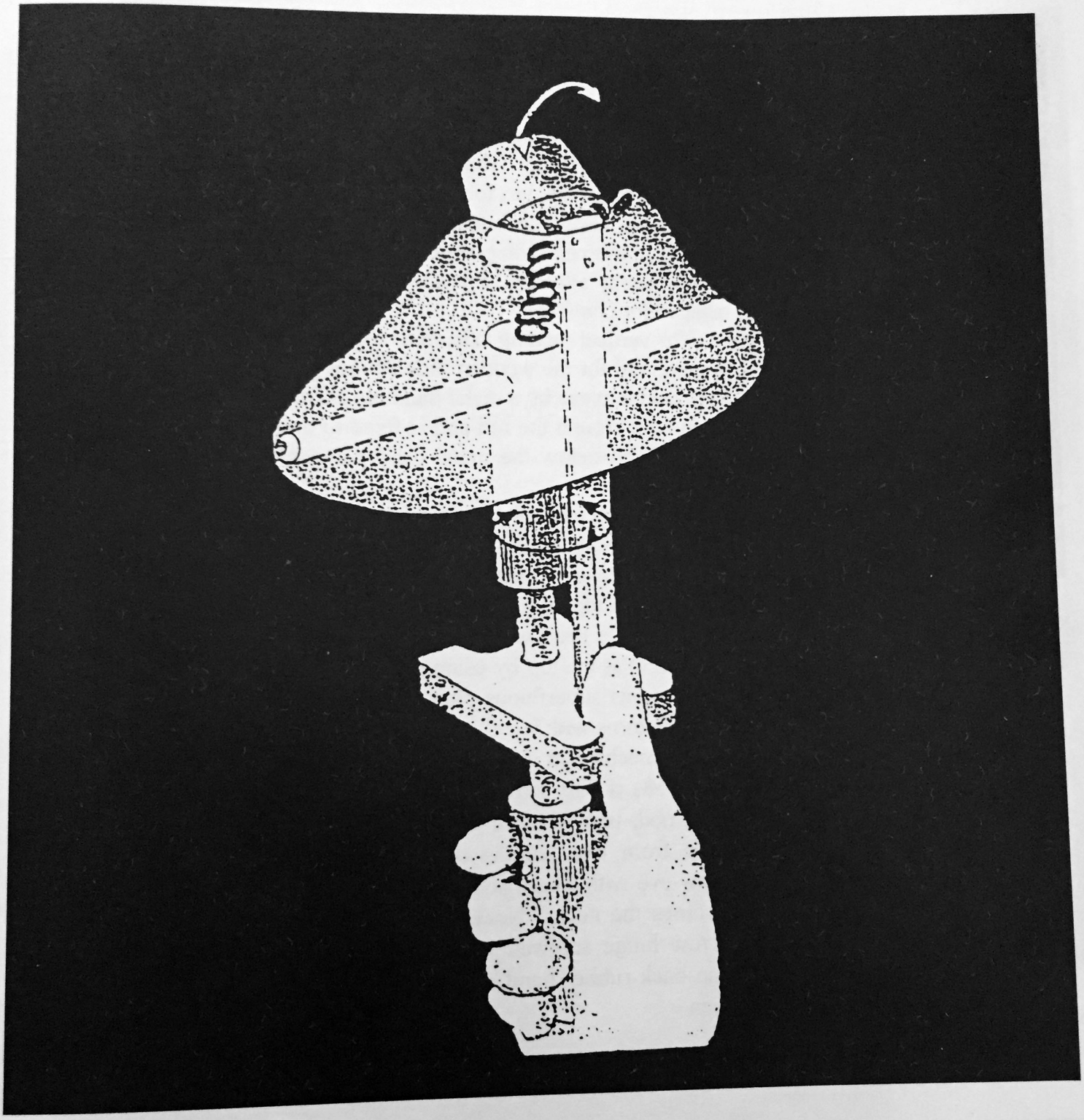
The puppet's head is connected by a loop to the rod that controls the head movements, and to the rigid rod by a flexible support. This could be a piece of wire or a tough piece of rubber tubing."

To create such mechanisms during or just after the war involved considerable ingenuity. There were no DIY shops, and so two bits of broom handle, a thin rod, a piece of rubber tubing, a strip of tin can, two small pieces of wood, something which could serve as a pushing rod – odds and ends such as these — had to do! Yet the result could not have been more effective.

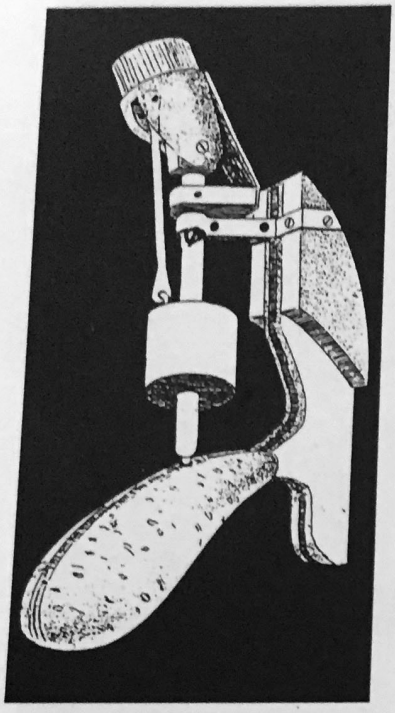
By making two hollows in the control plate (see diagram on the right), it is possible to manipulate the puppet from the front or the back. This example uses a spring to the head plate instead of rubber tubing.

* First published in Russia 1953: translated and published in Germany 1956

Turning-nodding mechanism illustrated in Fedotov's book



Turning-nodding mechanism with spring



Three Turning-Nodding Mechanisms by Leo Uttenrodt

The main support structure of the system on the left is made from 8mm thick plywood. The lower part is shaped into a pistol grip and the rear of the top part forms the contour of the puppet's upper back. As screws easily work loose and fall out of plywood edges, the top part is reinforced with pieces of wood, onto which the shoulders are subsequently attached. Pieces of cork are glued to the pistol grip and shaped for comfort.

The vertical rotating axle, mounted on the pistol grip, also serves as a guide rail for the wooden slide control used to manipulate the head. It is held in place by a metal band made from a strip of tin, which has been bent around the rod and is fixed to the support with screws. A screw fixed below the metal band prevents the rod jumping out of position.

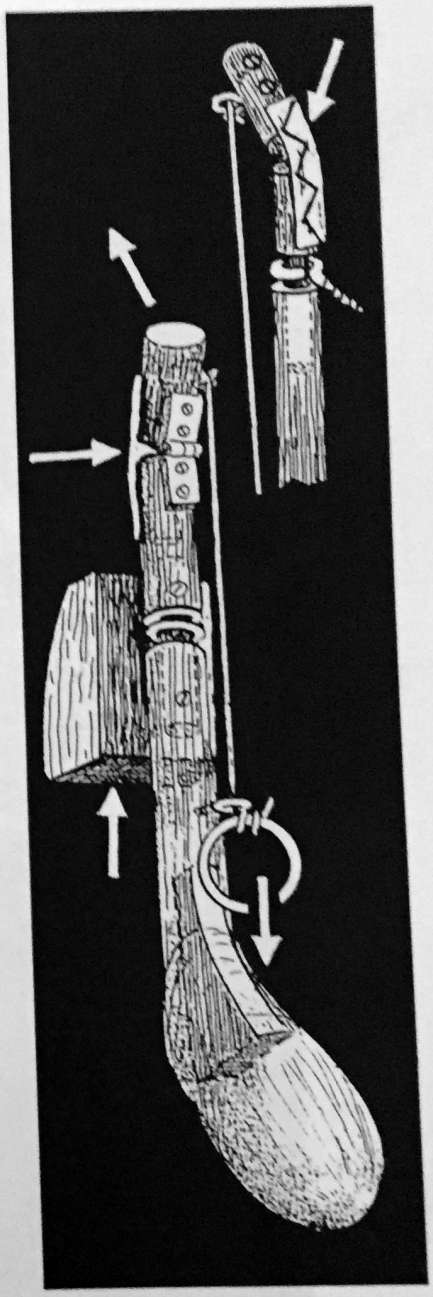
A square piece of wood, rounded off at the front, is fixed to the rotating axle above the metal band. One end of the piece of rubber which serves as a snap-back is attached to this square of wood, the other to the top of the neck-piece. The rod that connects the slide control to the head is jointed top and bottom. It is best to limit the movement at the top by using a slit, which allows vertical movement but prevents superfluous play. When the rod is rotated horizontally, the neck turns with it.

The mechanism on the right (used in the Village Schoolteacher on page 158) is very simple. The shoulders are attached to a piece of hardwood, into which a strong screw-eye is fastened. The spine is made from two lengths of broom handle connected through the screw-eye with a hardwood dowel, and a third piece of broom handle becomes the neck. Neck and spine are connected by a strong but narrow hinge screwed to the flattened front sides of the rods. A snap-back rubber band at the rear brings the two rods back together again.

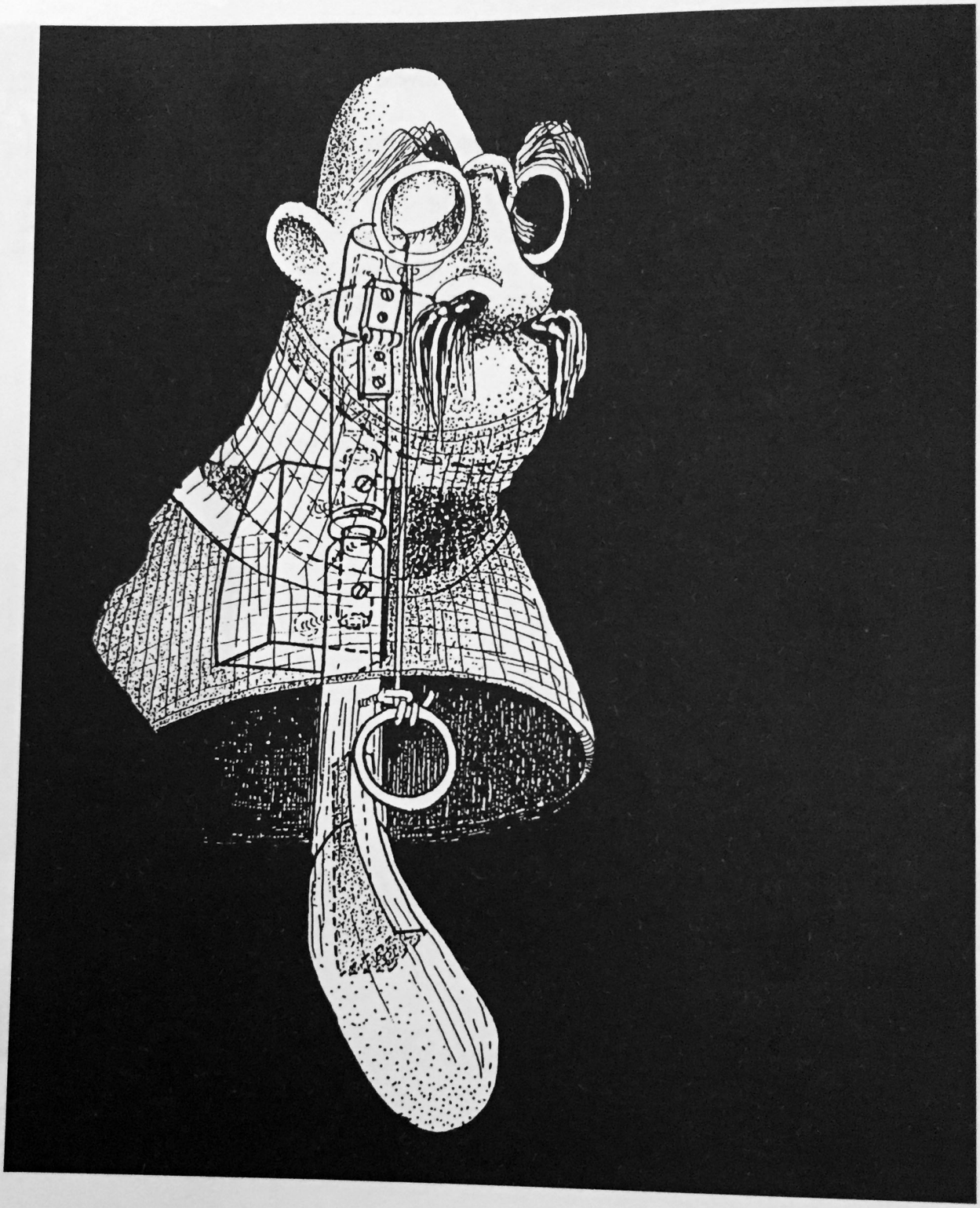
Leo Uttenrodt's first turning-nodding mechanism

A handle can be shaped and attached as required. The nodding movement comes from a downward pull on the string followed by the upward snap-back of the rubber band.

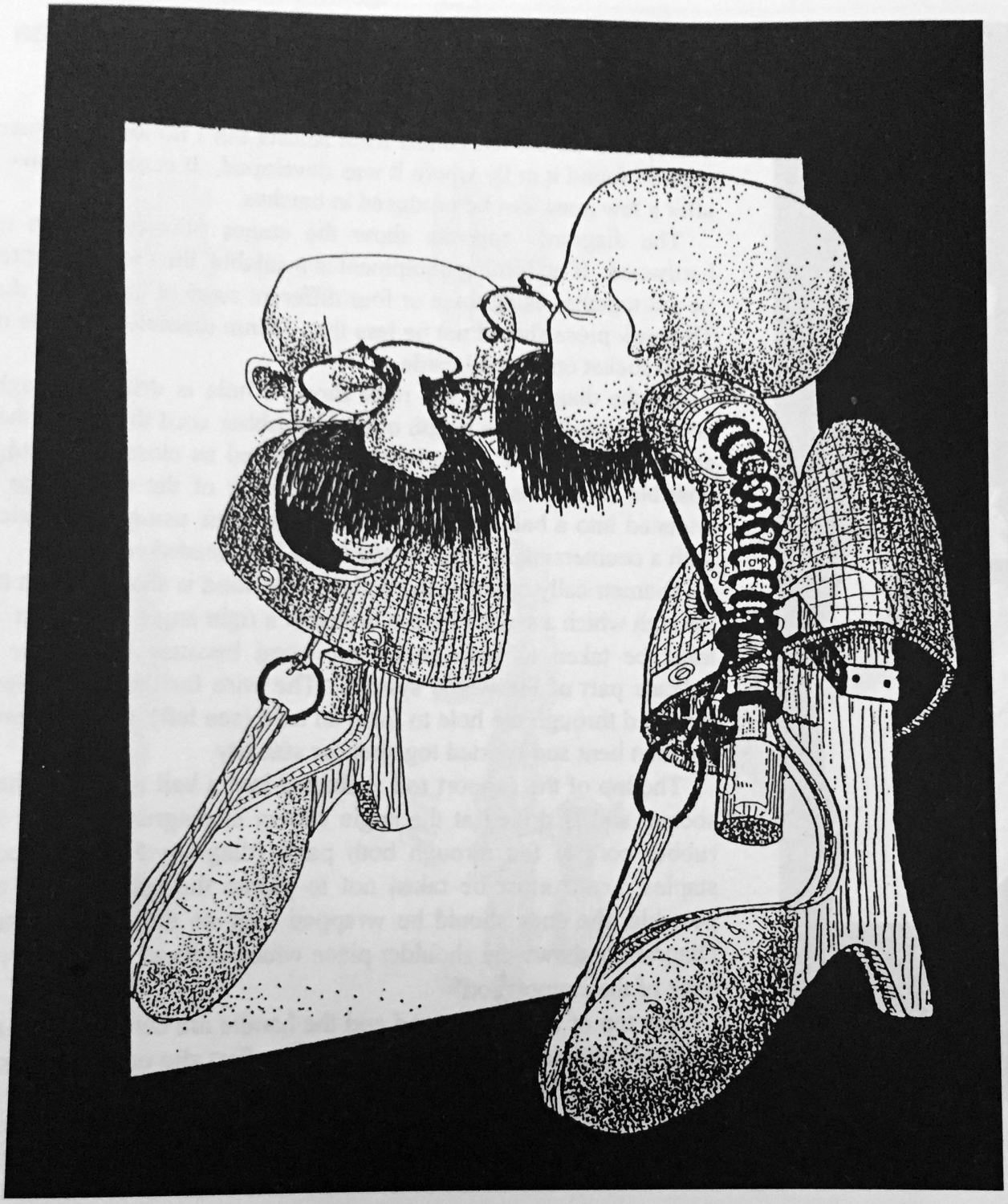
The Village Schoolteacher overleaf can only turn and nod his head, whereas Professor Karpenko on page 159 also shakes his. A spring is used for his neck, the size of which depends on the weight of the head. It can be difficult to find a suitable spring as they are not always available off the shelf, and the one we used was not strong enough to keep the head upright of its own accord. To give additional support, we covered it in foam rubber, followed by a tightly wrapped piece of cloth.



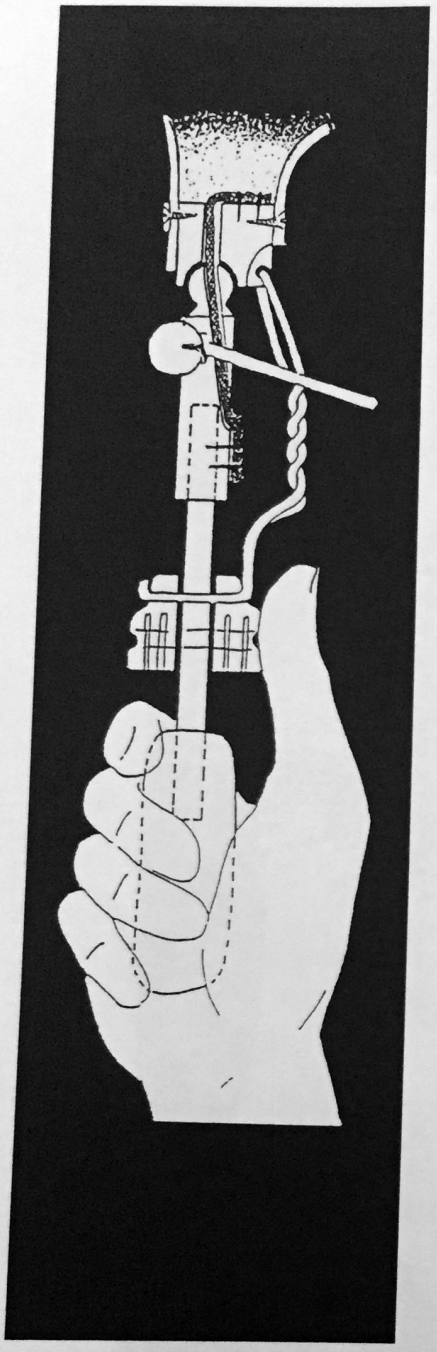
Turning-nodding mechanism with hinged joint



The Village Schoolteacher



Professor Karpenko



Turning-Nodding Mechanism by an Unknown Russian

The system on the left comes from Russia but I no longer remember where I found it or by whom it was developed. It is easy to make and after a few goes, can be produced in batches.

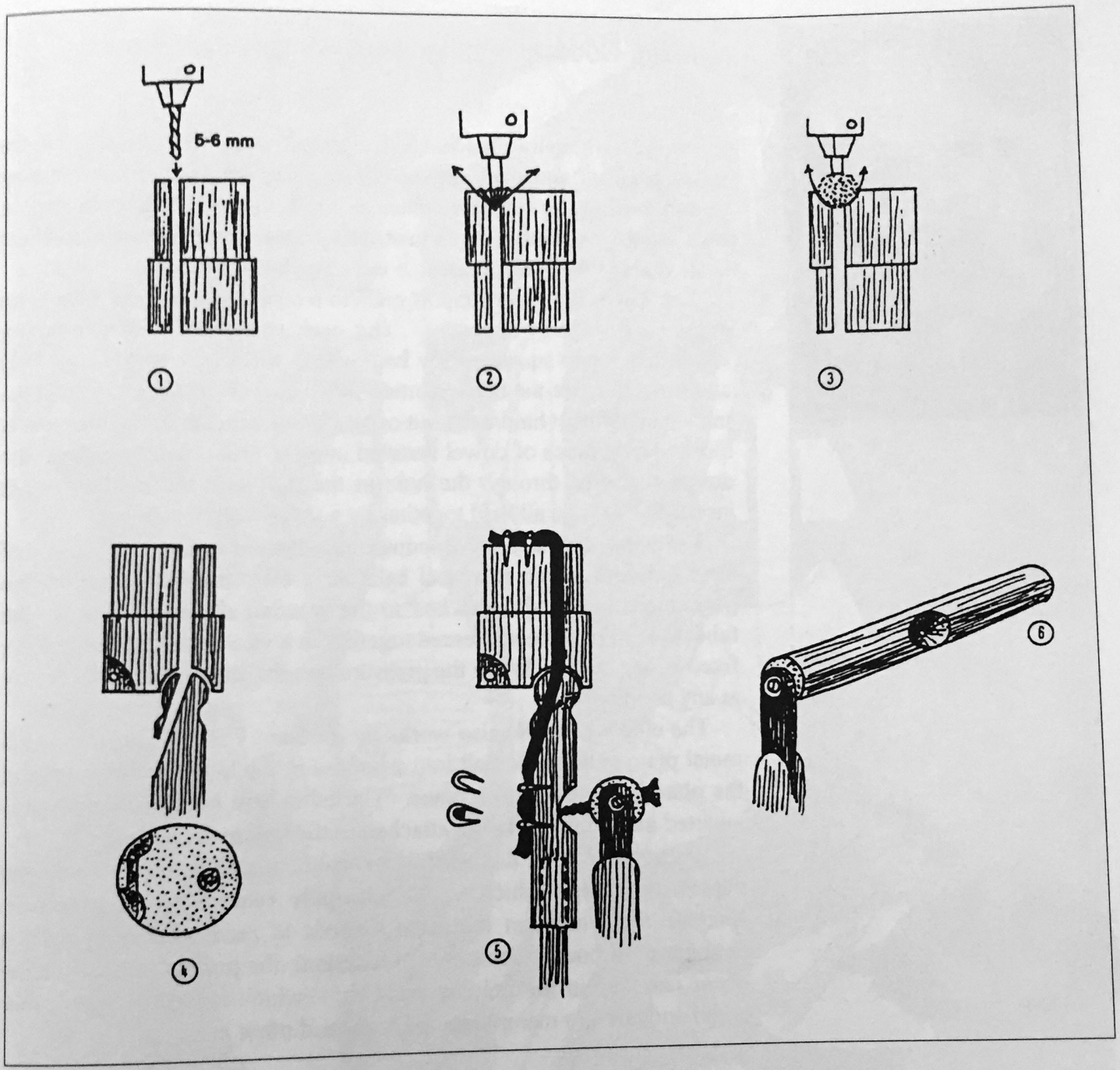
The diagrams opposite show the stages of construction using hardwood. If no turning equipment is available, the complete core can be put together using three or four different sizes of hardwood dowel. The neck piece should not be less than 30mm diameter because it has a ball socket on the underside.

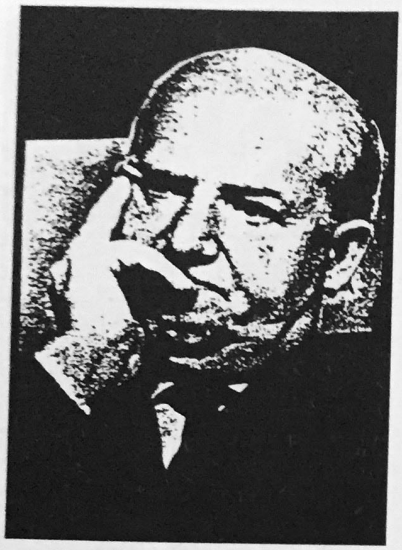
As the diagrams on the right show, a hole is drilled through the neck piece to take the length of silicon rubber cord that holds the ball and socket together. The hole is positioned as close to the edge as possible (diagrams 1-3). On the underside of the neck piece, it is widened into a ball shaped hollow – best done using an electric drill with a countersinking bit, followed by a ball-headed rasp.

Diametrically opposite the hollow, the wood is shaped into a tenon, through which a second hole is drilled at a right angle to the first. Care must be taken to leave sufficient wood because this is the most delicate part of the whole system. The wire for the control lever is threaded through the hole to form an axle (see left), and the two ends are then bent and twisted together for stability.

The top of the support rod is shaped into a ball to fit into the neck socket, and is drilled at the angle shown in diagram 4. The silicon rubber cord is fed through both parts (diagram 5) and fixed with staples; care must be taken not to pierce the rubber cord and, if possible, the ends should be wrapped over an edge before stapling. Diagram 6 shows the shoulder piece which is fixed to a hollow in the back of the support rod.

The top of the support rod and the handle are connected by a piece of dowel without forgetting, of course, to first slip on the slide control, through which the two ends of the wire are fed.


5-6 mm
1
2
3
4
5
6



Turning-Nodding Mechanism by Fritz Herbert Bross

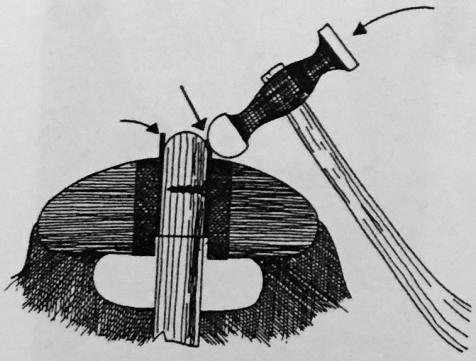
Bross was originally a mechanical engineer. In 1946 he began to make glove puppets and then applied his engineering skills to developing control techniques for marionettes and rod puppets. The construction of a Bross mechanism is elegant and precise, and requires excellent craft skills as well as expertise in metalwork and brazing.

The top of the main support ends in a steel ball on a rod bent at an angle (see diagram opposite). The neck is a piece of brass tubing which has been 'squashed' by hammering to form a socket (see left) and has a hole for the brass jointing pin. The tube can turn around the metal ball without hindrance but cannot become separated because it is blocked by a piece of dowel inserted into the tube. Once in place, the dowel is drilled through the hole in the tube and the jointing pin is inserted — so it is all held together by a single screw (see detail A).

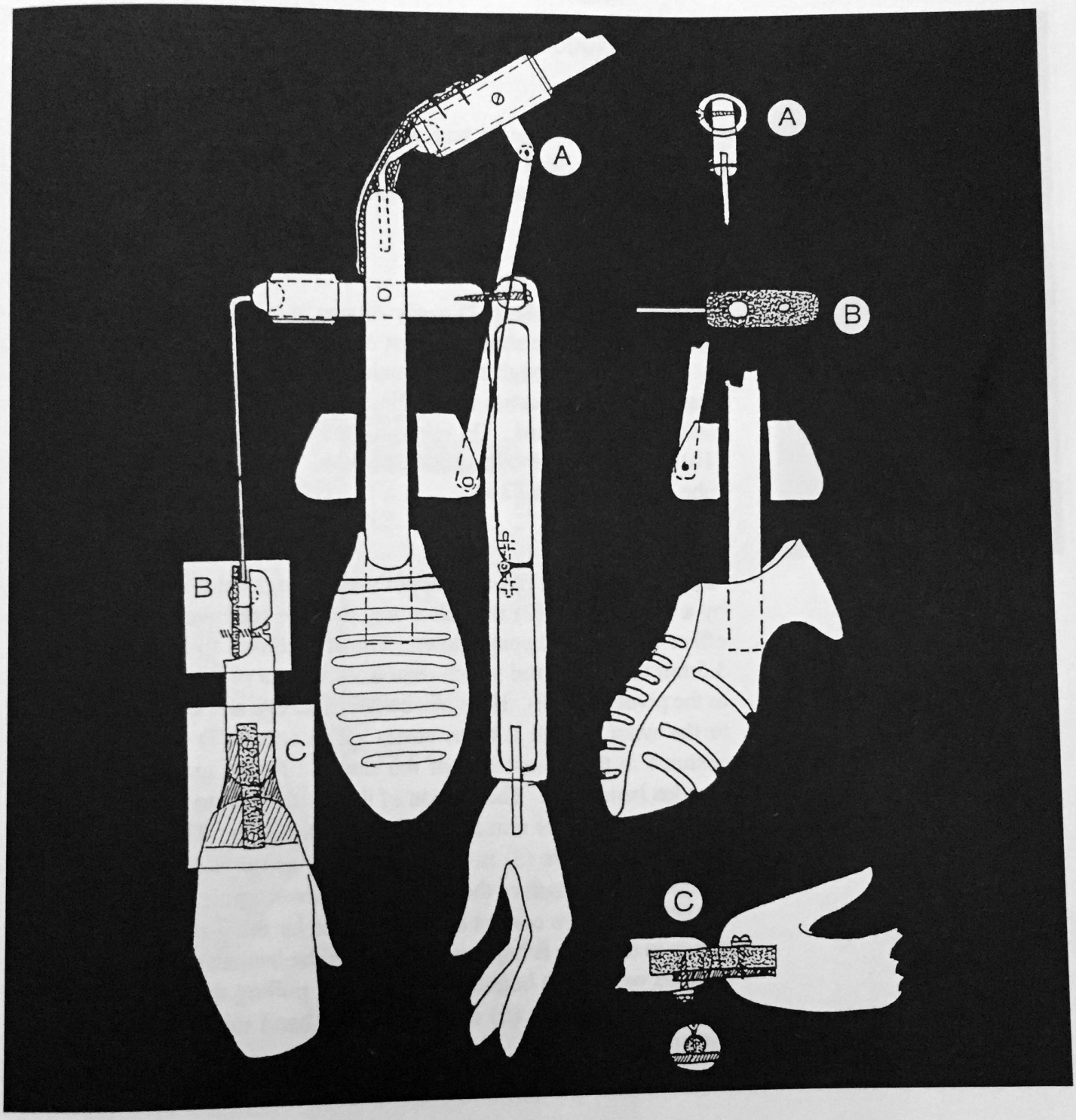
The upper arm also has a 'squashed' joint. It consists of a piece of steel rod onto which two steel balls have been brazed. The top one goes into a brass tube attached to the wooden shoulder piece — the tube and rod have been pressed together in a vice until wedged and are fixed with a screw. When the pressure is right, the upper arm will stay in any position.

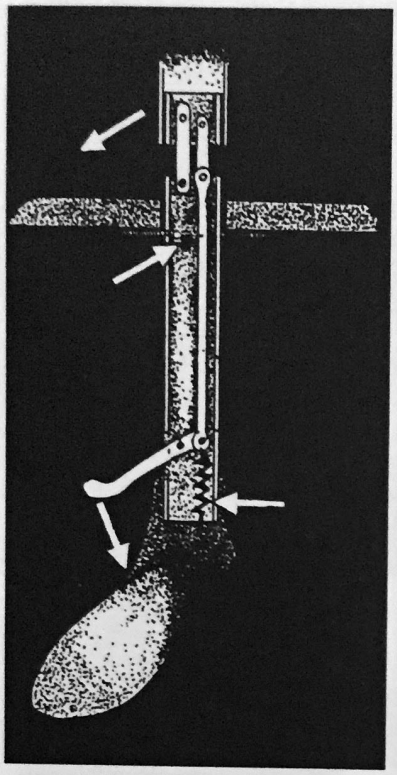
The elbow joint (B) also works by friction. Using a screw, a small metal plate presses the ball into a hollow in the lower arm. A hole in the plate keeps the ball in place. The other arm hangs loosely and is inserted into a tube of fabric attached to the ball in the shoulder.

The purpose of all this effort is to enable one performer to make the puppet do things which would normally require two puppeteers. Imagine for a moment the puppet needs to read something from a newspaper or book. Using this mechanism, the puppet's arm with the paper can stay in the holding position —which leaves the performer both hands free to manipulate the body and other arm.



Above: Fritz Herbert Bross, 1910-1976. Below: Making a brass socket by hammering.


A
B
C
A
B
C



Turning-Nodding Mechanism by Karl Heinz Drescher

I give here the original text and diagrams by K H Drescher. The control for the head and shoulders works very well, however, I would substitute the aluminium tube with PVC tubing because I find it easier to work with.

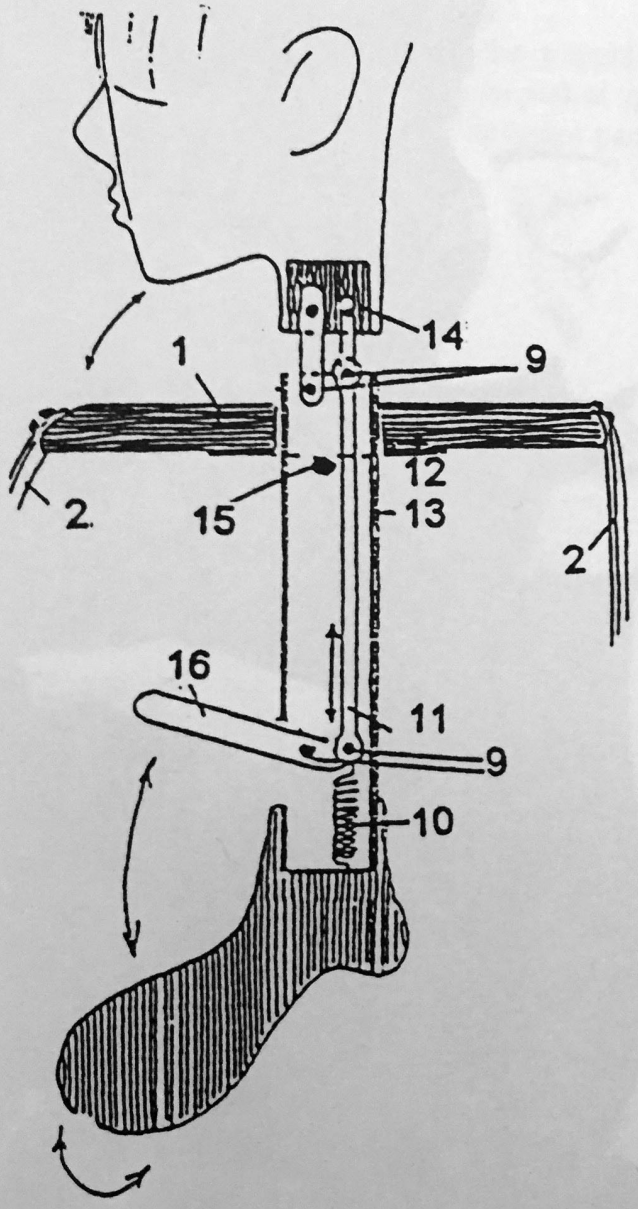
The head control

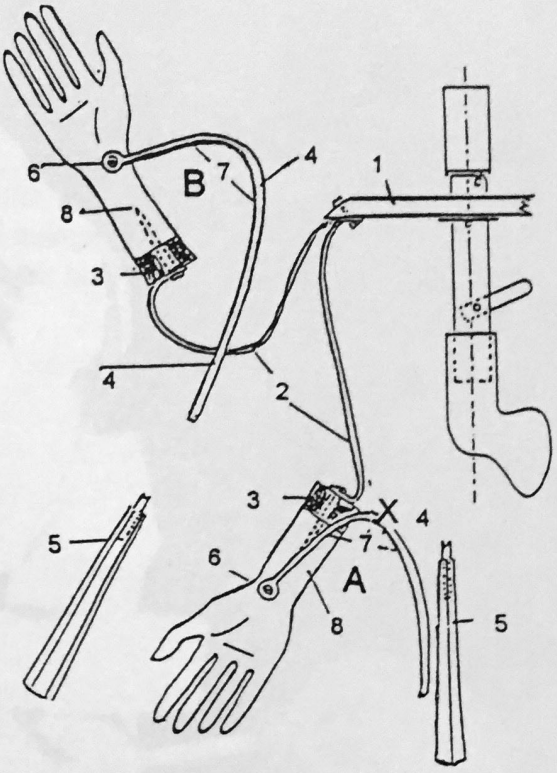
'The aluminium tube (13) easily rotates in a hole drilled through the shoulders (1). The shoulders rest on a plate (12) that is held in place by a peg (15) through the aluminium tube. When the lever (16) is pressed down, it pushes the connecting rod (11) up, which makes the head incline forward. On releasing the lever, the snap-back springs (10) pull the head into its original position. The head, ie the aluminium tube, is able to rotate 360°.

The arm control

'In its rest position (A) the puppet's arm hangs from the shoulders (1) by a leather strap (2) in such a way that the lead weight (3) loses its effect and the hand points down. The arm control rod (4) is made of a 3.5mm thick steel rod which runs from the curve (7) inside the sleeve to the pivot point (6). Here it is bent into an eye and is loosely screwed to the wrist so that it turns easily. The curve (7) hangs inside the costume in the lowest part of the sleeve. At the end of the rod is a wooden handle (5). The section of the control rod to the pivot point is as long as the lower arm and lead weight together. The part leading to the wooden handle (5) is the same length as the costume, which will depend on the length of the performer's lower arm.

'When the arm control rod (4) is lifted by the handle (5), the effect shown in drawing B happens: the pull of the leather strap (2) stops and the lead weight (3) begins to take effect, pulling the lower arm down on the rotation point (6) and making the hand raise in a convincingly human way.'





1. Wooden shoulders
2. Leather straps
3. Lead weight
4. Control rod
5. Wooden grip
6. Pivot point
7. Curve of the control rod
8. Hand
9. Joints.
10. Snap-back springs
11. Head nodding rod
12. Plate
13. Aluminium tube
14. Doweling for head
15. Peg
16. Head-nodding lever

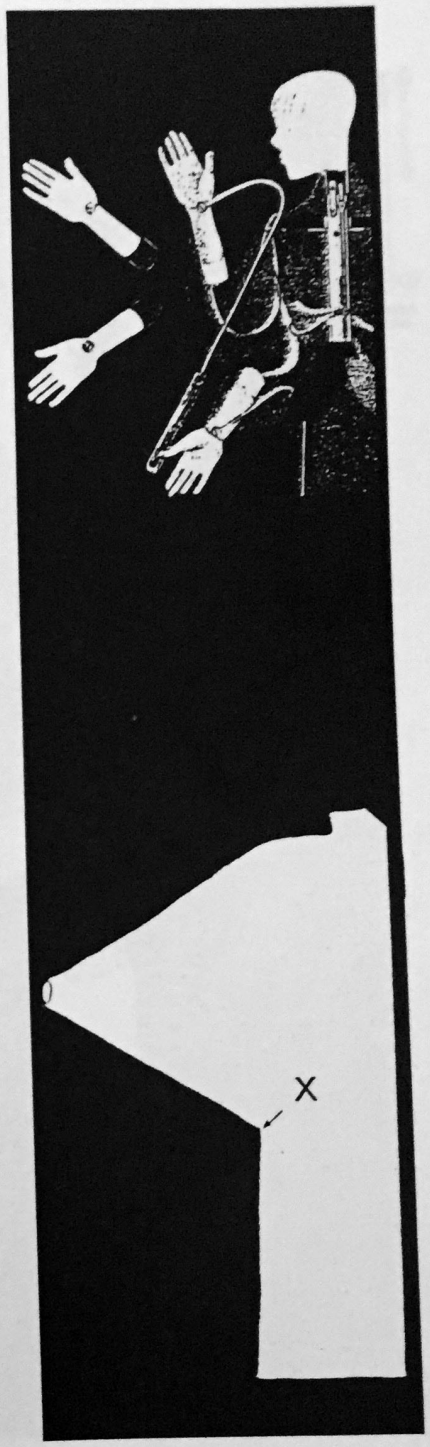
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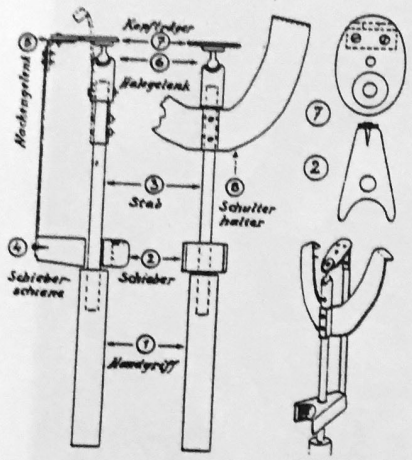


Conductor by Karl Heinz Drescher

The advantages of Drescher's internal arm control is that it produces very natural looking movements of the arm and hand, and the rods cannot be seen. To allow for the arm rods, the costume is made in a very particular way (see right). The sleeves are cut in a batwing shape, X indicates the position of the hips.

In their rest position, the rods to the puppet's arms lie close together and, if necessary, they can both be picked up and manipulated with one hand. The conductor on the opposite page shows how the technique can be used to great effect.





Turning-Nodding Mechanism by Günter Schnorr

The following article by Günter Schnorr appeared in *Perlicko-Perlacko* (Issue 5 1/1955). Forty years later, this mechanism still appeals to me because of its simplicity.

'Rod Puppets with Ball Joints

Requirements

Handle: bamboo Ø20mm
Slide control: hardwood
Rod: aluminium tube Ø10mm
Pusher: steel bar 12 x 0.5mm
Nape joint: hinge
Neck joint: photo-ball-joint*
Head support: 2mm aluminium sheet
Shoulder support: 1mm ditto

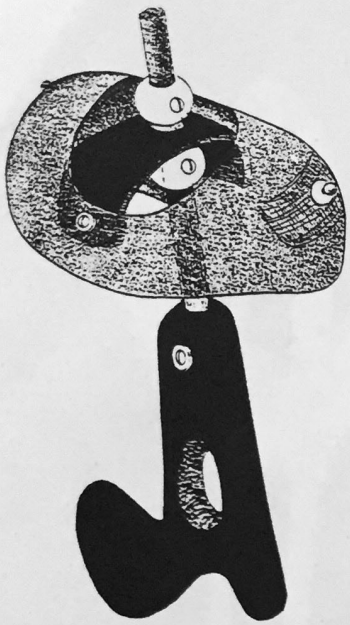
'Aluminium and bamboo were used to keep the puppet's weight to a minimum. Aluminium sheet is easily cut using metal-shears or a fret saw and smoothed with files and sandpaper. For the screw connections it is best, wherever possible, to use brass screws with flat heads. The rod is cemented into the handle with epoxy-resin glue. The nape joint is cut from a strong hinge. The photo-ball-joint* for the neck connection is drilled out to the diameter of the rod. The puppet's head should be as light as possible (wooden heads should be hollowed out). It is attached to the head support with a wood screw. Important: the middle of the neck lies between the neck and nape joints.

'A body which relates to the character of the puppet (shaped from tin or leather, or overcast) can be attached to the shoulder support with screws. The joints and the slide control must have enough room. According to the example shown, the puppet faces the performer. For the opposite control (away), the slide should be altered accordingly.'

* Publisher's note: 'photo-ball-joint' was the term used by Günter Schnorr, which we take to mean the type of joint sometimes used on camera tripods.

Diagrams which accompanied Günter Schnorr's original article in *Perlicko-Perlacko*





My Own Head Control Mechanism

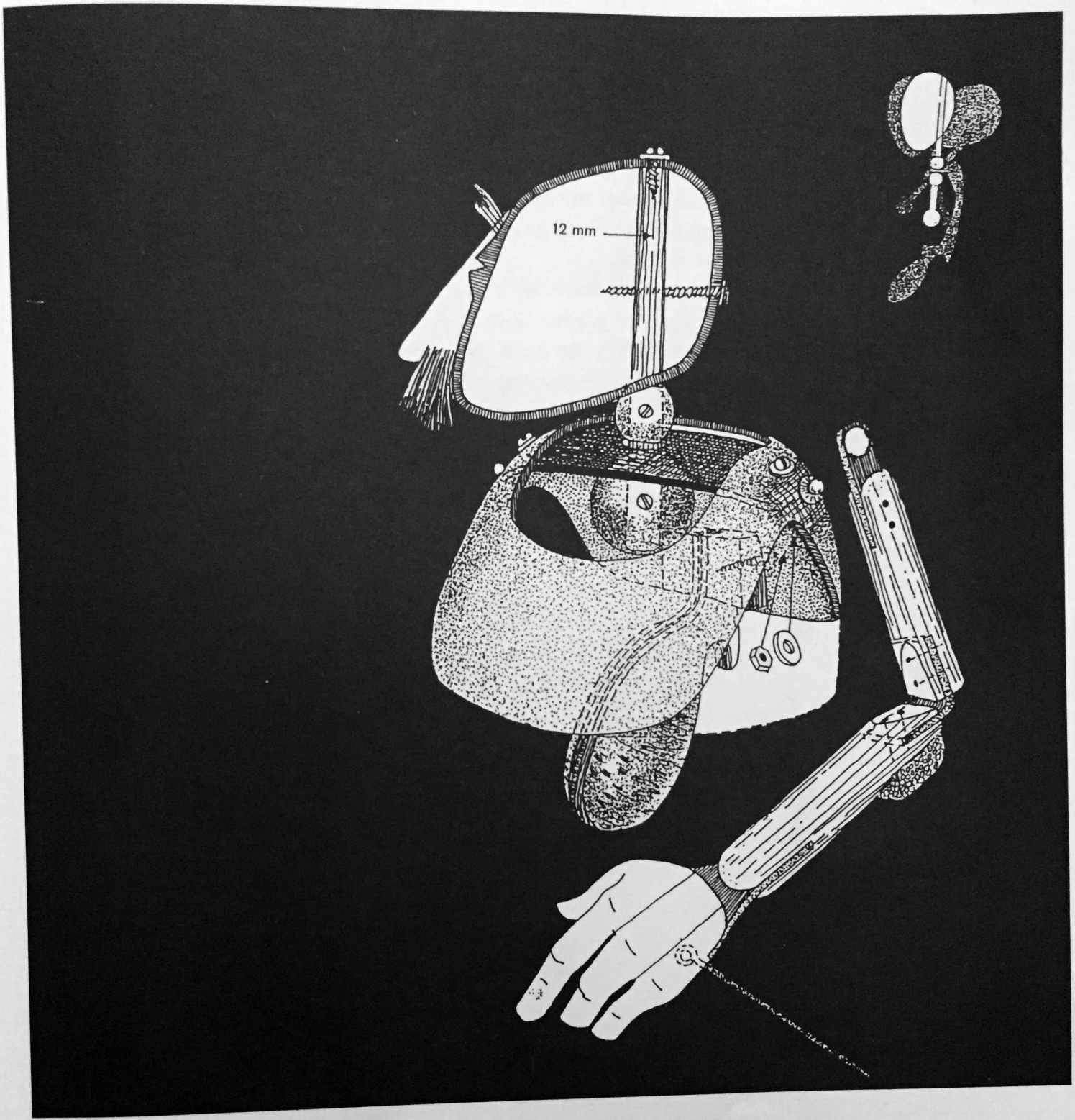
The mechanism opposite would never have come about if I had managed to find the ball joints described in the preceding article and hadn't happened to live next to a transport company.

It consists of a piece of car tyre inner tube with a hole, a piece of hardwood doweling between 10 and 15mm thick, two wooden balls, each with a hole of the same diameter as the dowel, and a handle with which to support the puppet. The handle pictured on the left was designed by Leo Uttenrodt and the hole in it allows, if needed, the index finger to manipulate a string attached to a moving mouth.

The piece of inner tube is stretched across the neck opening and fastened to the shoulders. A hole is then punched through the rubber to take the head dowel, onto which the two wooden balls are fed and fixed either side of the rubber, as shown. The head is controlled by manipulating the lower ball with the thumb, index and middle fingers, whilst the ring and little fingers grip the handle which rests on the palm of the hand. With a little practice, it is possible to sometimes rest the manipulation ball on the handle, which means the weight of the head does not always have to be supported by the three control fingers. The range of the head movements is determined by the two balls and can be altered by changing the space between them.

With this simple mechanism I had devised a rod puppet control with the sensitivity I had been looking for, and it has continued to work so well over the years that most of my puppets with short rods have been made with it. In fact, this control mechanism has become so much part of me that I think of it as my 'rod puppet prosthesis'.

Above and opposite: The author's turning-nodding mechanism made with car inner tube


12 mm

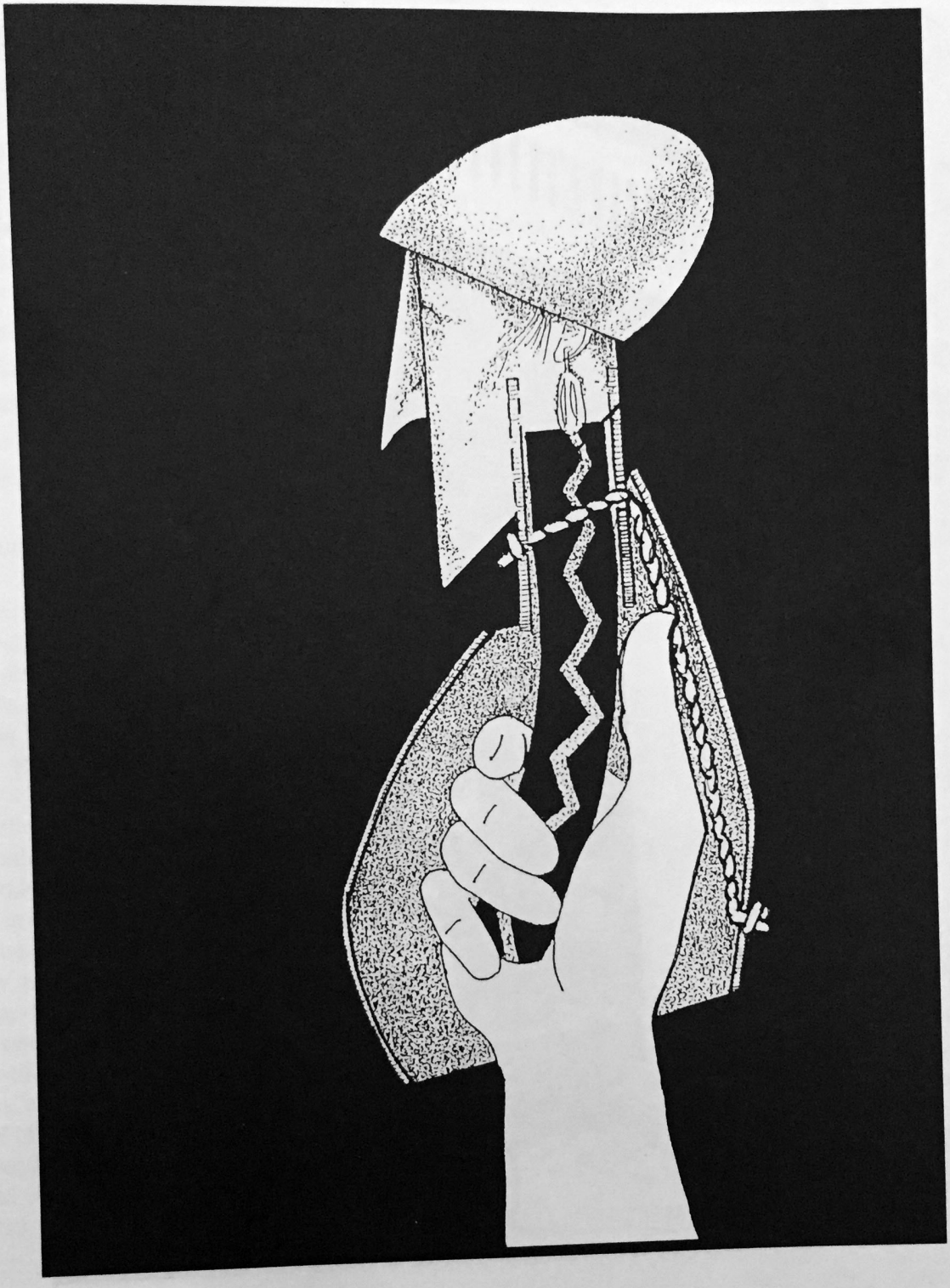


Rolf Trexler's 'Knotted-String' Mechanism

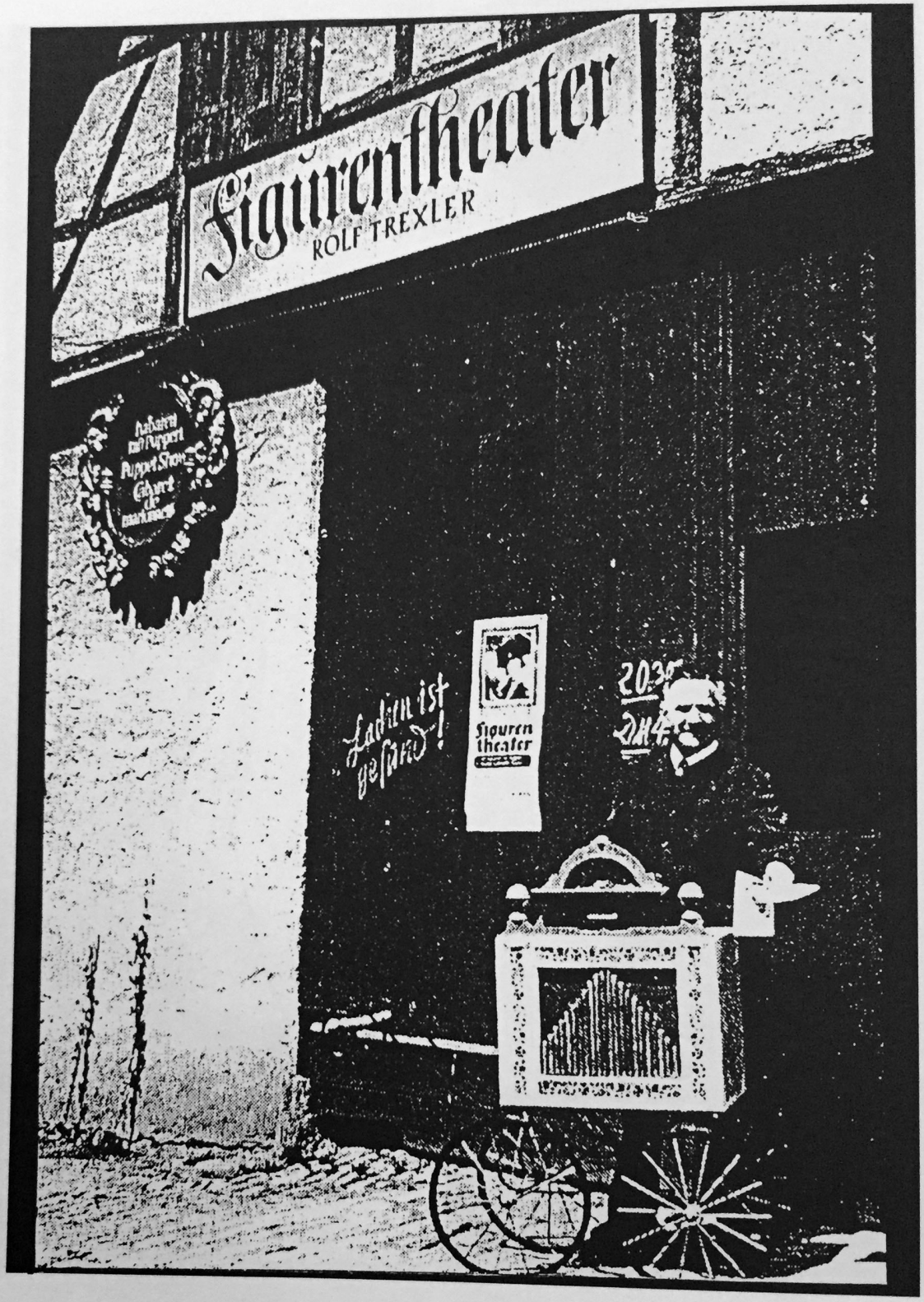
One of the simplest mechanisms to control a rod puppet is what I call 'Trexler's Knotted-String'. Rolf Trexler was a great inspiration to me, and over the next few pages I would like to pay tribute to his life and work, as well as pass on some of the techniques he so generously showed me.

The head and body of the puppet on the opposite page are joined by a length of garden hose and a piece of string; a simple mechanism which allows the head and shoulders to be moved separately. The garden hose is inserted into the puppet's neck, which gives it some flexibility. The head can be rotated (using the wrist) or inclined (using the thumb to bend the hose), whilst the shoulders hang freely. Alternatively, the head is held in a fixed position whilst the thumb rotates the shoulders by manipulating the string. The measurements and flexibility of the various elements can be coordinated so that the thumb is also able to manipulate the puppet's chest, as shown on the left.
The construction of the mechanism is very easy. As can be seen from the diagram on the right, the string passes through the neck (and hose) down to the lowest possible point in the puppet's back/shoulders, where it is fixed with a knot.

Student's puppet made with garden hose and knotted-string mechanism



Construction of Rolf Trexler's knotted-string mechanism



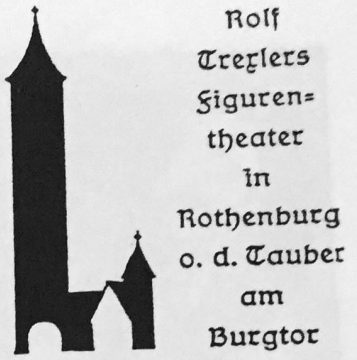
Rolf Trexler outside his theatre in Rothenburg ob der Tauber

Rolf Trexler's Cabaret

I met the professional puppeteer Rolf Trexler whilst training as a teacher in Karlsruhe. It happened because one of my pupils asked if I knew him and had seen him perform. Who? Where? "He plays nearly everyday in the Karstadt department store, first a few minutes in the window to get people interested and then he gives a half-hour puppet cabaret performance in the shop itself." Of course, I had to see it — and what I saw was a puppetry technique which was completely new to me at the time. After the performance I plucked up the courage to introduce myself and was received as if we were old acquaintances. A friendship stemmed from this meeting which lasted until his death.

Wolf Aldinger, dramaturg, once wrote of him:

> 'Rolf Trexler, founder and director of the Lindau am Bodensee Puppet Players, is a professional painter and sculptor, and it is in his studio that the distinctive, brilliantly satirical and incredibly versatile puppets are made, either personally or from his designs. His performance technique has been developed through years of painstaking experimentation. Rolf Trexler's theatre presents cabaret, inventive puppet cabaret. There are no worn out formulas here, no conventional trivialisation. On the contrary, this puppet theatre takes new paths, in fact I would almost say that a new philosophy is practised here - that of the 'wooden head'. And it is catching on .... fast. Rolf Trexler's cabaret is to be taken seriously in every way as an artistic form of theatre which breaks with the traditional and common perception that puppetry is only for children. Of course, youngsters do thoroughly enjoy Trexler's performances but the 'oldies' laugh and smile no less - on the contrary, perhaps they are better able to sense the seriousness of things which, though expressed in a cheerful and lively way nevertheless have a powerful hidden meaning. The puppet embodies the heart and soul of its creator. That is why Rolf Trexler's puppet cabaret is one of the leading companies in Germany — Trexler not only possesses solid and comprehensive technical skills but has his eye firmly fixed on the world, is able to be enthusiastic about all things beautiful and



INVITATIO

Es iſt an der Zeyt, daß wir Ew. Gnaden unthertheanigſt kund und zu wissen geben, daß das berühmbte & weytgereiſte Puppen=Ensemble von gelenkigen und kurtzweyligen Komoedianten & Muſicis in unſerer altehrwuerdigen Stadt Rothenburg ob der Tauber ſich die Ehre giebt, dem hochloeblichen Publico ſein Repertoire in ergetzlicher & vergnueglicher Weyſe vorzufuehren und ſich bey dihſer Gelegenheyt den wohlachtbaren Buergern, Hochwohlgeborenen & Gäſten der Stadt im neuen Hauſe vorzuſtellen.

Der geneygte Freund unſerer kleynen Kunſt wollt dihſe Gelegenheyt nicht vorbey gehen laſſen, weilen ein Puppen=Spectacel agieret, welches neuartige Manieren zeyget und ſolchermahßen in ganz Teutſchland eynmalig iſt.

Die pp. Direction der Holzkoepfe, Mahler & Luſtigmacher Rudolphus Treßler und ſeyne Gemahlin, wuerde es ſich zur beſunderen Ehre anrechnen, Ew. Gnaden bey dihſer Gelegenheyt begrueßen zu duerffen. Es ſeyndt lautter ehrbare und fridfertige spectatores zugegen.

Die Gala-Vorfuehrung findet ſtatt im Figurentheater am Burgtor. Selbige iſt für Ew. Gnaden umbſunſt & wird keyn Ehrengaſt mit eyner mildtetigen Collecte oder dem Klingelbeutel ſekkieret werden.

ÜBERSETZUNG:

Bitte machen Sie uns die Freude und seien Sie unser EHRENGAST





possesses a disciplined ability not to let ugliness touch his work. And what's more, this puppet cabaret is refreshingly unsentimental because Rolf Trexler himself has too much vitality, is far too young at heart, to allow even one digression into mawkishness. To sum up, one could say that, through Rolf Trexler's puppet cabaret, puppetry is experiencing a creative revival of such force that it is impossible to predict the outcome of all the possibilities contained therein.'

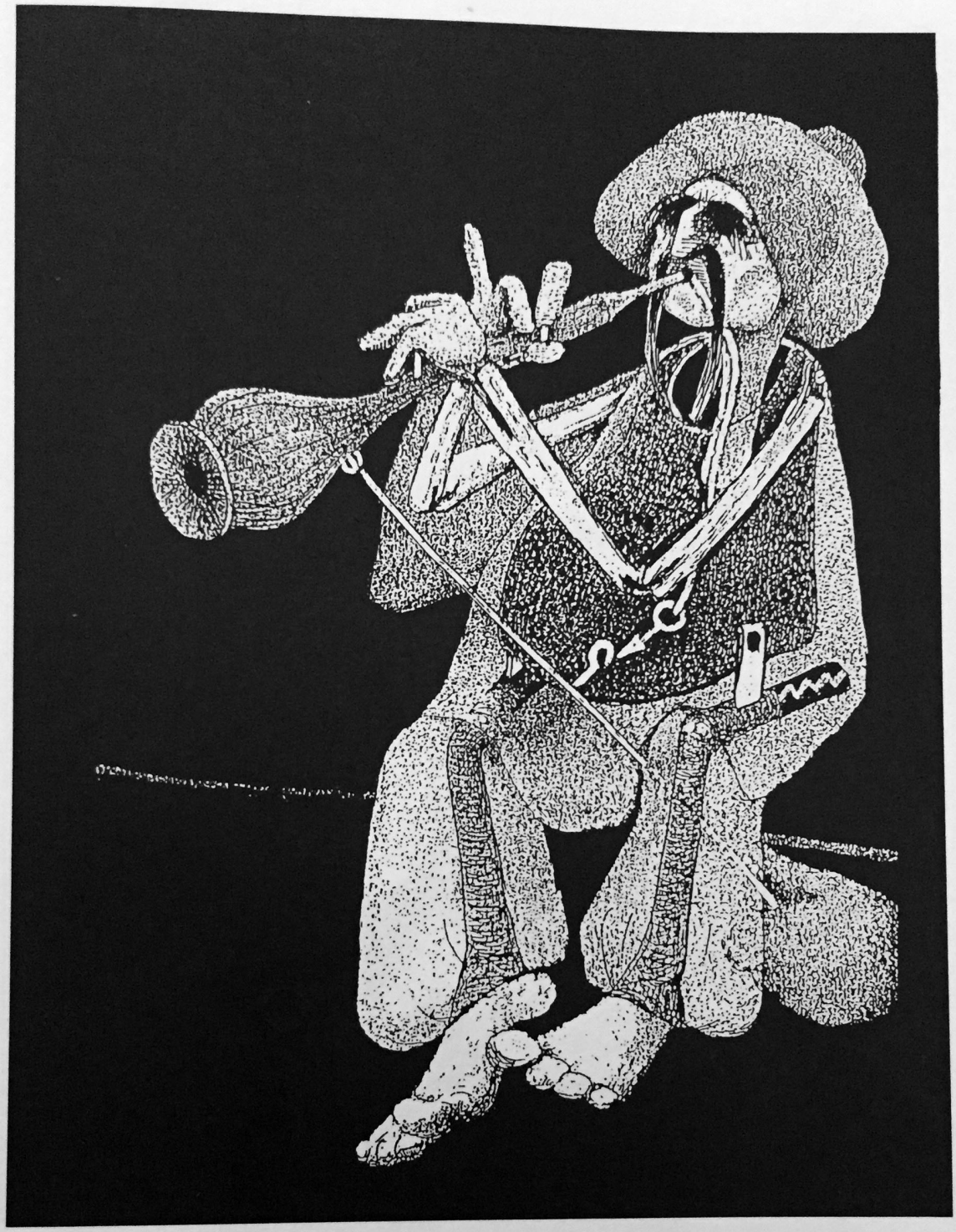
As previously mentioned, the first time I saw Rolf Trexler perform was in a department store. To attract passers-by into the shop, he would first play a snake-charming sketch in the window, which began as follows: a rod puppet snake-charmer waddled up to the playboard, carrying a basket, and proceeded to tell the audience about the tricks they were going to see. He then began to get settled, and it was quite a surprise to see him suddenly hoist his legs over the playboard, apologise for his unwashed feet and sit down in the lotus position. After some witty advertising slogans on behalf of the department store, and a few remarks about the audience, the snake-charmer pulled the mouthpiece of his flute to his lips (using the string and hook mechanism described on page 182), and began to play.

During the 30 minute performance inside the store itself, the sketches were introduced by a Master of Ceremonies with a moving mouth — which was a real eye-opener because, apart from ventriloquist dummies, there was nothing like it at the time. The technique has since become known as 'lip-synch', and is today very widespread.

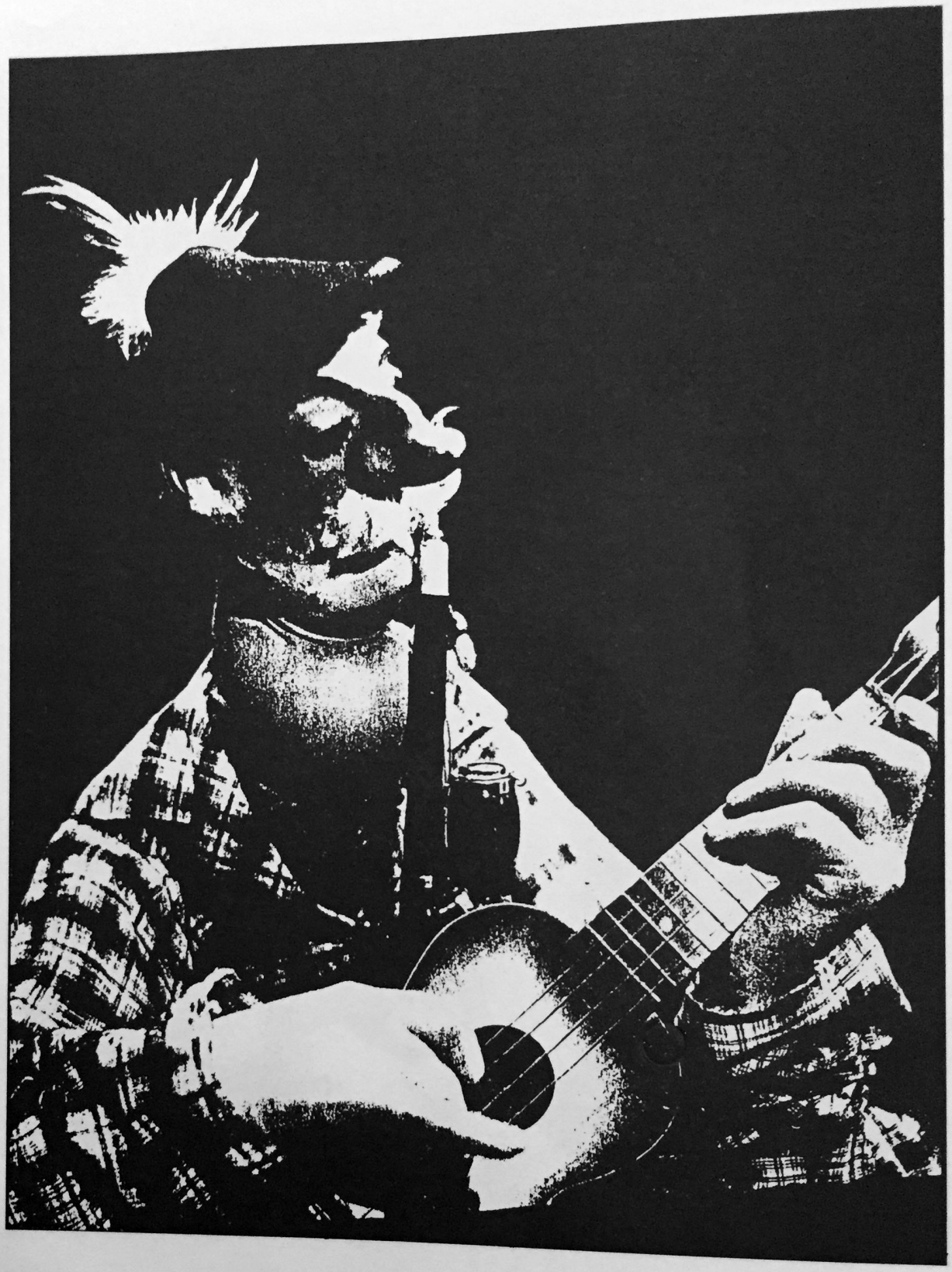
The star of the cabaret was a Gypsy Fiddler, carved by Trexler as a self-portrait. The Fiddler began his performance with carefully combed hair, but as his playing became more and more passionate, it began to whirl wildly around and finally landed in his face. The control to the violin bow ran parallel to the puppeteer's own wrist, and as Trexler really could play the violin, the Fiddler's playing looked very convincing.

The things Rolf Trexler's puppets could do seemed to border on the fantastic. I had never seen trick rod puppets before, and this first impression was for me a revelation.

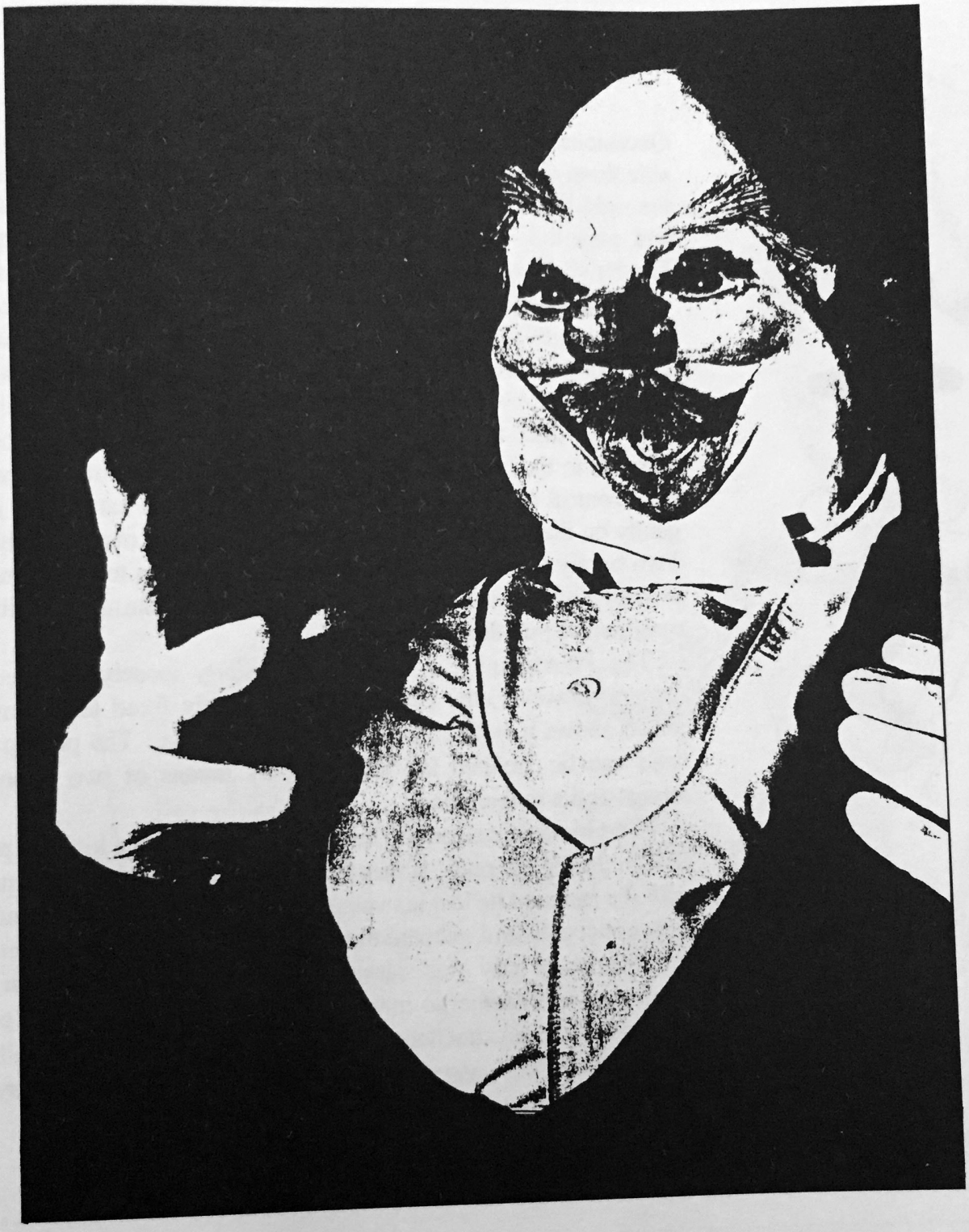
Gypsy Fiddler by Rolf Trexler



Snake Charmer by Rolf Trexler

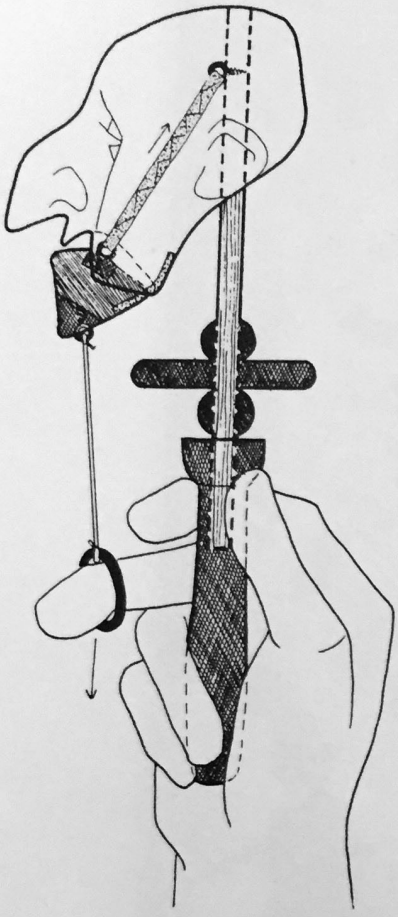


Guitarist by Rolf Trexler



Rolf Trexler's Master of Ceremonies opens the show

Special Mechanisms



Occasionally, puppets need individually-designed mechanisms to enable them to execute specific actions. For example, the Trumpeter on the right had to lift his instrument, position it correctly against his lips and give the impression of pressing the keys and blowing. Rolf Trexler showed me a relatively simple solution to achieve this.

The puppet's hands are connected to the trumpet, which is brought to the puppet's lips by pulling on a string attached to the mouthpiece. The string passes through the mouth and down the support handle through two screw-eyes, and has a ring at the end to prevent it slipping back up. Once the mouthpiece is in place, the ring is hung on a hook attached to the handle, and the body of the instrument is lifted using a steel control rod. The puppet's hands rise at the same time and rock gently on the keys as the trumpet is rhythmically moved to the music. Two barely perceptible strings connect the hands to the trumpet with enough play to make the motion look soft and natural. The elbows are weighted to pull the wrists down.

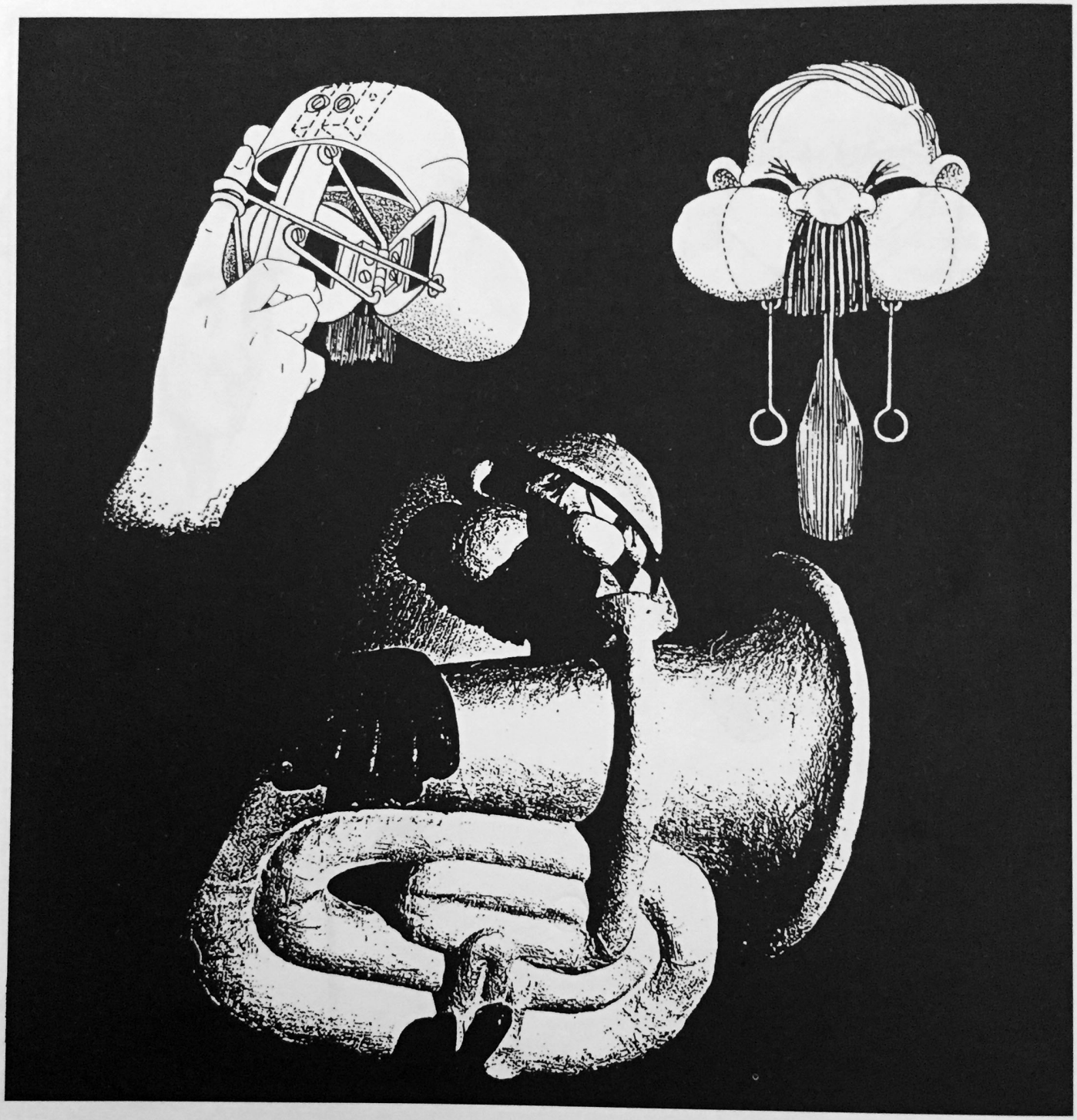
The Photographer's hands are similarly loosely attached to the camera, however, the camera itself is firmly fixed to a control rod, which allows it to be lifted with more precision. The photographer's head can be inclined left and right by means of two strong nylon strings and a rocking bar.

The Grand Vizier on the left needed to suddenly lose his power of speech during the play. It was planned that his mouth would not move until the moment he lost his voice, but that from then on it would do so very noticeably and vehemently. The head was made by overcasting, and the lower jaw was carved from wood. The two parts were connected with leather to make a movable joint. The mouth opens by pulling on a string attached to the chin, and an elastic band pulls it shut again. The string passes inside the body, which makes it easy to find and stops it from swinging about.

Grand Vizier from *Aladdin*



Mechanisms for theTrumpeter and the Photographer



Mechanism for The Military Bandsman's puffing cheeks

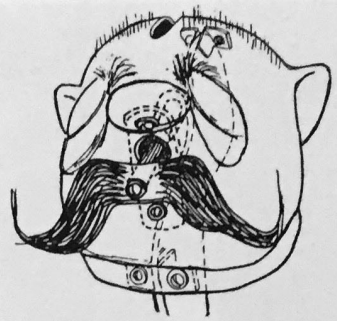
Inspired by Rolf Trexler's crooning Guitarist, whose throat (a balloon) would swell as he sang until it nearly burst, I decided to make a military bandsman whose cheeks puffed in and out to the rhythm of his playing. I didn't like the look of balloons swelling out of holes in the face, and therefore devised the following solution.

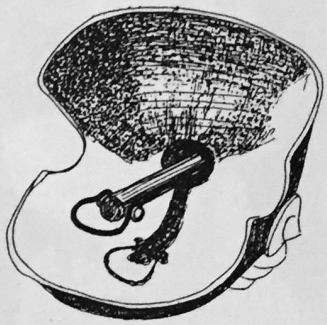
Using the overcasting method, I made a bean shape for the cheeks, which was then cut in half and rejoined with a hinge (see diagram on the left). The pin of the hinge was removed and replaced by a piece of strong wire bent into a loop hole at one end. Not knowing in advance how long it should be, I screwed the wire onto the support grip at the top, slipped on the hinge and bent it sharply back to determine the distance from the handle. With the screw still loose, I could move the cheeks up and down and decide how close to the skull they needed to be to create the right size eye sockets (suggested by the space between the ridge of the eyebrows and the top of the cheeks). I then bent the wire below the hinge sharply back to the handle and decided where to make and attach the second loop.

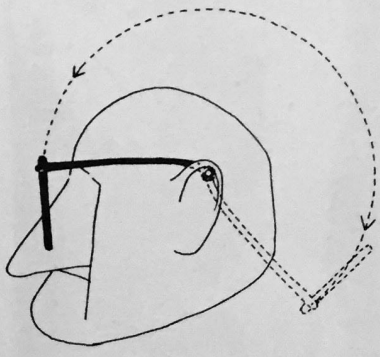
The dotted line in the second drawing on the left indicates the normal size of the cheeks before they are puffed out. Blowing movements can be precisely measured to the rhythm using one index finger to manipulate both wires with loops simultaneously.

The moustache of the trumpet player on the right can be rotated through 360° or waggled using the thumb and middle finger. His spiked helmet rises and falls to the beat by manipulating a rod that passes through the top of his head.

An extension to his glasses enables the puppet bottom right to push them onto the back of his head using his own hand, and with a sharp nod of the head, flip them down onto his nose again.







Top to bottom: Mechanisms for rotating moustache, rising hat and flip-over glasses



Lip-Synch Puppets

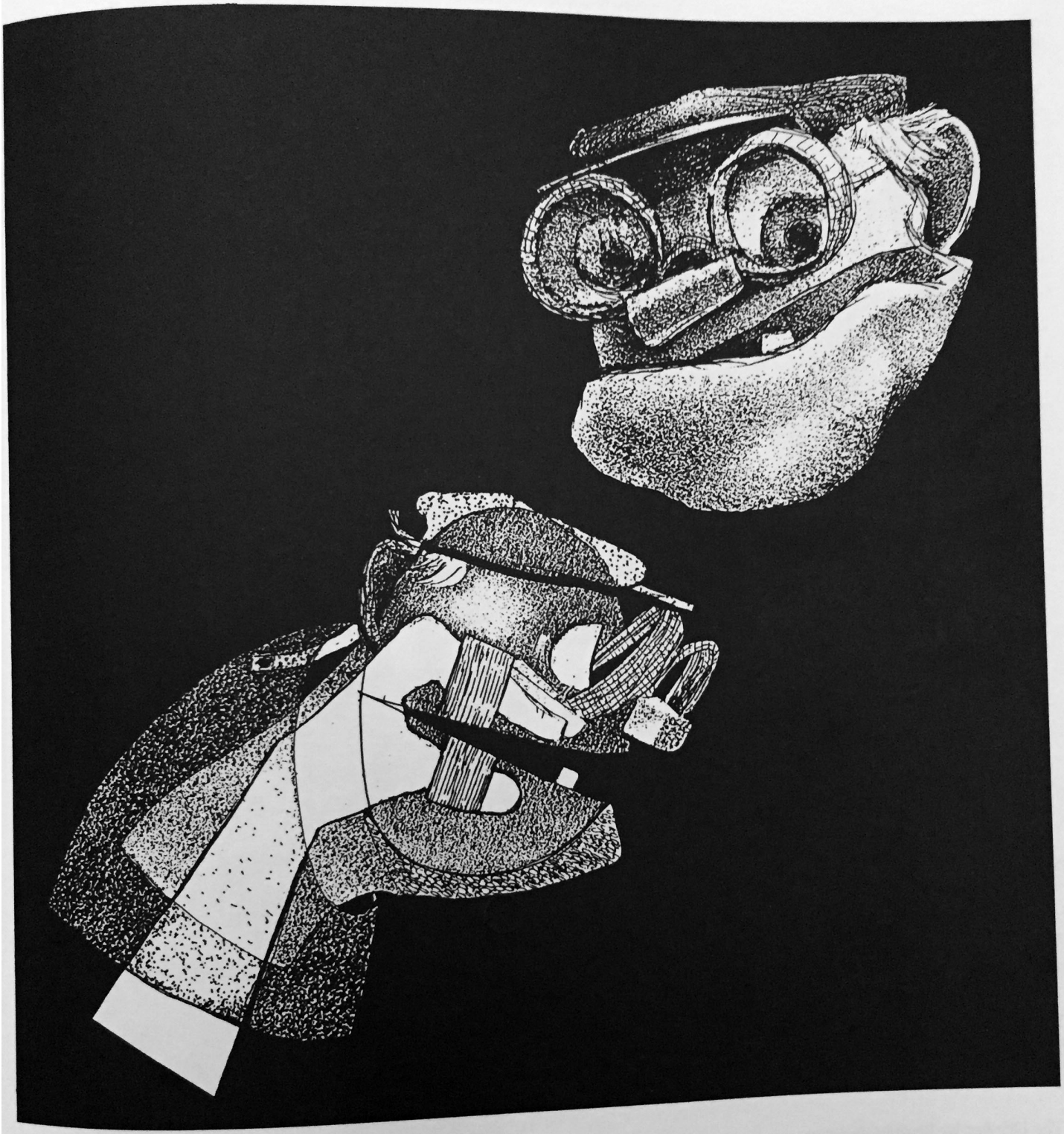
Rolf Trexler was one of the first, and possibly the first, in former West Germany, to work with lip-synch puppets. Reflecting in 1953 on puppets with moving mouths, Fedotov wrote: "This type of puppet is still not very wide-spread. Successful examples of this technique are few and far between, and are usually only used in variety and cabaret shows."

Much has changed since then and lip-synch puppets have now become one of the most commonly used techniques. The Muppets, created by Jim Henson, have been enjoyed all over the world, and puppets with moving mouths are used as tools in education and therapy, and appear in a variety of television programmes ranging from entertainment for the very young to biting political satire.

The diagram opposite shows the technique I used to construct a caricature of my garrulous French neighbour, Ferdinand, who is fond of a drink. The lower jaw is padded with foam rubber, and is flexible so that the puppet can lick the end of its nose and move its jaw from side to side. The head is a halved cardboard egg shape with the openings closed with card, and is completely covered with felt. At the back of the head is a tube of cloth, and inside are grips for the puppeteer's hand — a thumb goes into the lower jaw and the other four fingers into the skull. When the fingers and thumb are spread to make a right angle, the puppet's head is in the position shown on the left.

Foam rubber is often used for this technique and can be an interesting material for making relatively short-lived puppets with special features. I am not keen on it myself because some types of foam seem to disintegrate after a while, and I therefore made the Compere on page 187 from polystyrene covered with white cloth. The polystyrene was first covered with a layer of paper to avoid it being attacked by the glue used to attach the fabric. Where the face had to crease it was made from double thickness cloth, reinforced in places. The only foam rubber I used was a small piece, 2cm thick, that runs from the bottom lip to the chin.

Above and opposite: Ferdinand, a lip-synch puppet by the author





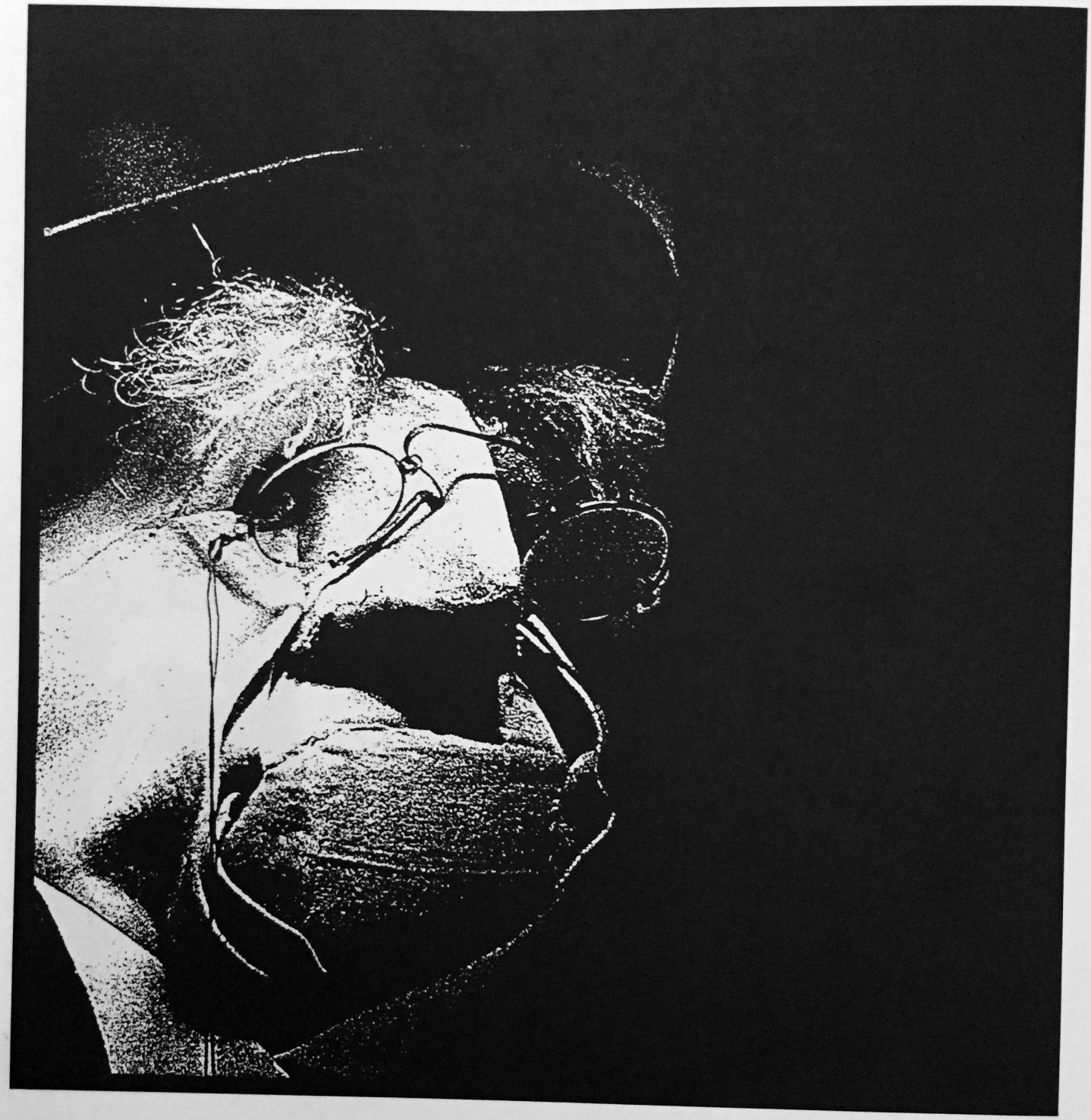
The Drinker by Sergei Obraztsov

Sergei Obraztsov's Drinker (opposite) is an excellent example of a puppet with animated features. The puppet's head was made from soft fabric, into which the whole of the puppeteer's hand could be inserted. By moving individual fingers, Obraztsov animated the puppet's expression – and the Drinker would twitch its nose, raise its eyebrows and crease its face into a thousand wrinkles.

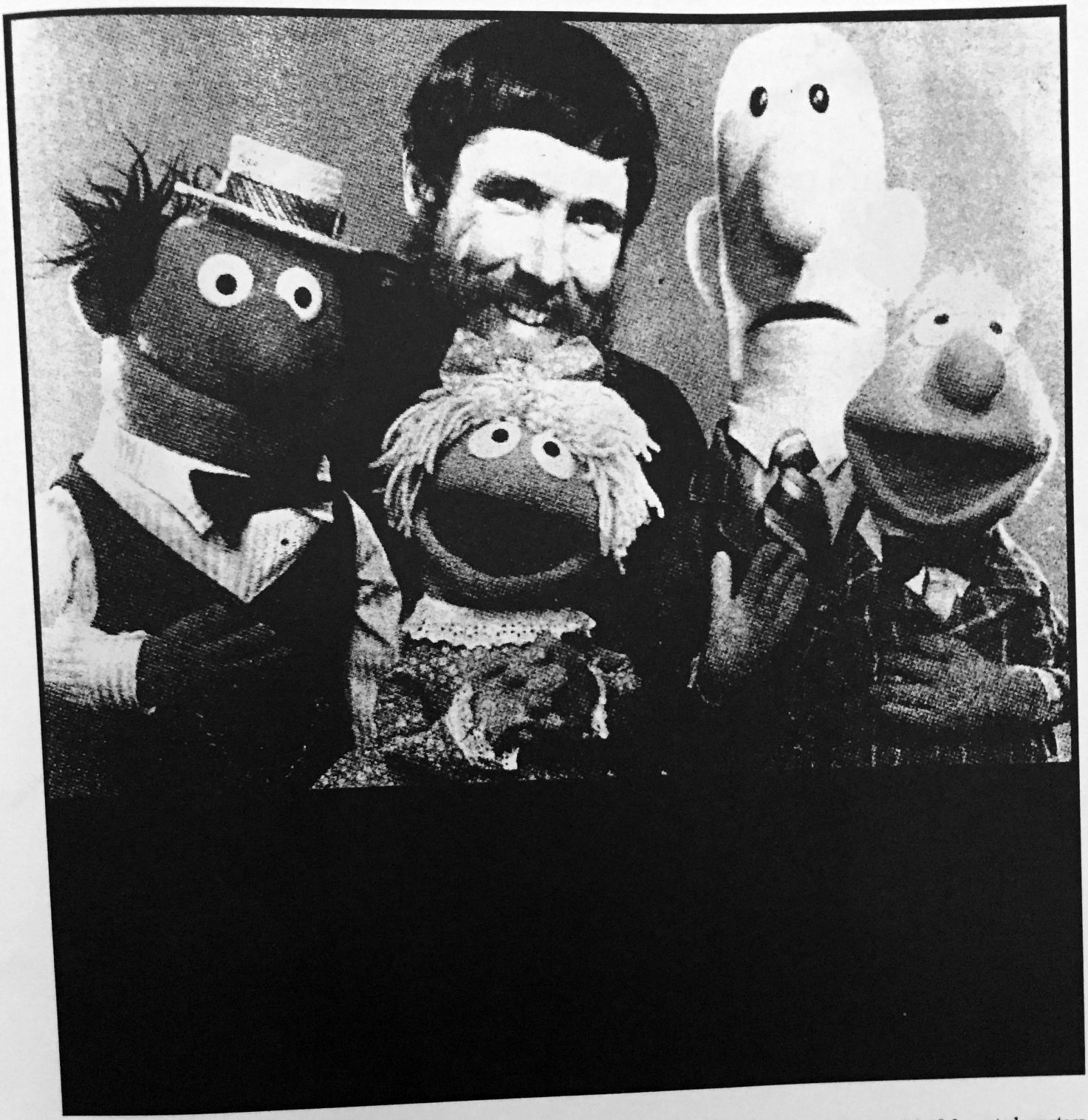
A puppet which can move its face in this way has a three dimensional cloth head, and a polystyrene or wooden model may be helpful when creating the pattern. Thimbles or loops are sewn into the appropriate places on the inside of the head, which is then padded, remembering to leave enough room for the performer's hand.



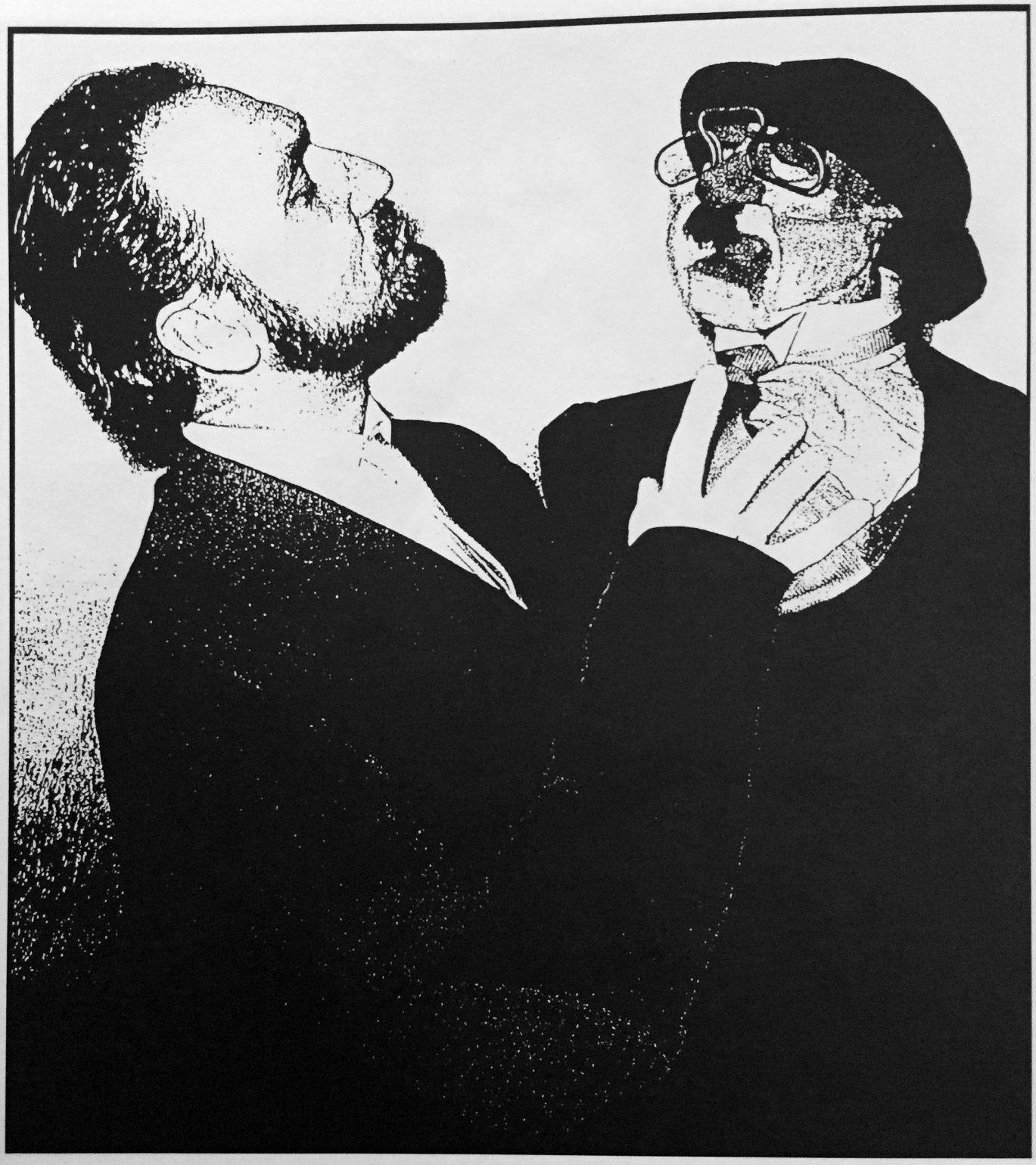
Compere by the author, a fabric-covered lip-synch puppet



Compere by the author for *Ladykillers*



Jim Henson and some of the Muppet characters



The author with his first lip-synch puppet

Chapter Five

Designing and Making Puppet Bodies



Shape and Proportion

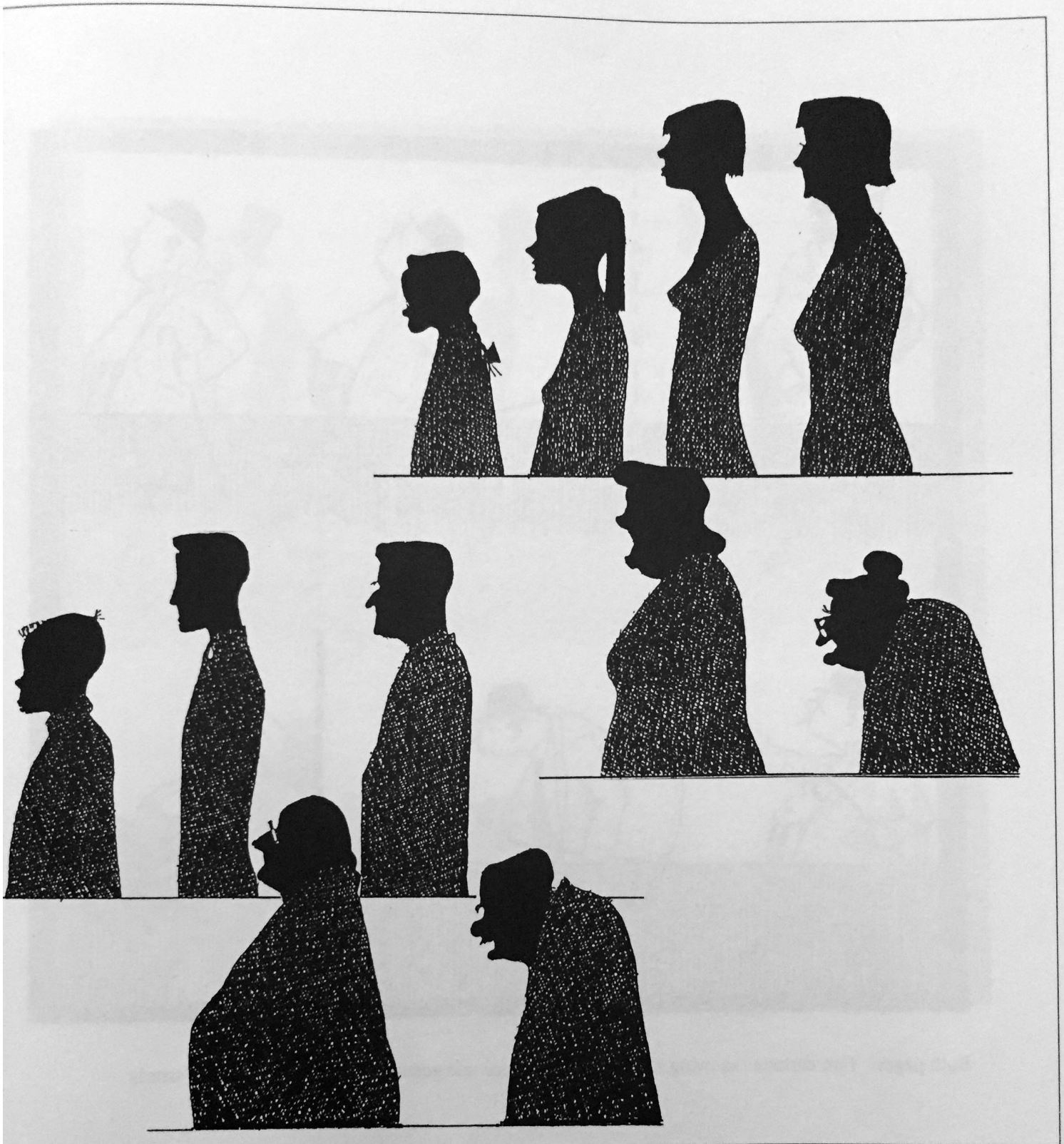
To imitate the human body, with all its 600 or so muscles, is pointless when designing a puppet. Instead, the aim should be to capture its essential characteristics. To do this it may be useful to have some knowledge of anatomy but it shouldn't be necessary to go any further than looking at your own body in the mirror or observing other people. We all have an unconscious store of knowledge about people and by astutely selecting and assembling features such as a hunched back, protruding belly, long neck etc, it is possible to create characters which embody the essence of human beings.

On the right is a drawing in which I portray a man and a woman in silhouette as they might develop from early childhood to old age. They don't have legs because, broadly-speaking, this is how glove and rod puppets appear in conventional booths. In contrast to normal adult human proportions however, where the total body length is approximately seven heads high, a puppet's proportions are most effective if the size of its head is between a quarter and a sixth of the total body length, including legs. To find the correct measurement for a glove or rod puppet, one should calculate as if making a puppet with legs.

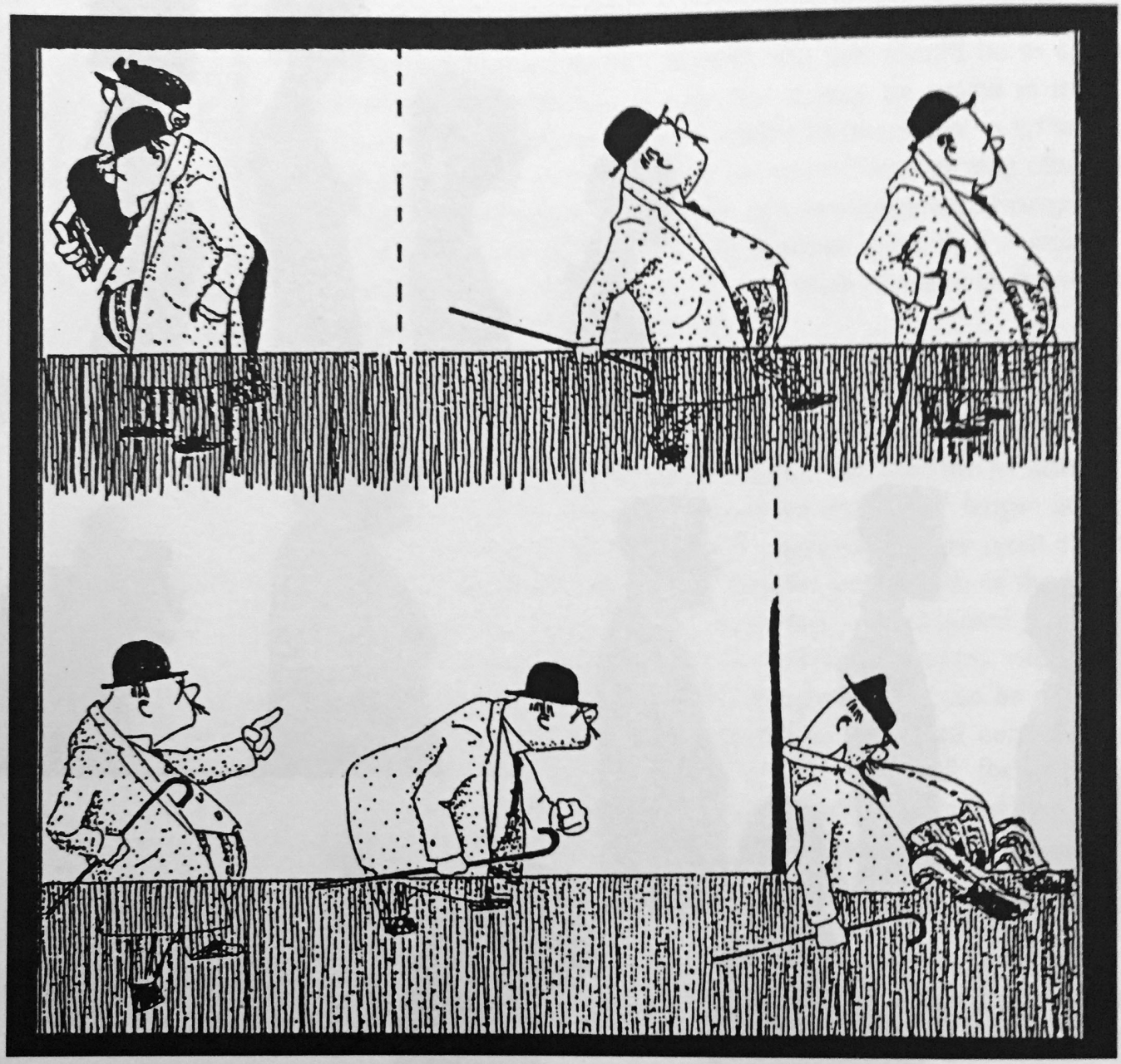
The shape and proportions of a puppet's body can be as important in defining its character as its facial features, and certainly help to distinguish it from other figures on the stage. If, for example, the height of the Cook in the diagram on the left is assumed to be one unit, three quarters of which are visible above the playboard, the thin man is not only taller than the cook by a fifth quarter but is further lengthened by his top hat. These are visual arguments which make it impossible to confuse the two characters, even from a distance.

On the next two pages are two cartoons in which the appearance of the characters, their stance and gestures tell the story. Similarly, a puppet should be able to express itself in mime, and this potential should be inherent in its conception and making. Successful puppets are not created by following a formula but through constant observation and practical experience.

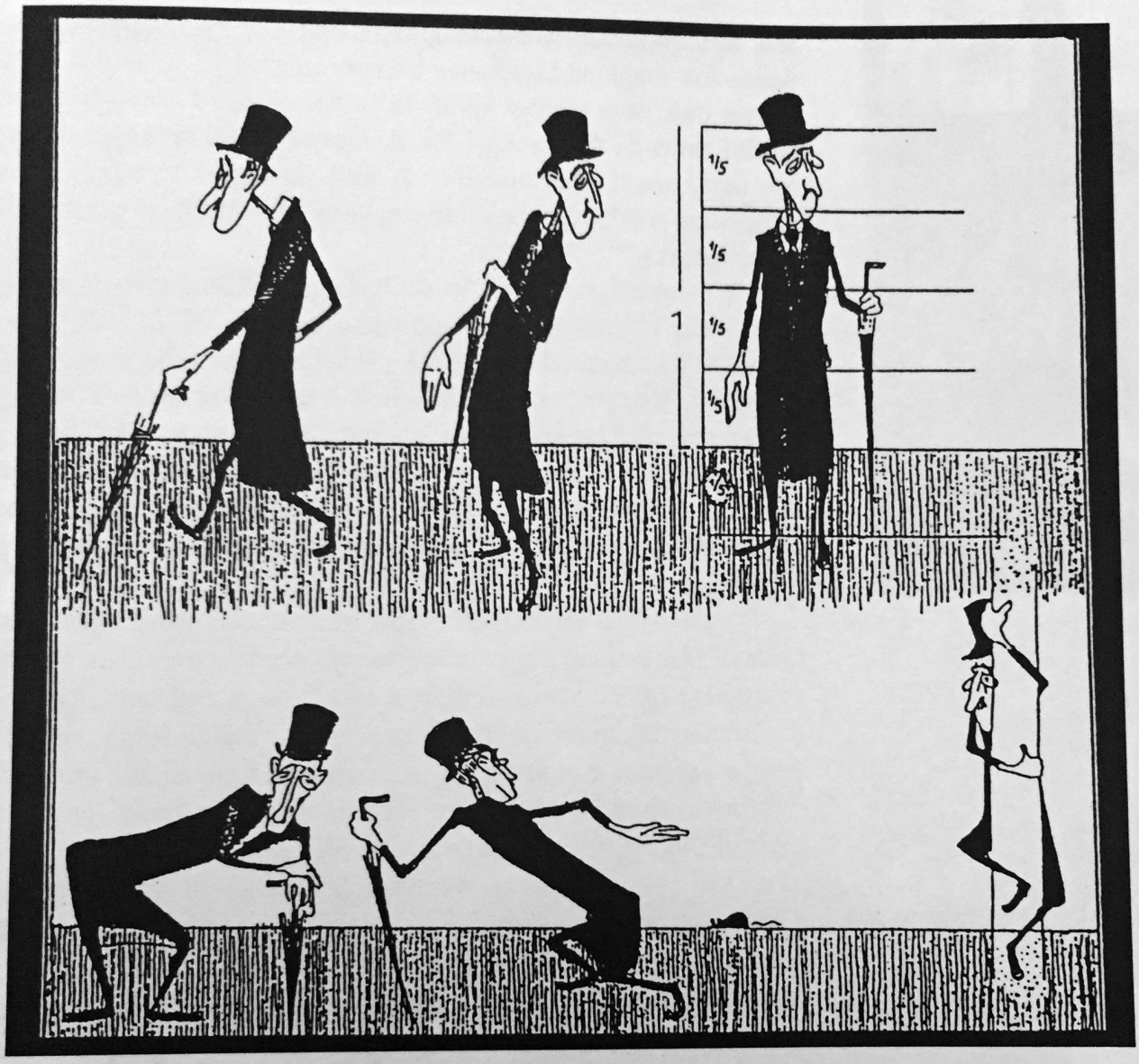
The use of proportion to develop characters

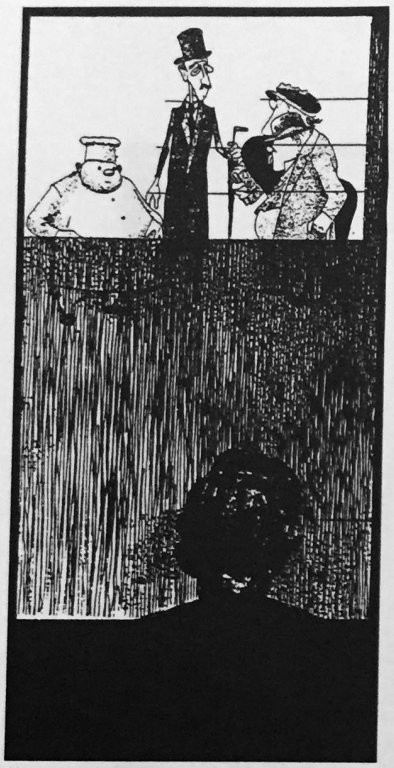


Changing body shape during the ageing process



Both pages: Two cartoons showing use of posture, stance and gesture to tell a story without words


1/5
1/5
1/5
1/5



Sightlines

It is very important when designing a play that the relationship between the space, stage and audience be coordinated. The sketch on the left shows part of a puppet booth from the point of view of a spectator seated towards the back of the auditorium, and although the puppets are fairly small, they are easy to differentiate and recognise because opposition and exaggeration of proportion has been consciously used in their design.

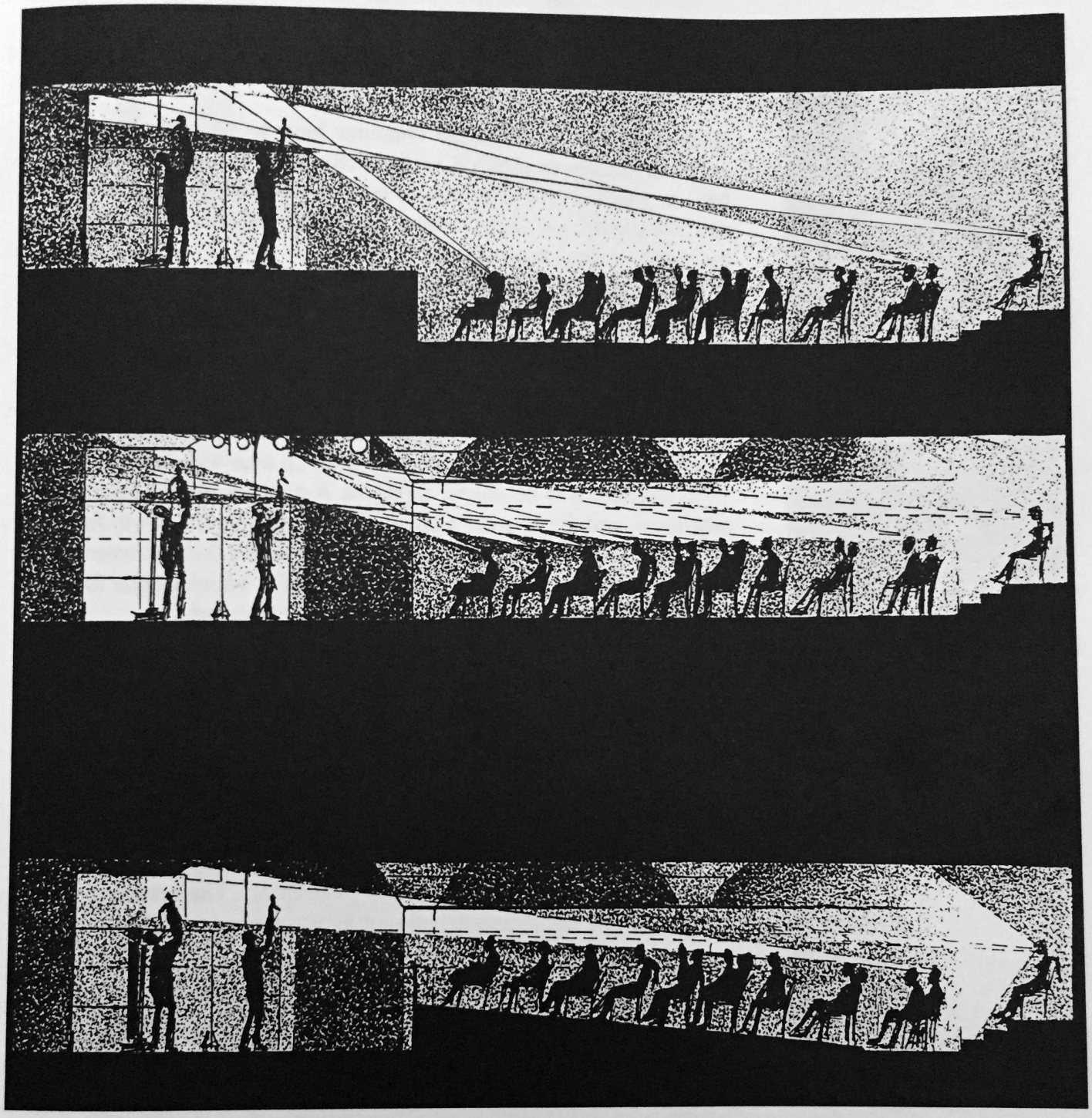
My theatre was situated in the basement of a printing works and the space was limited by the height and position of the 2.8 metre high pillars that supported the concrete floor on which the printing machinery stood. Our shows were designed to be performed in a booth, which meant that the heads of the puppets were often only 40cm below ceiling height. A spectator watching this type of booth show needs to look up at the puppets, which affects the line of vision, and it is important to consider this when designing and directing the performance.

The drawings on the right show three conceivable seating arrangements. The audience sightlines are indicated by the white triangles — everything below is out of their field of vision and cannot be seen. In the first arrangement the booth stands on a raised stage, which means the people sitting at the front can only see figures that are positioned right up against the playboard. The puppet at the back is not visible to most of the audience or, at best, can only partly be seen.

In the centre diagram, the relationships are slightly better but still poor when using the depth of the stage. The rear performer is standing approximately 200 to 250cm behind the playboard and his puppet cannot be seen by the front section of the audience. For spectators sitting towards the back, only the upper part of the puppet is visible.

The third solution shows the seating arrangement we adopted in my theatre in which a platform slopes the audience upwards towards the playboard, thereby creating sightlines that are more or less the same for the whole audience.

Spectator's view of a puppet booth



Sightlines and seating arrangements



Constructing Bodies for Rod Puppets

Biology teaches us that some creatures have an internal skeleton, for example humans or giraffes, while others, such as beetles and crayfish have an external one. The latter is more suitable for puppets because it not only provides a structure onto which mechanisms can be attached, but protects them at the same time.

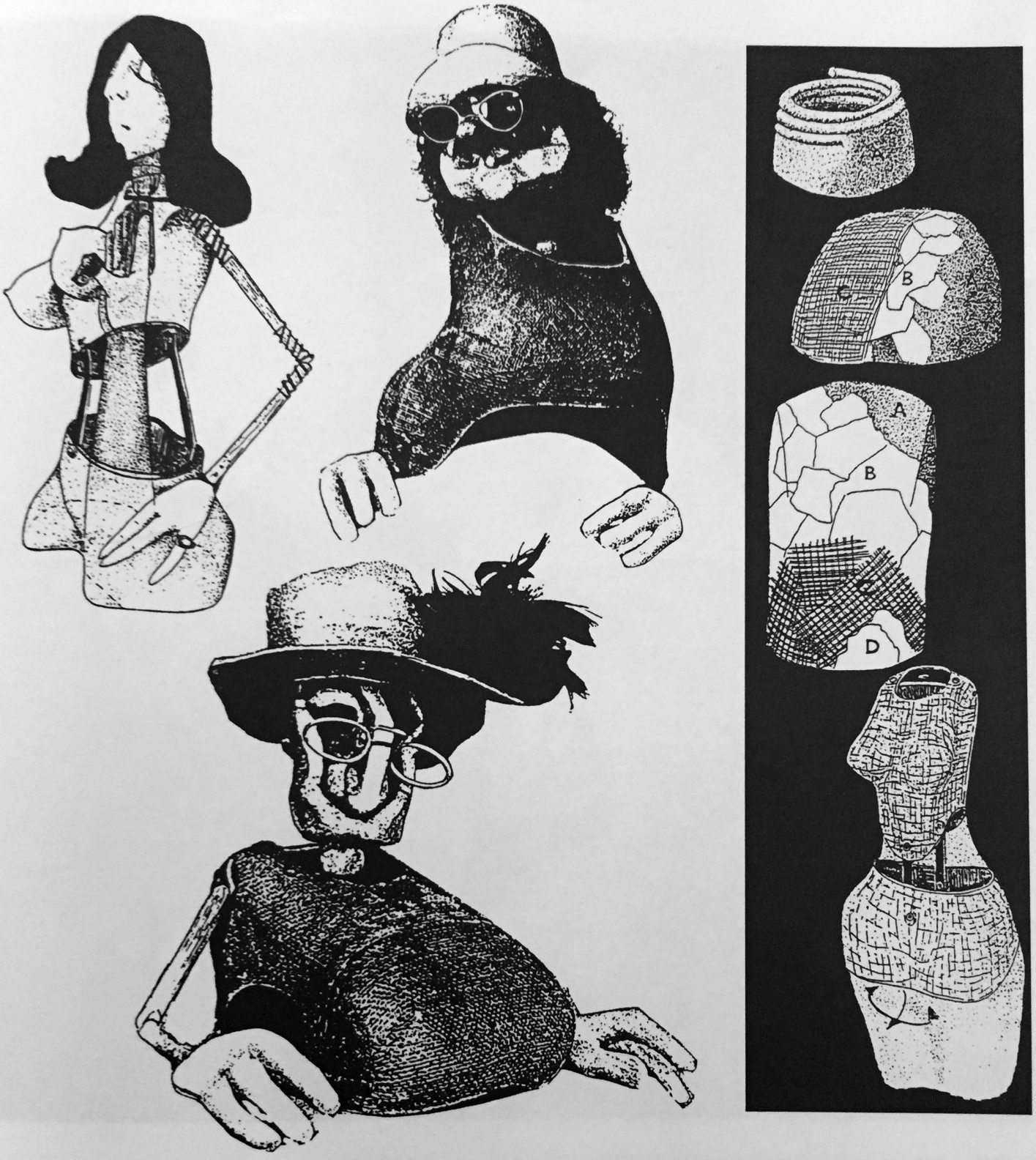
I have already described how to make heads by overcasting (see pages 62 and 63) and shoulders and bodies can be made using the same method. However, to save on clay or *plasticine*, it is advisable to model the body using the coil pot technique in pottery: ie 'sausages' are rolled from the modelling material, layered on top of each other and gently pressed together. The outer surface is then smoothed. Alternatively, the modelling material can be built up over a chunk of wood.

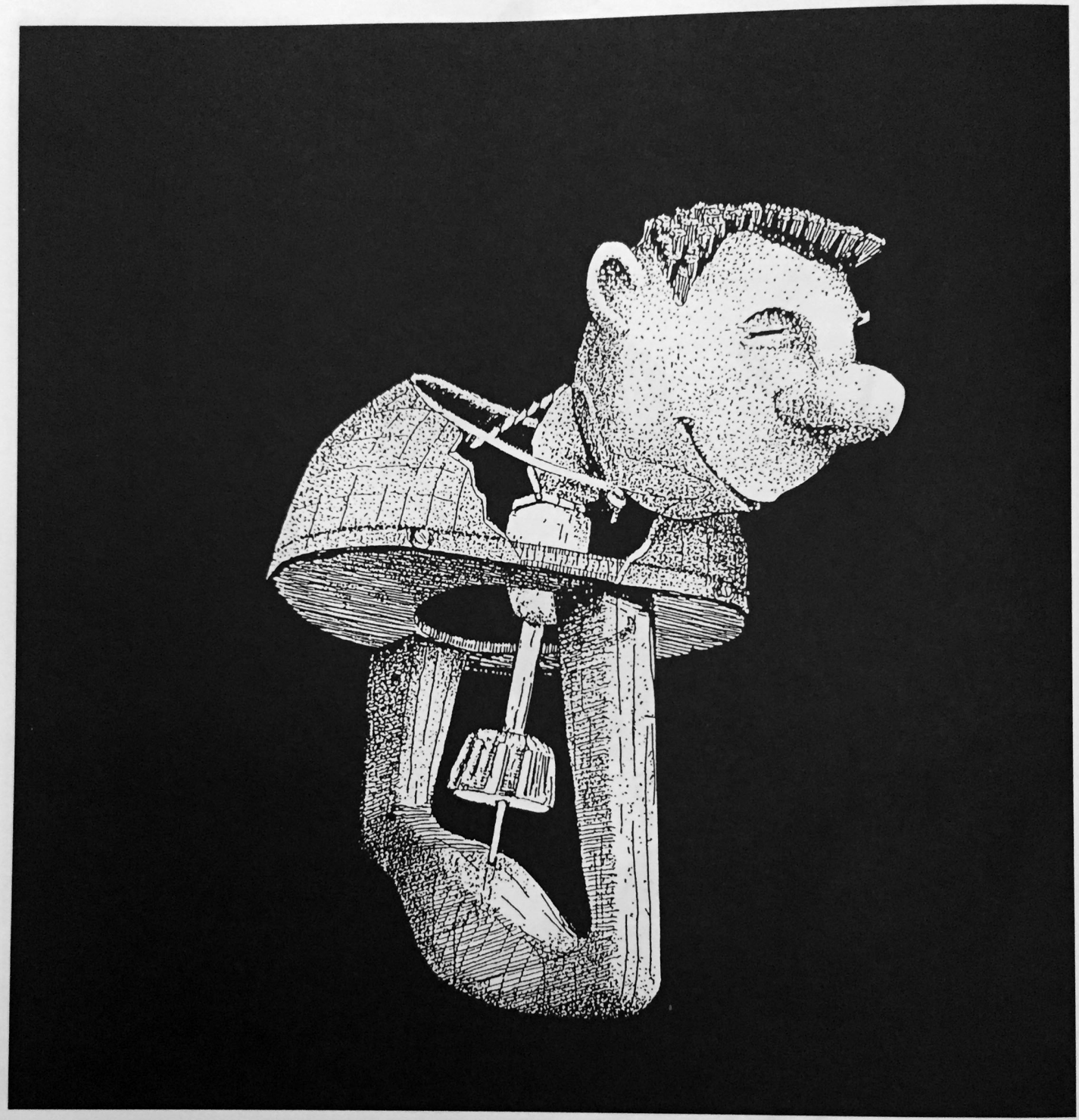
In the diagrams on the far right, the A-areas represent bare clay or *plasticine*, and the B-areas a layer of brown paper which will form the inside surface of the shoulders. The C-areas are a thin but strong shell made from layers of sacking painted with PVA, which can be followed by a layer of paper (D) if a smooth surface is required.

Bodies made this way often need to be reinforced and one method of doing this is seen in the Film Mogul on page 201, whose wooden handle is attached to the front and back of the overcast shell, thereby giving it additional support. Similarly, the shoulders of the puppet on page 200 are fixed onto a wooden structure which serves as a handle, a mount for the turning mechanism and also gives the body strength.

Another method of creating shoulders and bodies quickly and easily is to use either cardboard elements, as shown on page 203, or to cut a torso from card using a pattern (see page 202). The resulting shapes are then joined and strengthened with fabric soaked in PVA.

An external skeleton provides structure and protection


A
B
C
A
B
D



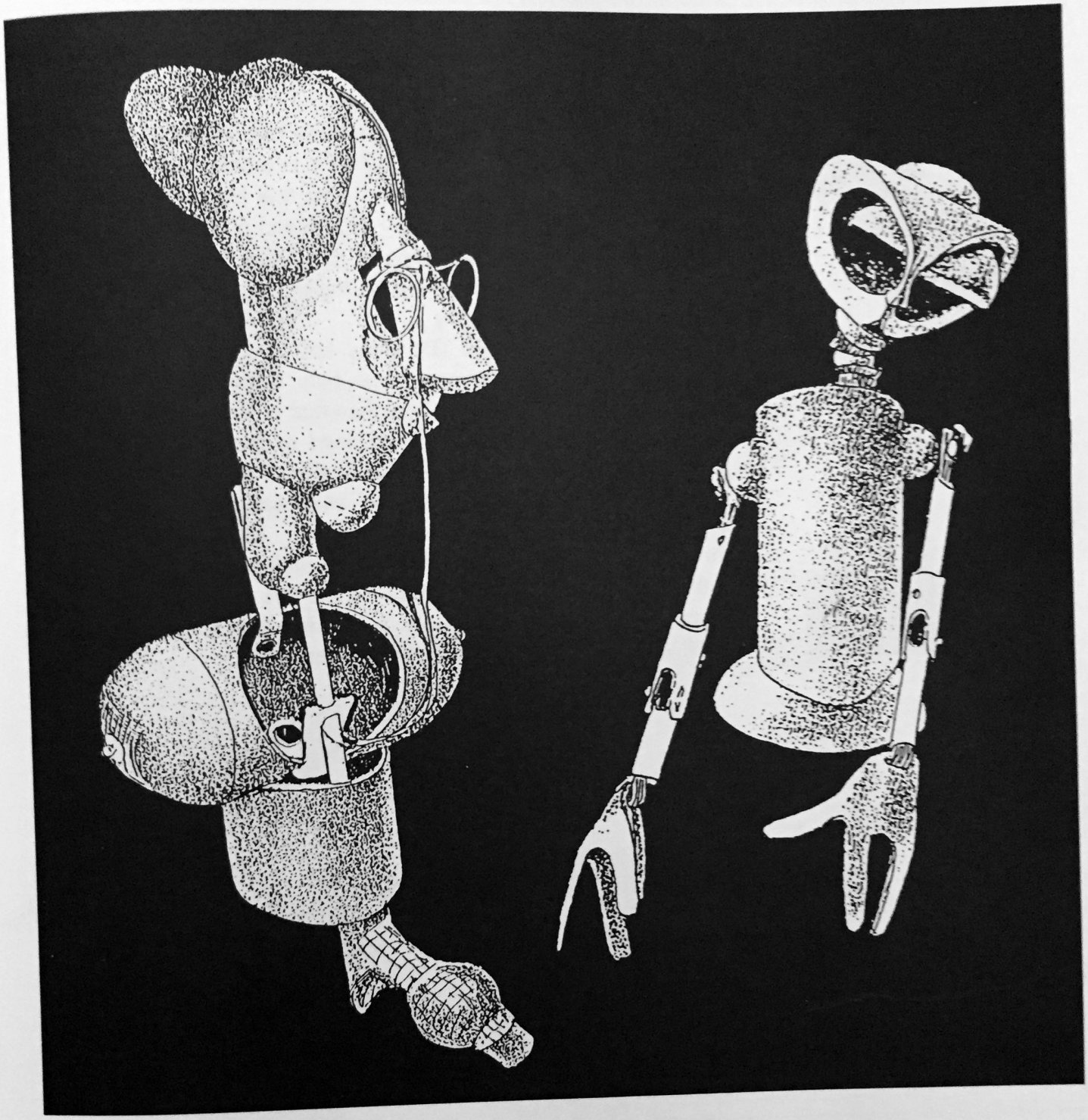
Professor Karpenko's assistant with reinforced overcast shoulders. The enlarged opening and hinged neck joint is to enable the puppet to look up to watch the stars.



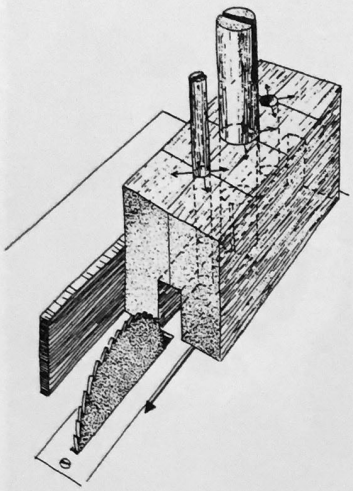
Film Mogul from *The Canterville Ghost,* made by the author for the Soldiner Theatre

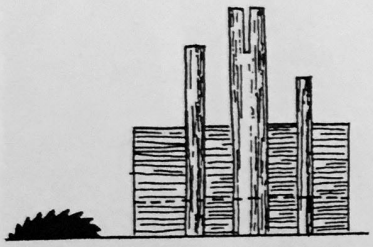


Patterns for making card chest-pieces (which are subsequently reinforced)



Making bodies from cardboard elements





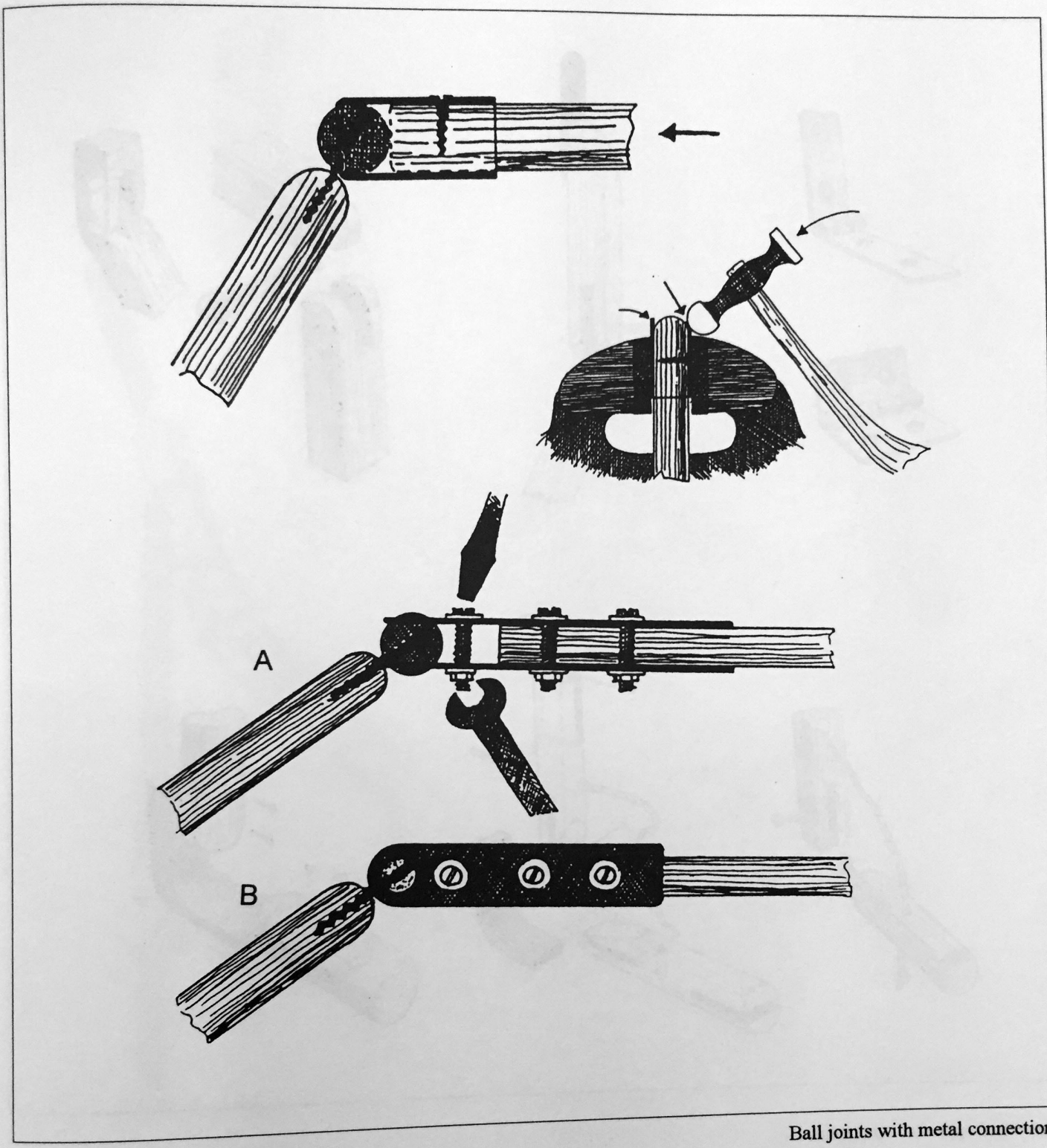
Arms

The diagrams on the opposite page show two solutions for shoulder joints with metal connections. At the top is a ball joint where the ball rotates freely in the end of a brass tube that has been narrowed by beating. This is done by rounding off the end of a piece of dowel the same thickness as the ball, slipping the brass casing over the end, holding it tight in a vice and hammering the brass to the shape of the dowel (see diagram top right).

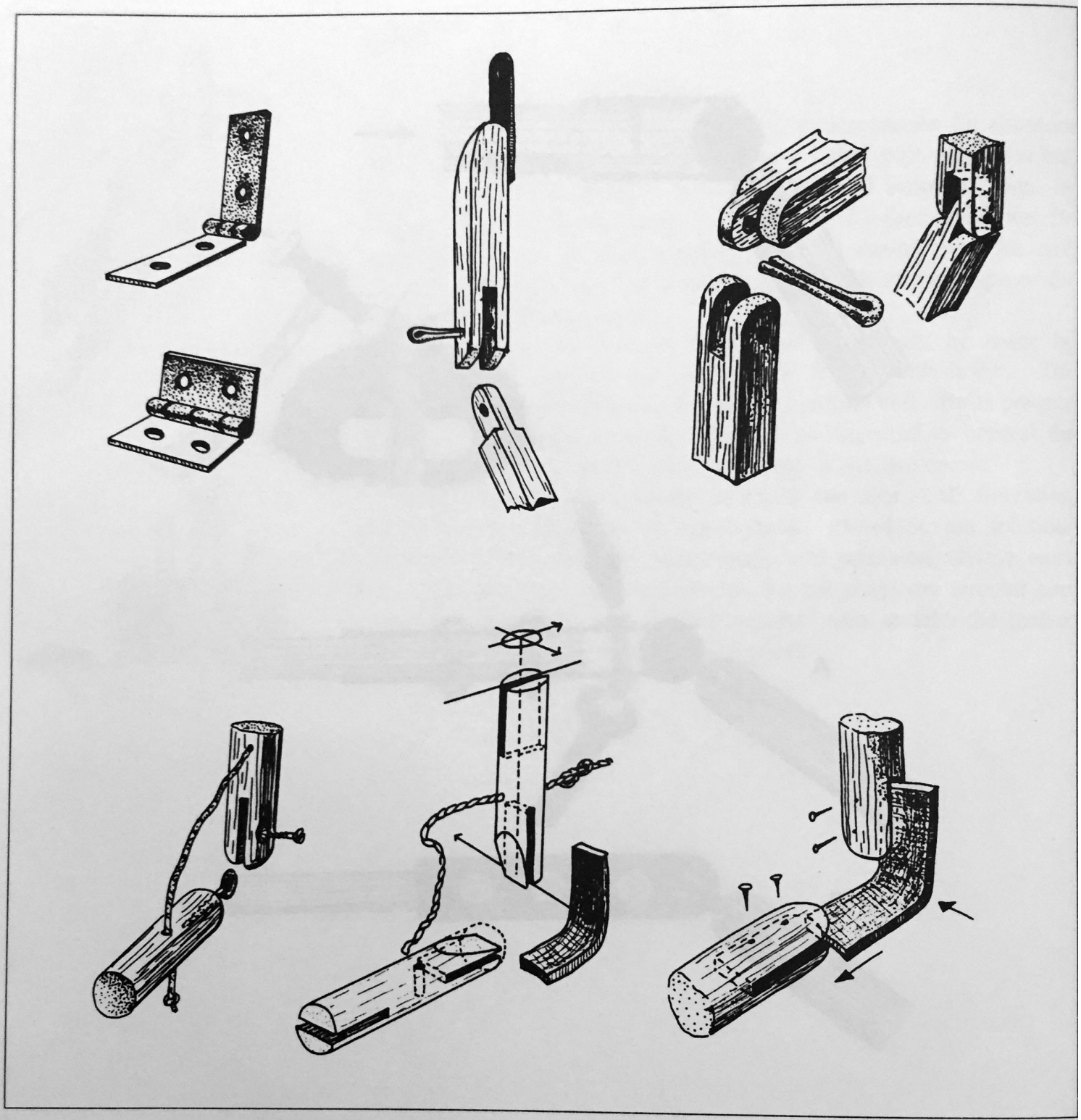
The diagrams (A) and (B) show how a joint can be made by trapping a ball between two metal bars drilled with holes. The diameter of the holes must be less than that of the ball. Bolts passing through the metal bars can be tightened or loosened to control the pressure on the ball, which varies the quality of the movement.

Joints which are not restricted, ie which can turn in all directions, are not suitable for elbow (or knee) joints. However, the solutions shown on the following two pages, made with precision, always work well. The diagrams in the column on the left show my circular saw fitment for making precise slots in rounded rods to take the leather joints seen in many of the examples overleaf.

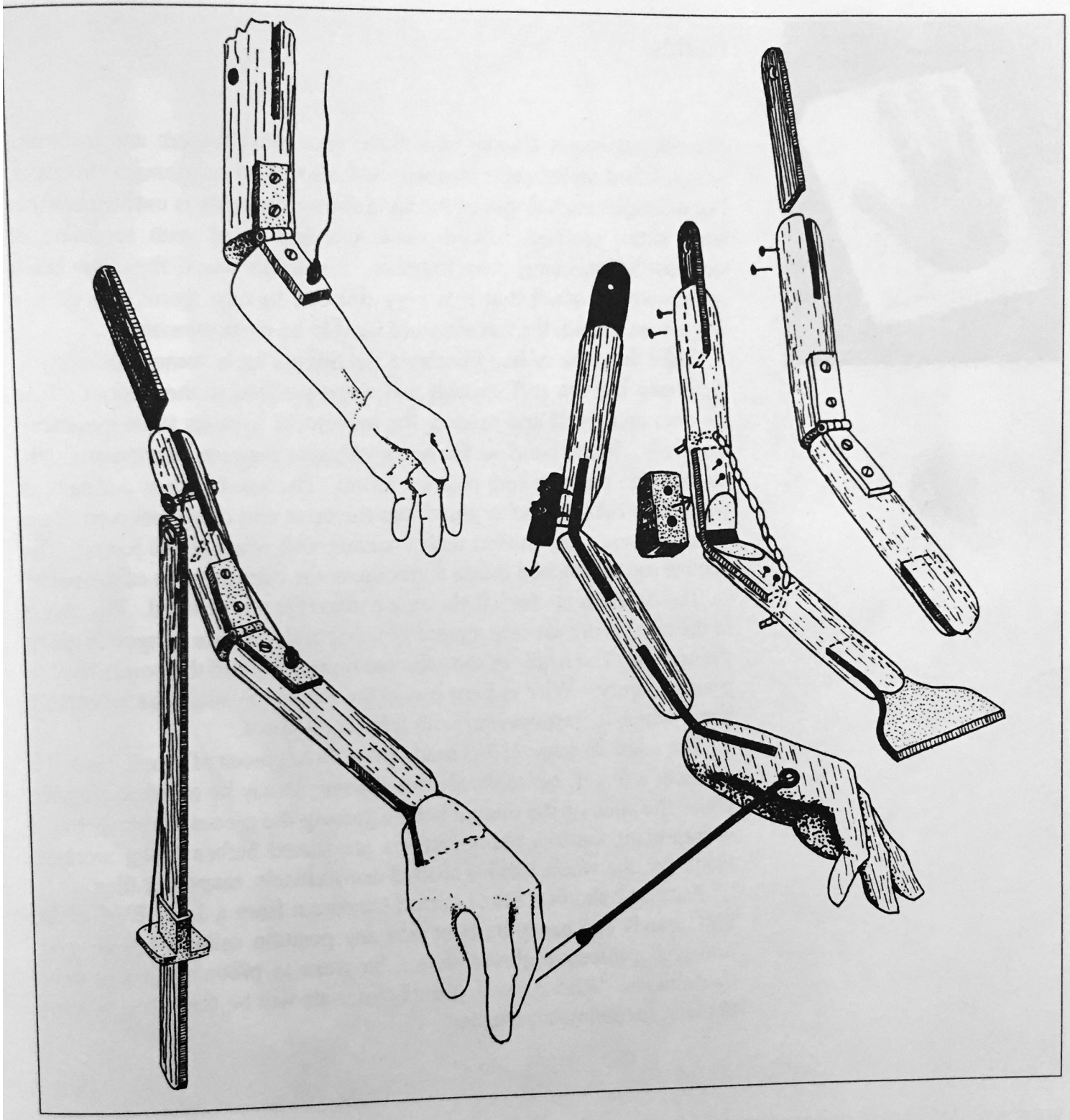
Device for sawing accurate slots in dowel using a circular saw

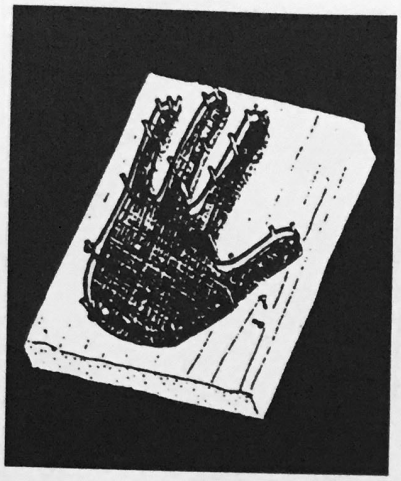


Ball joints with metal connections



Above and opposite: Arm joints





Hands

My puppet hands always have three (not four) fingers and a thumb, which I find stylistically pleasing and also more economical to make. For example, each finger of the hand shown opposite is individually cut from cloth, seamed, turned inside out and filled with semolina or sawdust before being sewn together. It is fiddly work, the tubes being sometimes so small that it is very difficult to turn them. To fit five fingers on a hand, the tubes would need to be even thinner.

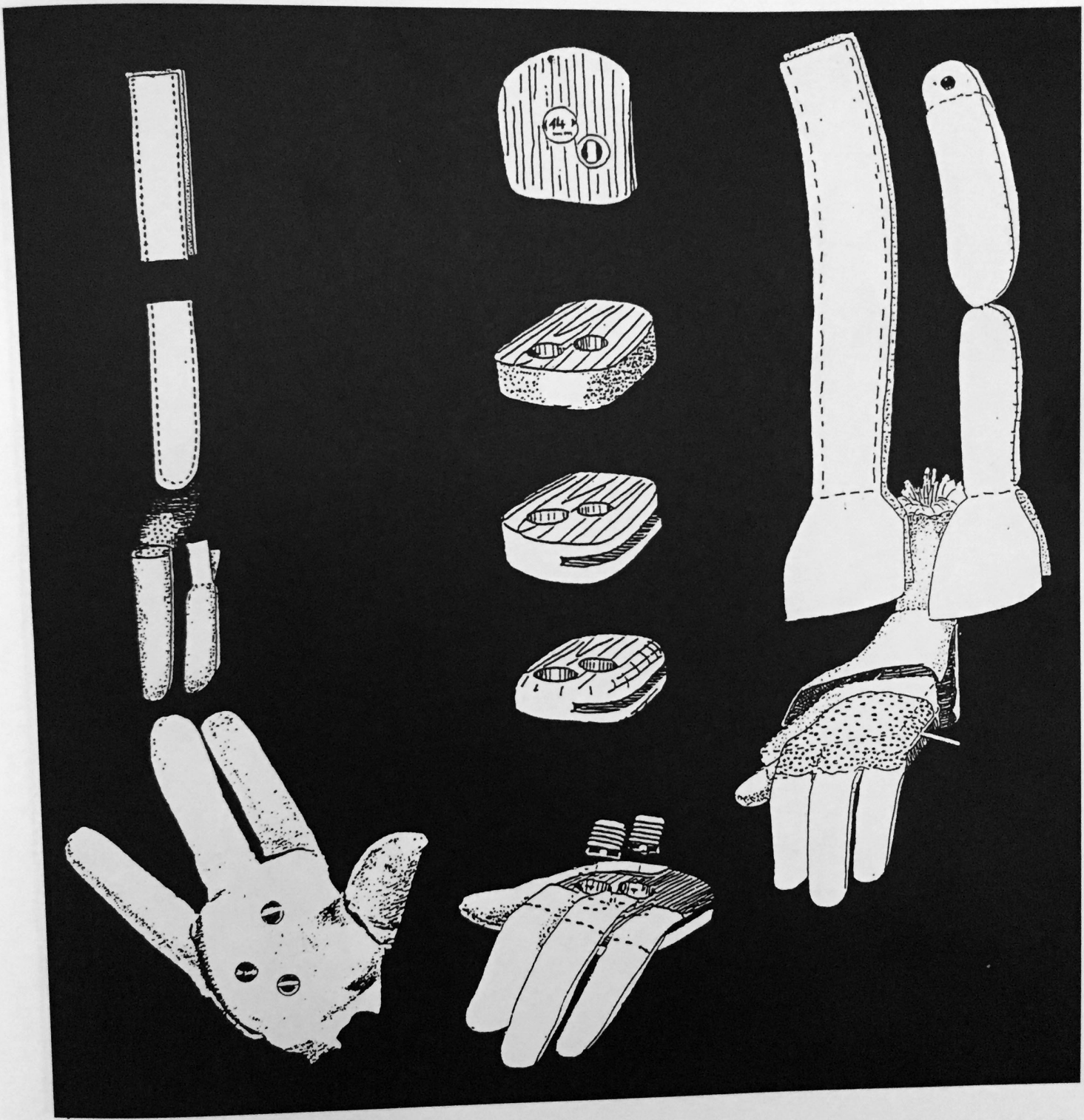
I like this type of hand because the fingers have some flexibility, ie they hang but are stiff enough that when pressed to the puppet's face (or onto an object) and rotated, the movement appears to be generated internally. In the hand on the opposite page, magnets are inserted into the wooden palm to help pick up props. The hand is then padded out with foam rubber, and is glued into the open end of a cloth arm made from a fabric tube stuffed with wadding and sewn at the joints. The control rod is attached inside a groove on the outside edge of the palm.

The diagram on the left shows a pattern for a wire hand. The shape of the hand is drawn onto a piece of wood and nails are banged in along the outline. The heads of the nails are nipped off and the points filed to prevent injury. Wire is bent round the pattern to make an adjustable hand, which is then covered with fabric or a glove.

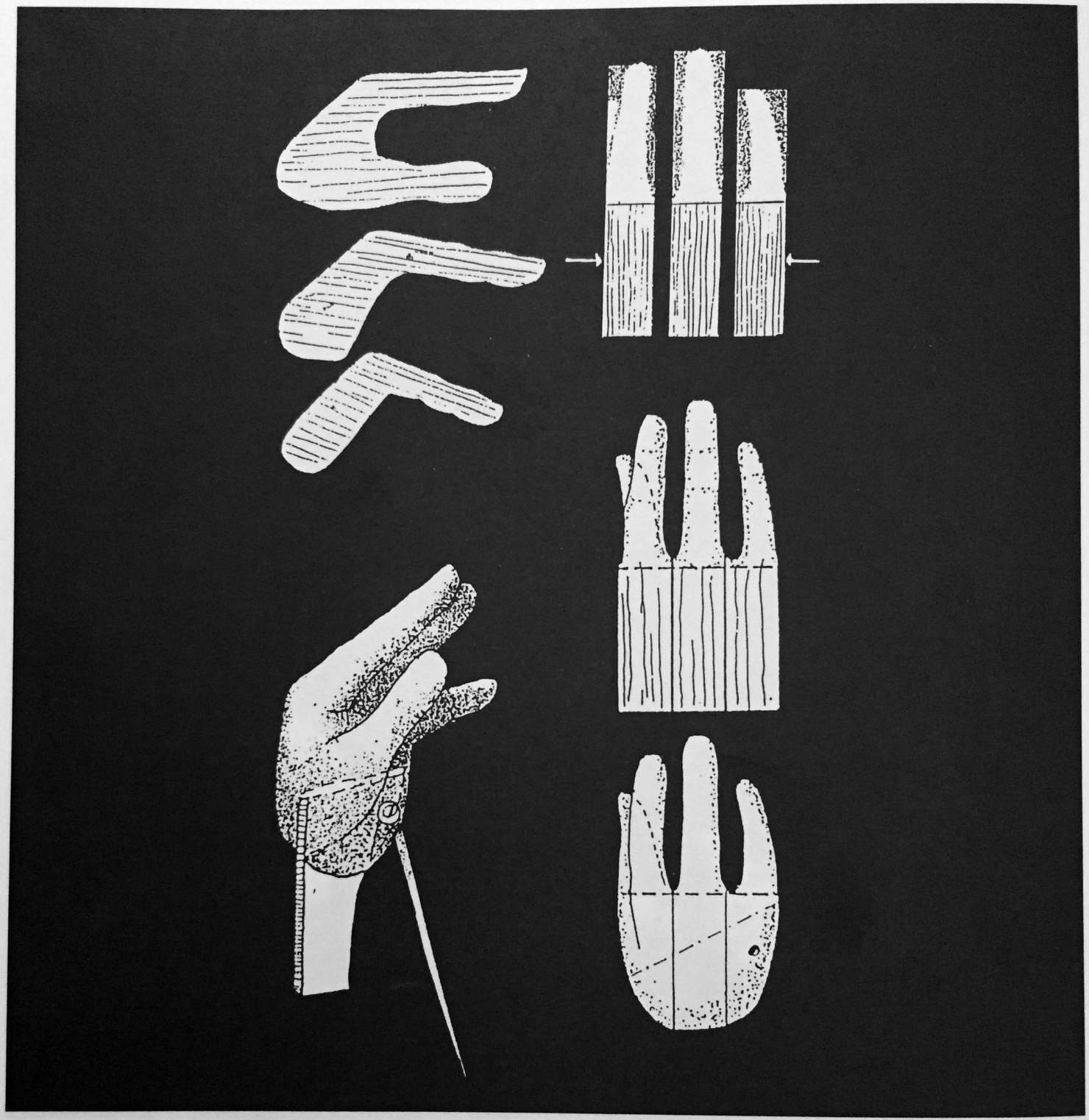
The hand on page 210 is made from three pieces of wood, each the width of a finger, cut to the shapes shown. It may be easier to roughly shape the ends of the fingers before glueing the pieces together, but it is important that the palm sections are joined before being worked. Once dry, the whole hand is shaped using chisels, rasps and files.

Page 211 shows a set of spread hands cut from a 3mm PVC plate. PVC hands can easily be bent into any position using a hot air gun, however, protective gloves should be worn to prevent burning one's own fingers. Working with plastic materials will be described in more detail in the following chapter.

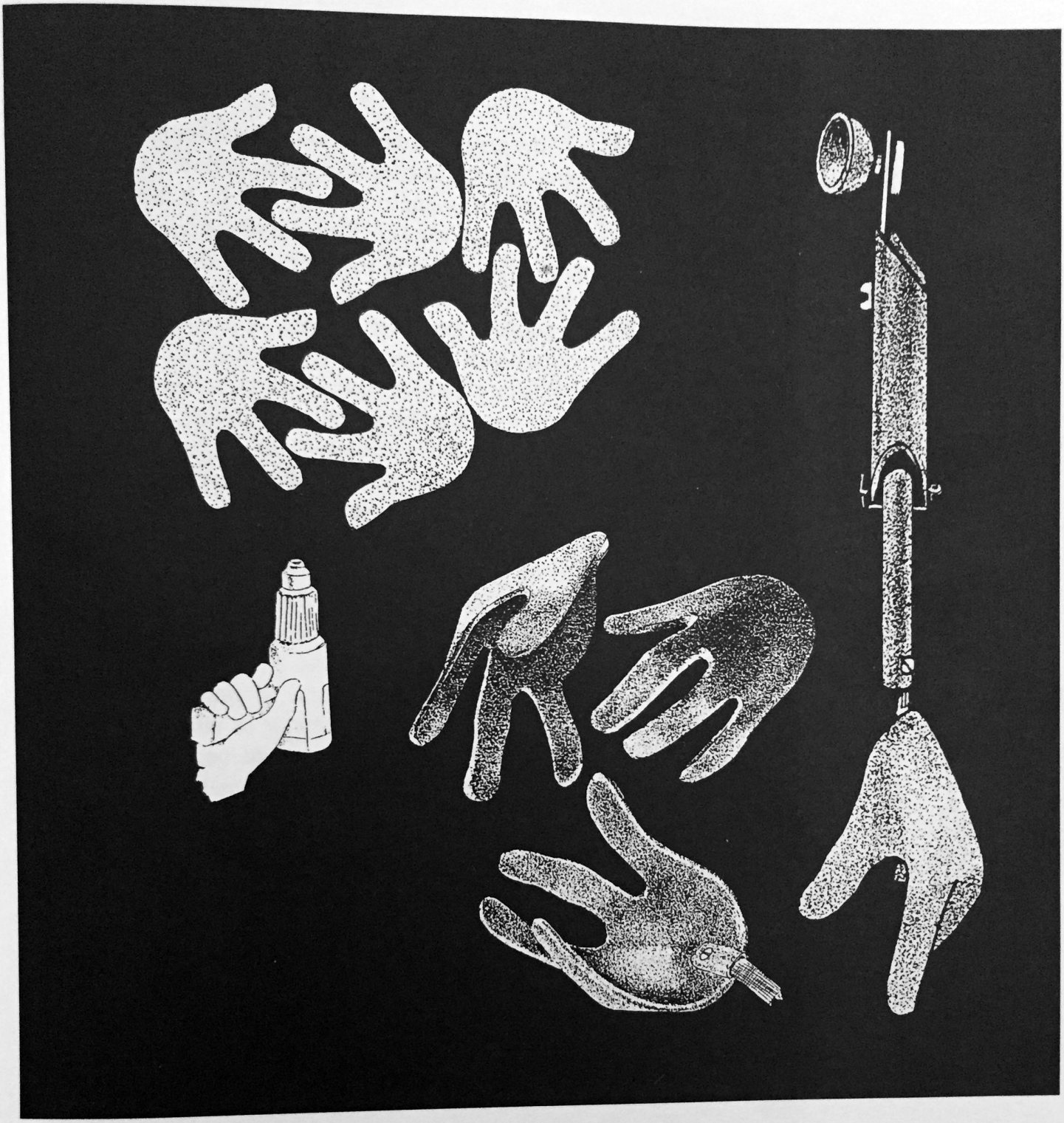
Jig for constructing wire hands



Construction of hand with flexible fingers and magnets in the palm



Construction of a three-piece wooden hand



Hands made by heating and bending cut-outs from sheet PVC



Control Rods

Control rods and how they are attached to the hands constitute half the life of a rod puppet. On the left are three types of rod: (A) is made of wood and is typical of the Javanese Wayang Golek. It is attached by a string which passes through a hole in the palm of the puppet's hand and is fixed with a knot. Flexible steel rods (B) are preferred in the West. One end is bent into an eye (sometimes difficult with thick rods), which is attached to the puppet's hand with a screw. Personally, I prefer the wire used for drive-shafts on model ships, which can be found in specialist model-making suppliers together with matching brass casing (C). The brass tube supports the slightly bendy wire, which extends only as far as is necessary. The wire and casing are glued together with an epoxy-resin adhesive to prevent the rod slipping about. Wooden handles make rods easier to control and can be covered with rubber to stop them clattering.

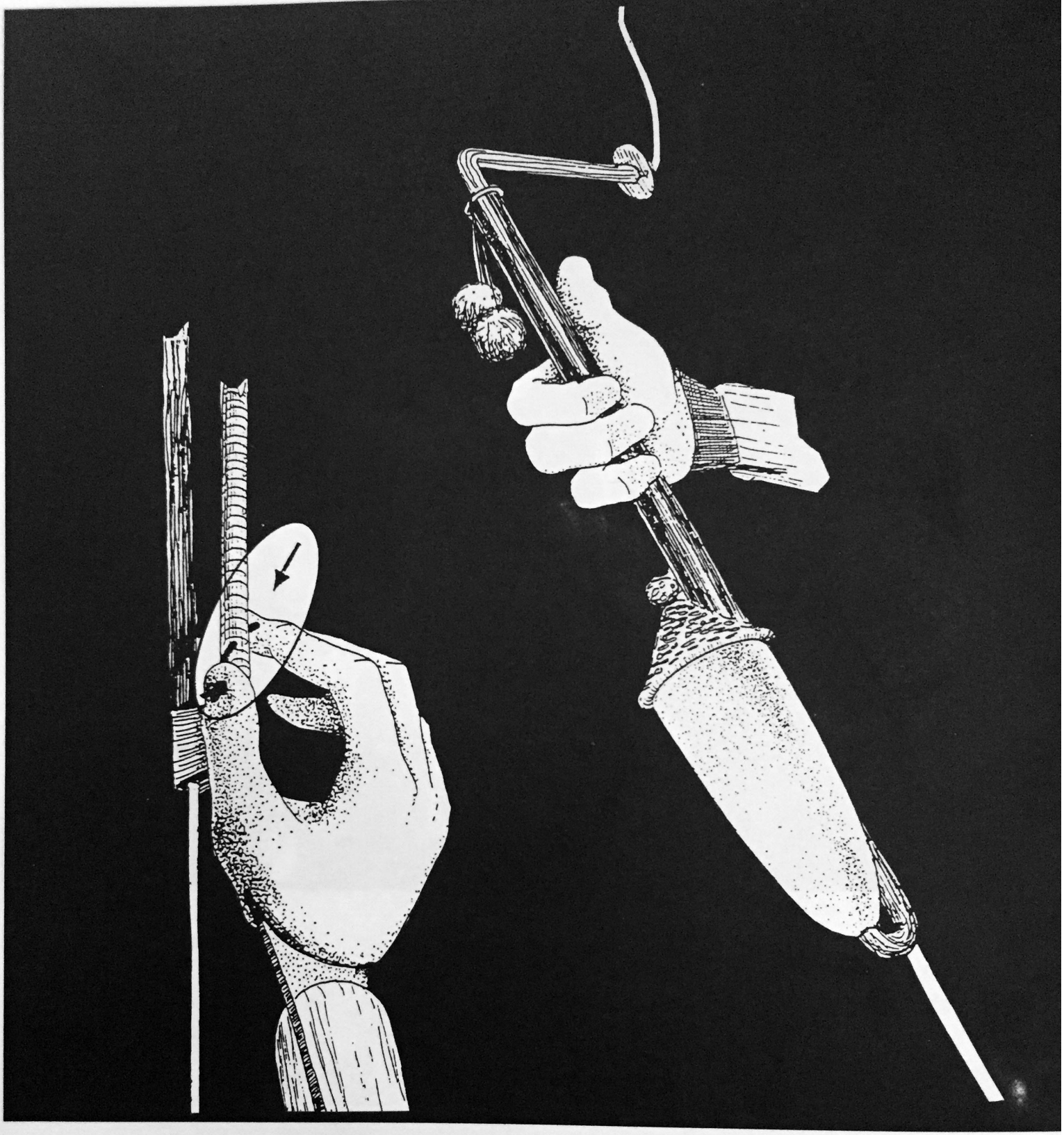
Shiny rods may be distracting and are therefore often painted black, wound with dark thread, or even covered with rubber electrical tubing. On early rod puppets efforts were made to completely hide the rods, and Fedotov dedicated four pages to the subject, beginning: "One should try and use the cut of the costume to camouflage the rods. Normally, rods are hidden from the spectator or efforts are made to justify their presence using long sleeves, pearl necklaces etc." The photograph opposite shows a scene from *Tango* by the Obraztsov Theatre, in which the rods are camouflaged by the costumes. Another memorable example was a slim female figure by Karl Heinz Drescher whose rods were hidden in a feather boa.

Rods can also be successfully disguised as walking sticks, umbrellas, brooms, spears, skiing sticks etc, as can be seen from the drawings on page 214. I would particularly like to point out the Sweepers on page 215 and the effective way both the puppet's hands are controlled by simply manipulating the broom.

Examples of control rods



The Tango, Obraztsov Theatre



Control rods disguised as a violin bow and a pipe



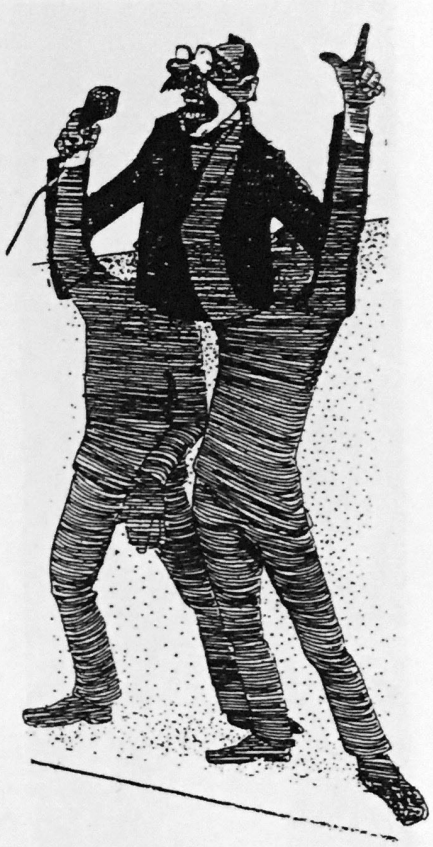
Two figures of road-sweepers showing different rod connections to a broom. The performer on the left wears a 'lazybones' sling.



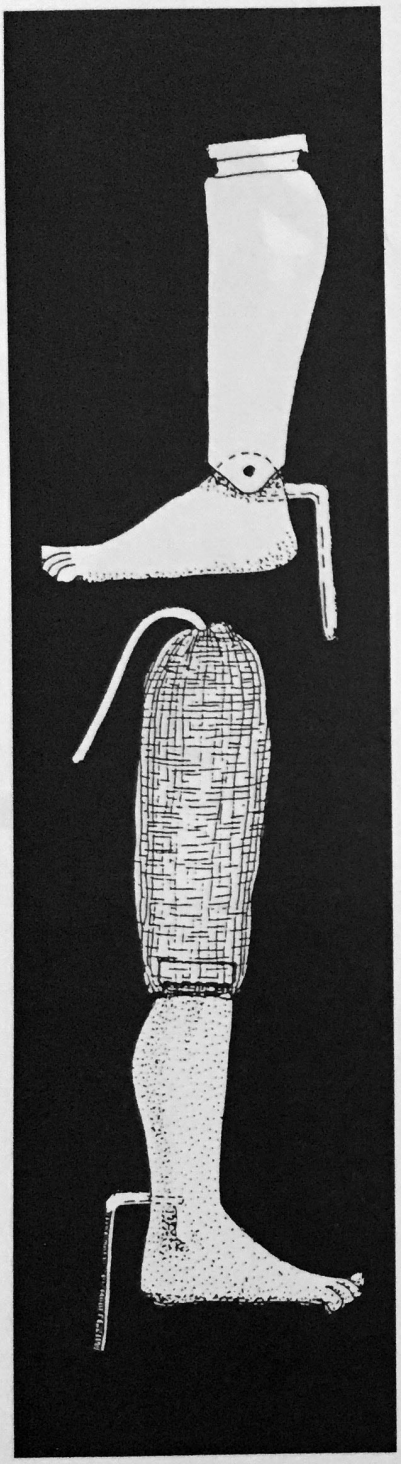
Back-pack puppets

Large puppets can be heavy and might need additional support. One solution is to use a 'Faulenzer' (a 'lazybones') — a rod which diverts some of the puppet's weight away from the performer's arms. The Hänneschen Theatre in Cologne (described on page 224) use long rods which rest on the ground, but these may restrict mobility. A more successful solution is to use a shorter bamboo or wooden pole, supported in a leather pouch attached to the performer's belt, as shown in the drawing on the previous page.

In a 1955 issue of Československý Loutkář, Václav Havlík presented the figures on the left, which he described as 'back-pack' puppets. This is a good technique for supporting large figures, and it is interesting to see how different parts of a puppeteer's body can be used, for example, the bear's mouth is animated by the movements of the performer's jaw. Another popular technique is for the performer's own hands to become the puppet's hands, which allows it to gesticulate and pick up props.



Lip-synch figure operated by two puppeteers



Legs

Most of the puppets described so far do not have legs, however, figures which use the long rod or table-top techniques (to be described in the following two chapters) will usually require jointed legs of some description.

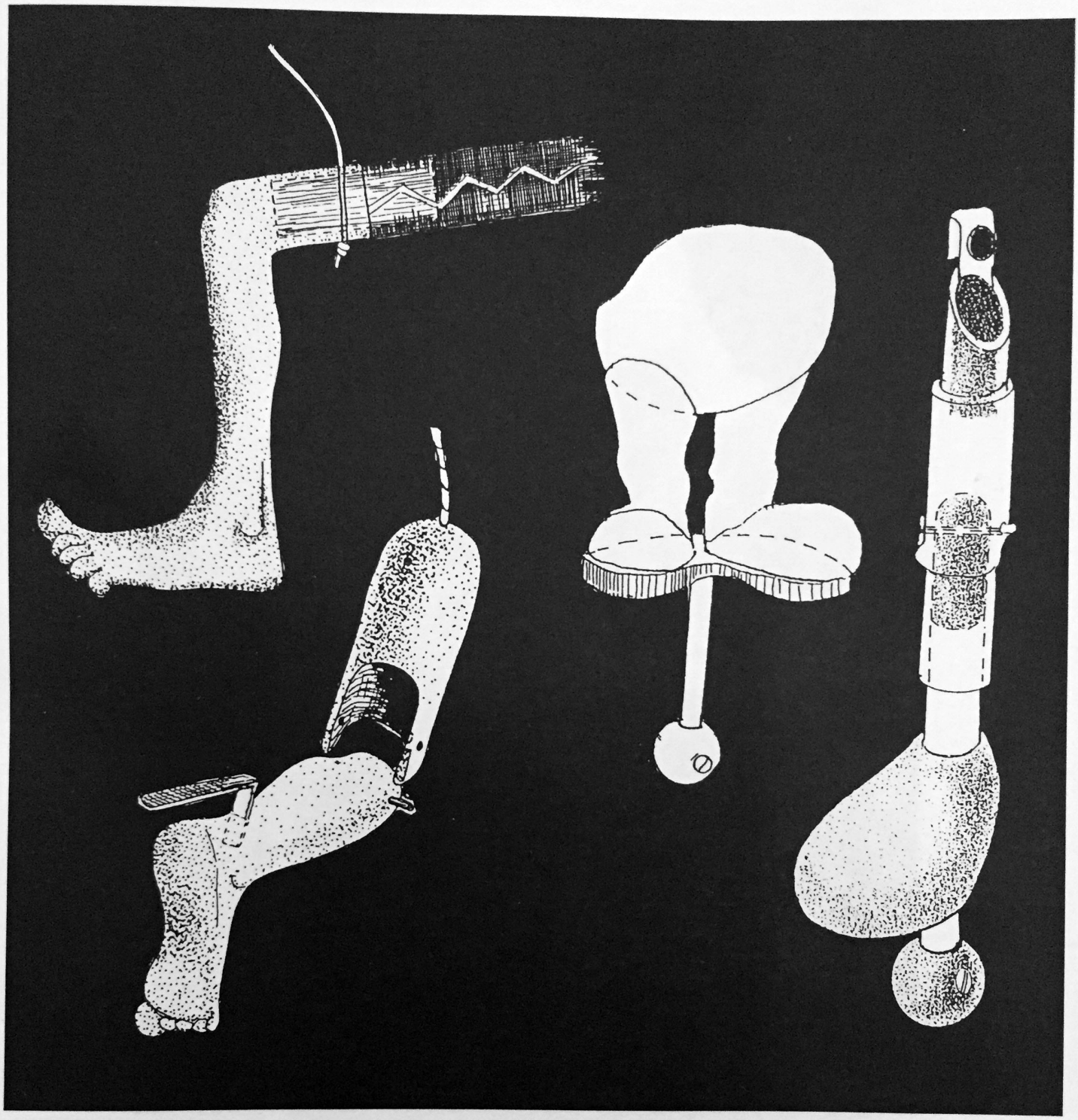
The leg at the top of the column on the left is connected to the body with string. Its foot and lower leg are a solid unit, to which a thigh made from a stuffed cloth tube has been attached. The padding in the thigh should not be too tight if the leg is required to bend at the knee. A secure way of attaching the cloth tube is to bind it around a groove cut in the top of the lower leg, which can be clearly seen in the diagram bottom left of a lower leg with a pivot joint at the ankle.

On the opposite page, the top left drawing shows a leg inspired by Rolf Trexler's puppet of a snake-charmer. This puppet has been designed to sit with its legs dangling over the playboard, and they are therefore angled and rigid up to the centre of the thigh, the remainder being a piece of garden hose.

The diagram bottom left has a rigid lower leg and foot unit, and is jointed at the knee, as is the leg made from PVC tubing (far right) which will be discussed in more detail in the chapter on table-top puppets.

The final drawing shows a 'belly on a stick' which constitutes the lower part of a simple rod puppet that can be slotted onto the play-board. The puppet walks by twisting the ball control but, if required, the legs can saunter off by themselves and leave the upper torso and head standing — something that only puppets can do.

Above and opposite: Various ways of constructing legs





Clown by the author, Sherlock Holmes by a student

Chapter Six

Construction of Puppets with Long Rods



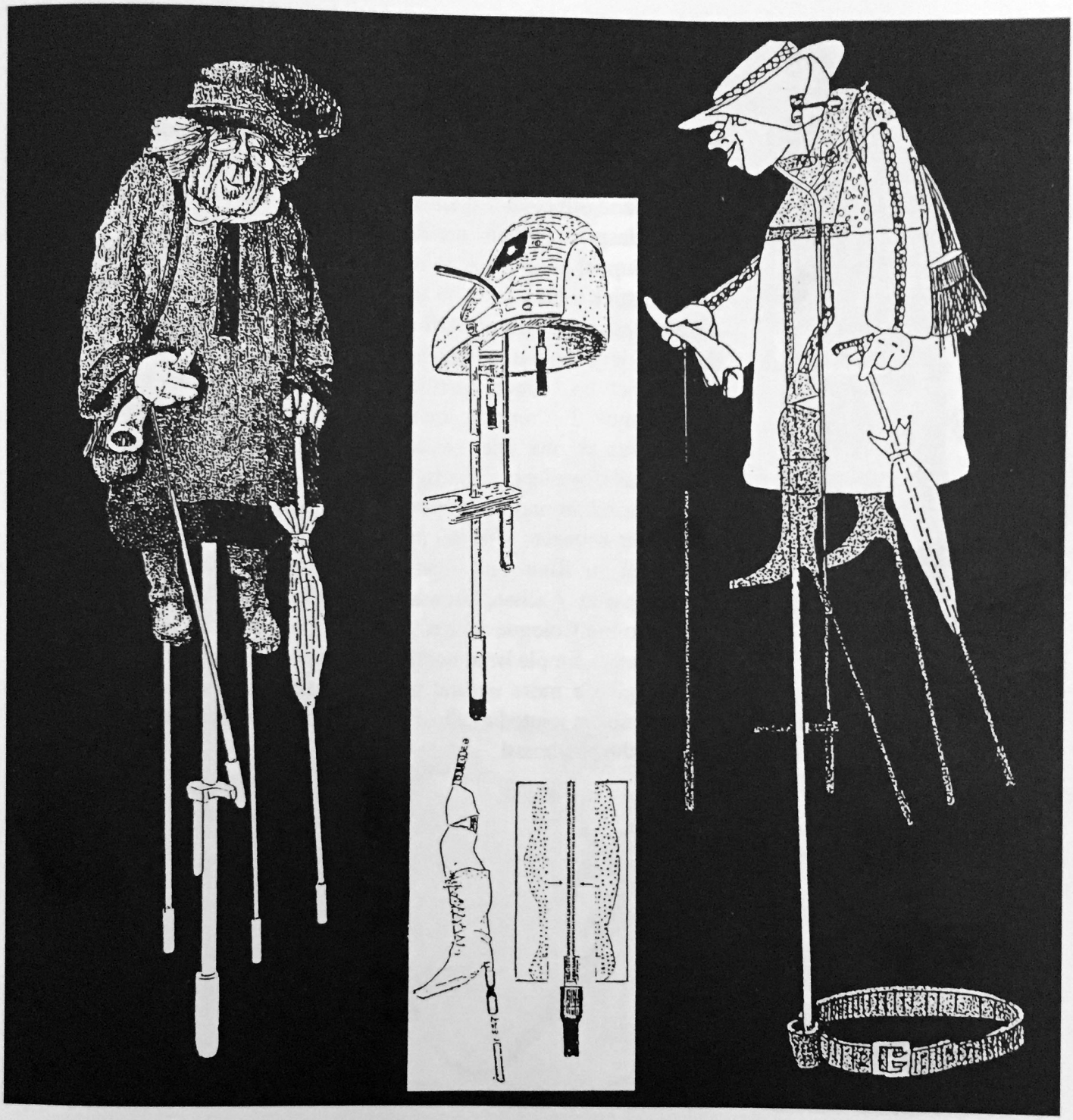
My Early Long Rod Puppets

When performing with a glove puppet or a figure controlled by a short rod to the head, it becomes like part of my own body. Inside, the puppet has the best movement mechanism in existence: the human hand with all its flexibility and sensitivity. I believe that puppets are best manipulated by a direct hand grip rather than built-in mechanisms, but if this is not possible — for example on figures with long rods and legs — it is best to look for the least complicated solution.

The drawings on these pages show two of my early long rod puppets, which have mechanisms made from wood or metal, and are controlled by strings or adaptations of the turning-nodding mechanism. Lady, the lead character in *Ladykillers* (see opposite), was my first serious attempt to make a long rod puppet with legs. Although she had some interesting features, I was not completely satisfied with the puppet's construction, mainly due to problems of weight and balance, combined with the fact that five rods were needed to control her.

It was not until I began using PVC materials that I finally arrived at simple and effective solutions for making puppets with long rods that are light and have a wide range of versatile and sensitive movements. They will be described from page 232 onwards, but I would first like to introduce some other interesting puppets with long rods.

Belly-dancer with rigid central support rod and rocking hip mechanism



Lady from *Ladykillers*



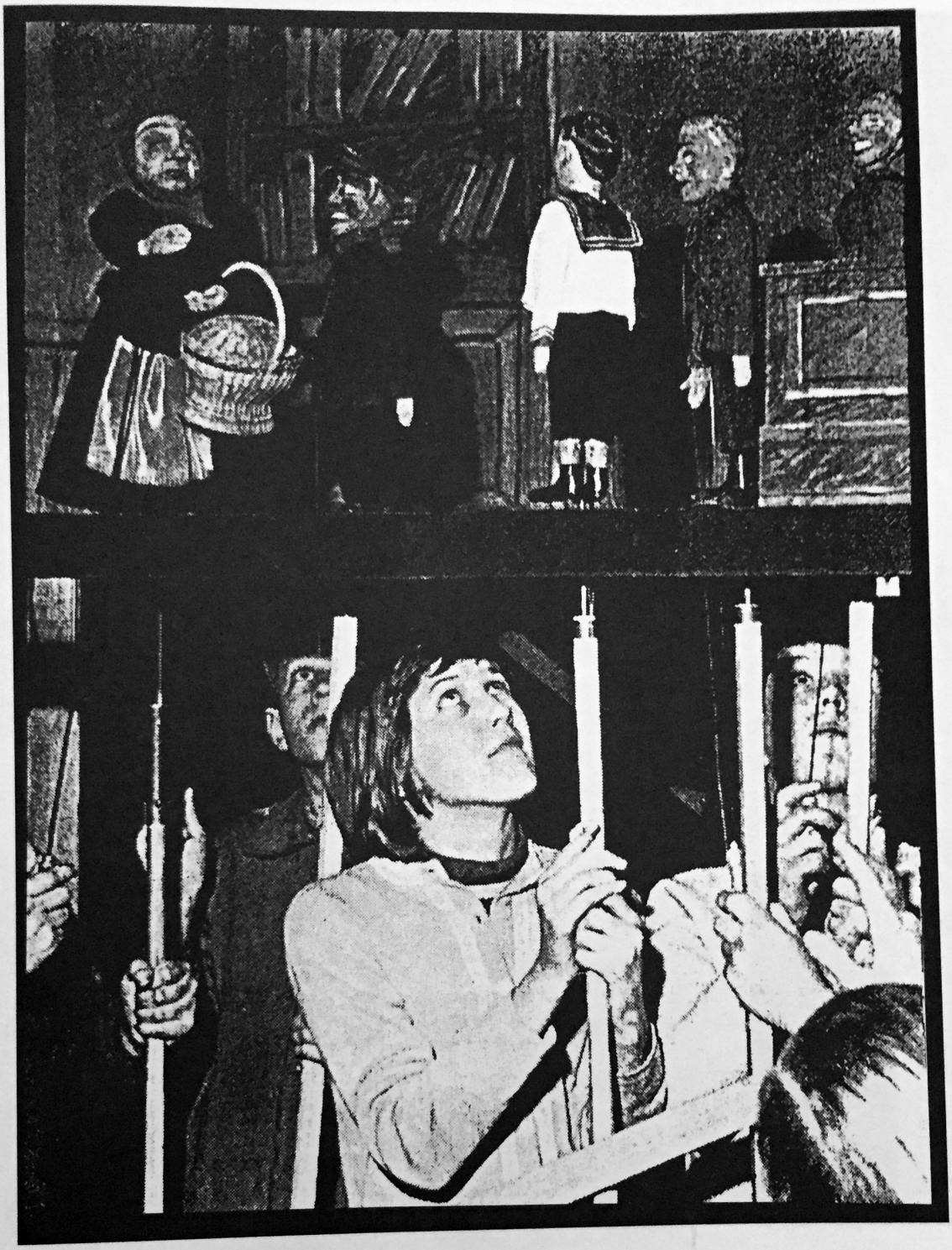
The Rhineland Pole Puppet

This type of puppet has been used by the Hänneschen Theatre in Cologne since the beginning of the 19th century and being so simple, practical and effective it is surprising that the technique did not become more widespread outside the Rhine valley.

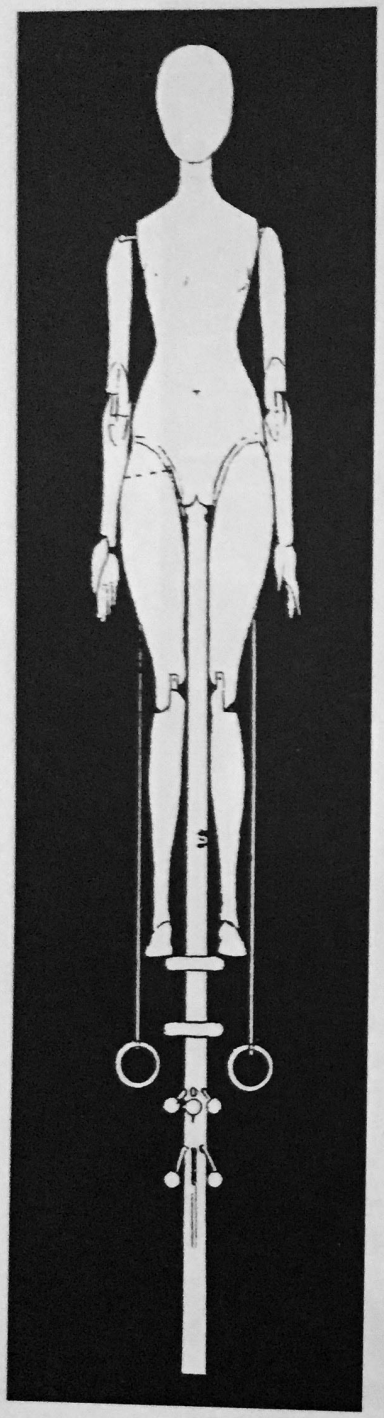
The puppet is attached to a central metal rod let into a long, thick wooden stick which rests on the floor. This pole ensures that despite differences in the size of performers, the puppet will always remain at the same level above the playboard. It also saves the effort of holding the puppet up, which permits greater concentration on the actual performance. For touring, the stick can be detachable. Sharp rhythmic movements of the stick make the puppet's legs swing pendulum fashion, as if walking. The right arm has a metal control rod linked to a metal band around the puppet's forearm which is usually hidden by the puppet's sleeve. The left arm swings freely.

One of the Rhineland theatres influenced by the Hänneschen Theatre is that at Aachen, founded in 1919. The Aachen puppets are similar to the Cologne figures but have become a little more sophisticated using a simple head nodding mechanism. The left arm is slightly bent to give a more natural appearance and sometimes the wooden control stick is jointed to allow the puppet to sit, lie down or disappear beneath the playboard.

Long rod technique by the Hänneschen Theatre of Cologne



A school puppet company playing in the style of the Hänneschen Theatre



Richard Teschner

Richard Teschner was the most important German-speaking rod puppet maker and performer in the first half of the 20th century, and his skills as a craftsman are to this day unsurpassed. Stylistically he belonged to the Viennese *Jugendstil*, however, he was always open to experimentation and as early as 1919 was projecting chemical processes as lighting effects for his sets.

As previously mentioned, I was permitted by Ludwig Krafft to examine all the rod puppets in the Munich collection. At the time, I hadn't heard of Richard Teschner or the wonder of his *Figurenspiegel* (Puppet Mirror), but the figures by him of a student and young mother so filled me with awe that I only took one modest look under their costumes and didn't dare take them apart. The image opposite can only hint at the sophisticated movements of his puppets and the craftsmanship of their construction.

Basic torso shapes were prepared by a wood-turner working from Teschner's plans, and the details were carved by Teschner himself. A support rod runs through the torso to the head, but for figures that bend at the waist, a section of the rod is replaced by a spring.

The head has a universal joint and is controlled from below via manipulation balls attached to the catgut threads that run up through channels in the support rod and are fixed to various parts of the head. The diagram on the left shows the two ring pulls, attached to the buttocks, which raise the thighs.

Long rod figure by Richard Teschner



Scene from Richard Teschner's *The Princess and the Waterman,* 1936



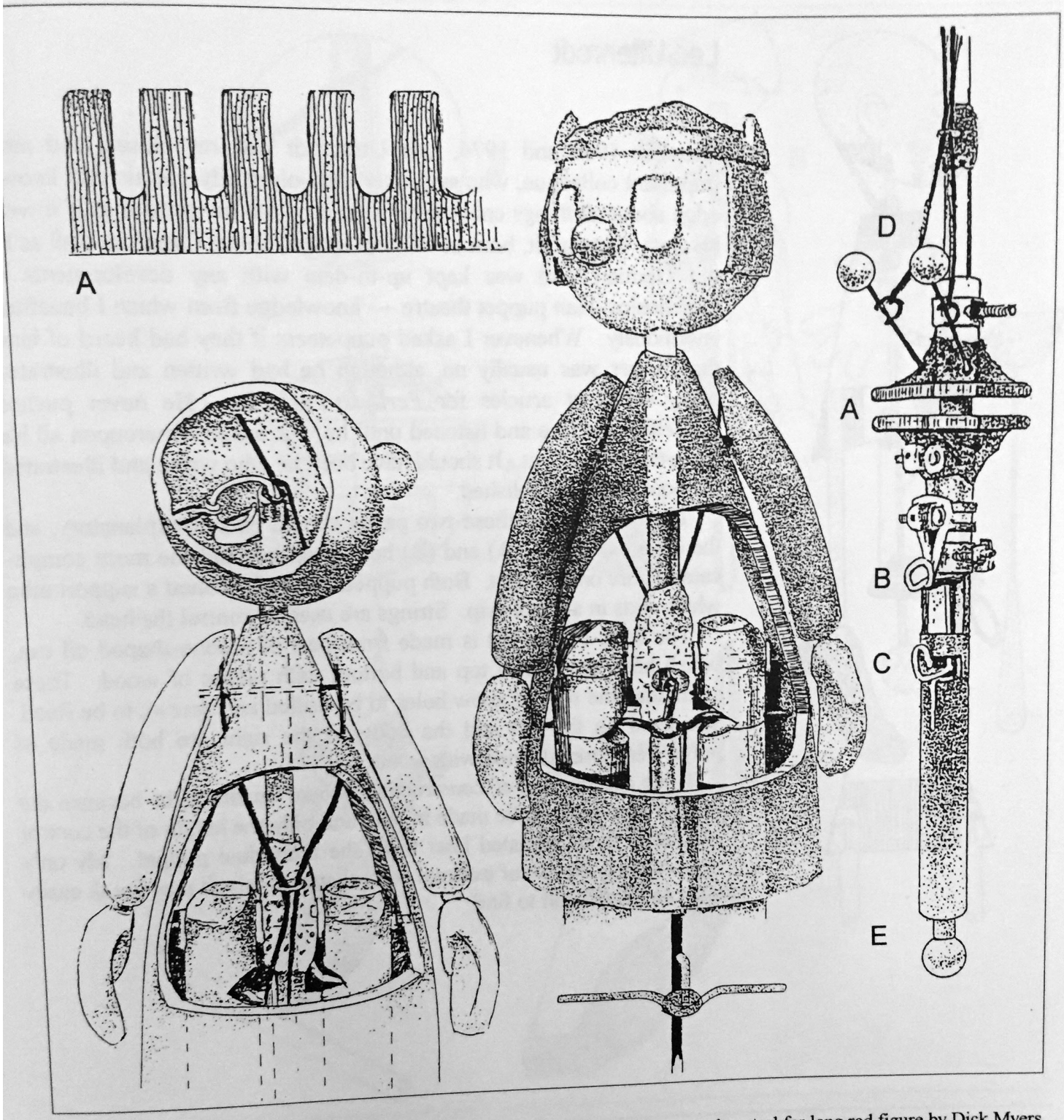
Dick Myers

My first contact with Dick Myers' puppets was though photographs and I asked myself: who could perform with automata like these? However, when I later saw his show, I was bowled over by the variety and humour of the performance — between each burst of laughter the whole audience waited with bated breath. Dick achieves this through the tiniest shift in the way an arm is held, or the turn of a head after a pause.

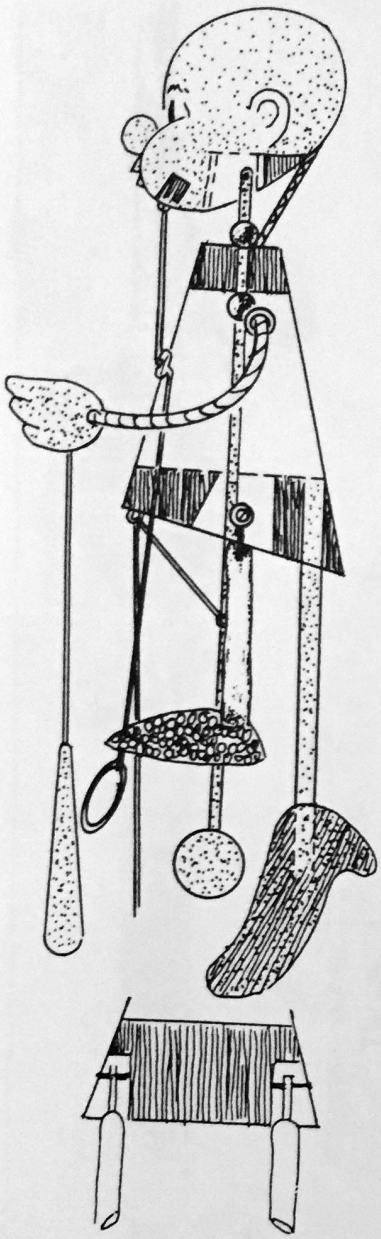
The puppets appear to stand on the playboard and are manipulated, separately or simultaneously, to make well-calculated, precise movements. The automaton-like movements are planned from the beginning to be an essential characteristic, as is the apparent naivety of the design. Each figure is modelled entirely in plastic wood except for the wooden dowel legs. The smooth body is painted to represent its costume and is mounted on an aluminium tube which in turn is attached to a thick dowel. Two wooden flanges are attached to the tube and dowel; carefully spaced so that they will slot into a shelf below the playboard (see detail (A) opposite) thus allowing the puppet to be brought on stage and 'parked'.

Inside the aluminium tube are two welding rods. One of these goes to the button (B) and controls the head, which can turn and nod. The other rod controls the legs and goes to button (C) — this can be moved from side to side causing the rod to revolve a little in each direction. A cross-member attached to the top of this rod makes the legs go back and forth (when one leg goes forward the other goes back). The arms are operated by strings attached to two levers (D). When the levers are pressed downwards, the arms are raised (either together or singly). A ball is carved on the bottom of the dowel, and its 'neck' (E) allows the puppet to be stored upside-down in the grooves cut in the shelf below the playboard.

Long rod figure by Dick Myers



Internal mechanisms and control for long rod figure by Dick Myers



Leo Uttenrodt

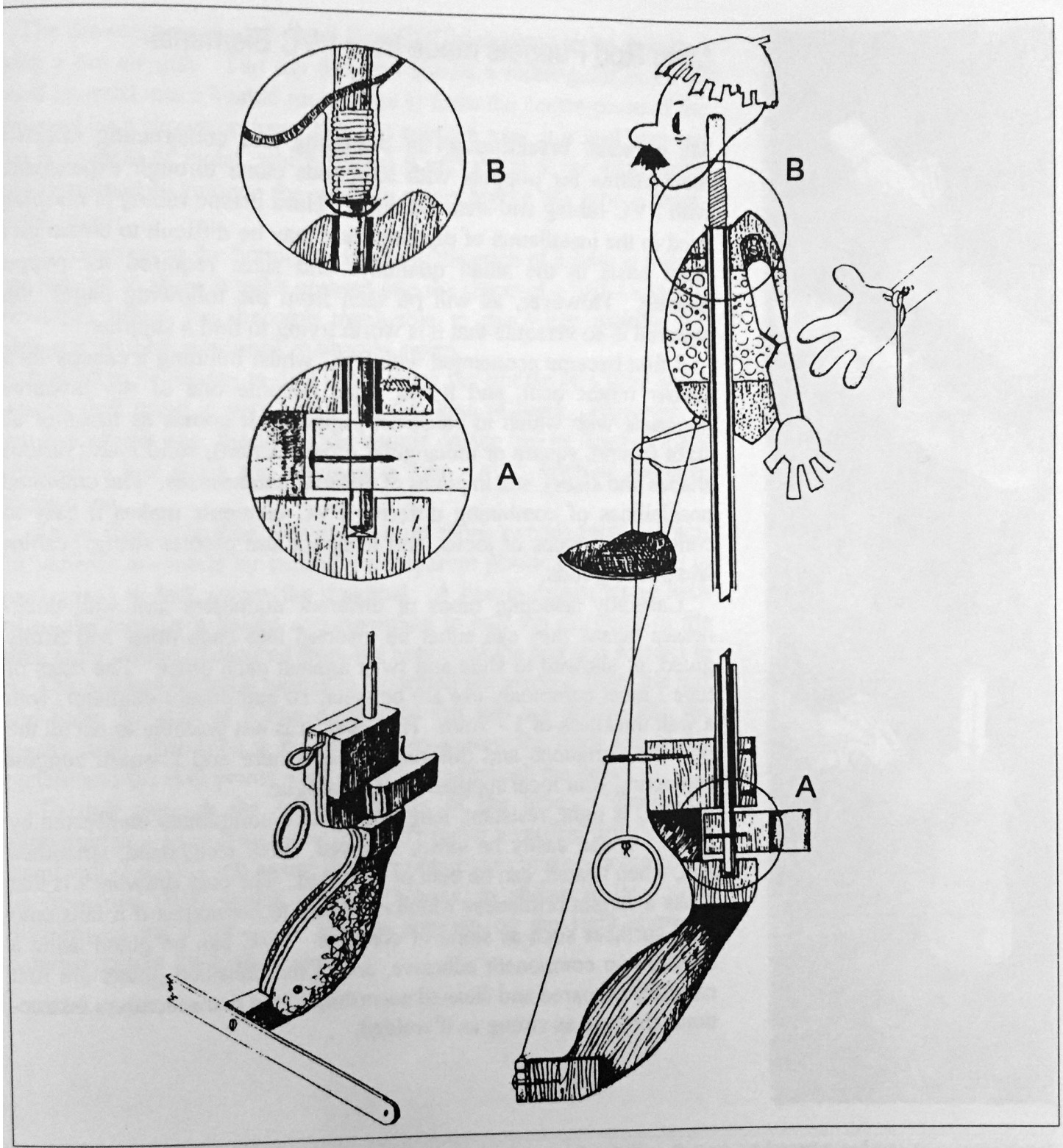
Between 1960 and 1974, Leo Uttenrodt was my closest and most important colleague, who selflessly and voluntarily put his vast knowledge about all things concerning puppetry into my theatre as if it were his own. Uttenrodt, born in 1925 in Brünn, spoke Czech as well as he did German, and was kept up-to-date with any developments in Czechoslovakian puppet theatre — knowledge from which I benefited enormously. Whenever I asked puppeteers if they had heard of him, the answer was usually no, although he had written and illustrated many excellent articles for *Perlicko-Perlacko*. He never pushed himself to the fore and listened until he was asked, whereupon all his expertise poured out. It should have been he who wrote and illustrated the books I have published.

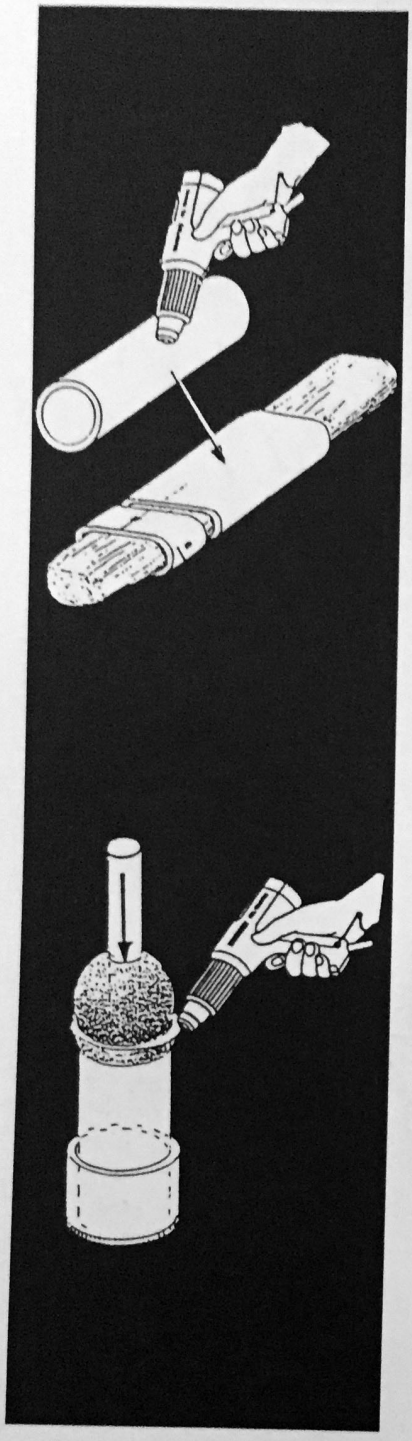
The drawings on these two pages should be self-explanatory, and the enlarged details (A) and (B) help to understand the more complicated figure on the right. Both puppets are built around a support tube which ends in a pistol grip. Strings are used to control the head.

The body on the left is made from part of a cone-shaped oil can, which has been closed top and bottom with pieces of wood. These strengthen the tin and allow holes to be drilled and screws to be fixed. The head on the left and the body on the right are both made of polystyrene strengthened with wood.

I like the method of construction shown on the right because the various elements can be made in bulk and only the length of the control rod needs to be adjusted later to fit the individual puppet. My only reservation is the use of external control strings which may break easily and can be difficult to find.

Above and opposite: Two figures by Leo Uttenrodt


B
A
B
A



Long Rod Puppets made from PVC Elements

My personal breakthrough in designing and constructing effective mechanisms for puppets with long rods came through experiments with PVC tubing and snap-fasteners. Hard plastic tubing is normally used in the installation of pipelines and may be difficult to obtain on a retail basis in the small quantities and sizes required for puppet making. However, as will be seen from the following pages, this material is so versatile that it is worth trying to find a supplier.

I first became acquainted with PVC whilst building a canopy for a rubber motor boat, and it has since become one of my favourite materials with which to construct puppets. It comes as tubes of all sizes (round, square or rectangular cross-section), solid rods (various shapes and sizes), and in plates of different thicknesses. The unlimited possibilities of combining different PVC elements makes it easy to construct all types of joints, and to direct and protect strings, cables and pushing rods.

Carefully selecting tubes of different diameters and wall thicknesses means they can either be inserted into each other and firmly glued, or allowed to slide and twist against each other. The sizes of tube I most commonly use are between 10 and 40mm diameter, with a wall thickness of 1 - 3mm. However, it is not possible to list all the possible variations and different fitments here and I would suggest contacting your local supplier for a catalogue.

PVC is light, resistant, long-lasting, and completely unaffected by damp. It can easily be sawn, screwed, filed, roughened, smoothed and, when heated, can be bent or distorted. The only drawback is that it has a certain brittleness which may lead to breakages if it falls onto hard surfaces such as stone or concrete. PVC can be glued using a special two component adhesive, and if the adhesion points are first carefully prepared and cleaned according to the manufacturers instructions, they are as strong as if welded.

Using a hot air gun to distort PVC tubes

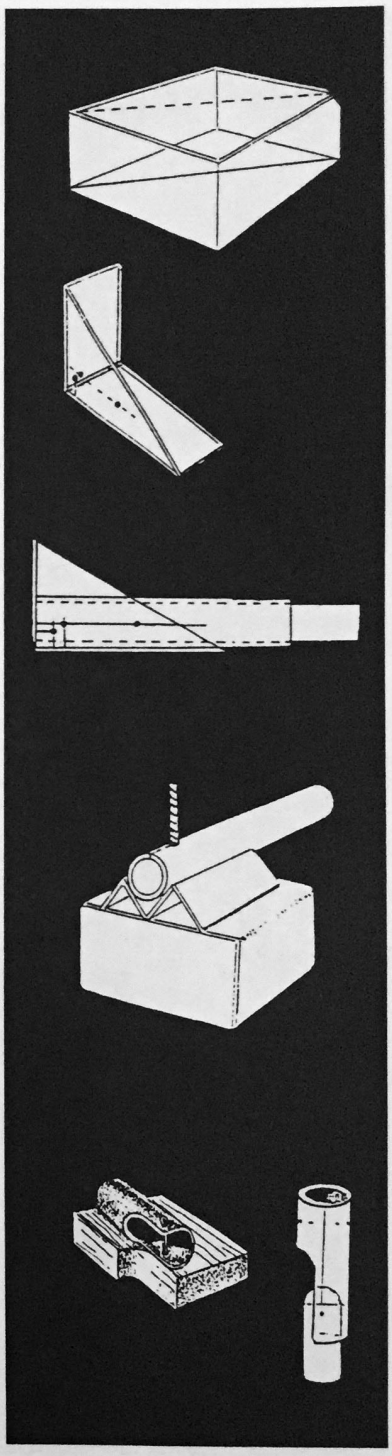
The drawings on the left show how PVC elements can be distorted using a hot air gun. The top diagram shows a rectangular piece of wood inserted into a heated round tube to form the centre-piece of the universal joint shown on page 234. To cool the tube, it is laid between two flat pieces of metal, which 'irons' it into shape at the same time. It is important to remove the wooden insert before the tube is completely hard.

The diagram at the bottom shows how the edge of a tube is heated just enough to allow it to be pressed into the shape of a ball socket - a technique which has become invaluable to me when making the table-top puppets described in chapter seven.

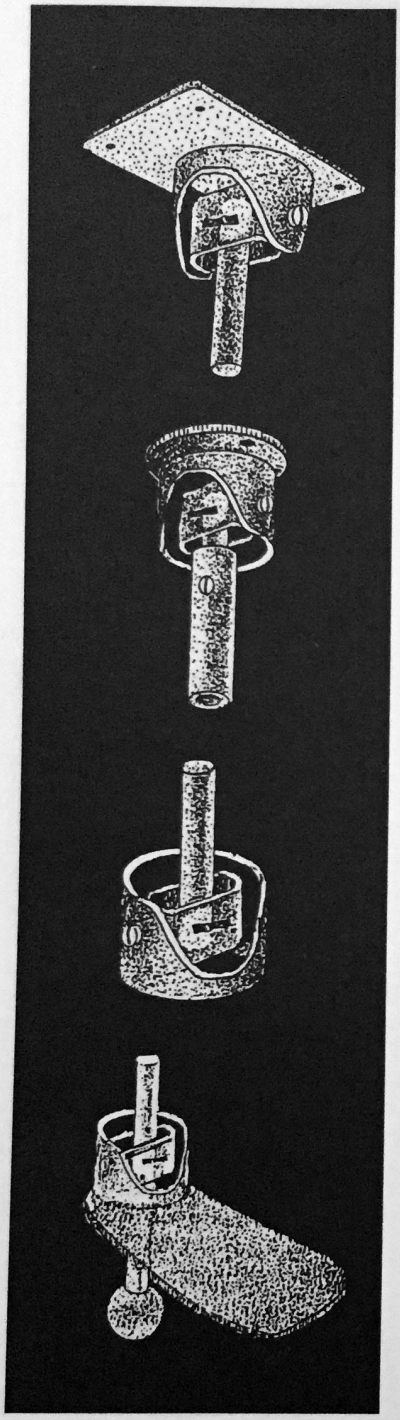
It is often necessary to drill holes along the middle of a tube and a vertical drill stand is very useful for this kind of work. However, if you haven't got one, the following simple device can be used to mark points in a line along the length of a tube - a tip Michael Benecke showed me.

As the first three diagrams on the right show, two identical triangular patterns are made by cutting a transparent plastic box (as used in packaging) in half across the diagonal. A line is drawn along each triangular wall at a height corresponding to half the diameter of the tube to be drilled, measured from the bottom of the box and parallel to it. The points where the tube is to be drilled are marked along the line and holes the size of a thin permanent felt pen are drilled into the plastic wall. The tube is then butted up against the front end of the pattern and the drill points marked with pen through the holes.

To drill through the exact diameter of the tube, it should be supported in a jig positioned horizontally under a vertical drill. A drill stand will make the job easier but it is possible to make a home-made jig from two PVC angles glued to a base, as shown in the fourth diagram on the right. The bottom diagram on the right shows a wooden pattern for a joint cut-out.



Devices for marking accurately aligned points along a tube, drilling through its diameter and making a joint cut-out



Universal Joint as a Turning-Nodding Mechanism

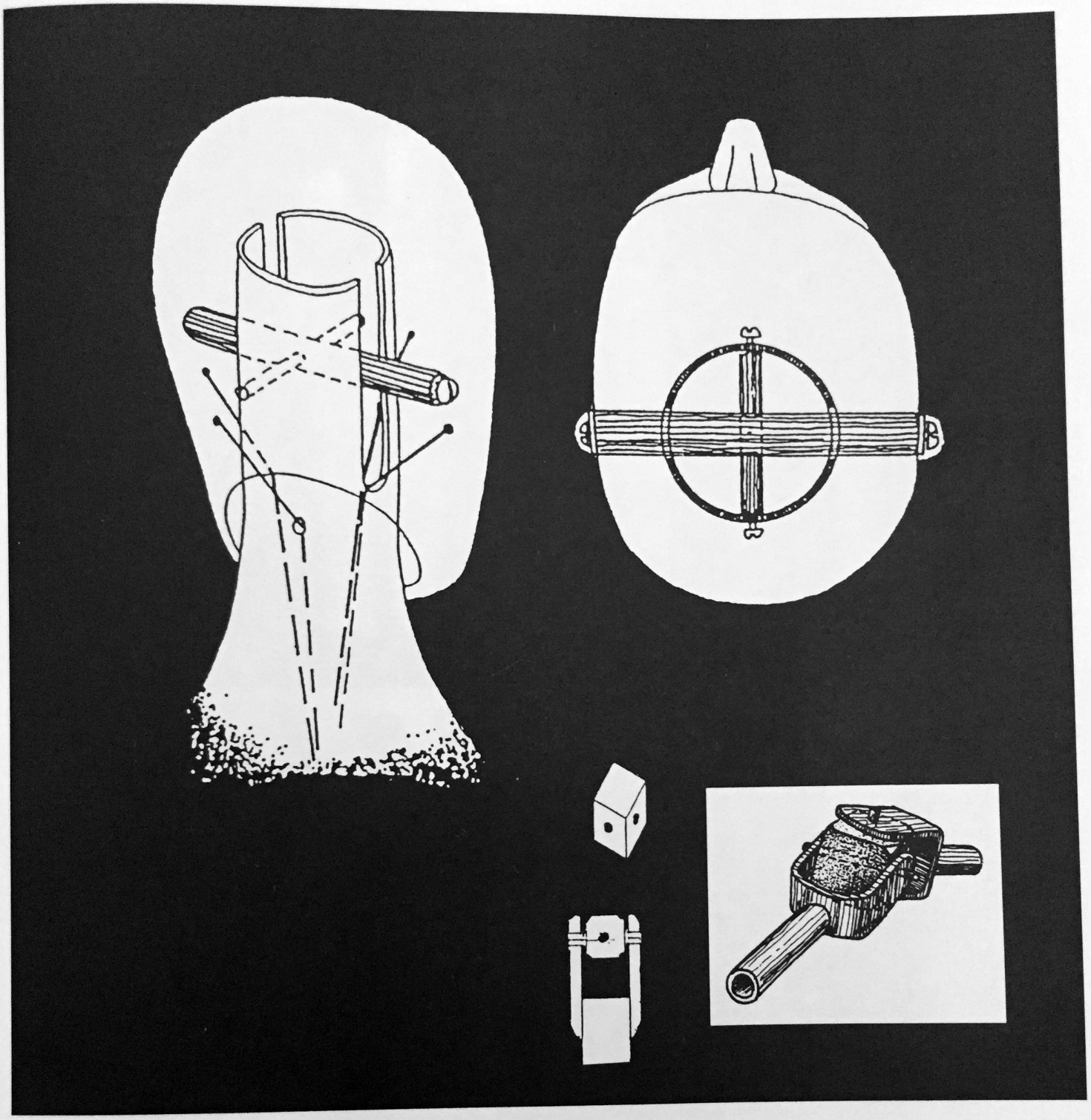
A universal joint is a form of coupling (commonly used between two rotating shafts) which permits freedom of movement in all directions — as found, for example, on a car axle. It can be made in various ways, but the principle always remains the same: two axles, positioned at the same level and at a right angle, form a drive shaft to steer movement round corners. Universal joints have become indispensable to me, and I use them in head mechanisms for puppets with long rods and as swivel-rocking joints for hip connections on figures with legs.

The range of head movement possible with a universal joint is determined by the shape, size and position of the neck hole, (ie a large opening will allow greater movement) as well as the distance and position of the axles inside the head in relation to the opening. An easy way to make the two axles cross at right angles is to insert them into a ball or cube with rounded corners that has been drilled through at right angles (see diagrams bottom right).

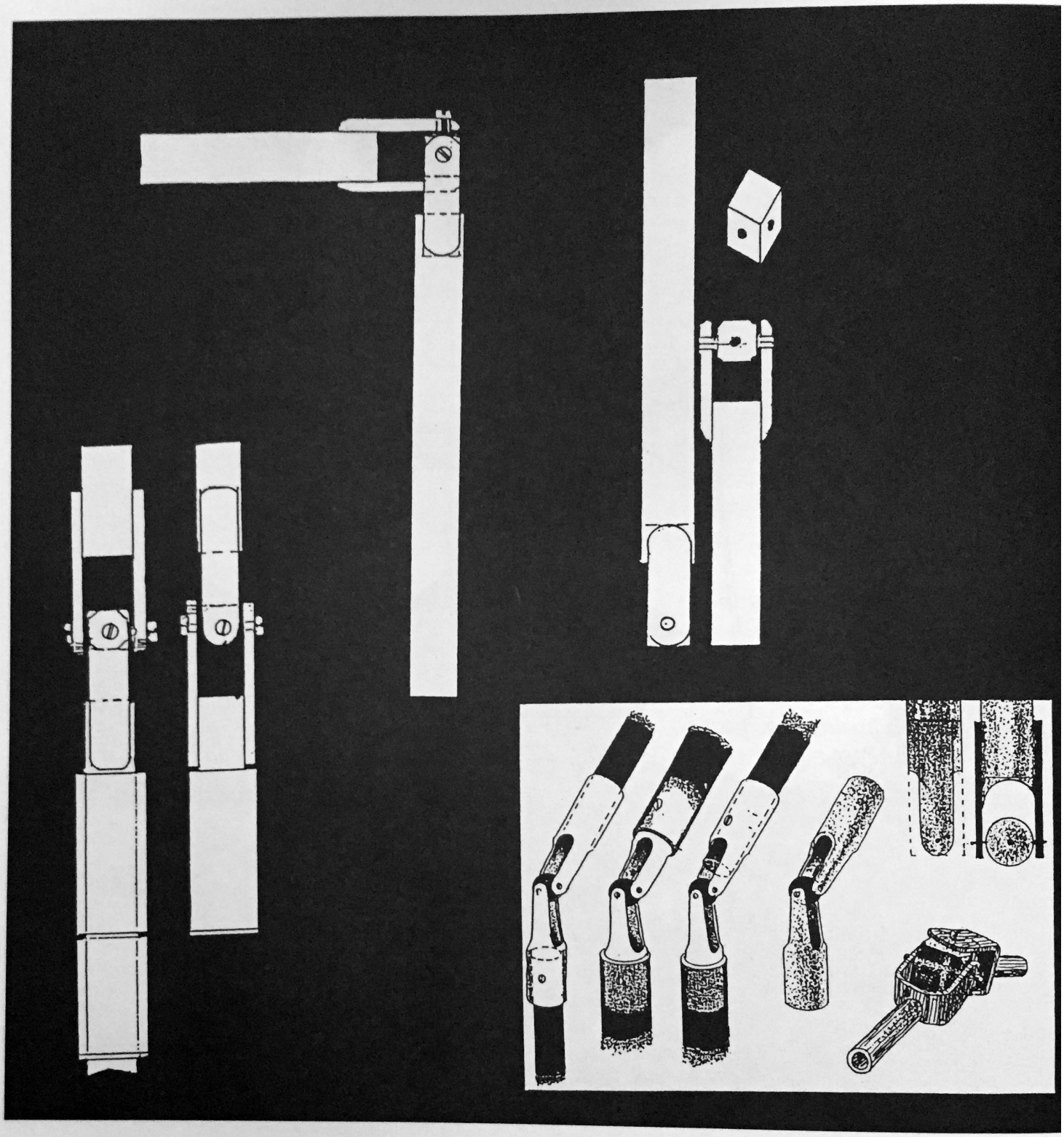
The top diagrams opposite show a universal joint on a figure by Richard Teschner, made from pieces of doweling screwed to the head, which is controlled by pulling on strings. The column on the left shows various ways of using a universal joint I designed myself and made from PVC tubing. Both the Teschner mechanism and the solution top left are designed for figures with interchangeable heads, ie a new head can be slotted over the basic head form or screwed to the PVC plate without interfering with the movement mechanism.

The diagrams overleaf show ways of extending a universal joint using tubes or solid rods attached with screws, and page 237 shows various ways of restricting its movement using slots and small screws. The diagram on the far right shows a rotating mechanism, used for a puppet's pelvis, which can swivel round a vertical axle and slide up and down. At its end is a fitment with restricted turning and inclining possibilities.

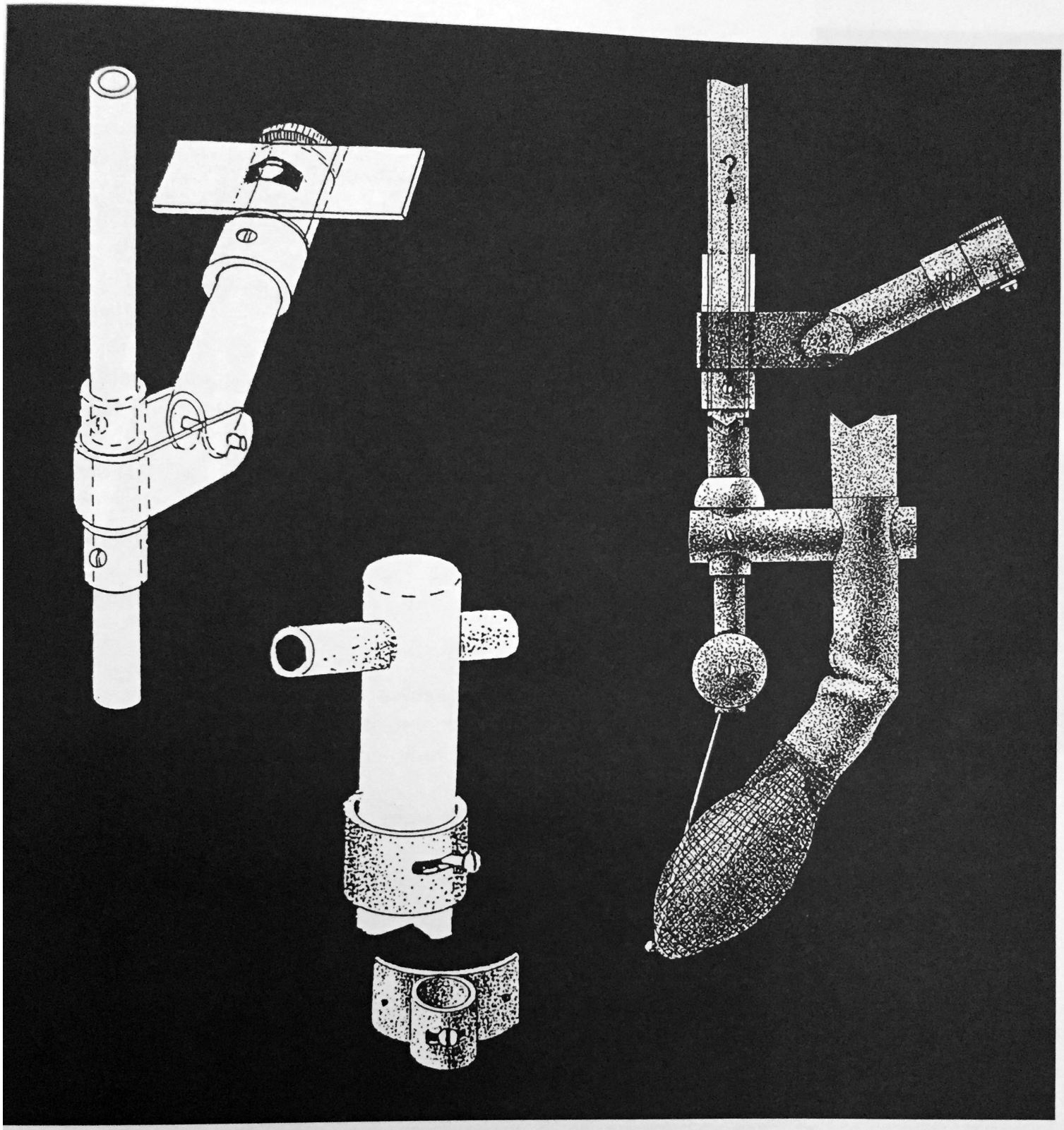
A universal joint made from PVC elements, used in different ways



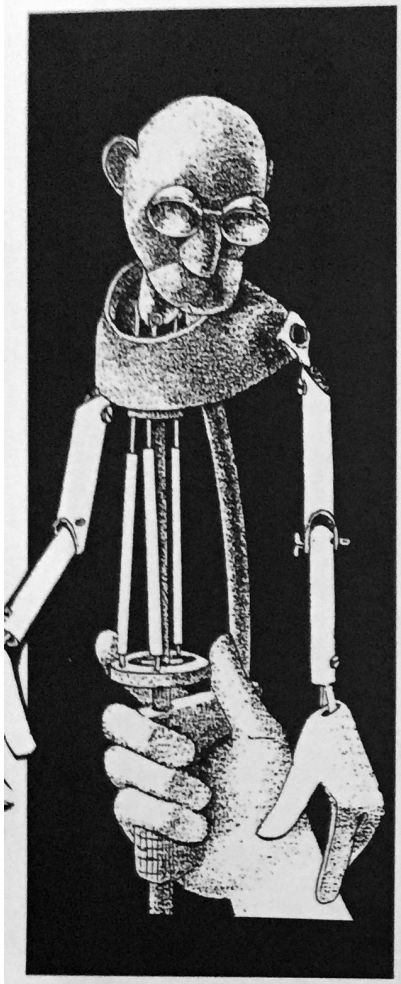
Above: Universal joint by Richard Teschner, made from dowels Below: Using a ball or rounded cube to fix axles at an angle



Universal joints with extensions (for necks, legs, arms etc)



Using slots to limit movement



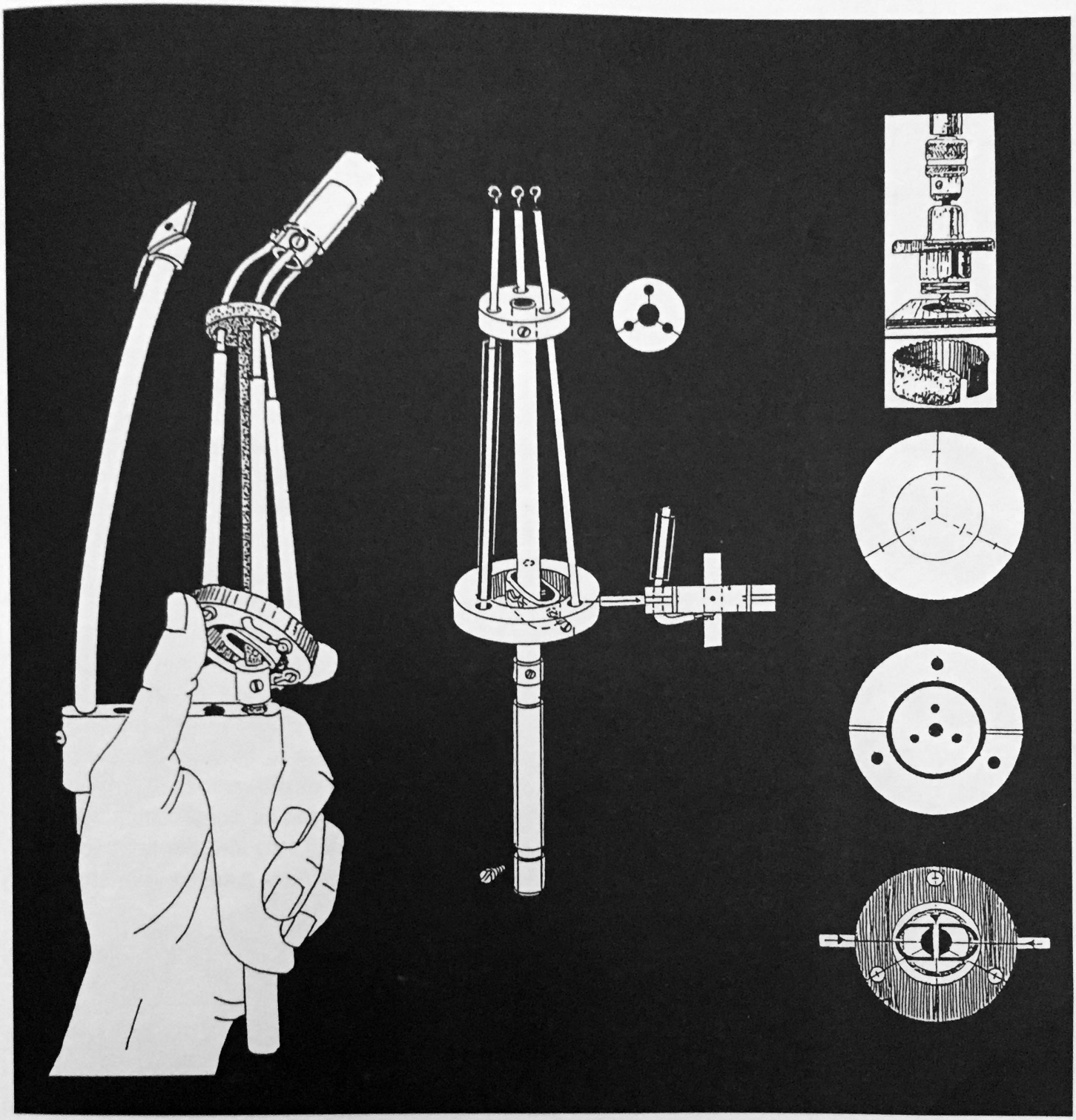
Head Control Mechanism with Universal Joint

The diagrams on these two pages show a turning-nodding mechanism with a universal joint, which I adapted from one by Georg Offik and constructed from PVC materials. I call it a 'three-point-mechanism' because the movement is transferred to the head via three flexible wires which terminate at three points on the base of the neck. I believe the drawings to be self-explanatory and therefore simply give below a list of the materials used.

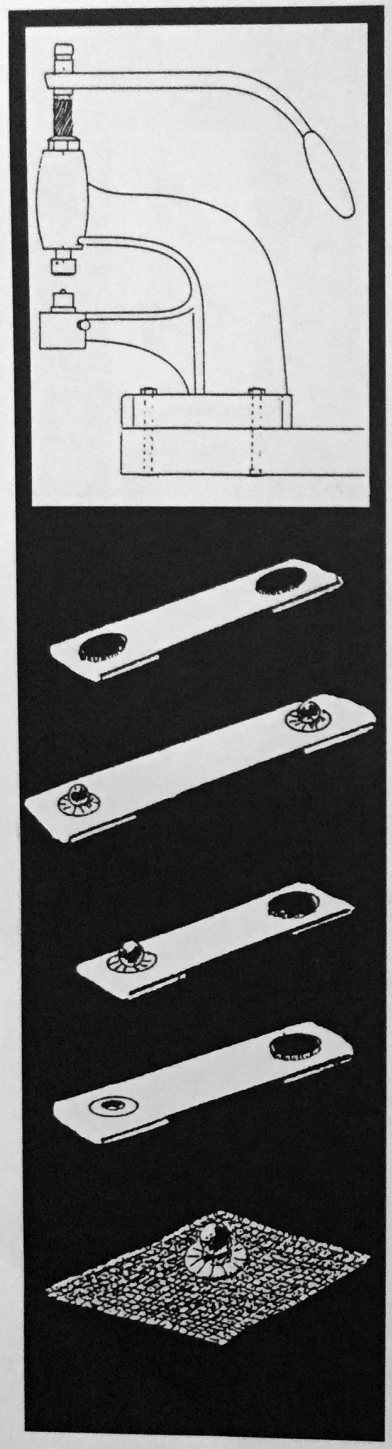
1. PVC plate, 12mm thick, for the outer ring of the universal joint and the upper ring through which the wires to the head are fed. These plates could also be made from beech wood.
2. Two compass saw fitments for an electric drill Ø60mm and Ø30mm, used to cut the above-mentioned rings.
3. Three curtain wires Ø4mm, sold by the metre in curtain shops or suppliers of caravan accessories.
4. Eyes that screw into the ends of the wires, also available in curtain shops.
5. Flat-headed screws:
   a) Ø3mm X 9.5mm, for general use.
   b) Ø4mm X 22mm, used to make one axle of the universal joint.
6. PVC support tube, Ø12 mm, either with wall thickness 1mm or as a solid rod.
7. Split pin Ø2mm L 2.5-3mm, used for the internal axle of the universal joint.
8. Three strong PVC tubes Ø8mm, wall thickness Ø1mm, used to support the curtain wires.

The flattened inner section of the universal joint is made by the heating and distorting process described on page 233. The pistol grip and shoulder support rod are also made from PVC materials.

Three-point mechanism made from PVC elements



Left: Transferring movement via curtain wires. Centre: Attaching the curtain wires. Right: Cutting and drilling the PVC rings



Connections for PVC Tubing — Snap-strips and Mounts

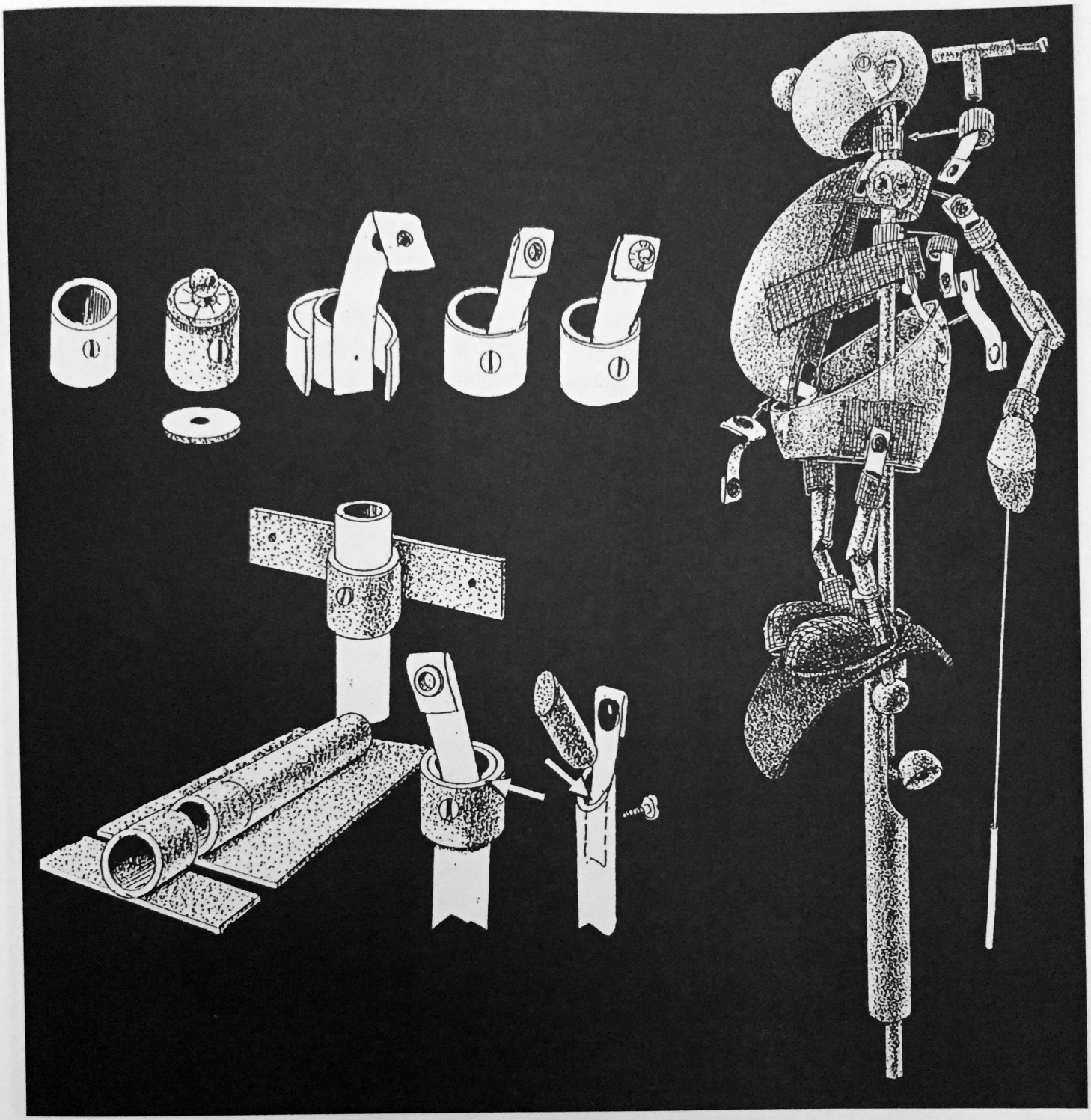
Another important material I discovered whilst making the canopy on my rubber boat was a durable non-tear nylon tenting fabric which is easily furnished with snap fasteners. Snap fastening connections offer tremendous possibilities for jointing and attaching puppet limbs, and have become an integral part of my puppet-making — either as 'snap-strips' made from PVC fabric or as 'mounts' from PVC tube.

The two parts of a snap fastener are used in different combinations to create individual snap-strips, and the diagrams on the left show various possibilities — from top to bottom: female-female, male-female, male-male and eyelet-female. Eyelets could also be combined with the male part of a snap fastener. The bottom drawing shows a male half inserted into a piece of *Agoplast*,* which allows it to be attached directly onto the puppet's body. Devices are available to fix snap fasteners into fabric, and can be obtained from wholesalers to the shoe-making and saddlery trades.

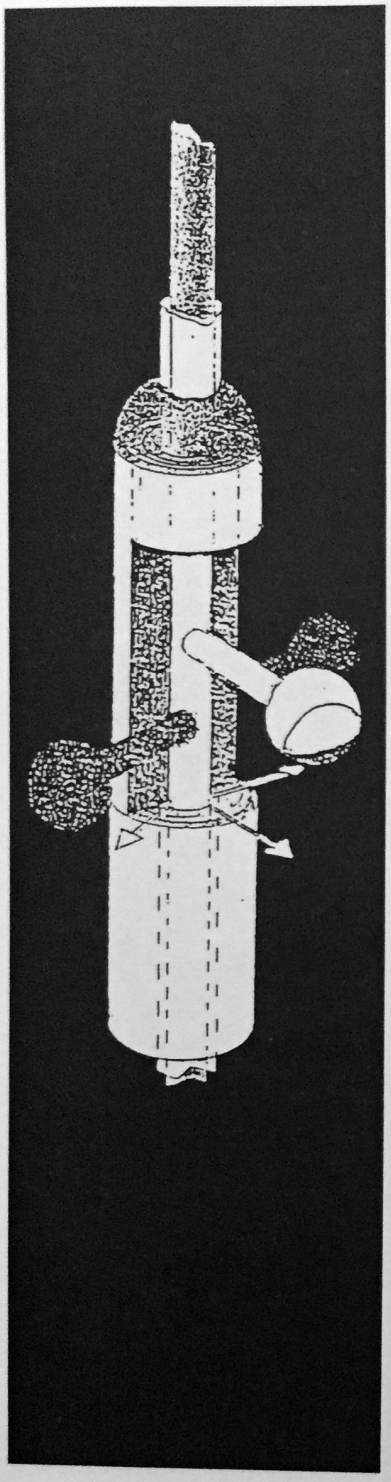
The diagrams opposite show a series of 'mounts', which I use as stoppers or supports for fitments — for example, the mount in the centre with the PVC plate could be used as a shoulder support. Mounts are fed onto the main support tube and fixed with a small self-tapping screw, taking care not to restrict the movement of any internal free-turning tubes. Mounts can also be used in combination with snap-strips to create a wide range of different connections. The two solutions bottom right could be used in combination with the mount with a male snap (top row, second left) in order to attach arms to shoulders; a connection which is sometimes more appropriate than a ball joint.

*Agoplast: see publisher's note on page 65.

Top: Press for fixing snap fasteners. Below: Various snap-strips. Bottom: Snap fastener in Agoplast patch.



Left: A selection of mounts. Right: Long rod figure assembled using mounts and snap-strips.



Simplicity Without Strings

Much of my work with PVC tubes has been devoted to developing long rod figures which have legs, can bend at the waist, walk convincingly and do not use mechanisms controlled by strings. The main breakthrough in this search is described from page 246 onwards, but I would like to introduce two puppets from the intermediary stages, which are interesting in themselves.

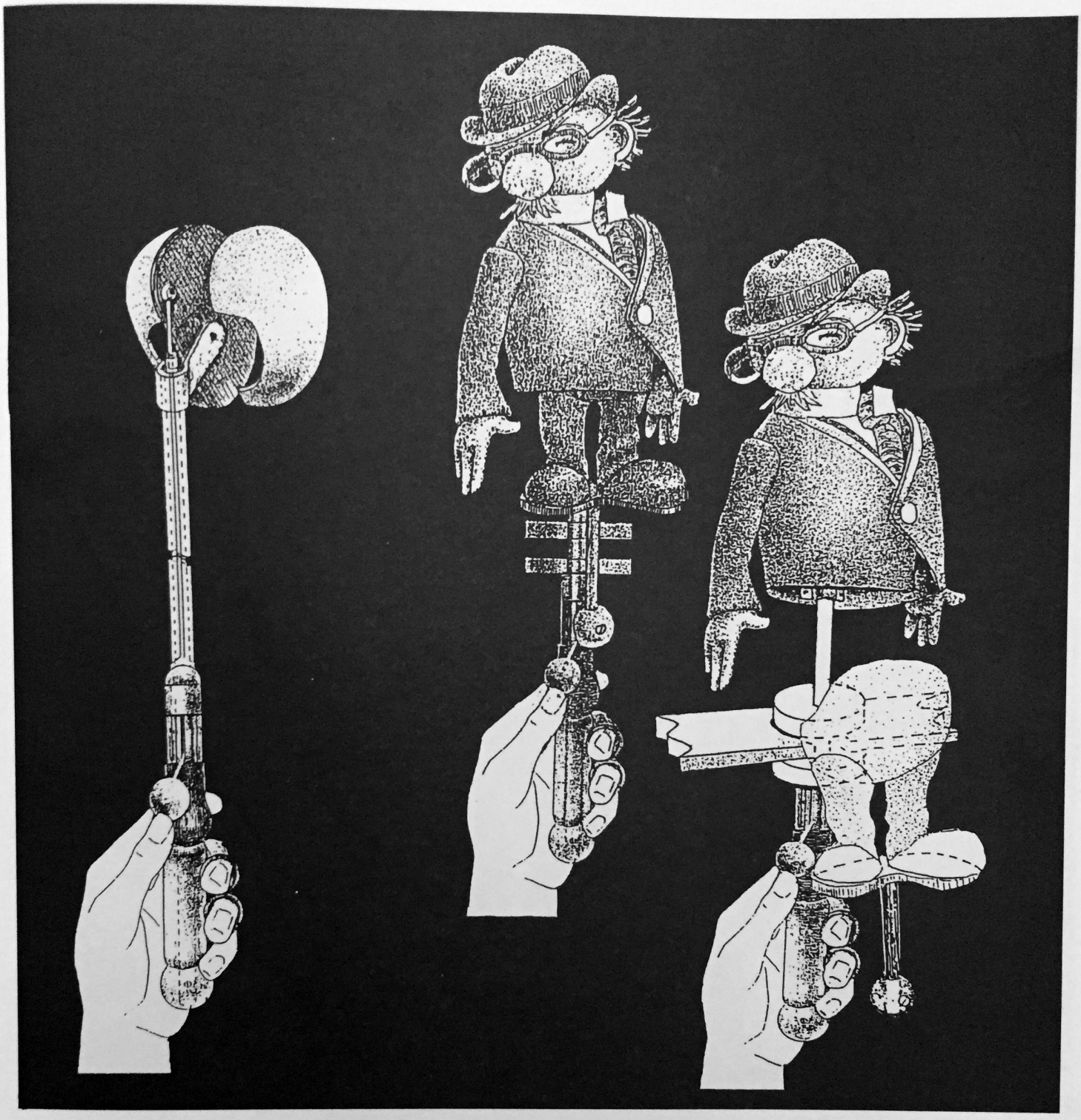
The lower half of the figure on the opposite page is a detachable 'belly on a stick', which either rests on the upper of the two discs used to 'park' the puppet on stage, or can be completely removed — which may be used to humorous effect, ie the legs accidentally leave the body standing, or male and female body halves are interchanged.

The head control mechanism is a variation of the 'rod in a tube' technique shown on the left, which has an inner control rod made from solid PVC and a wooden manipulation ball on a PVC stem. The rod turns freely inside the tube and the amount of head movement is governed by the size of the cut out, which restricts the amount the tube can turn or rise and fall.

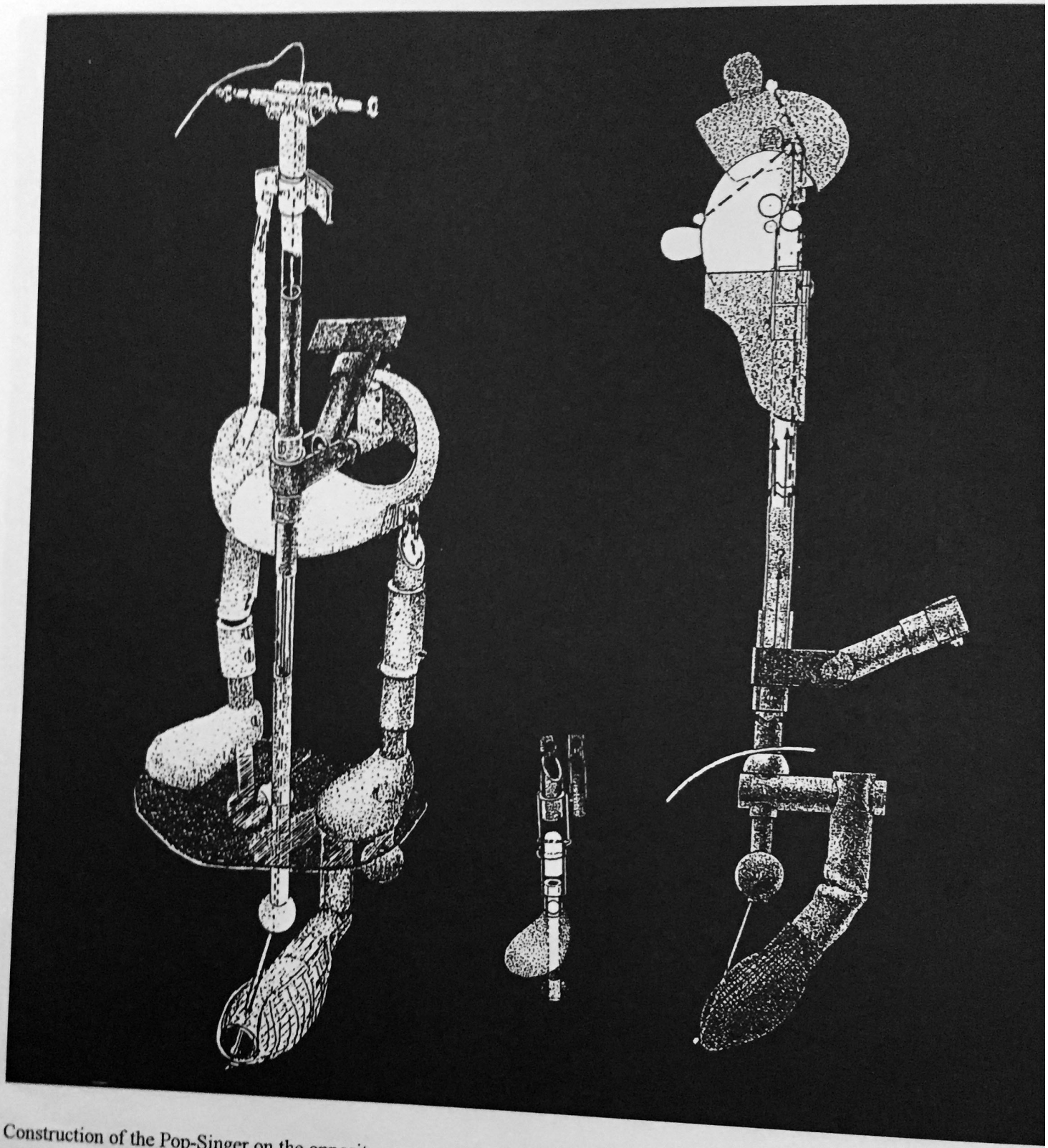
In the puppet on the right, the inner rod is replaced by a free-turning tube with a stiff wire running through it. The top of the wire is bent into an eye, which is attached with a screw to a piece of plywood in the middle of the egg-shaped head. Between the inner and outer tube is another free-turning tube, onto which the double-tongued mount, made from 3mm PVC plate, is wrapped around and fixed. The two tongues are attached to the plywood to make a nodding joint for the head.

The bottom of the manipulation ball is ground flat to fit the thumb. The tubes rotate inside the handle, onto which further sections of tube have been glued to make a comfortable grip for the fingers. A control ball is glued to the outer tube above the handle. The ball at the bottom of the handle can be removed, which allows the head and shoulders to be moved in opposition to the legs.

'Rod in a tube' head control mechanism



Long rod figure with detachable lower body

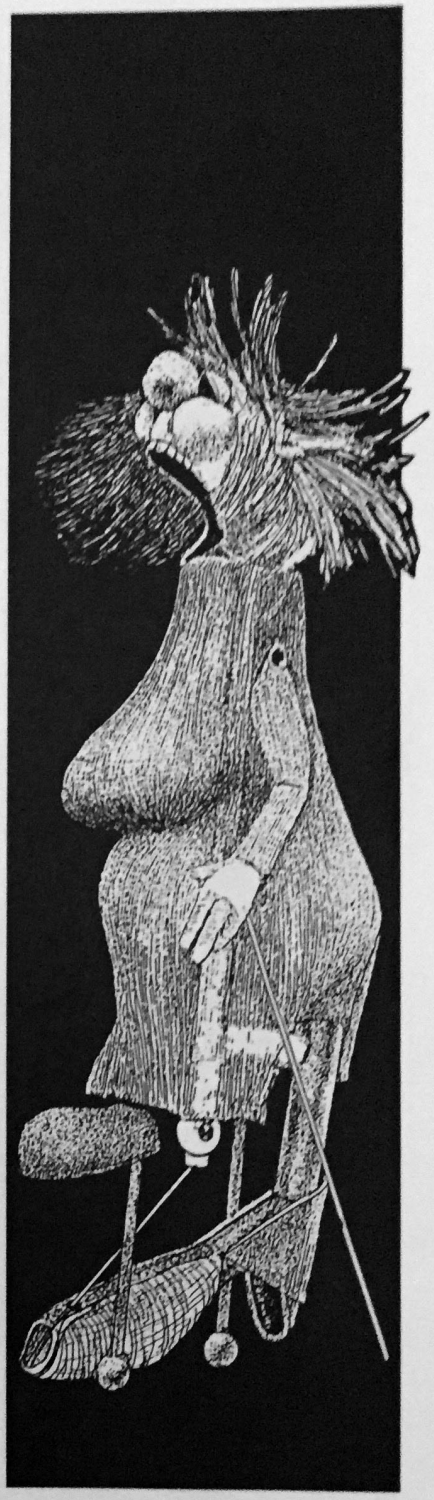


Construction of the Pop-Singer on the opposite page

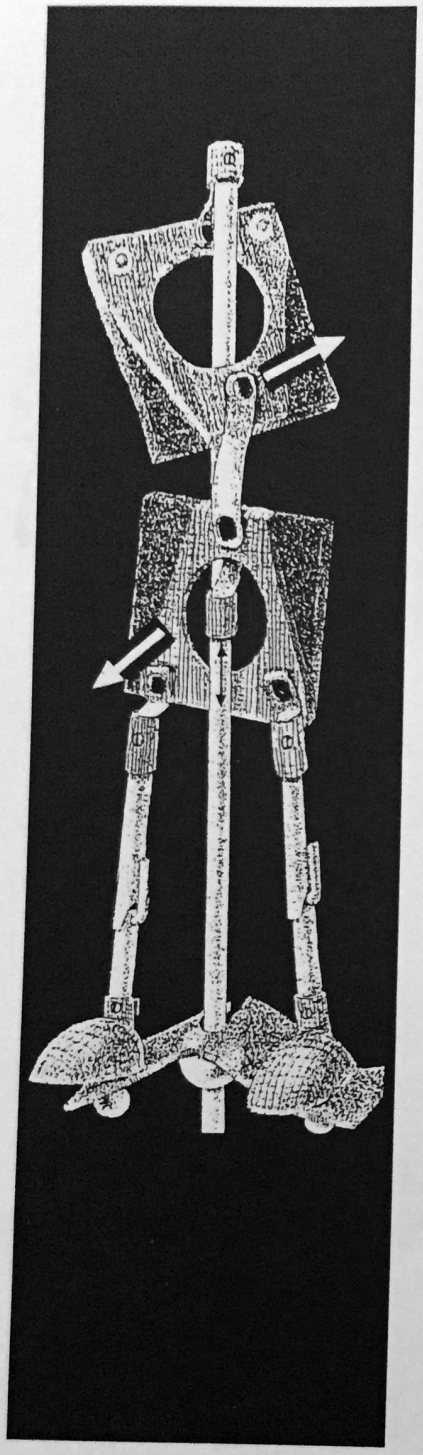
The construction of the puppet on the right is interesting because it combines many different ways of using PVC materials to make joints and connections. Although on first sight the structure might seem complicated, it is simply a set of tubes inserted into each other and a selection of mounts (as described on page 240).

The rocking mechanism for the hips is based on a universal joint, and was described on page 234. The arm that connects the rocking mechanism to the support tube is made from a flat strip of PVC that has been heated and bent round a free-turning mount which is held in position between two further mounts fixed to the support tube. In theory, the rocker could rotate 360° around the tube but a snap-strip keeps the amount of movement under control.

The top edge of the shoulder mount also forms a rigid bottom jaw. The puppet's mouth is opened by pulling on a nylon thread which runs from the end of the bent PVC grip, through the ball at the base of the support tube, up the length of the tube and over three pieces of tubing to the bridge of the nose. These three pieces of tubing inside the head are glued together and attached to the top of the spine, and the thinnest of them holds the axle for the head.



The Pop-Singer



The Breakthrough

The drawing on the left shows the basic principle of what I consider to be my most important discovery; the result of decades of reflection and brooding on how to make a long rod puppet with legs which can be controlled externally by one performer and has a versatile range of movement. I also wanted the figure to hang naturally on the control rod in the relaxed posture of a sleepwalker and not look as though it had 'swallowed a stick'. Keeping this criteria always in the back of my mind, I felt it would all click into place once I found the right catalyst.

One day, whilst rummaging through my boxes of PVC offcuts and failed experiments, I came across two square pieces of PVC plate which had been drilled through the centre - and it was these two holes which provided the key. The PVC plates already had snap fasteners glued to them, and there were support rods in stock, one of which had a snap fastener mount attached. As I pressed the mount and one of the plates together, the penny finally dropped. A little later I had made the mock-up on the left from bits and pieces lying around, although it didn't yet have a rubber plate under the feet.

The body consists of two loosely connected parts. One PVC square forms the shoulders and chest, and is connected to the support rod with a snap-strip. The rod passes through the hole, pushing the bottom front edge of the plate out to suggest a rib cage. The top edge of the lower square is connected by a snap-strip to make the shape of the belly, and as the support rod passes through the hole, its lower edge is pushed back to form the puppet's bottom. Legs are attached with snap-strips.

Holding the feet in one hand, I rotated the support rod rhythmically back and forth with the other, and the two plates automatically moved in opposition. I was thrilled by the subtlety and fluidity of the body movements possible with the construction principle described above, and soon afterwards developed the two prototypes opposite, whose feet were moved in synchronisation by rotating a plywood footplate.

Basic principle of long rod technique developed by the author



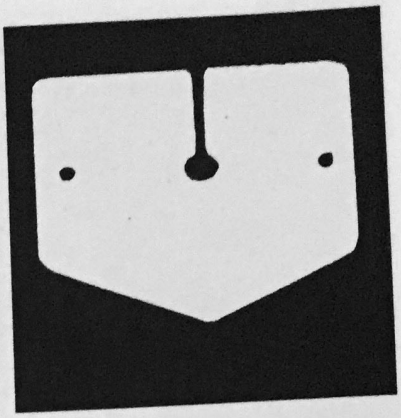
Prototype long rod figures with wooden footplate



Long rod figure by the author showing use of footplate to control the legs

The wooden footplate, however, was stiff, unwieldy and noisy when the puppet's legs moved, and I therefore designed a more flexible one using a piece of car inner tube. After a few attempts, I arrived at the shape shown on the right, which works very well. The footplate has three holes along its centre line; the two smaller outer holes take the rods to the feet and the larger hole in the centre is for the support tube.

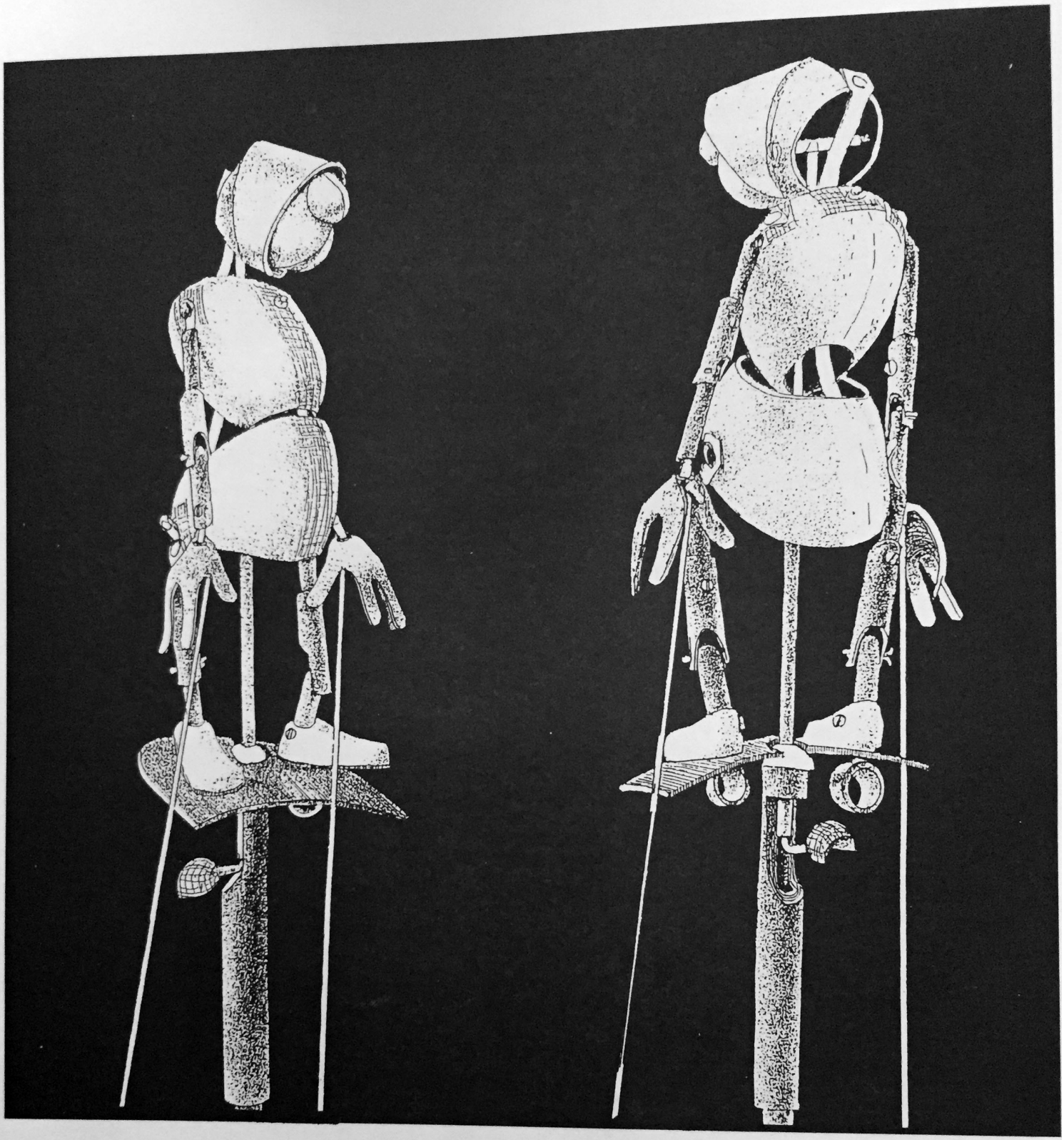
The size of the footplate depends on the distance apart of the puppet's feet (determined by the width of the pelvis) and governs the length of the stride. The slit from the centre hole to the back of the plate allows the support tube to be released from the footplate, which extends the range of leg and pelvis movements. The holes for the leg control rods are just large enough for the wooden manipulation balls to be squeezed through.



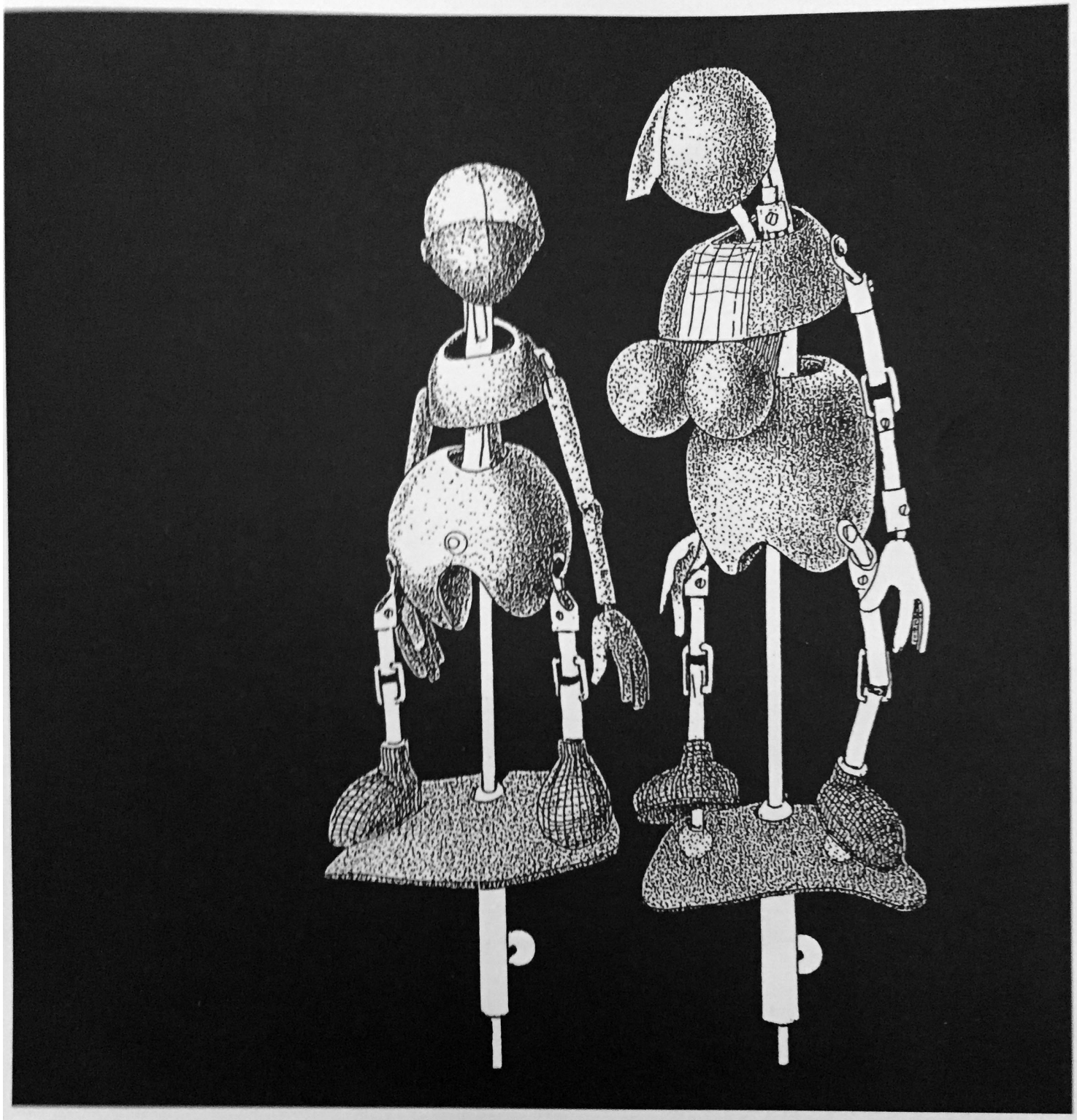
Rubber footplate for long rod figures with legs

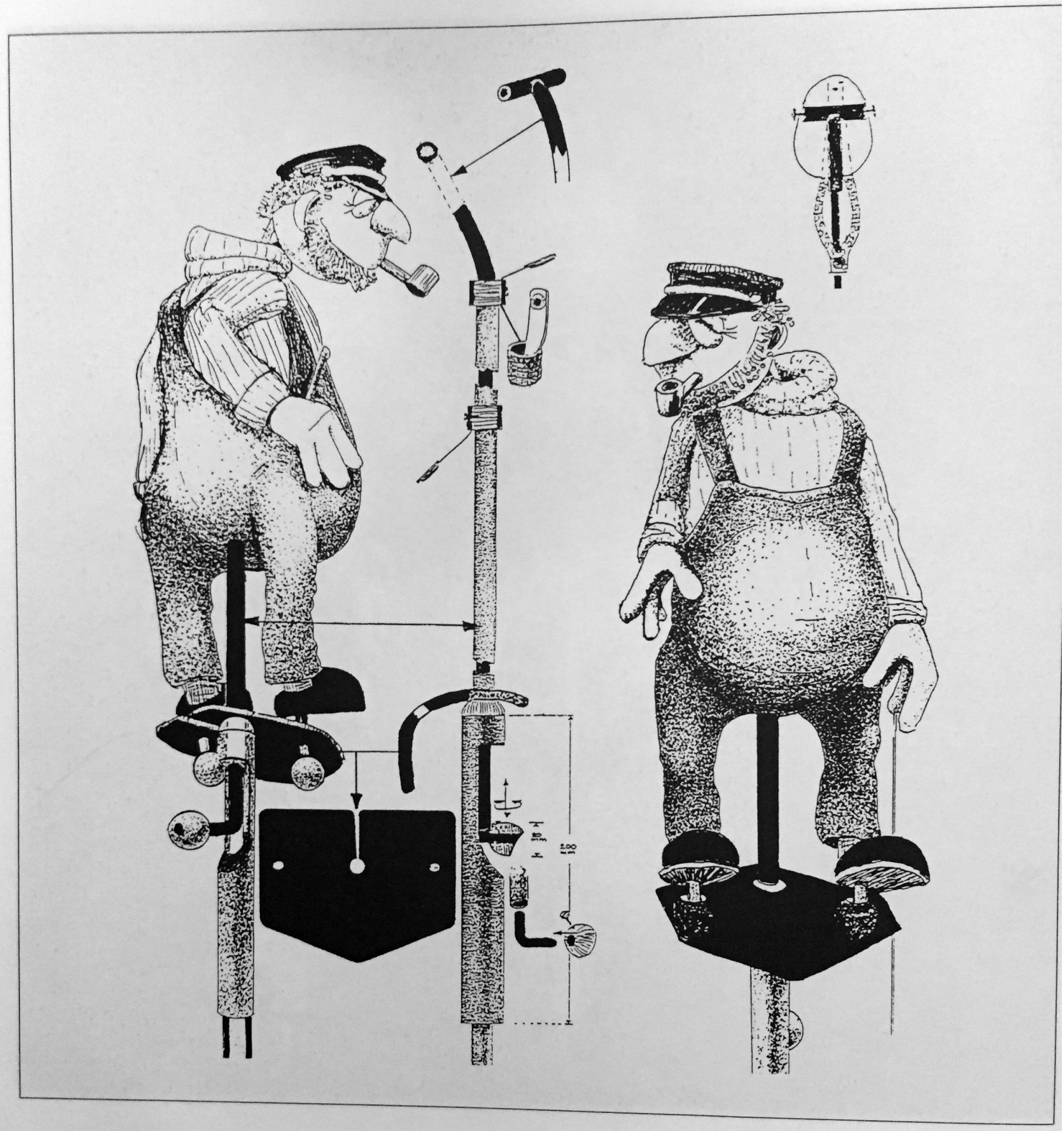
The following pages show various puppets with long rods that have been made using the two-part body technique described. Control rods and limbs are made from PVC elements, and upper and lower body parts are easily shaped using cardboard elements to which snap fasteners have been fixed.

The various elements are joined by mounts and snap-strips (as described on page 240), and it is the position of the mounts in combination with the length of the snap-strips which determines the range and type of movement possible. To make it easier to test different lengths and to subsequently measure exact distances between elements, I have developed a 'snap fastener tape measure' which consists of a strip of PVC fabric with the female part of a snap fastener at every centimetre. I experiment with this until the right effect is achieved and then count the number of fasteners to calculate the length of the final strip.



Both pages: Long rod figures by the author, constructed from PVC and cardboard elements

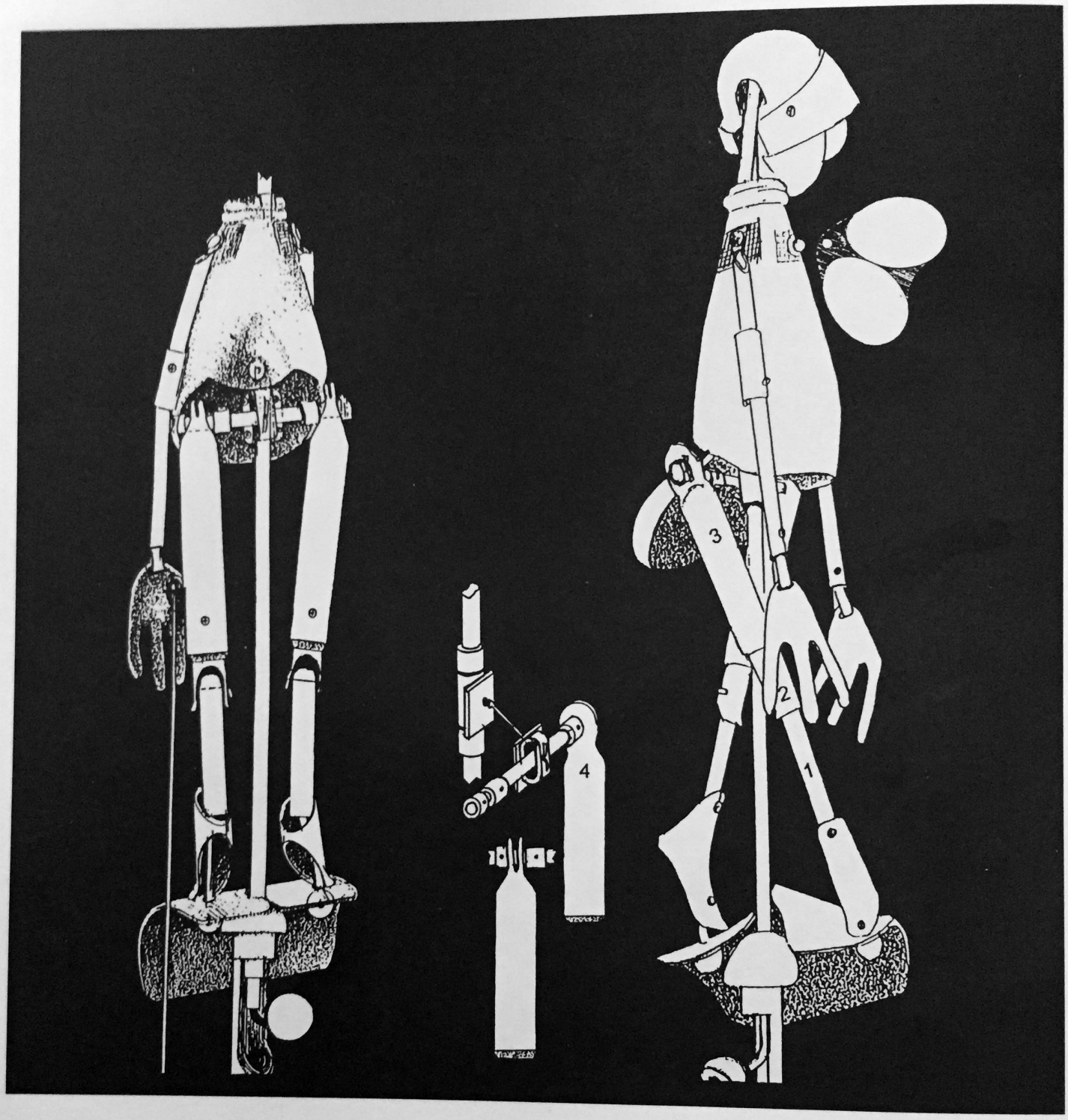




The Sailor, a long rod figure by the author



The Twenties Lady (construction details overleaf)



Construction of the Twenties Lady with detail of the pelvis mechanism

Miscellaneous Mechanisms

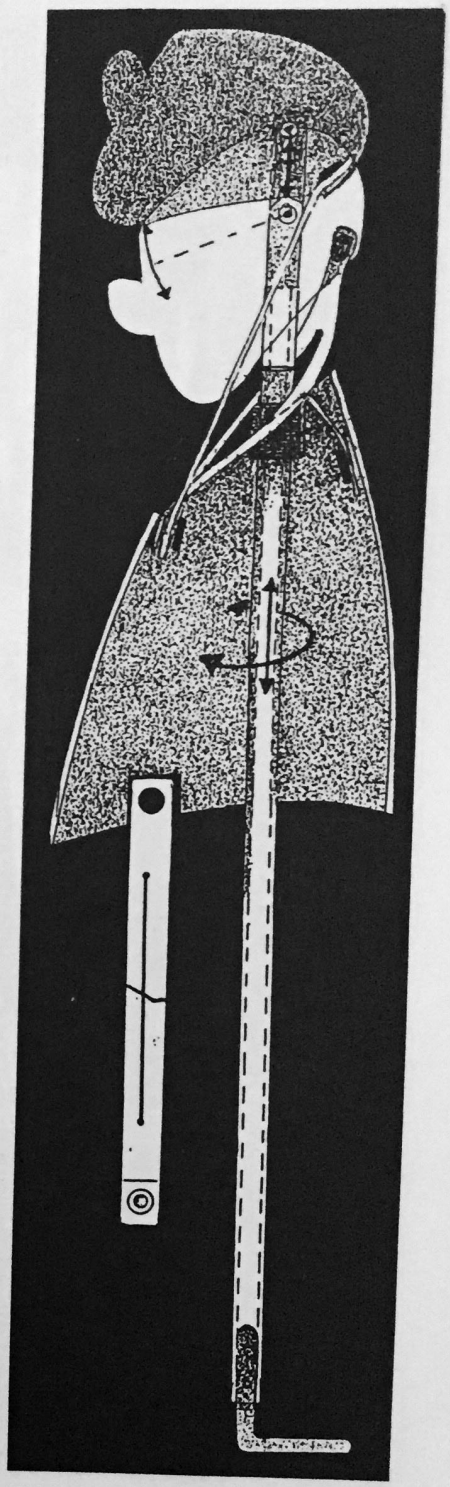
The diagram on the right shows a split-neck-strip which is used in combination with a horizontal axis inside the puppet's head to make an elegant, simple and efficient turning nodding mechanism.

At the top of the neck rod (which slides smoothly up and down inside the main support tube) is a T-shaped fitting which forms the horizontal axis for the head, thereby allowing the puppet to look up and down. The neck rod passes through a split in a strip of PVC fabric, one end of which is attached with a snap fastener to the back of the puppet's head and the other to the front of its chest. By gently sliding the neck rod upwards, the distance between the head and chest increases, which tensions the split strip and causes the head to look upwards.

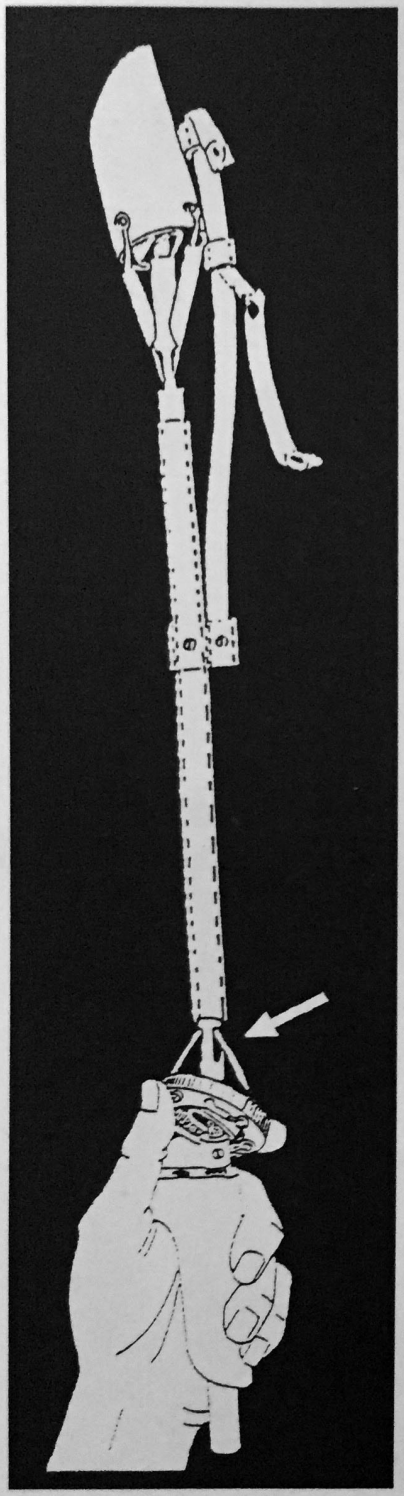
The neck rod is manipulated at the lower end of the support tube as shown on page 242. Pushing the control rod upwards makes the head look up, and rotating it causes the head to turn. The rear view of the figure on page 250 shows the split strip coming out of an open head, and the T-junction which holds the nodding axle.

The construction of the leg mechanism on the figure on the left (and on the previous page) gives it a distinctive, rolling walking movement. The upper thighs are attached to a crossbar connected by a rocking joint to the main support tube. Combining the rocking motion with twisting the support tube gives the hips a range of movement similar to that of a universal joint.

The puppet's pelvis is in one piece, loosely attached to its back. However, it could be made as two individual buttocks, separately attached, which would enhance the walking effect. The legs are controlled from below by control rods attached to the 'toes' of the high-heeled shoes which are made from diagonally cut pieces of PVC tubing.



Turning-nodding mechanism using a split-neck-strip



Head Control with Bowden Cables

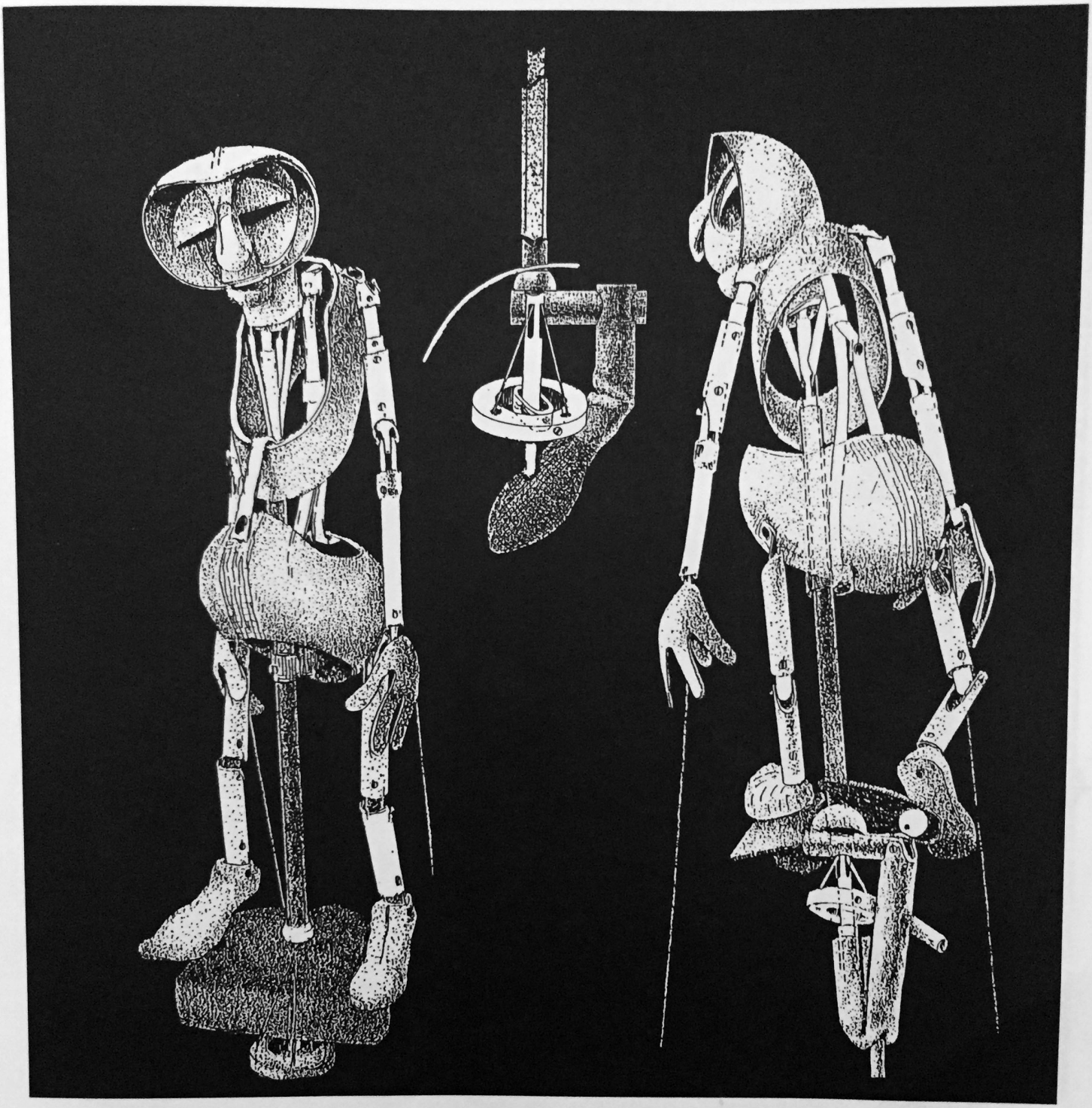
The head control mechanism on these two pages works on the same principle as the three-point-mechanism described on page 239, but the movement of the universal joint is transferred by Bowden cables (as used in bicycle brakes) rather than curtain wires. The cables run through three slits in the head control tube and are attached to a neck unit. Different heads can be slotted onto the neck piece without interfering with the control mechanism.

The manipulation tube turns freely inside a tube onto which the mount for the shoulder support tube is fixed. The shoulder support tube first runs parallel to and then bends away (using heat) from the central tube, and the shoulders are attached using a mount and snap strip.

I would suggest experimenting to improve the support grip, as the small pistol grip shown is not ideal for this puppet (which has a tendency to be top heavy).

Human beings each have their own way of standing and walking, recognisable even from a distance, and to find a stance to suit the character I am making, I connect the various parts of the puppet's legs and rotate them to establish the correct position before finally screwing them all together. A puppet's stance and gait can be altered by changing the proportions of the leg, or by turning the knees out or the feet in, and bandy legs can be made by heating and bending tubes.

Three-point mechanism using Bowden cables



Long rod figure with head controlled by Bowden cables



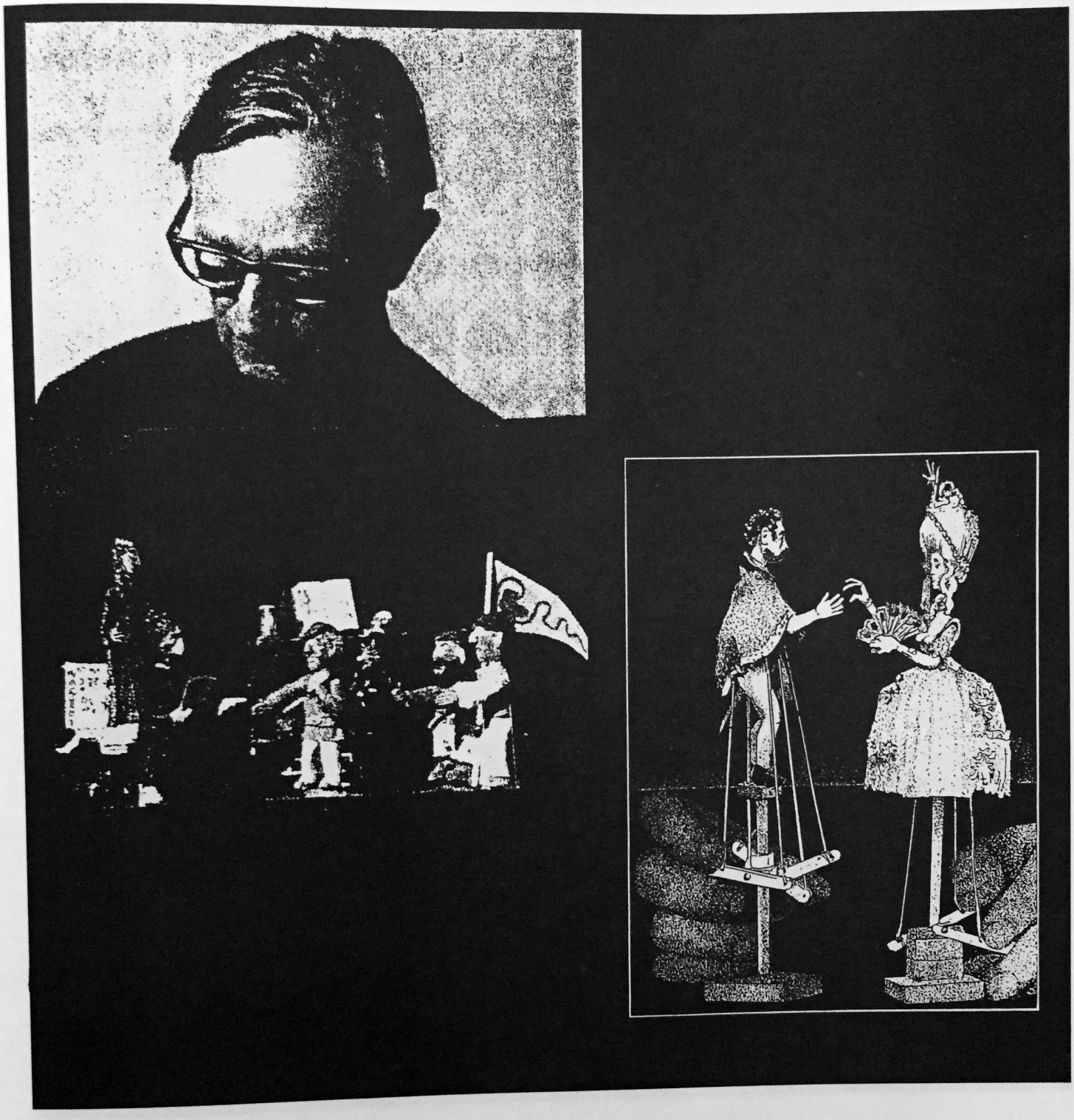
19th century figure from Peter Herzog's mechanical cabaret

Gustav Dubelowski-Gellhorn

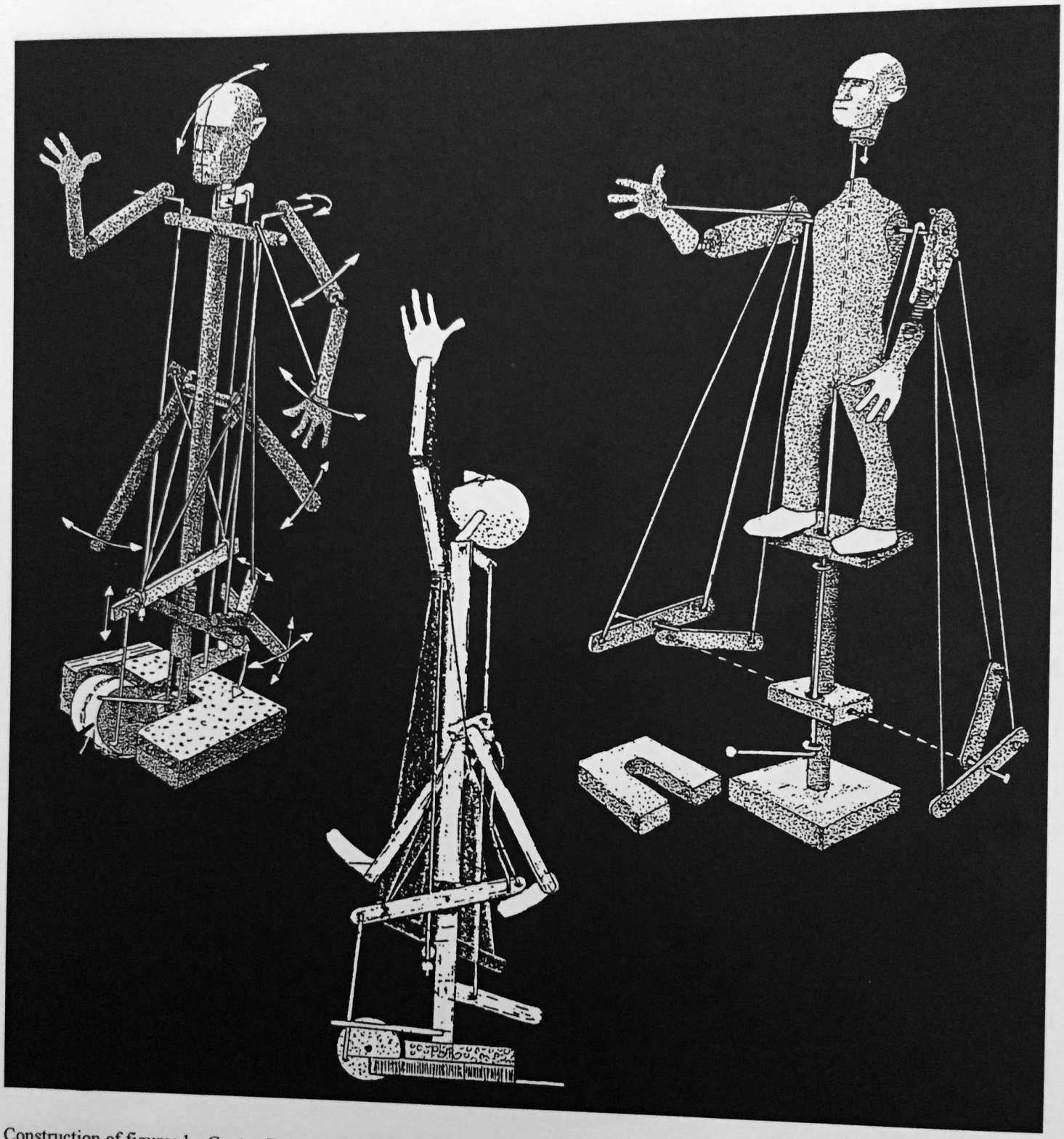
I first met Gustav Dubelowski-Gellhorn at the 11th UNIMA Congress in Charleville-Mézières, and found him intriguing. It wasn't necessary to ask his interests as it soon became apparent that he was completely obsessed by his tiny theatre and all that belonged to it. He was always ready to talk about the plays he performed, from *Faust* to *Ionesco*, the mechanisms of his tiny figures and how the lighting worked. Everything in his theatre was so compact that he only needed to open a suitcase to make the 'boards which represent the world' ready for the show to begin. We exchanged addresses and there followed a correspondence which comprised almost 300 letters before his sudden death in 1991 whilst giving a performance.

Gustav Dubelowski-Gellhorn's figures could be described as miniature long rod puppets operated from below, and were inspired by the 19th century figure shown on the left from Peter Herzog's mechanical theatre in Munich. The diagrams opposite and overleaf say more about their construction than words can, and the technical thought involved is worth close consideration.

Around the time I was beginning to work on table-top figures, I invited Gustav to visit me as I felt I could benefit from his experience. He came at once and tried using his method on my PVC tubes and cardboard elements, producing bizarre machines which I found impossible to operate, even on a large scale - yet he could effortlessly manipulate the levers to guide and operate even the tiniest figure.



Gustav Dubelowski-Gellhorn and his miniature figures



Construction of figures by Gustav Dubelowski-Gellhorn

Chapter Seven

Table-Top Puppets



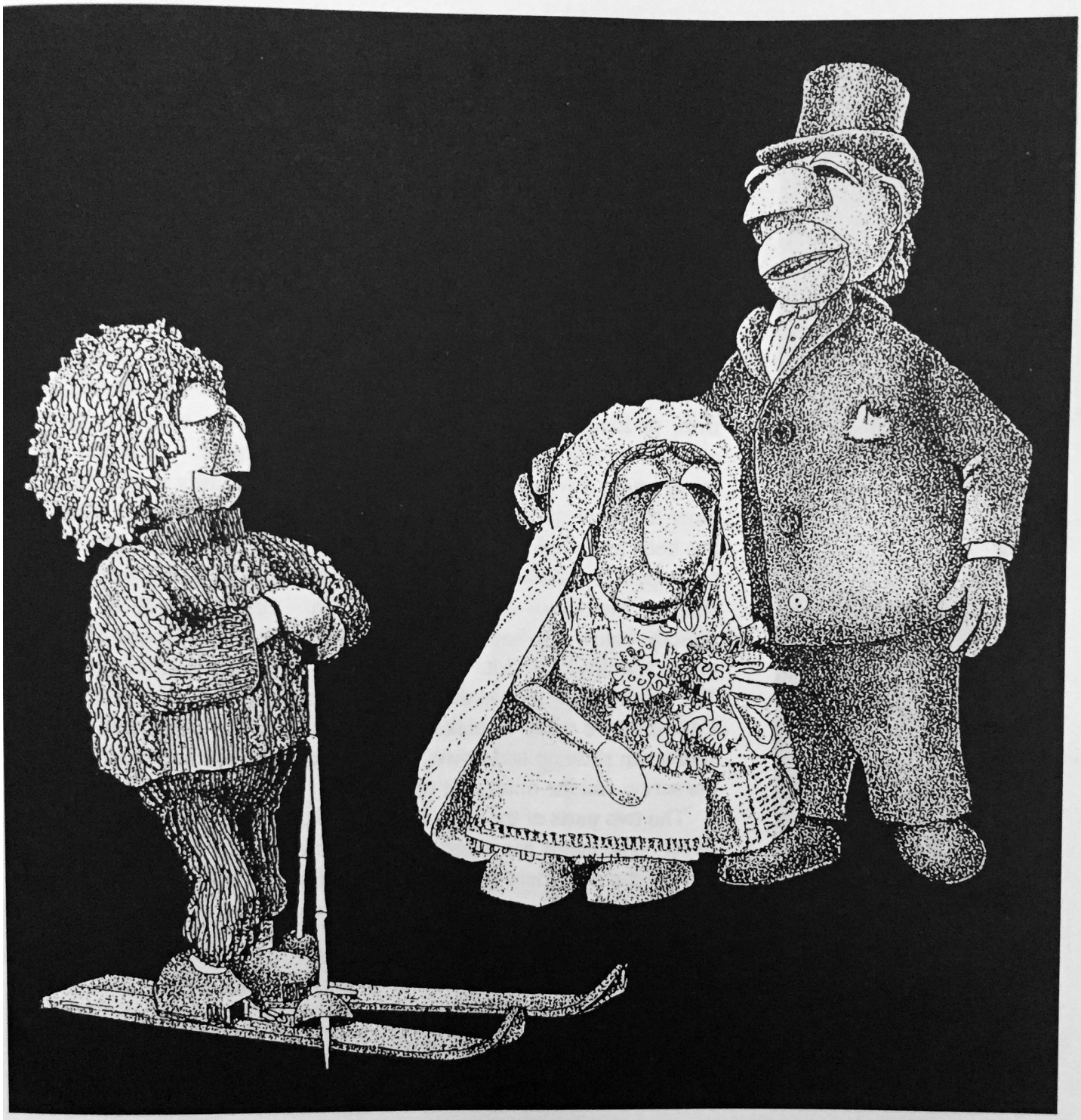
Standing Figures

My involvement with table-top puppets developed out of an exercise I devised for my pupils to make standing figures from cardboard shapes. The children took on the task with such enthusiasm and produced so many interesting models - examples of which are shown on the opposite page - that I felt inspired to find ways of making them move.

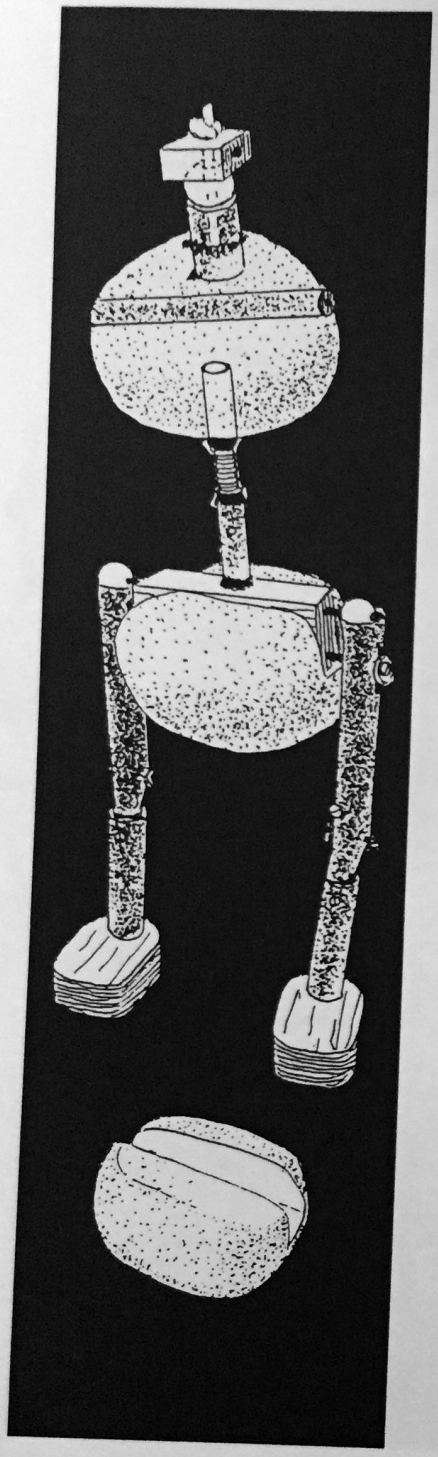
The drawings on the left show the construction of my first standing figure, which demonstrates how tubes can be connected by balls to create dynamic angles between them. This idea developed out of an initial experiment in which the egg for the figure's body was placed on top of a tube to adjust the angle of its tip. I then cut two round holes in the lower part of the egg, into which two balls of a larger diameter were glued to make an easy connection for the upper leg tube.

The idea worked so well that I subsequently used balls wherever possible to avoid cutting exact angles for the legs, and discovered how easy it was to use this technique to create figures with interesting contrasts in body shape and dynamic shifts of weight. I later used the same technique to develop a flexible spine for table-top puppets.

The author's first standing figure



Standing figures by the author's pupils



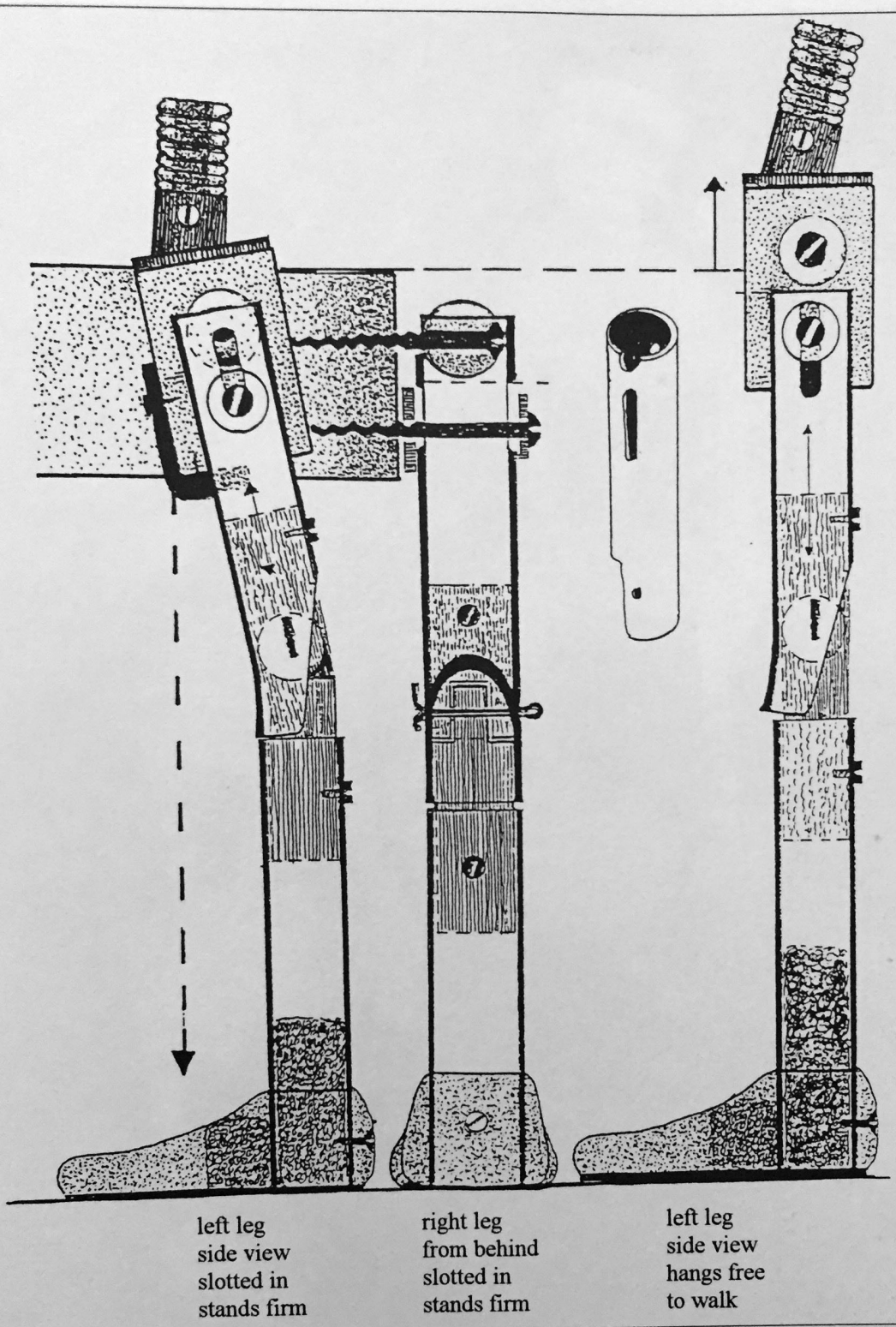
Barbara Scheel's Free-Standing Table-Top Puppets

Around the time of working with me, Barbara was developing table-top figures for her own show. She wanted the puppets to be able to bend at the waist, walk, kneel, sit and stand alone - quite some demands for figures which are operated directly from behind by a visible puppeteer. I later saw her perform with these puppets and was impressed by how naturally she incorporated herself and the figures into the play.

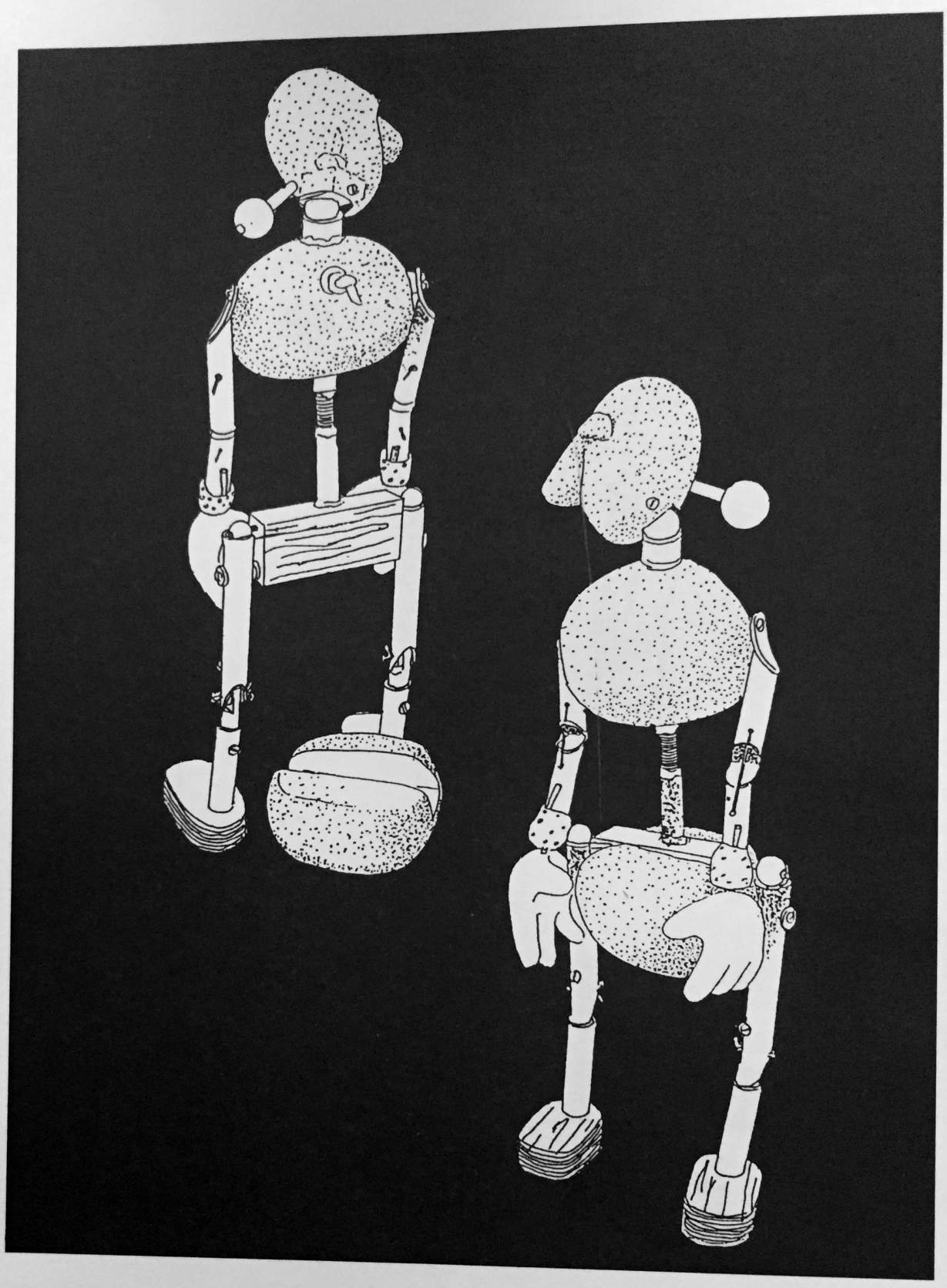
The puppets have a simple but ingenious hip joint, designed by Michael Benecke, which allows the legs to either slot in and stand firm, or hang loose to kneel and walk. In each end of a wooden cross-piece the width of the hips are two screws. Attached to the upper one is a wooden ball, whose diameter is slightly smaller than the inner diameter of the tube which constitutes the upper leg. This tube has been prepared as shown in the small diagram on the right. When the puppet is standing still, the wooden ball fits inside the tube with the shaft of the screw resting in the notch. On the inside of the leg, directly below the notch but with enough distance to not affect the tube's stability, is a slot. On the outside of the leg is an identical slot. The lower screw passes through both slots to fix into the cross-piece. Care must be taken to make the slots smooth and straight so that the screw can slide up and down. Two plastic washers are fitted between the screw and the outer side of the tube.

The two parts of the torso are made from polystyrene overcast with paper. The pelvis has a gap for the hip cross-piece and the chest has a rod for the shoulders (although I would substitute this with a second cross-piece). A spring in the waist allows the body to bend and straighten itself.

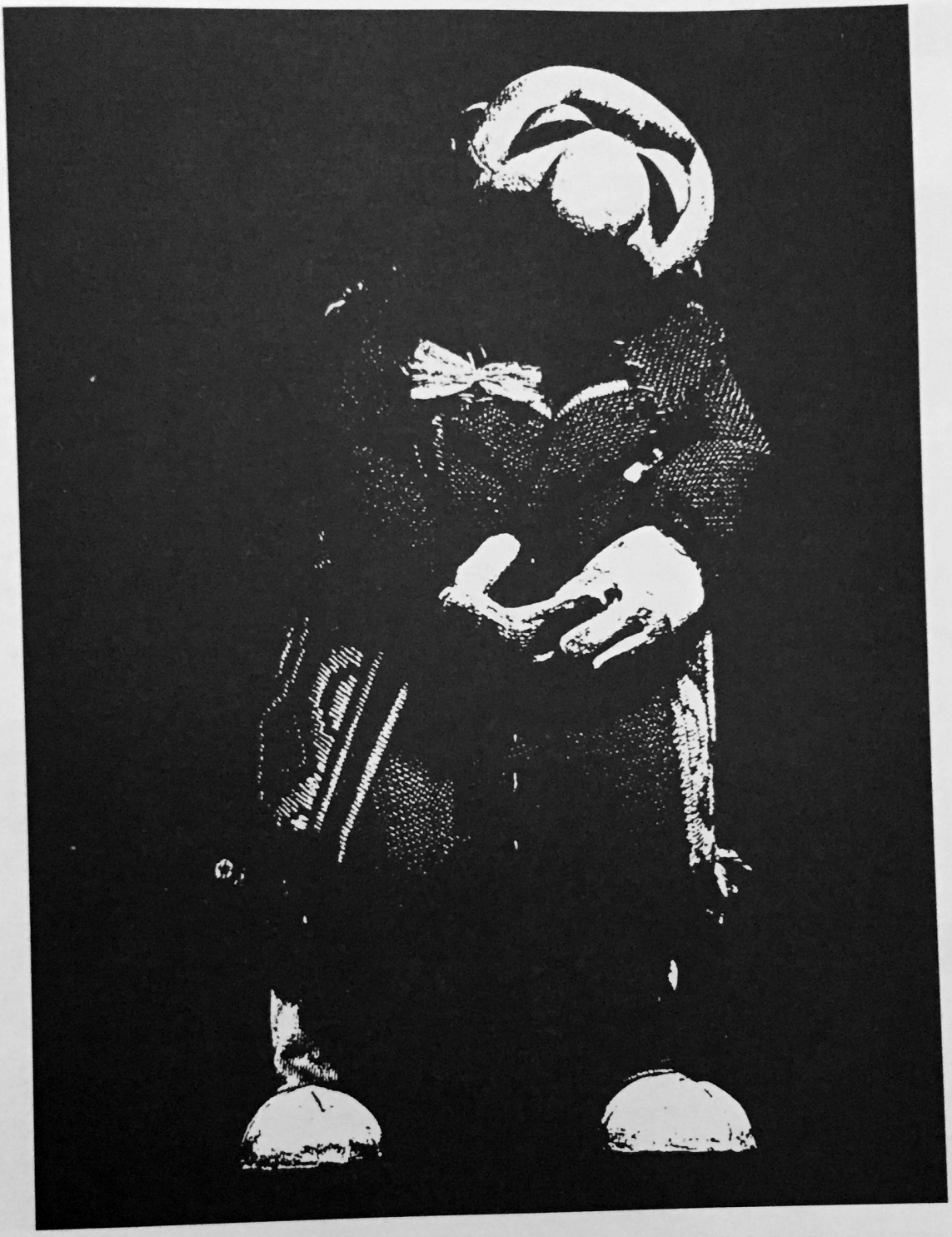
Construction of a table-top figure by Barbara Scheel



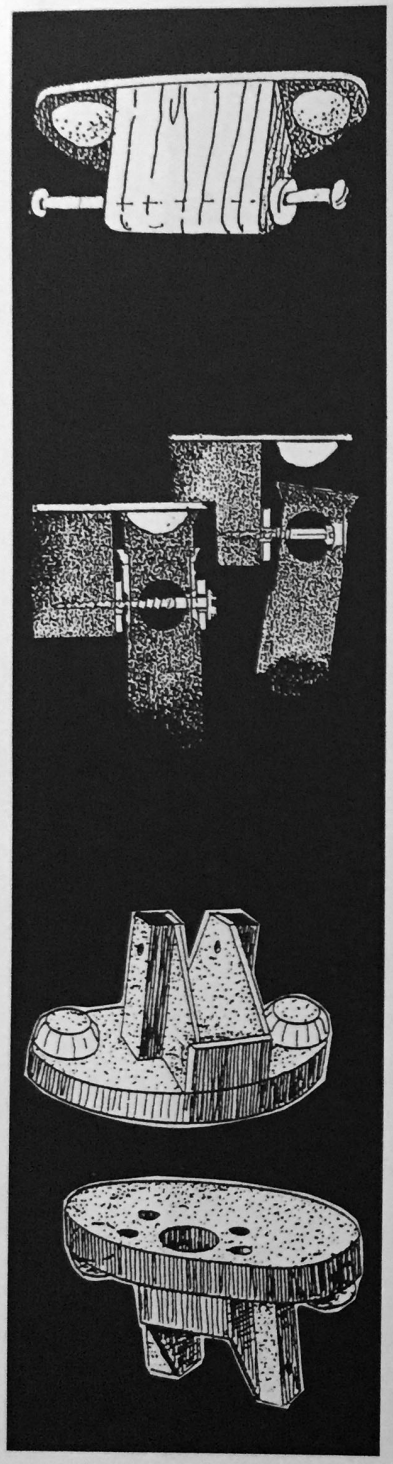
Michael Benecke's leg slotting-in mechanism for table-top puppets



Internal construction of table-top figures by Barbara Scheel



The Tartar King, a table-top figure by Barbara Scheel



Details of slotting-in hip joints

Table-top Puppets Made From PVC Elements

Inspired by my early standing figures and the idea of a slotting-in mechanism for legs, I began to develop table-top puppets which have a wide range of movement but also stand by themselves in any position without losing their balance.

The combination of a precisely hinged knee joint and a slotting-in mechanism at the top of the leg enables the puppet to stand solid. Lifting the upper body releases the legs from the slots, allowing them to swing free for walking and kneeling movements. When the body is rested, the legs automatically slot in again.

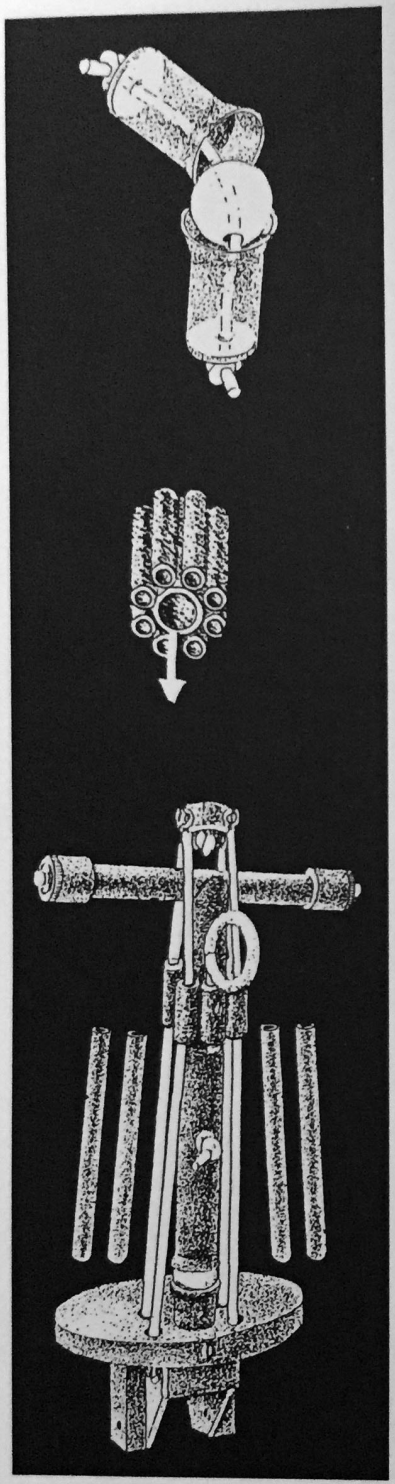
On the left are two versions of a pelvis with slotting-in mechanism. In the top diagram, a piece of wood is glued to the underside of a 3mm thick PVC plate and two halved wooden balls are attached to the plate where it overhangs the wood. When the figure needs to stand securely, these two half balls sit in the tops of the upper leg tubes, which have been widened by heating (see page 233). The leg is screwed to the wooden cube through two slots in the thigh, which allows it to move up and down as the hip joints slot in and out.

The idea of the pelvis bottom left was to leave ample space between the legs for costuming. It consists of a 2mm thick PVC channel, two pieces of 1 x 1cm square rod to take the leg screws, and a 12mm thick PVC plate with two half balls attached. This thickness of plate is ideal for table-top figures as it is stable and heavy, and can easily be drilled to take attachments such as the spine.

To achieve a secure standing position, the legs have a very precise knee joint. The two parts of the leg are connected so that the puppet should just about be able to stand without collapsing backwards at the knee. The front edge of the upper part of the joint is then carefully heated and, when slightly soft, is gently pushed out a little to make the shape shown in the drawing on page 265. The shape of this knee joint makes the puppet hang forward a little when standing, thereby throwing the balance over the feet. For stability, the puppet's feet are fairly large and the lower leg is filled with lead shot to make it heavy.



First table-top construction system by the author



Wedged Ball Joints and The Braking Mechanism

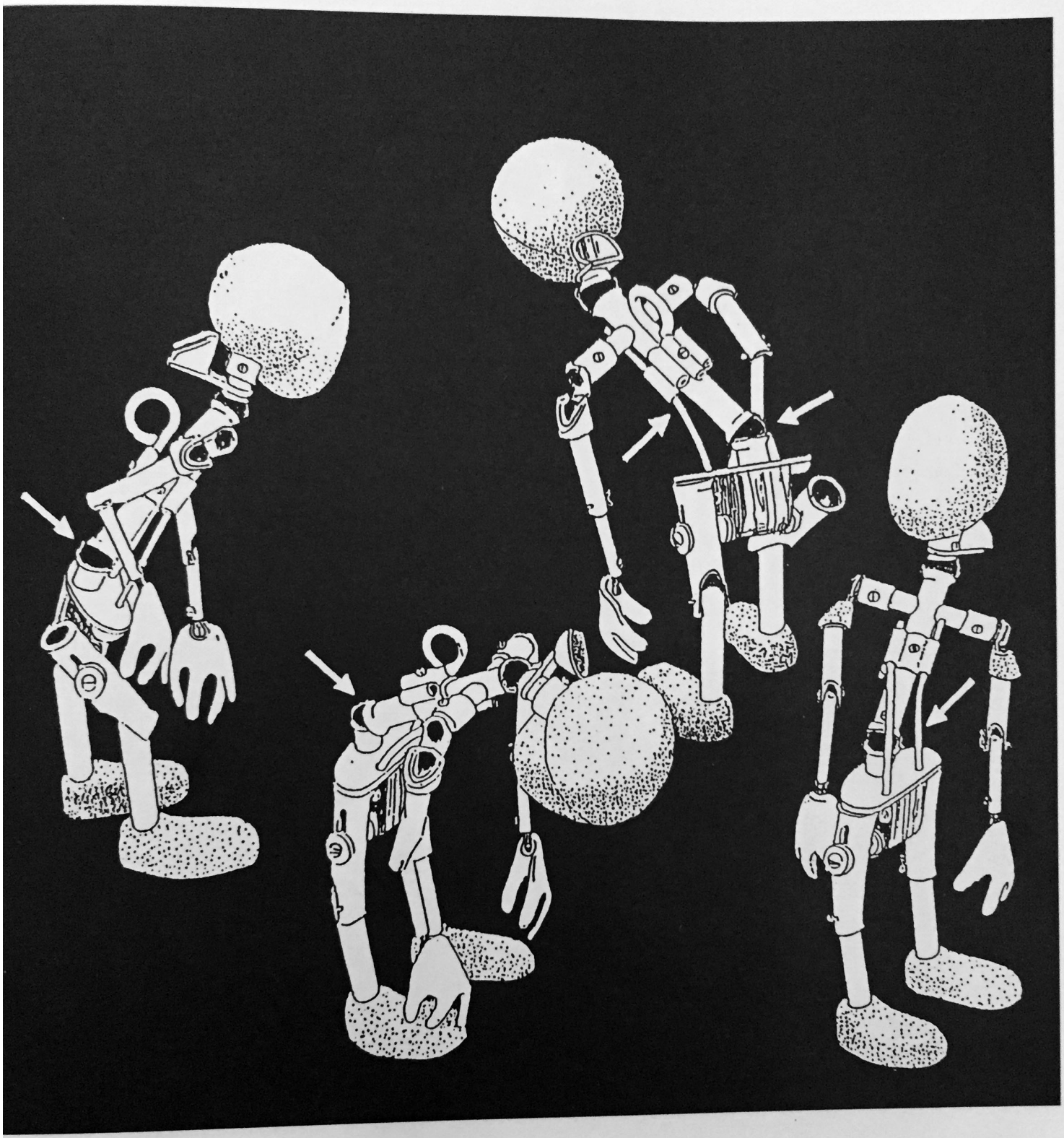
The essential characteristic of this table-top technique is the way a fluidly moving puppet can freeze in a pose and hold the position without being supported by the puppeteer. Ball joints give a wide range of movement, and friction in the form of a 'braking barrel' is used to keep the various parts in position.

The spine of the puppet on the opposite page is a single unit, with a ball joint at the waist and neck. It is made by threading wooden balls and PVC tubing with the ends widened into sockets onto a silicon rubber cord, which is then pulled tight and knotted. The opening at each end of the spine has a lid so that tension can be exerted over its full length (see diagram top left).

If the puppet's head is light, the friction of the wedged neck joint should be enough to hold it in any position but the shifted weight of the body may need something stronger. I therefore designed a braking mechanism using tubes and curtain wires to increase the amount of friction (shown in various forms in the puppets on the following pages). The number of wires needed may vary, depending on the weight and size of the puppet, and loose PVC sleeves are sometimes fed onto them to prevent kinking. It is important to remember to slip the braking barrel (centre diagram on the left) onto the spine before the ends of the tube are widened, and it is advisable to fix it with screws rather than glue so that it can be moved if necessary.

The braking mechanism on pages 272 and 273 has similarities with the 'three point mechanism' described on page 238, and is also used to transfer movement. As the drawings show, the head has no neck joint but is connected to the body, at a little distance from it, by four curtain wires. When the upper body is moved as if stirring a spoon, the motion is transmitted via the curtain wires to the neck and the head mirrors the circular movement. The head and neck can also be inclined and rotated directly by hand. Rings or balls are attached to the back of the puppet's head, shoulders and pelvis so that different parts can be operated in isolation or held still whilst the rest of the figure is manipulated.

Top: Wedged ball joint made from PVC tubes, a wooden ball and silicon rubber cord. Centre: Braking barrel.
Bottom: Braking mechanism from PVC tubes and curtain wires.



The combination of wedged ball joints and a braking system enables the puppet to stand in any position without support

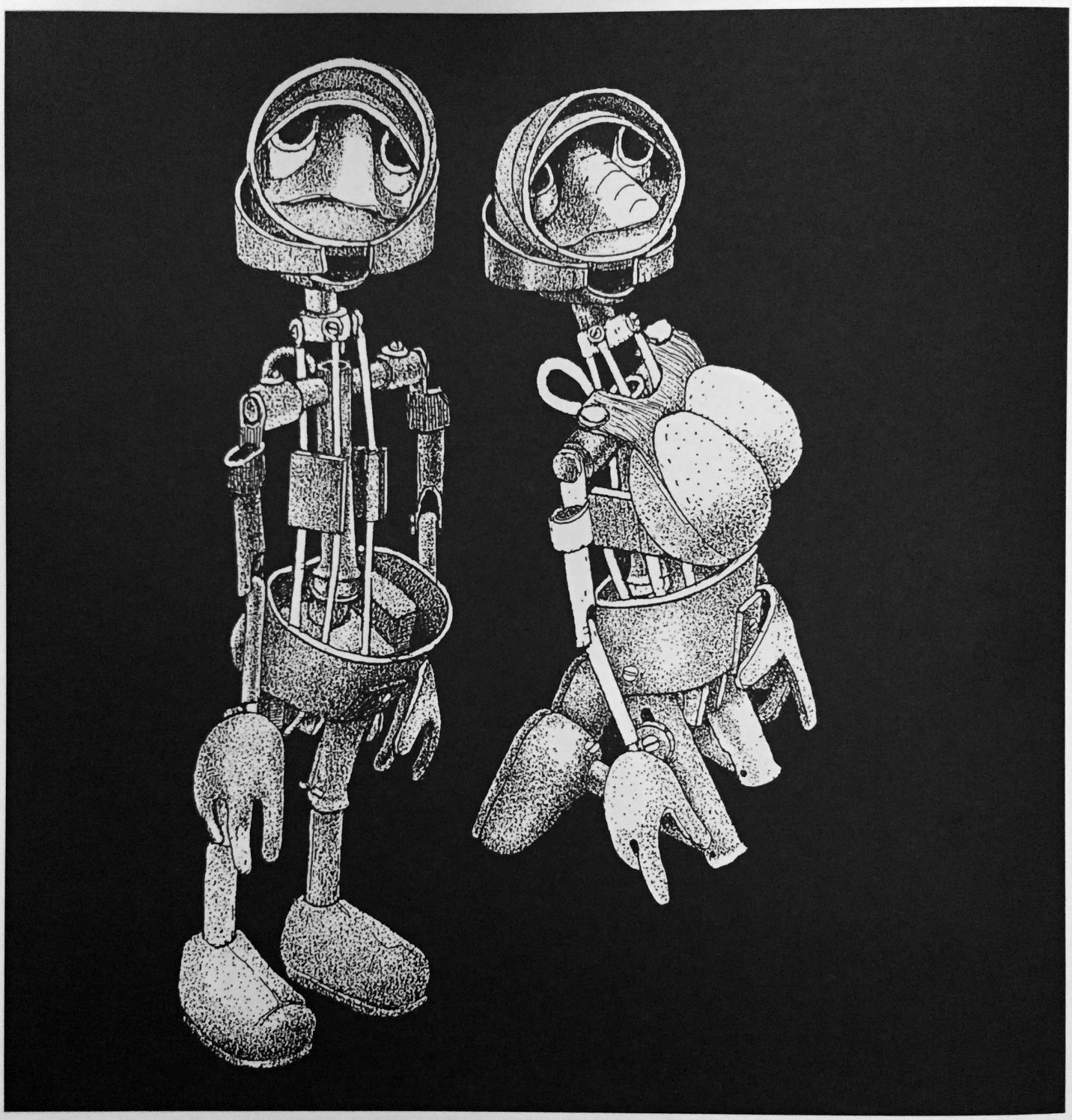
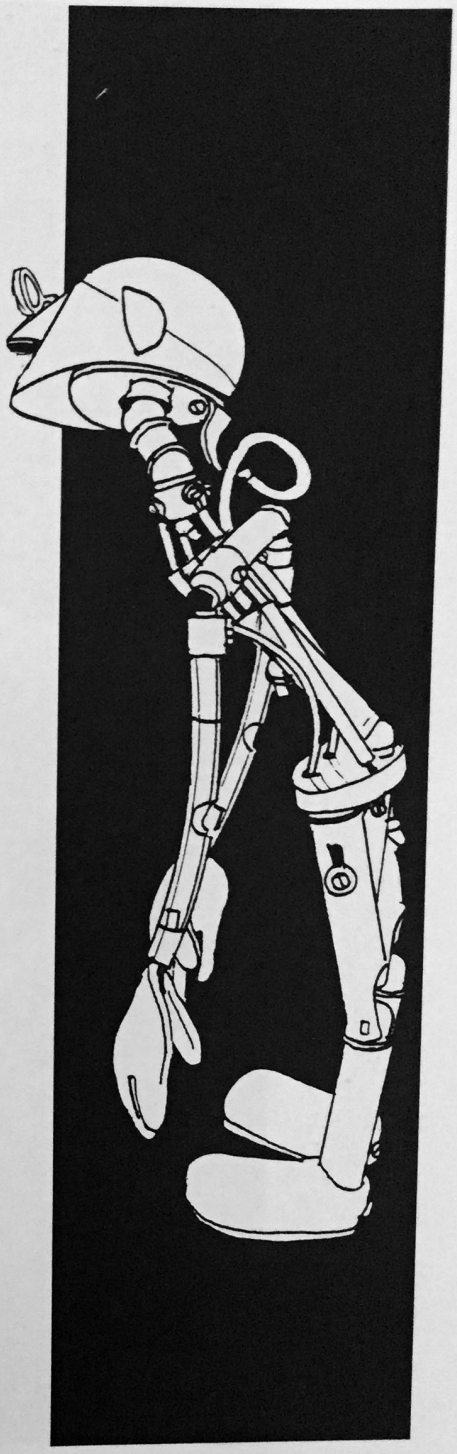
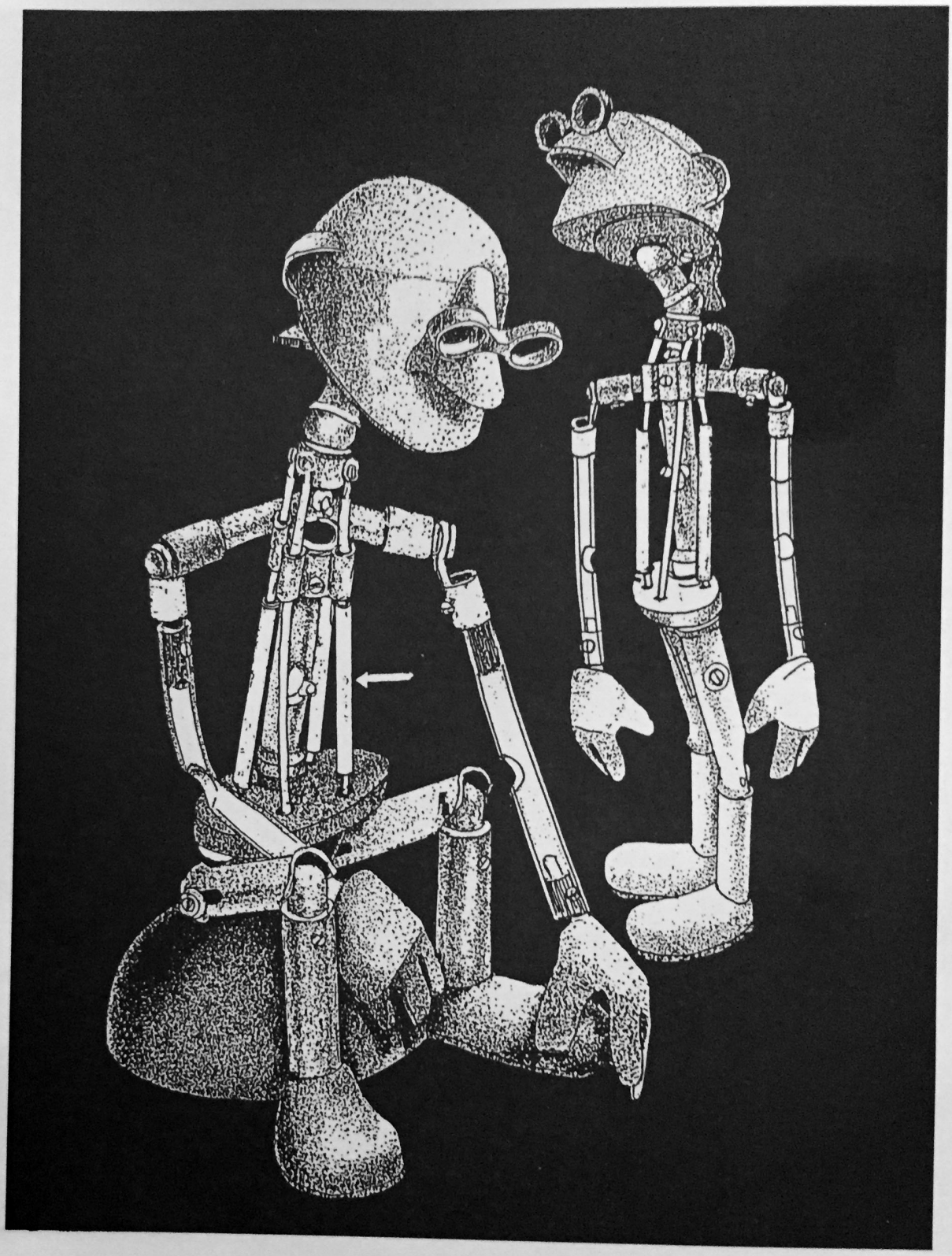


Table-top figure with cardboard body parts attached with snap fasteners

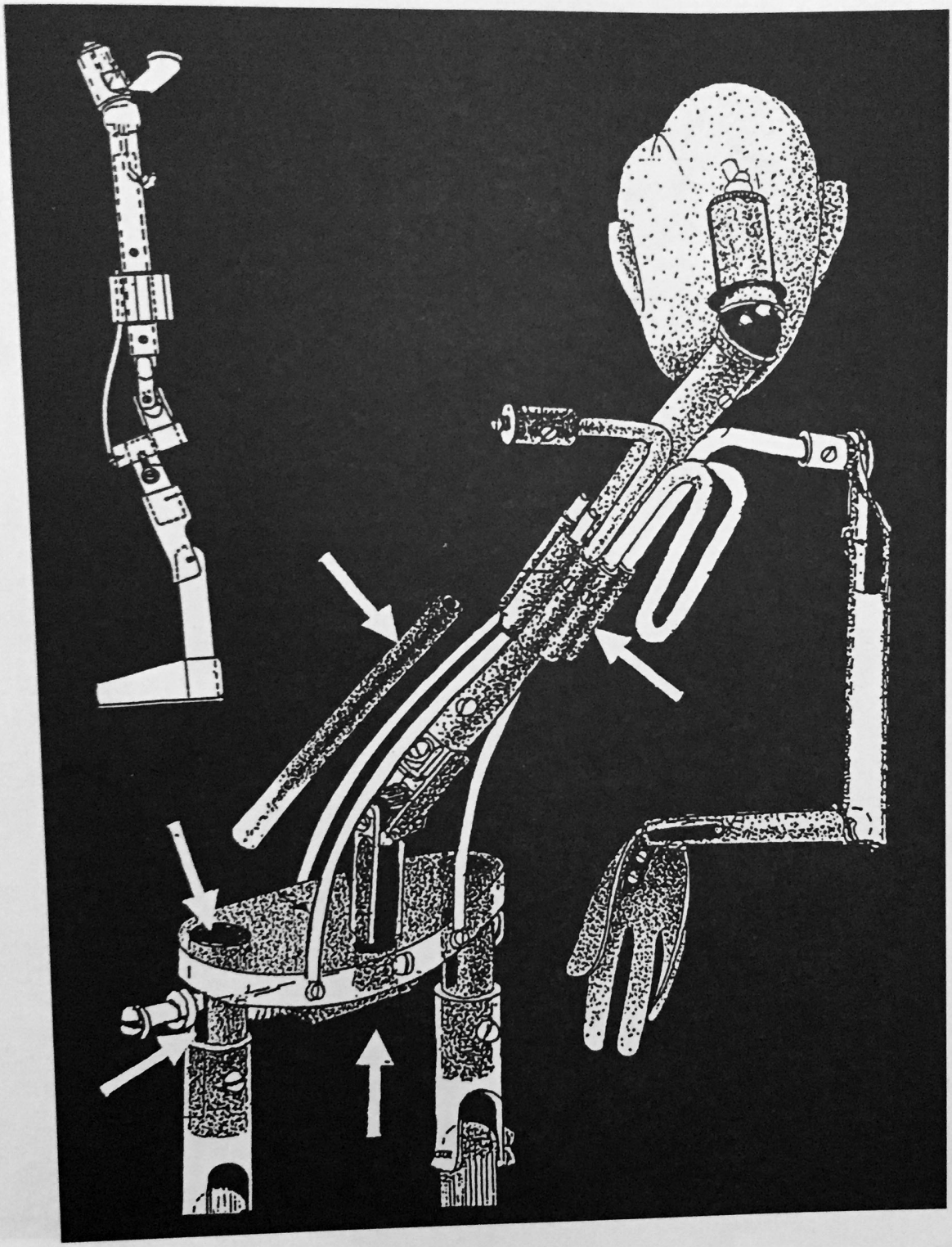
Cardboard elements or foam can be used to make bodies for these figures, taking care not to restrict their movement, and arms are made from PVC tubes attached to the shoulders with snap-strips. The figure on the right has arms made from clear thin transparent nylon tubing with a simple elbow joint made by cutting an oval hole into one wall of the tube, thereby weakening it in the cross-section to allow it to bend. The hand is connected to the arm by a strip of fabric wedged into the tube with a PVC stopper and fixed with a screw.

The best costumes don't obscure but emphasise the flexible movements of the puppet's body, and are made from thin, light fabrics. Every costume in some way limits the movement of joints and I therefore prefer to exaggerate the mobility of the basic skeleton (ie by using extra long snap-strips for shoulder joints) and adjust it later through costuming. Sleeves are best not sewn into the body of the costume as they can restrict arm movement at the shoulder joint. It is therefore preferable to attach them directly to the upper arm - if possible, in a way that disguises the fact they are separate from the rest of the costume.

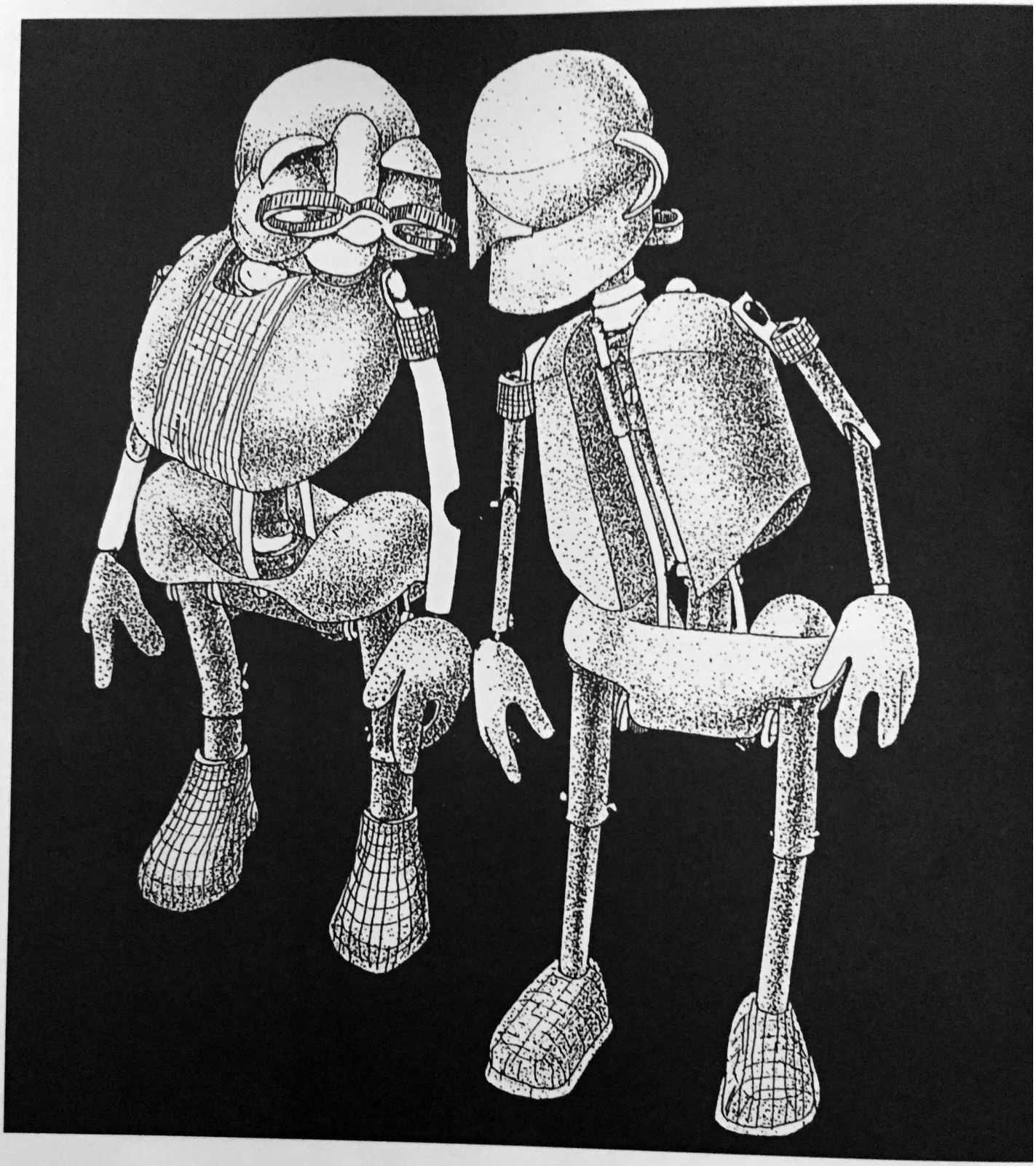




Free-standing figure with wedged ball joint and slotting-in leg mechanism described on page 268

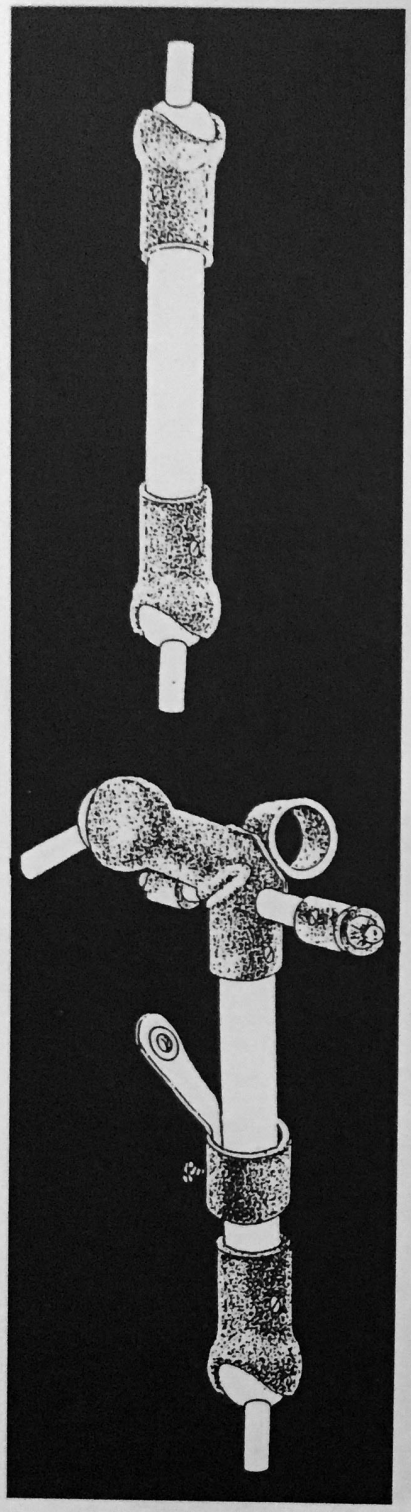


Free-standing figure with universal joint at the waist and legs that slot directly into the pelvis plate



Both pages: When attaching body shapes care should be taken not to restrict the internal mechanism





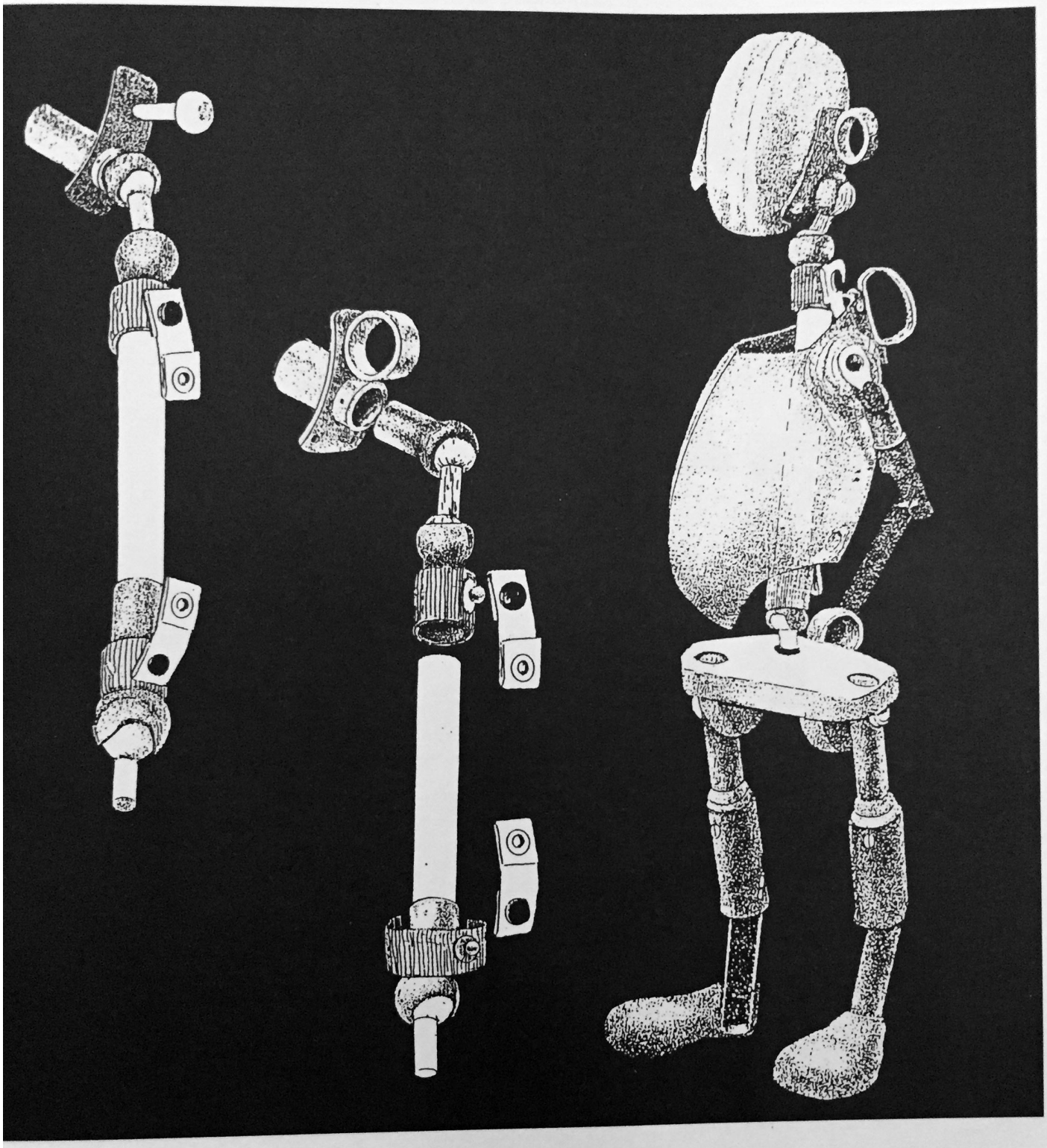
Two spines with moulded ball joints

Moulded Ball Joints

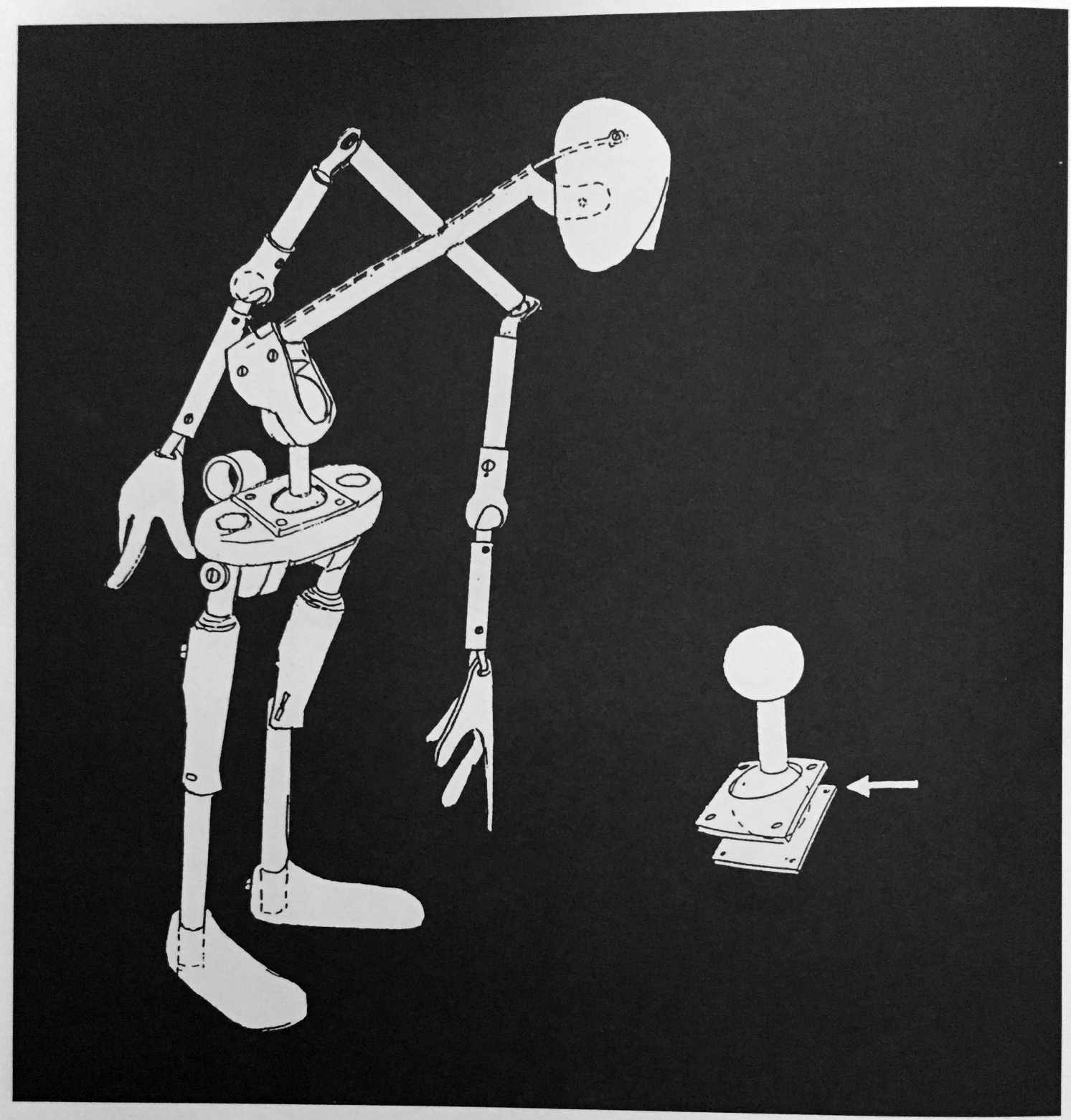
The moulded ball joints on the following pages combine the functions of the wedged ball joint and braking system previously described. The various parts of the construction system can be mass-produced and assembled later according to the posture and type of movement required, which will depend on the size, shape and resistance of each individual joint. Made tightly, moulded ball joints are usually strong enough to hold the body at any angle but stretched silicon rubber cord (see page 270) can be used if more pressure is required.

The diagram top left shows the system in its simplest form - a spine with a moulded ball joint at either end to connect the head and pelvis. The drawings opposite show a more flexible head mechanism with a ball joint at either end of the neck, and the diagram bottom left shows a moulded ball joint in the end of a neck which juts forward (bent by heating the tube).

Making moulded ball joints is a simple process, and it is more efficient to prepare them in bulk. A hardwood dowel is glued into a wooden ball to make a stem. The end of a section of PVC tube held in the hand (remember to wear protective gloves) is heated with a hot air gun and, holding it by the stem, the wooden ball is pressed into it until two-thirds inserted. The gloved hand helps to mould the tube around the ball as it cools and contracts. It is difficult to determine at this stage the final intensity of the joint's frictional resistance and results can be somewhat uneven - either too tight, too loose or just right. However, this is not important when making them in bulk as it is later possible to choose from a stock of joints, each with a different quality of movement.



Free-standing figure with moulded ball joints and legs that slot directly into the pelvis plate



Free-standing figure with different ball joints at the pelvis and waist

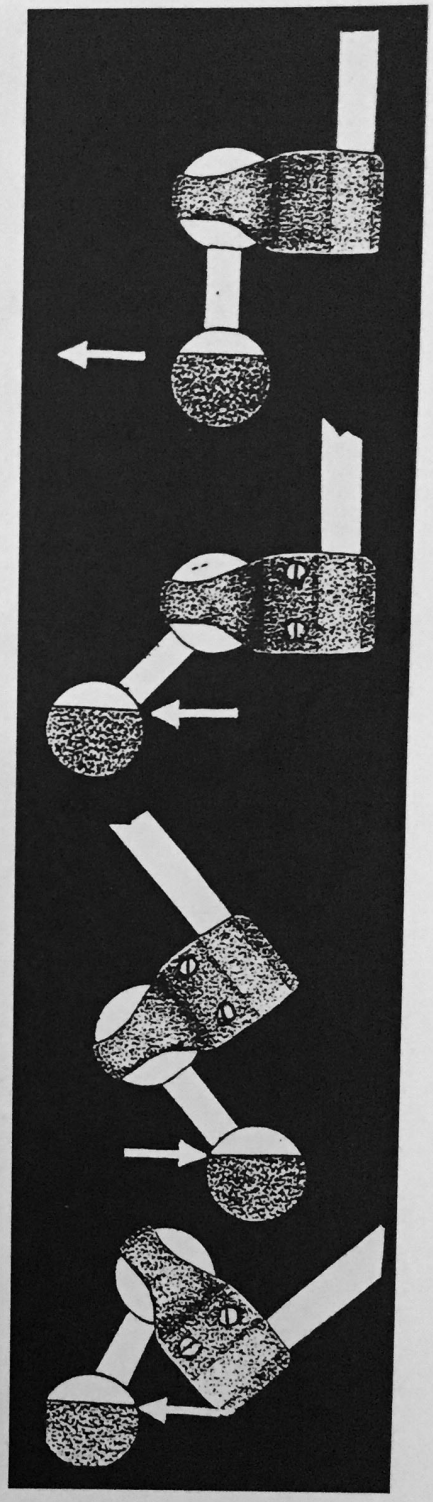
The figure on the left shows two further ways of making ball joints. A hole slightly larger than the diameter of a wooden ball is drilled into a 12mm thick PVC pelvis plate, and a 3mm square plate with a hole somewhat smaller than the diameter of the ball is screwed to its underside. The wooden ball sits in the pelvis, resting on the lower plate, and an identical 3mm square plate is placed on top and screwed down to trap the ball. The pressure exerted on the ball creates friction and, if necessary, a piece of leather can be inserted between the plates to increase the amount of resistance.

The shoe connection for the waist joint allows the spine to be set back from the centre of gravity, which gives more control over the puppet's posture and balance. The diagrams on the right give an idea of the flexibility of a torso fitted with a double ball joint such as this (the arrows show the level of the pelvis).

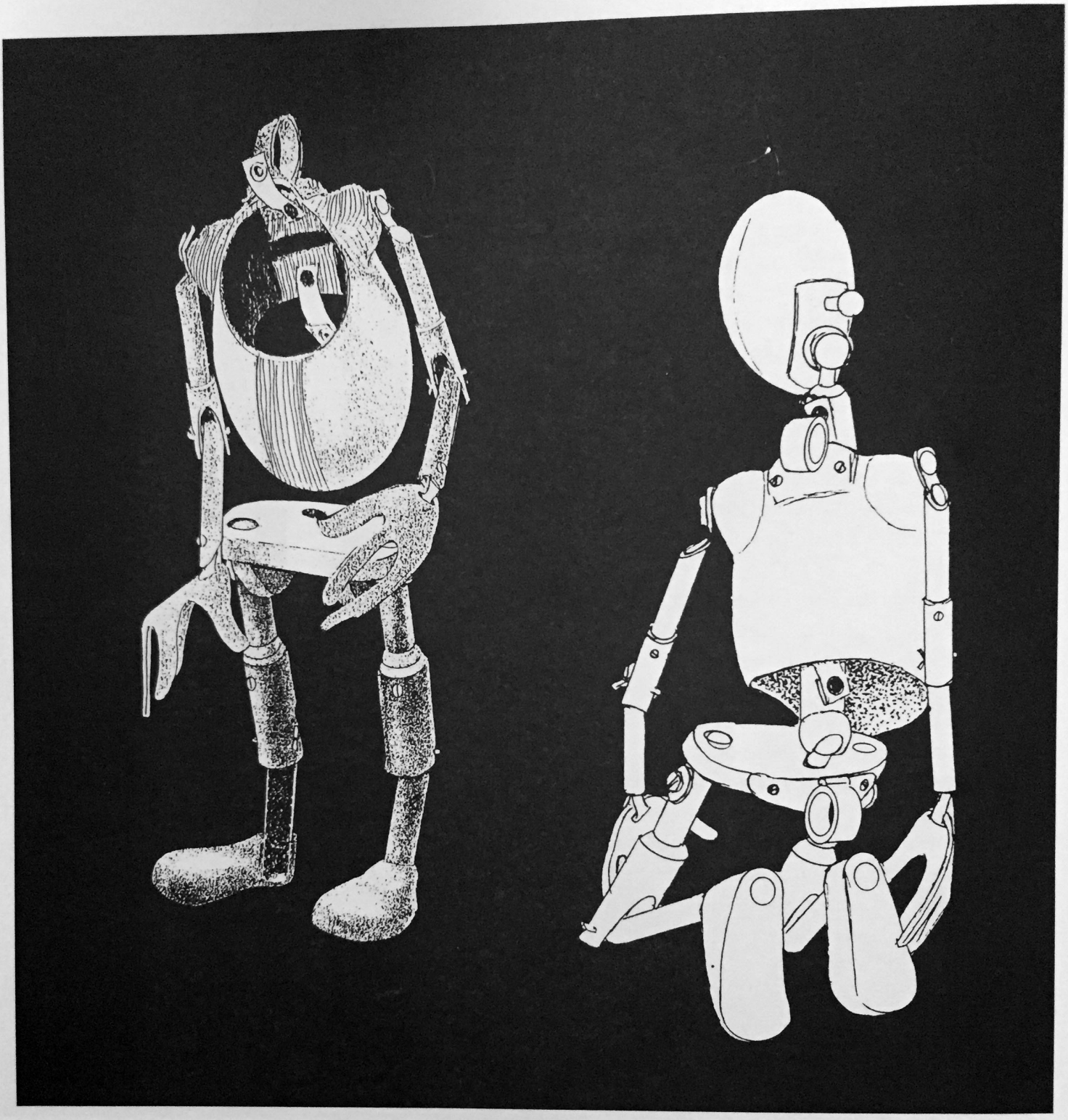
The shoe is made from a heated piece of PVC plate wrapped around a ball and moulded to its shape. When cool, the plastic is pulled tight and screwed to a piece of PVC (or hardwood) in order to exert pressure on the ball. The ends are then re-heated, moulded around the spine and later fixed with a suitable glue.

Bodies are made from cardboard shapes or foam depending on the type of movement or posture required: cardboard shapes attached with snap-strips permit great flexibility between upper and lower body parts, and foam can be shaped to rest on the pelvis to determine a basic posture and control the centre of gravity.

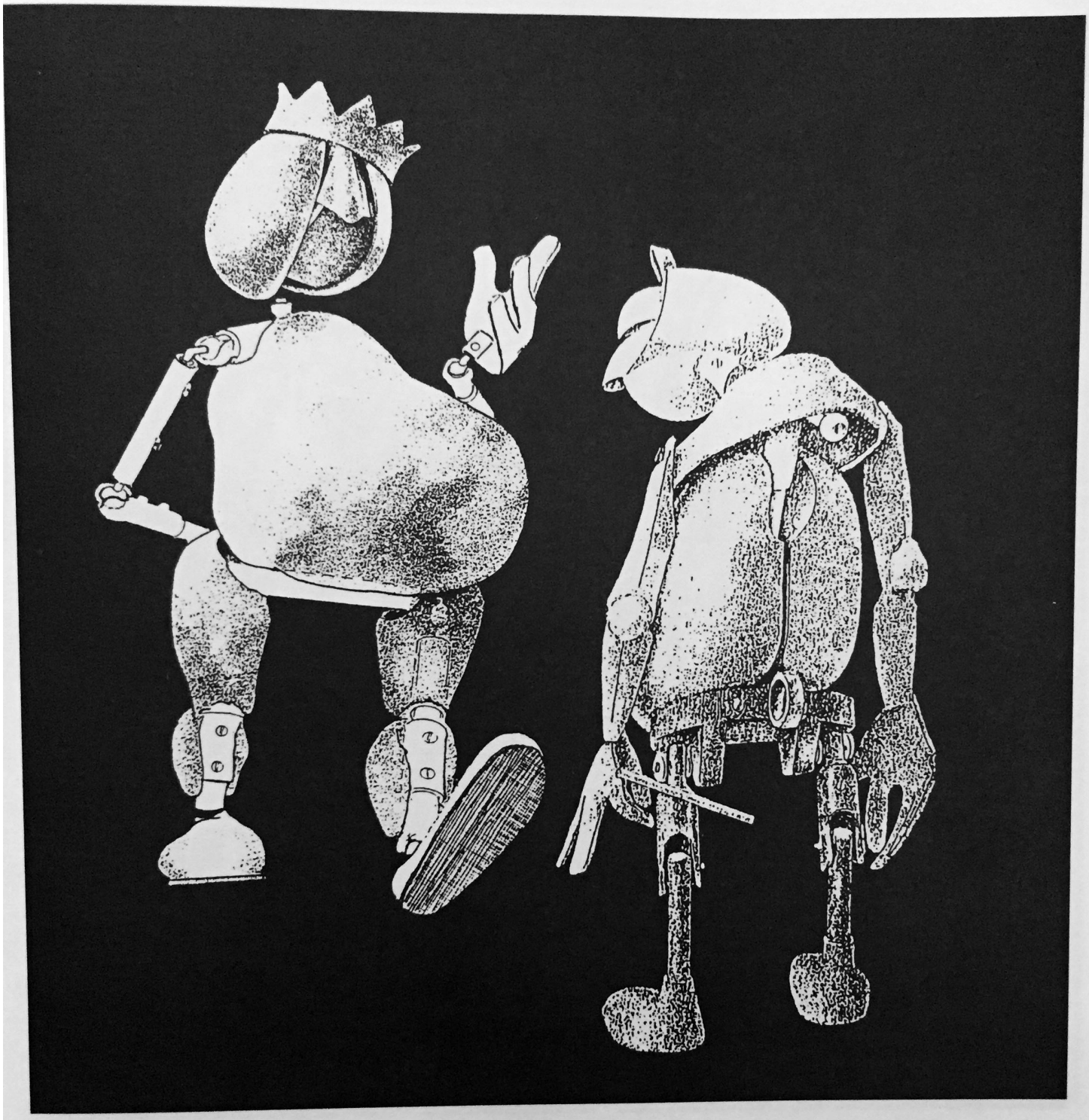
I like to make figures which are easy to take apart and put back together again so that mechanisms can be adjusted or repaired. The drawings on page 283 show how a one-piece foam body is fitted over the PVC skeleton before being covered in a jersey body suit with a zip.



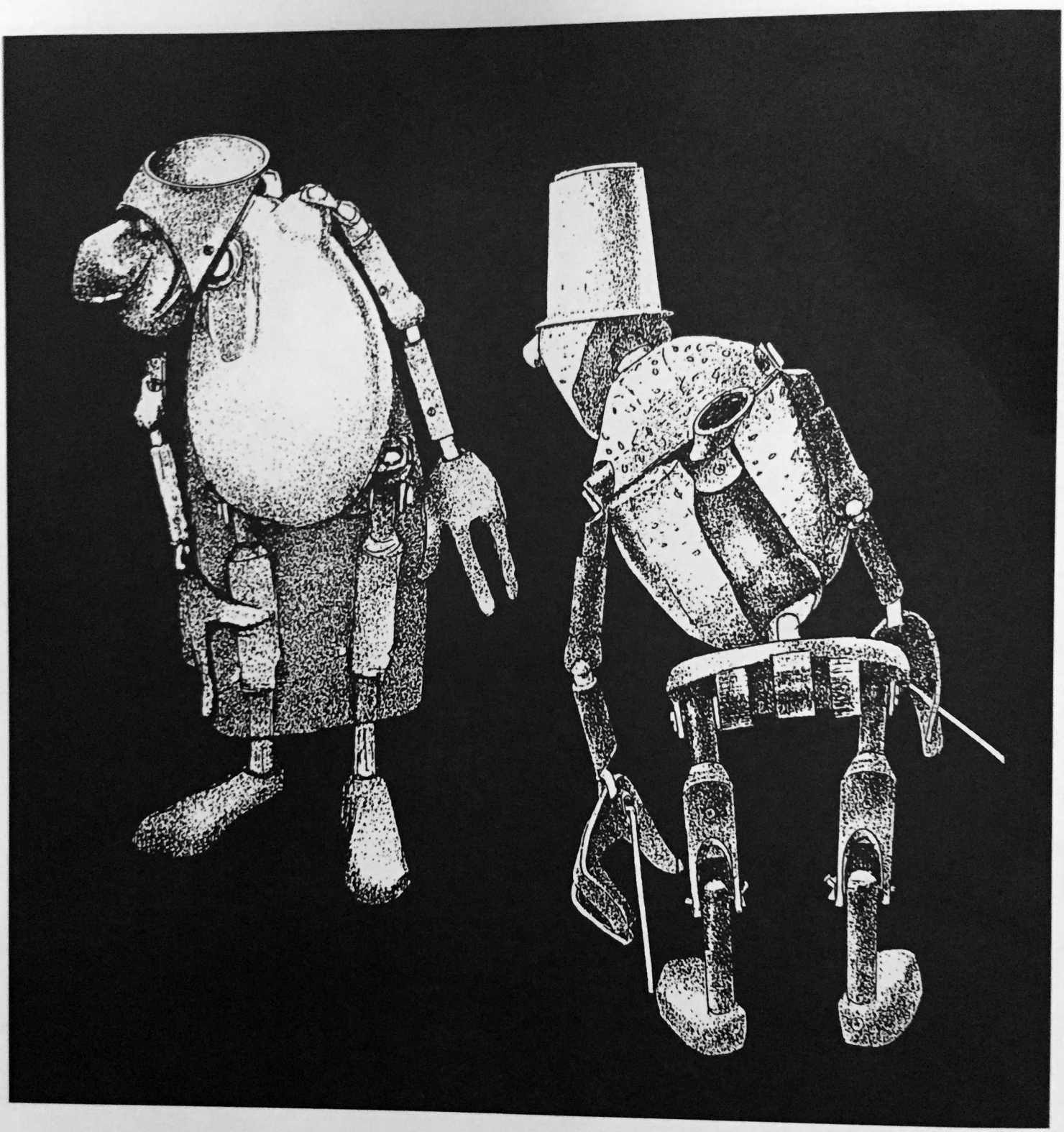
Movement range of a double ball joint
(arrows indicate level of the pelvis plate)



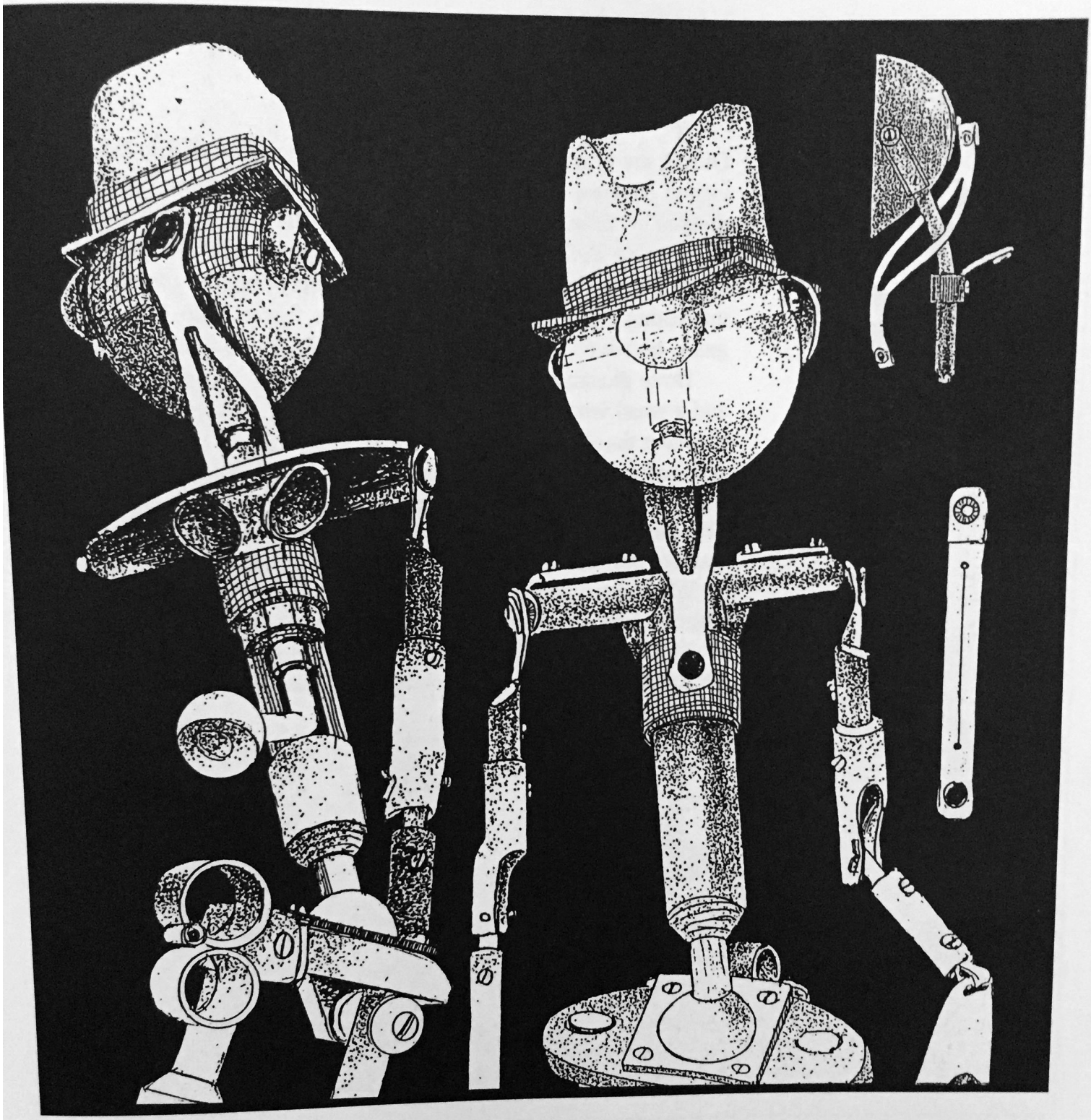
Attaching cardboard elements with snap-strips allows chest and pelvis to be moved in opposition



A body cut from foam gives control over the puppet's posture



Foam bodies which slot onto the PVC skeleton are easily removed for adjustments and repairs



Free-standing table-top figure which combines a ball joint in the pelvis with a split neck strip turning-nodding mechanism

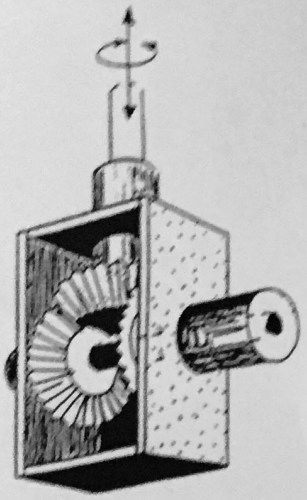


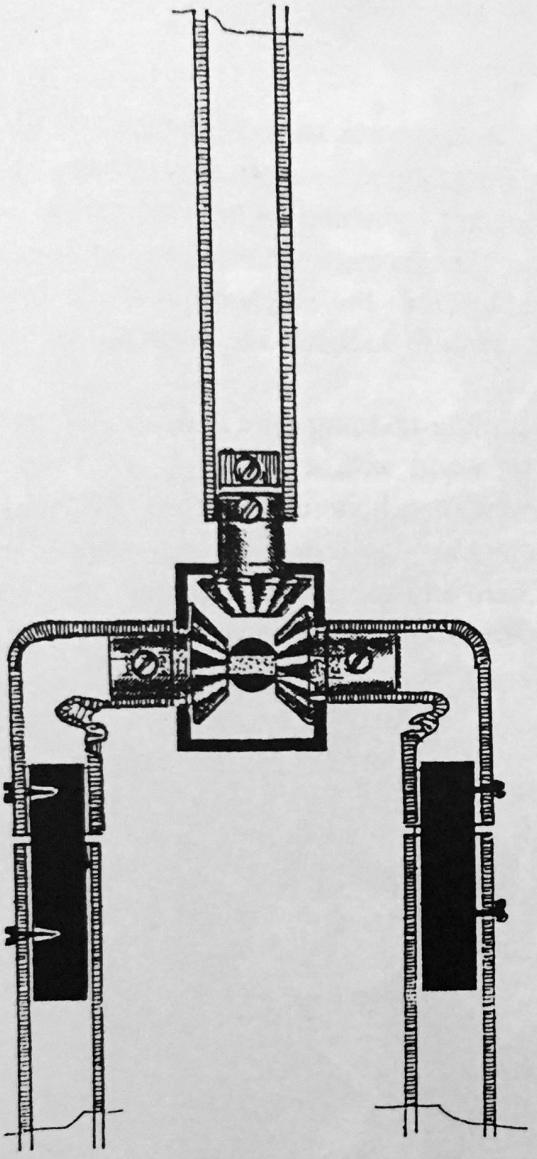
Table-Top Puppet With Gear Mechanism

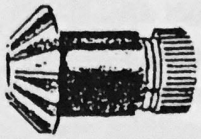
During the time I first became interested in making table-top figures, I visited Michael Benecke, a marvellous technician and craftsman who divided his time between running a company called Die Strippenzieher (The String Pullers) and solving technical-creative problems such as the slotting-in leg mechanism for table-top puppets. One of the many interesting items he showed me was a figure with legs moved by gears, on which I based the mechanism shown on the opposite page.

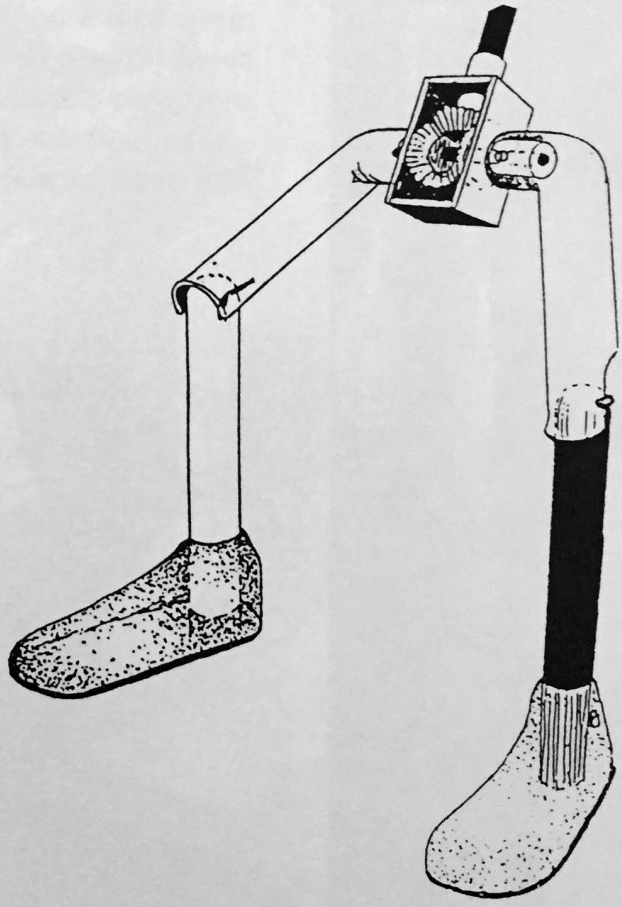
Three plastic bevelled cogwheels are fixed into a small PVC box and a small wooden bead is inserted between the two lower wheels to maintain the distance between them. The ends of the lower cogs are screwed into a piece of tubing bent into a right-angle (with a hot air gun), which allows them to turn but prevents them slipping sideways. The third cog pokes through the lid of the box and can either be inserted between the teeth of the other two or lifted clear of them.

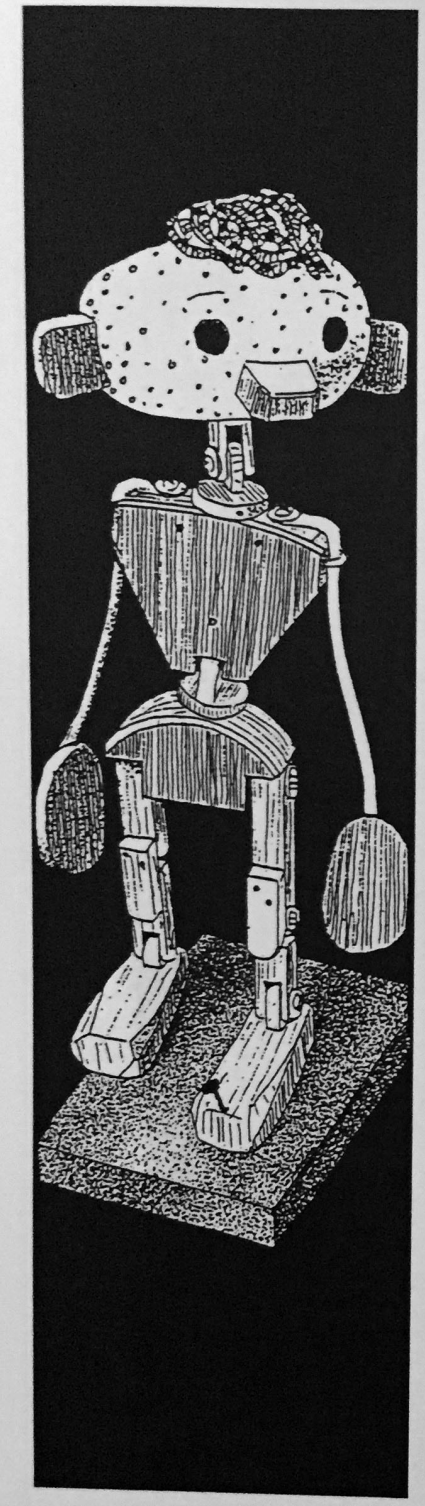
When the upper cog is inserted and rotated, the legs move. The diagram far right shows how the puppet can stand with one leg raised when the upper cog is inserted and fixed in position. The lower legs are jointed at the knee and may need to be weighted, depending on the puppet's balance.

Detail of gear mechanism opposite









Animation Model by Leo Uttenrodt

This chapter ends with a little side-track to show an animation model that also stands by itself in any position — even on one leg. Its joints have screws as axles, which are tightened to restrict movement and loosened to change position. Pins through small holes in the front and back of the feet attach the figure to the surface on which it stands, thereby allowing it to be filmed walking on vertical, as well as horizontal surfaces.

The figure has a simple turning-nodding joint at the waist and neck, made from a round piece of wood with a tenon glued on top and a dowel below. The dowel turns in a hole in the pelvis (or shoulders), and a cross-pin fixes the tenon into a groove in the upper body (neck).

The arms are made of wire and are easily bent into any position. They are fixed to the shoulders with a screw and a staple.

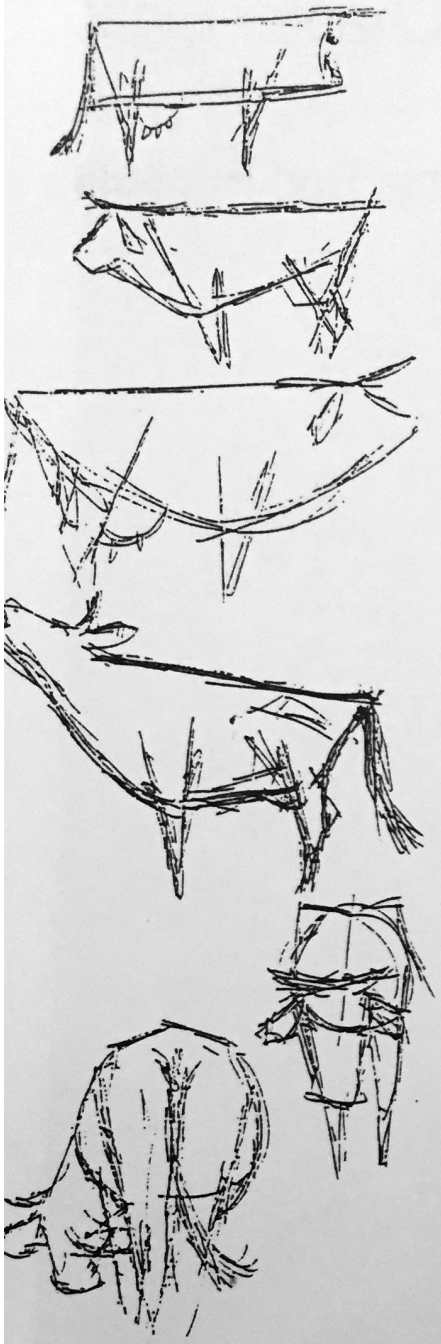




Cockerel by Ali Bunsch for MINIATURA, the State Puppet Theatre of Danzig (photograph from the title page of *Perlicko-Perlacko*, Animal Issue 2, 1961)

Chapter Eight

Animal Rod Puppets

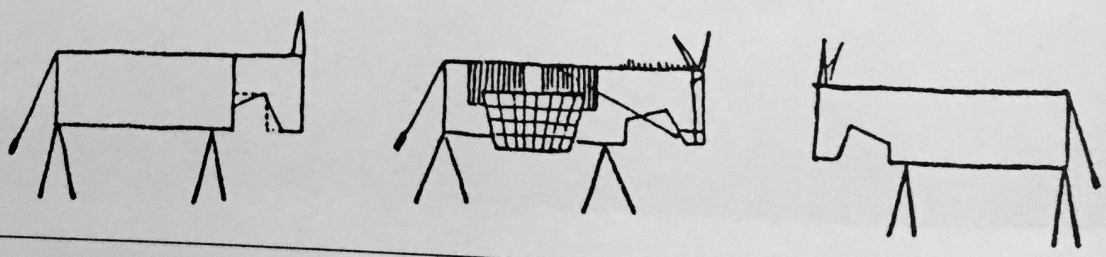


Inspirations

Animal figures are very popular, especially with children, and I thought it would be interesting to include a section which deals specifically with their design and construction. During the active period of my theatre I didn't actually need any animal puppets and the techniques described on the following pages therefore come from other sources rather than my own experience.

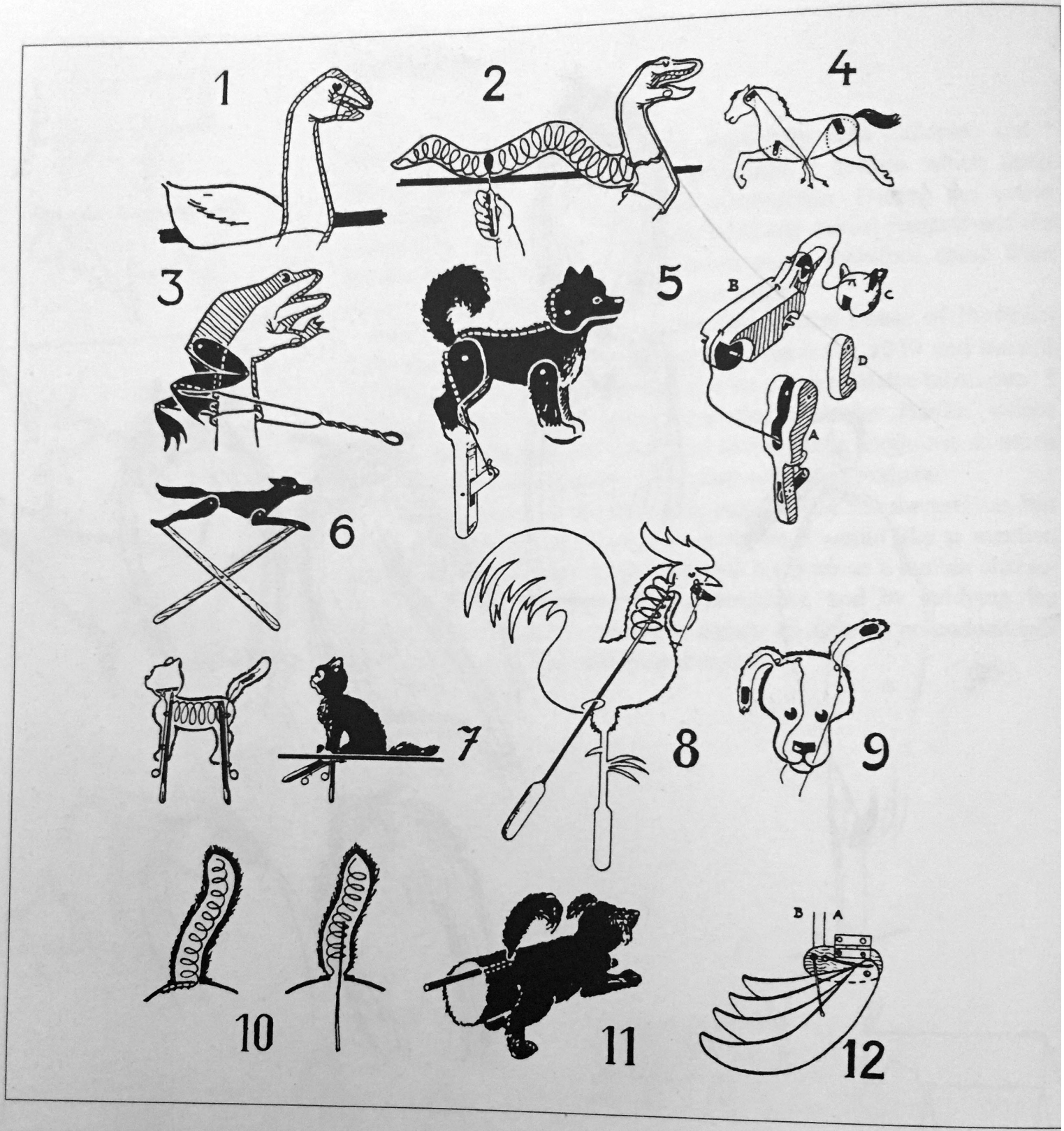
Particularly useful have been the two special issues of *Perlicko-Perlacko* dedicated to animal puppets (Issue 6 IV/ 1959 and Issue 3 11/1961), and the book by A. Fedotov on puppet theatre technique. I would also like to once again acknowledge Vaclav Hávlík, whose many informative and well-illustrated articles have taught me so much about all aspects of designing and constructing rod puppets.

The illustrations on the following pages speak for themselves, but before taking a look at specific mechanisms, I would like to mention that a successful animal puppet depends as much as a human character on capturing its essential characteristics, and by studying the shapes and behaviour of animals in nature we develop an understanding of what makes each species individual.

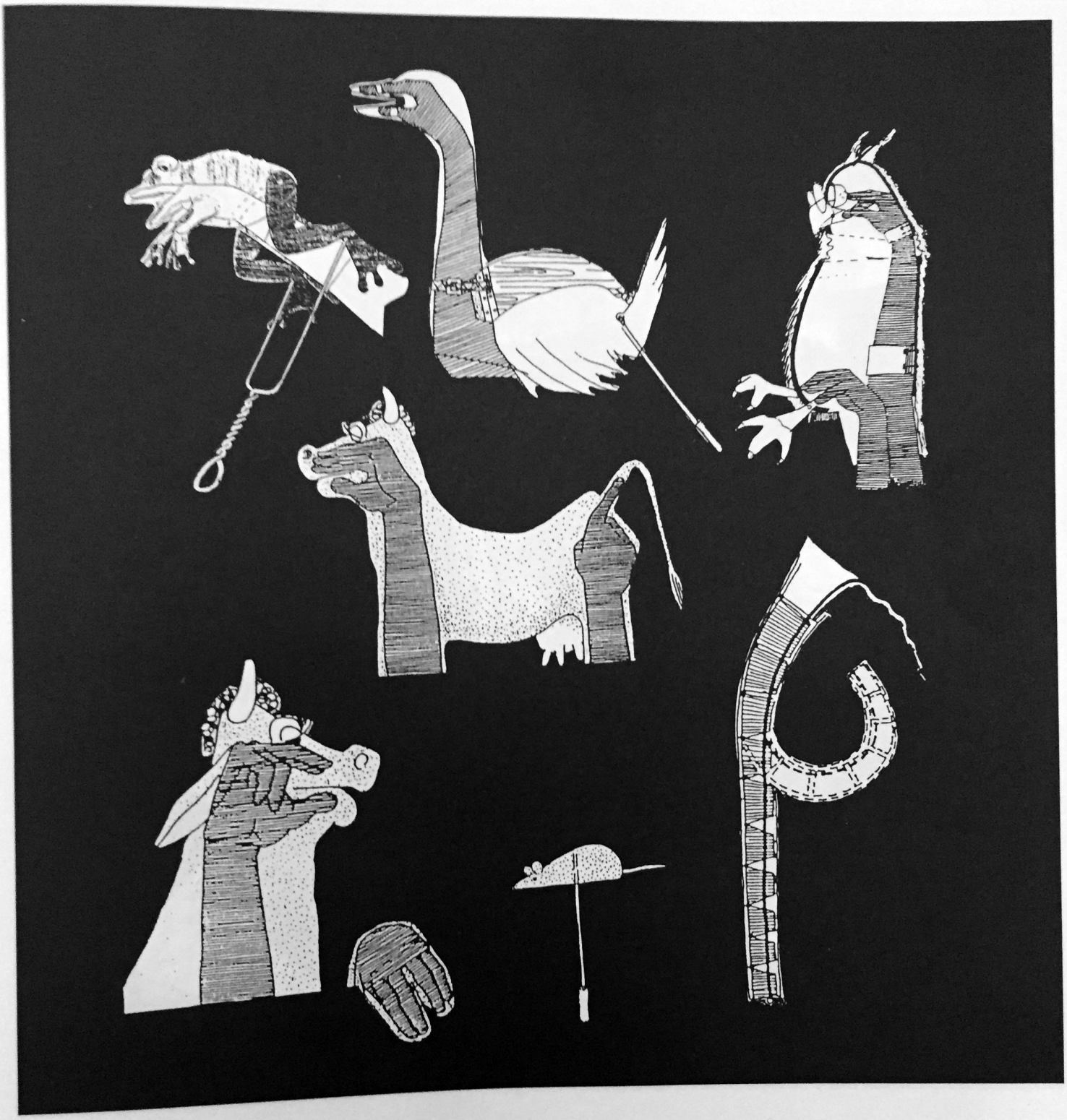




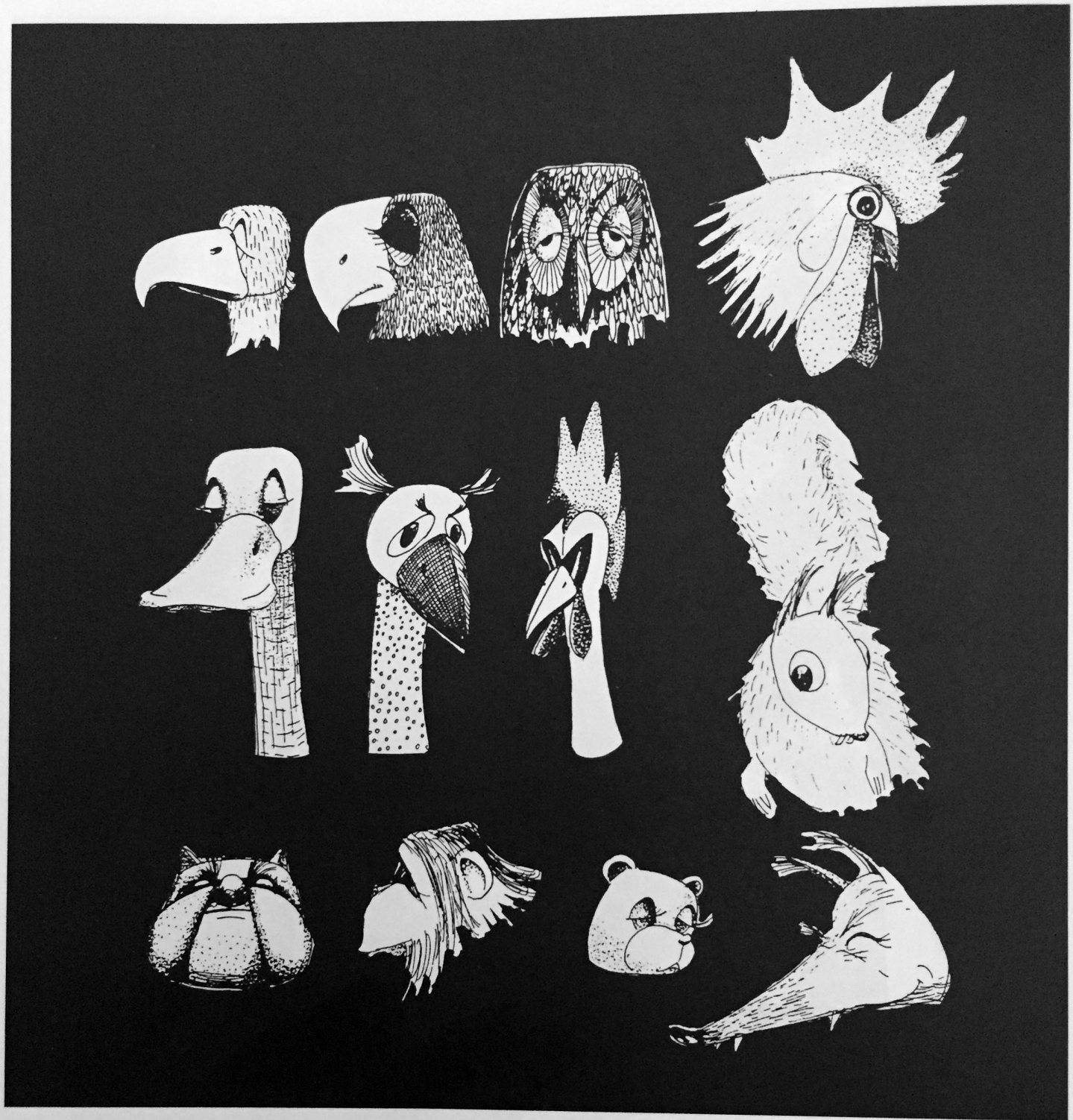
Page from the author's sketch book



Drawings by A J Fedotov from the book *Technik des Puppentheaters*



Drawings by the author



Rod Puppet Animals

by Vaclav Hávlík

First published *Loutkář* 1951

Excerpts from republication in *Perlicko Perlacko* 1961

I Hare

The heroes in *The Magic Boot* are the hares. Their internal mechanism is similar to that of a human puppet because they often sit upright, appearing to stand as a human. I would therefore like to carry on from a previous article in which the basic rod puppet mechanism was described.

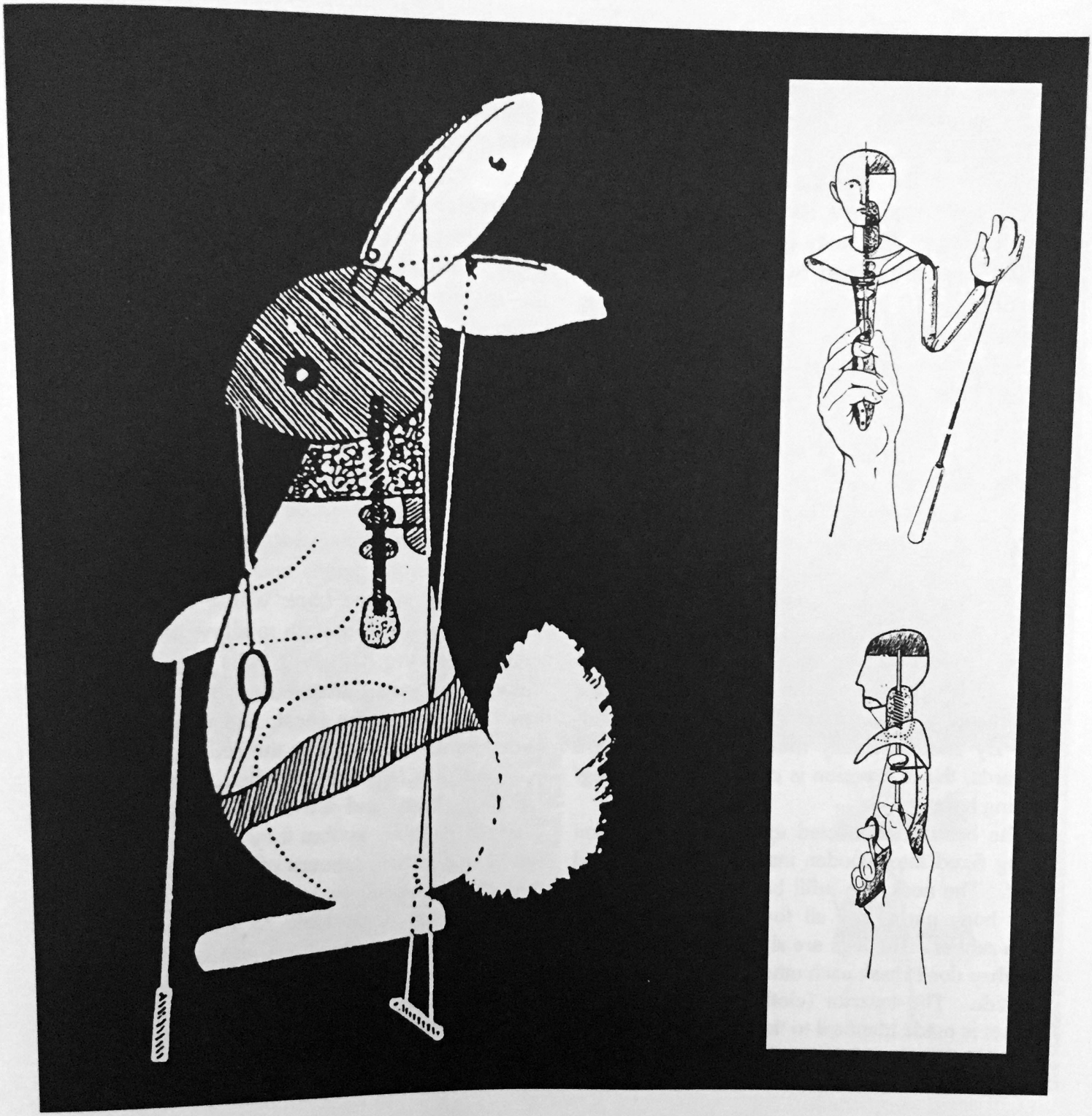
The head and body move independently of each other. The puppet's head is made of wood. The rod glued into it is divided in two and replaced by a spring for the length of the neck. At the puppet's chest height, the rod has wooden beads and at its base is a manipulation ball made of cork. The supporting screw-eye is attached at the height of the 'shoulder blades' to the wooden back. The pistol grip typical of human puppets is replaced by a shaped horizontal grip fixed into the lower part of the animal's body at a comfortable angle for the performer's hand.

The nodding string runs from the nose and down into the body through a ceramic ring at approximately chest height, and is attached to a metal ring which is easily pulled to the front of the hand grip using the elastic band. The ceramic ring fixed into the front wall of the chest minimises the friction at the point where the string enters the body and prevents it wearing through. Rings such as these can be obtained from sports and fishing suppliers.

The body is hollow and is made from newspaper overcast on a model. It is cut in two parts, producing symmetrically identical left and right sides. For reasons of assembly, these are more practical than a front and back. Both pairs of legs are either made of stuffed fabric or cut from foam, and are carefully sewn to the overcast body or attached with wire. The back legs are fixed in the crouching position. The front legs are controlled by rods, as with a human figure. The performer inserts a hand through an oval opening behind the back legs. A conscientious performer also wears a black glove or a special black sleeve made from a sock so that the light skin colour of the wrist or lower arms doesn't show and spoil the illusion.

The whole of the puppet's body is covered in sheepskin (either that of the broad-tailed Ukrainian sheep or a good imitation fur with frizzy curls). It is dyed with hot fabric dyes and a spray gun, which ensures a soft transition between colours and prevents the often unavoidable patchwork effect of piecing together bits of different coloured fur. The eyes are either round beads or the large glass pins used by taxidermists. The tail is made from the feathers of a white swan. The puppet's construction can be seen in the diagram opposite.

When the hares jump or need to run quickly across the stage, duplicates are used (which look identical but are manipulated using another technique). At the appropriate moment, the upright hare is quickly replaced by the running hare puppet (which must be well rehearsed!). It is possible to construct puppets with a series of complicated mechanisms to enable them to perform such different functions but, previous experience shows



Construction of the upright hare from *The Magic Boot,* based on the mechanism in the human figure on the right

that if too much is asked of a puppet, its very 'universality' means it often fails in the most fundamental requirements. This also applies to set design, lighting etc.

To return to the 'running' hare. The head and body are hollow and are also made by the overcasting method. The body is split in the middle. The two parts are joined by a flat clock spring, approximately 15 to 20mm wide. The spring is inserted into the front and back body parts and is attached to the support rod with a cramp (or two screws). The method of fixing should not, however, impede its natural springiness.

Strings are attached to the front and back body parts, between the legs. The strings run together through a screw-eye attached to approximately the centre of the support rod and are tied to a metal ring. By pulling on the strings, the tension of the spring in the 'spine' is overcome and its ends bend down. When the strings are released, the ends of the spring snap back up into place. Obviously, the body parts attached to the spring follow these movements and the hare clearly bends in the middle. By simultaneously moving the support rod forwards, the impression is created of a jumping/running hare.

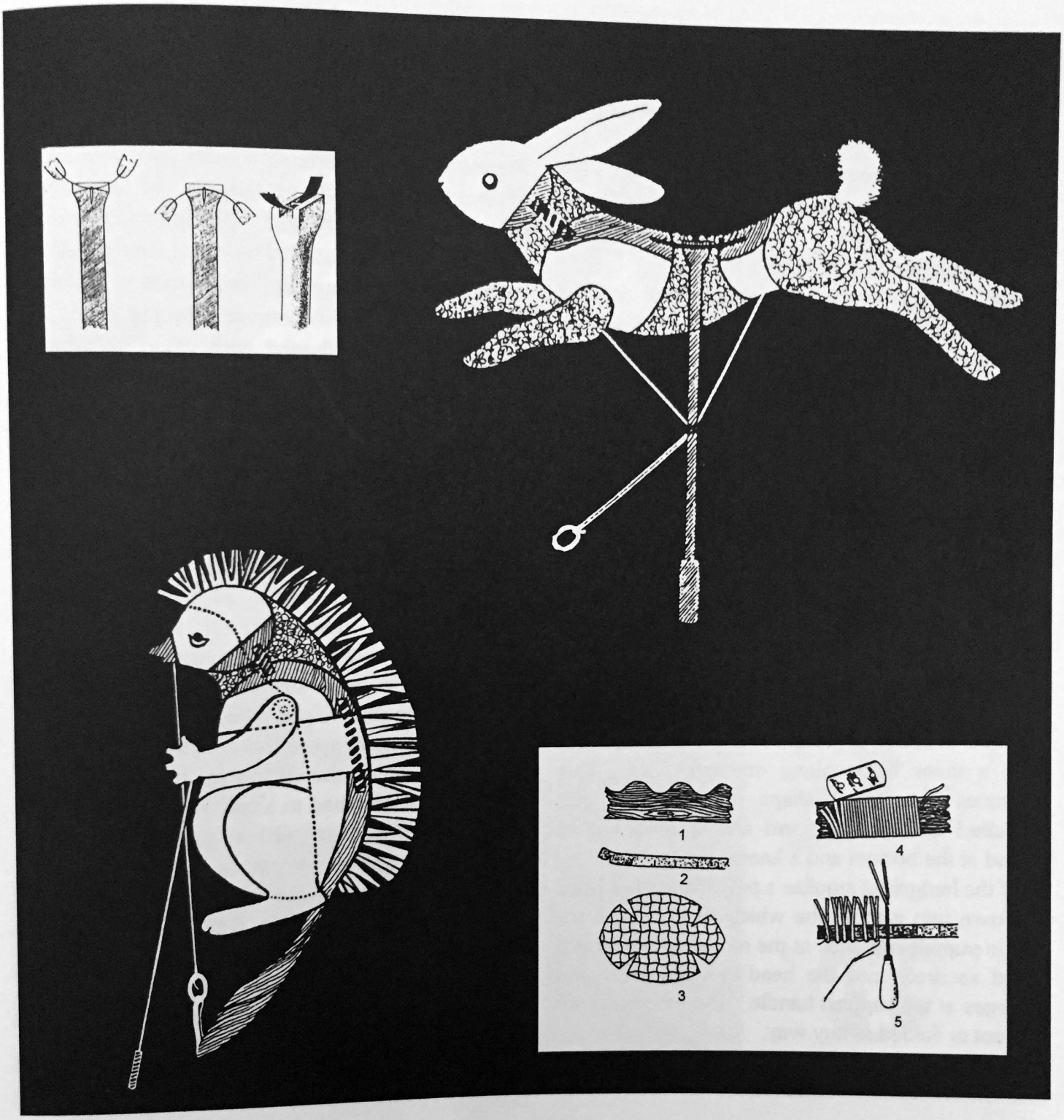
The head is connected to the torso by a coil spring fixed into wooden inserts in the neck and chest. The neck, the infill between the front and back body parts, and all four legs are made of foam rubber. The legs are attached in such a way that they don't mask each other when viewed from the side. The exterior (cloth and colour) of the puppet is made identical to the upright model.

It is probably not necessary to point out that by making miniature doubles of one or another puppet (without, of course, superfluous mechanisms) it is possible to create surprising effects of distance.

II Hedgehog

The hedgehog is constructed in such a way that it can roll itself up, depending on the elasticity of the covering material. The head can either be made of solid wood or of overcast paper with wooden reinforcements in the nose and neck. The chest, attached to the head by a spring, is similarly either made of solid wood or overcast paper reinforced along the spine. The wooden reinforcement is split in the middle and the two parts are connected with another spring to allow the body to roll into a ball. The pelvis is larger than the chest. It is made of overcast paper and has a wooden reinforcement along the back which ends in a grip. The pelvis is wide enough to allow the chest to fit inside when the hedgehog rolls up; achieved by pulling on a string attached to its nose. First the head is pulled to the chest, and then the chest is pulled closer and closer to the belly.

The lower legs are modelled with wadding or cut from foam, and are sewn or wired onto the pelvis in such a way that they don't actually move but have a certain amount of give in them. If the puppet is required to smoke a pipe or play the harmonica, it is possible to use snap fastener connections at the shoulders and substitute duplicate arms attached to the necessary props rather than go to the extra effort of making a complete double. To prevent the whole arm from being pulled off at an inappropriate moment, one part of



Top: Running Hare with detail of back spring. Below: Hedgehog with stages of making its coat of spines.

the snap fastener is sewn to a leather or canvas strip, which is wrapped around the chest before being fixed to the chest. The other half is simply sewn to the underside of the arm.

The string to the nose is fixed to the end of the handle with an elastic band and is easier to find if it has a ring attached. The neck is modelled around the spine in wadding or foam.

The puppet's back is covered in a coat of spines. The foundation is a piece of grey foam not quite 1cm thick. A paper pattern is cut to snugly fit the puppet's body and is transferred to the foam. the diagrams on the previous page show how it is made. A pattern cut from plywood (1) is used to cut wavy lines into the foam using a razor blade (2), taking care not to cut through the foam completely, which results in the pattern (3). In this way the coat becomes softer and more pliable. The wavy pattern is necessary because straight lines would result in open channels between the spines. The spines can be made from various materials; plastic tubing for electric cables, raffia etc. To make the spines the same length, the selected material is wound round a ruler and cut with a razor blade along one edge (4). This produces spines in a V-shape. Each pair of spines is pulled through the foam and secured with a thread at the bottom and a knot at the top (5).

If the hedgehog smokes a pipe, cigarette smoke is blown into a thin tube which runs through the whole puppet and ends at the muzzle. The tube is glued securely into the head and the other end emerges at the support handle. The tube must not be bent or folded in any way.

III Fox

The fox is a puppet which sometimes walks on all fours and sometimes sits on its hind quarters like a dog. In the latter position the spine is vertical, irrespective of whether the front paws are on the ground or are used to gesticulate. To avoid building a double, the vertical supporting rod was made to fold into the chest. The chest and pelvis are made by overcasting and strengthened internally with a wooden reinforcement The top part of the head is also strengthened with wood, to which a wooden jaw is attached in the usual way. The mouth is kept closed by an elastic band or spring connecting the top and lower jaw on the inside (see detail A opposite), and is opened by pulling on the central string of the head control bar.

The head is weighted with a lens-shaped lead weight at the back (shown black A and B), so that when the animal is walking in a horizontal position, the nose doesn't point to the ground (although, if desired, this effect can be achieved by pulling on the head strings). There is a long, narrow slit in the weight, which goes through the skull to the wooden reinforcement and this is the channel in which the spring to the neck moves. The spring is attached to a nail in the centre of the wooden reinforcement (B) in such a way that it still has plenty of movement. In the chest area, the spring is fixed firmly.

The torso is modelled and overcast as one piece. When dry, it is cut to make a front (upper) part and a rear (lower) part, which are subsequently joined with a spring fixed to the wooden reinforcements. The rear part of the body has a slit along its length from the belly to the tail to take the



Construction of Fox for *The Magic Boot*

folding support handle. When the fox sits in an upright position, the handle follows the line of the wooden reinforcement and folds into the body like the blade of a penknife (detail A and B opposite).

The top end of the handle is attached between metal plates in the wooden reinforcement in the chest. It turns on a metal axle (screw with nut and lock nut) and is prevented from swinging to the front by being angled exactly. The hand grip and the back part of the wooden reinforcement in the pelvis have small projections which lay on top of each other when the puppet is in the upright position and prevent it falling over. The 'backbone' of the tail is a slightly softer spring, that runs through a cloth tube which is later padded with wadding.

The structure of the plywood legs should correspond to the anatomical proportions of a foxes legs. The individual parts are loosely riveted together at the joints. They are then covered in a fur costume and stuffed in such a way that the legs are prevented from bending the wrong way at the joints. Only the front legs and the tail have control rods. The back legs don't need them because with care and a little practice it is possible to get them to swing in a rhythm which gives the impression of running.

The head is manipulated with two strings attached to screw-eyes at cheekbone level. Together with the chin string (which is slightly longer to make it easier to find), they are tied onto a dowel approximately 15 cm long, which can be attached to the support handle using an elastic band to prevent it from swinging about and getting tangled in the control rods. The strings to the head should be long enough that the control bar is not visible to the audience even when the puppet is in an upright position.

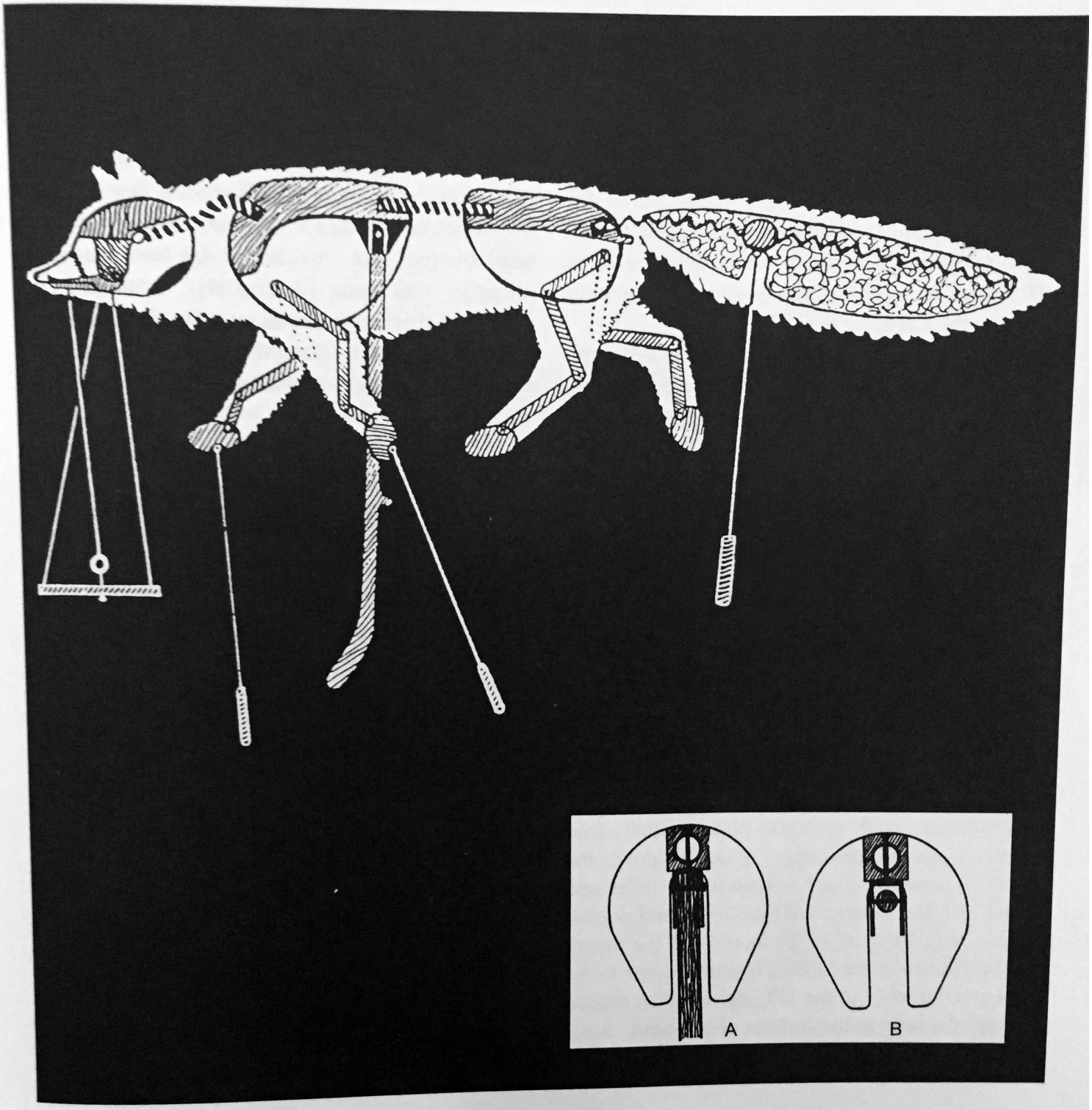
The whole puppet is covered in white fur, which can be dyed with hot fabric dyes and a spray gun. This allows a smooth transition of colours, eg where the red of the back goes into the white of the belly. Whilst wet, the hairs are combed in the right direction and when dry, the fur looks as if it is growing out of the puppet's body.

By matching the proportions and carefully balancing the weight between the front and back parts, the transition between the vertical and horizontal positions is very elegant. Other four-legged creatures such as cats and dogs can be made in the same way.

IV Owl

The owl from *The Magic Boot* has an unusual construction, particularly with regard to the mechanisms selected by Dr. Malik of the Central Puppet Theatre in Prague. Even the dimensions of the puppet and its proportional relationship to the stage, ie to the environment in which it appears, are unusual. The owl is large enough that its claws are in fact four-fingered gloves, into which are inserted the hands of one of the puppeteers. The staging for a figure of this size must be spacious so that it doesn't cramp the puppet; a small set would make the puppet appear too large.

The body of the owl is constructed in a similar way to that of the hedgehog. It is made from overcast paper and is shaped like a melon. Once the paper is completely dry, the form is sawn through twice and, if necessary, strengthened.

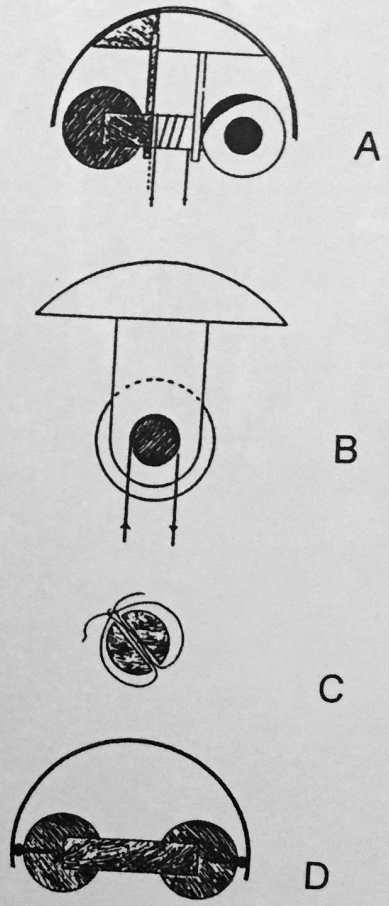


Fox and details of folding support handle

Both parts are reinforced at the back with pieces of wood, into which the spring and handle are firmly fixed. The long handle is slightly curved and also functions as a support which rests on a stand. The two parts of the body are loosely tied together around the edges with string, which determines the required distance between them and the amount the top part can rotate to the side, as well as preventing the cloth covering from getting caught in the cavity of the belly.

The rod for the head movement is fed through a strong screw-eye fixed to the wooden back support at shoulder height, and is glued into the wood that reinforces the head. In the neck section, the rod is substituted by a coil spring to allow the head to bend. The rod has a small ball of cork or wood at its base for manipulation purposes and is held in position by two wooden beads, which are drilled and fixed one above and one below the screw-eye, thus holding it in position whilst allowing a little rotation. The nodding of the head is controlled by a nylon thread attached to the wooden beak, which runs down the outside of the puppet, between its claws, and ends in a ring.

The eyes pivot on a horizontal axle and are controlled by a thread that winds up and unwinds over a roller which connects both eye-balls (see details A and B opposite). At its midpoint, the thread is passed through a hole in the roller and knotted so that it turns with the roller and doesn't simply slide freely (C). Both ends of the thread are wound round the roller a few times, one to the right and the other to the left, and are then passed through the hole at the bottom of the head, down inside the whole body, to below the puppet. The ends are tied to a short, straight, horizontal rocking bar which rotates at its centre point by being loosely screwed to the piece of wood that reinforces the wide tail or to the handle. The tail also hides the manipulation ball from the front. The eyes with the connecting roller look like a dumbbell which is attached to the wood at the top of the head by two wire eyelets or by two pieces of plywood with holes (A and B). It should rest loosely so that the eyes can revolve. (Lubricate the points of friction). Another, simpler, method of attaching the eyes is shown in detail D.

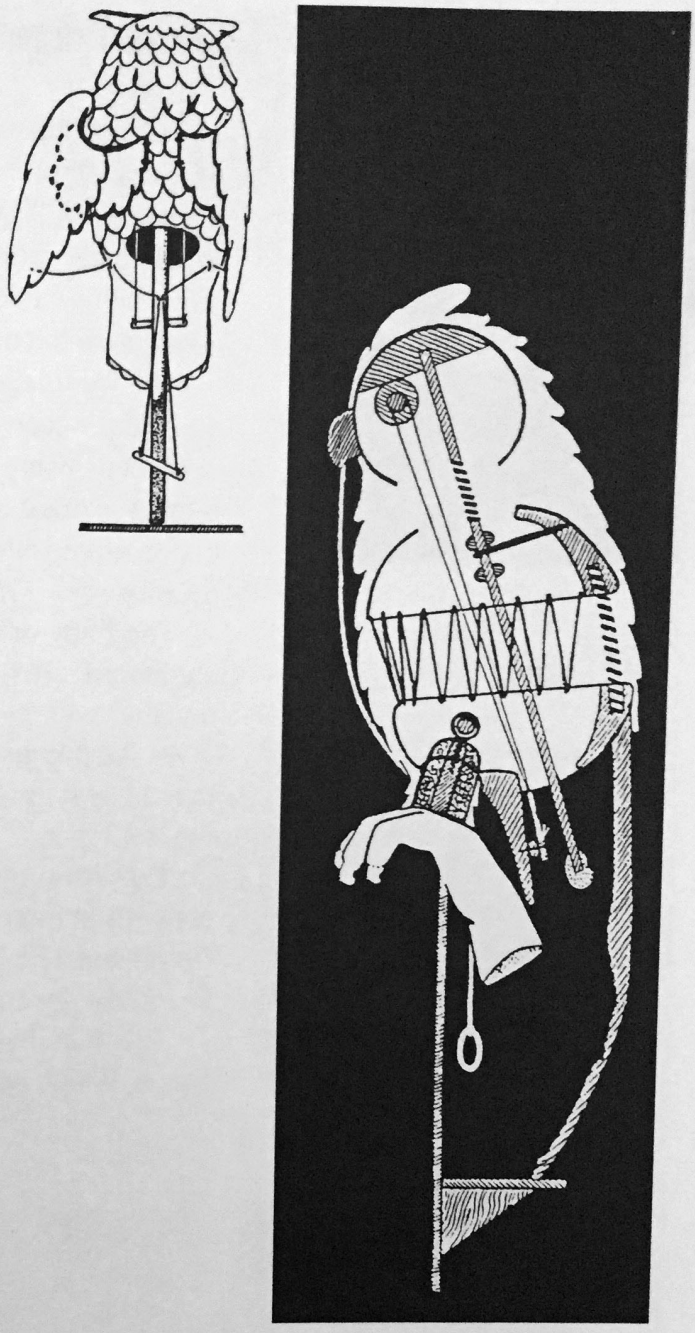


The legs are cut from foam rubber and are inserted into the cavity of the belly. To fix them securely, wooden pegs are glued into the foam and they are then hung by screw-eyes onto a rod that runs through the puppet's stomach. The claws are four-fingered gloves (the thumbs are placed under the palms) made of a pliable material such as jersey, and the joints and outer claws are stuffed until they are as thick as the middle claw when two fingers are inserted. The tips are finished with wooden talons, which are drilled and sewn onto the fabric. The top of the glove is sewn onto the foam legs around their edges.

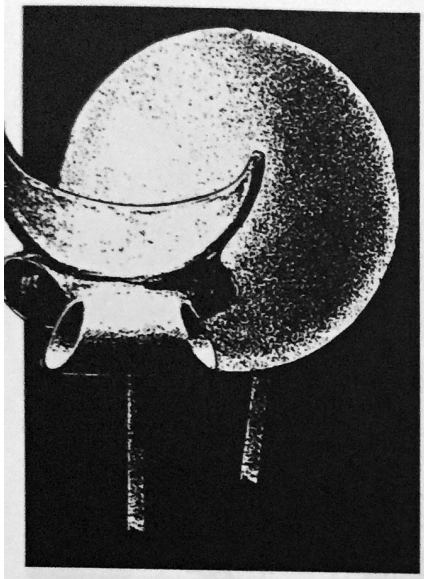
Finally, the whole puppet is covered with strips of hemmed flannel or thin felt, which have been cut round at the bottom edge to resemble a row of roof-tiles and are glued and then sewn onto the puppet. The thickness and size of these pieces is based on a real owl without becoming naturalistic.

The wings of the owl are relatively passive. For reasons of clarity, they have not been shown and they do not need a mechanism for movement. They are loosely attached by wire or a leather strap to the wooden shoulder reinforcements in such a way that they stick out a little and can be pulled towards the body when required. It should seem as though the owl is making itself comfortable. Each wing consists of two slightly arched parts, made of paper over a wire frame, which are joined by a soft spring at the bend.

The puppet is manipulated by two operators. One controls the whole body with the head, wings and eyes, whilst the other slips inside the claws, which can then be used to write, turn the pages of a book or use a telephone.



Construction of the Owl from *The Magic Boot*



Animal Puppets from PVC and Cardboard Elements

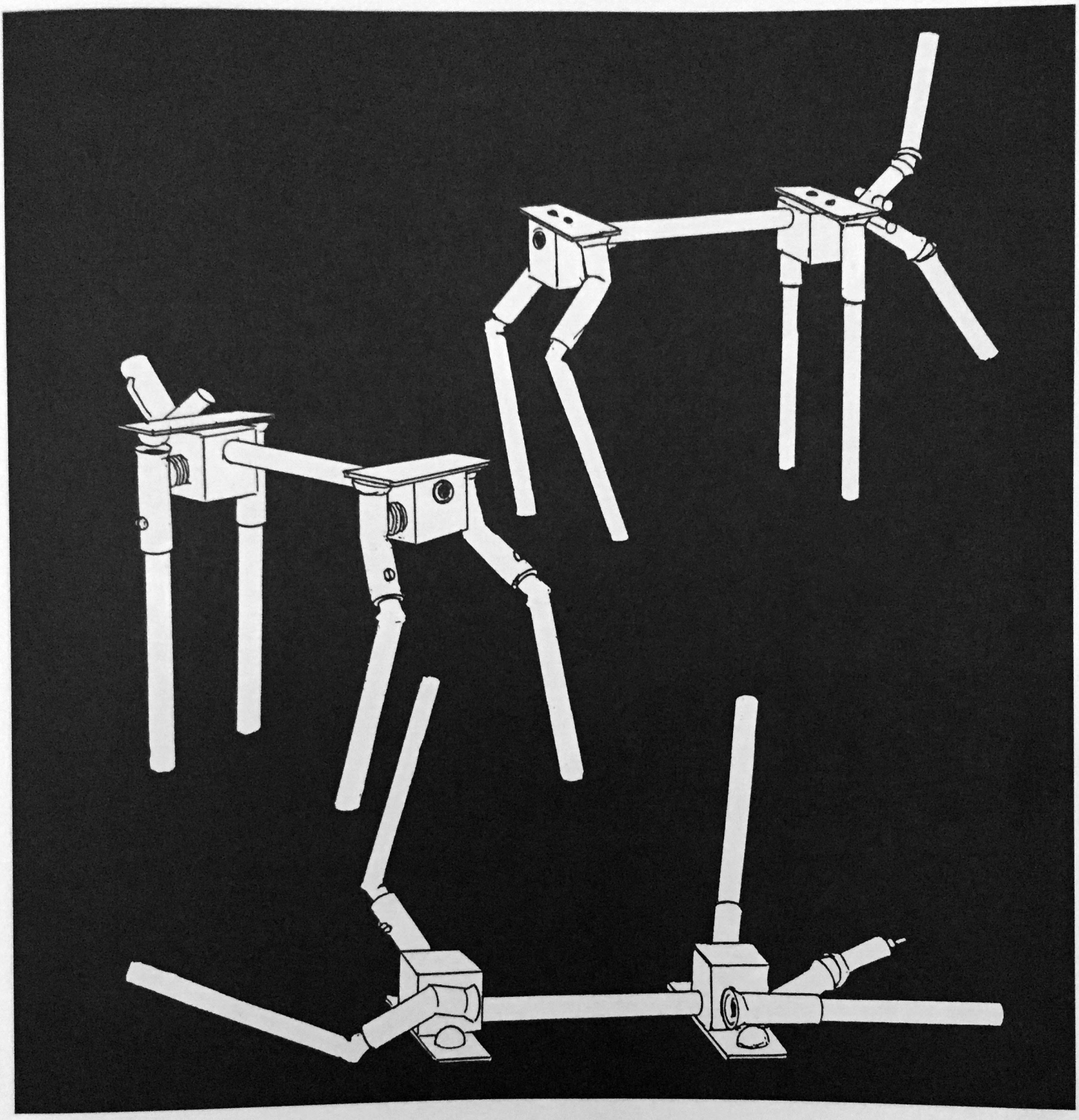
The diagrams opposite show the basic structure of a four-legged table-top figure with slotting-in leg mechanism (see chapter on table-top puppets). The body consists of two wooden blocks connected by a spine made from PVC tube or dowel. For more flexible walking movements, a section of the spine could be replaced by a spring — taking care to ensure that front and rear body parts are still balanced.

The front legs are straight but are attached in such a way that they don't mask each other when viewed from the side. The back legs have been bent using the hot air method (see page 233), which gives the puppet a more animated stance. Once all four legs are attached, the bottoms are sanded together on a belt-sander until the figure stands in balance.

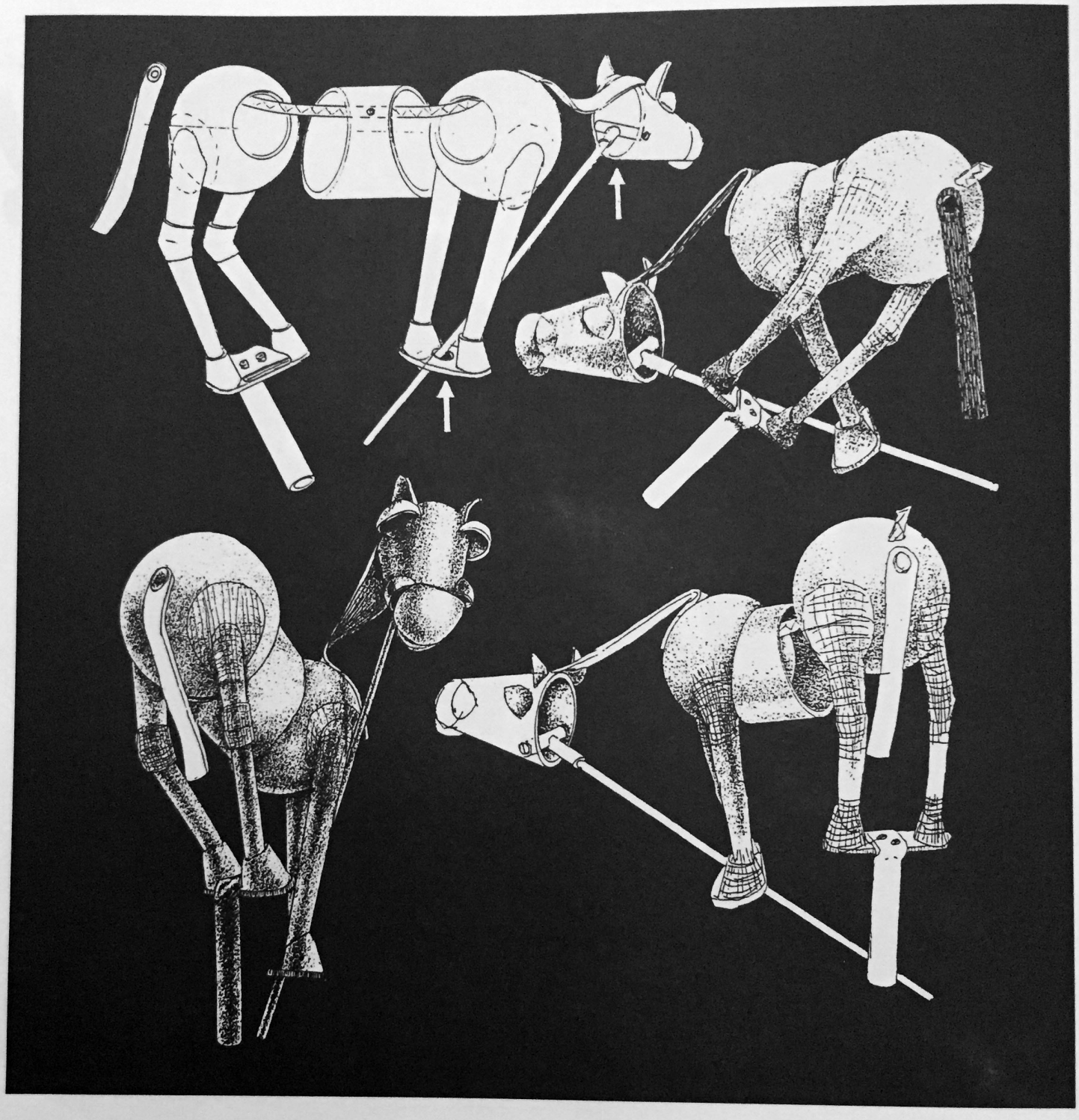
The body of the horse on the left and overleaf is made from three cardboard elements held together by a silicon rubber cord which, together with a loose neck made from a strip of leather or PVC fabric, gives the puppet a wide range of flexible movements. The legs are not jointed, and the control rod passes through a hole in the footplate under the front feet.

The drawings on page 311 show two more experiments in making animal rod puppets. The creature on the left has a flexible torso made from leather, rubber or canvas with wooden struts glued on either side to control the amount of undulation.

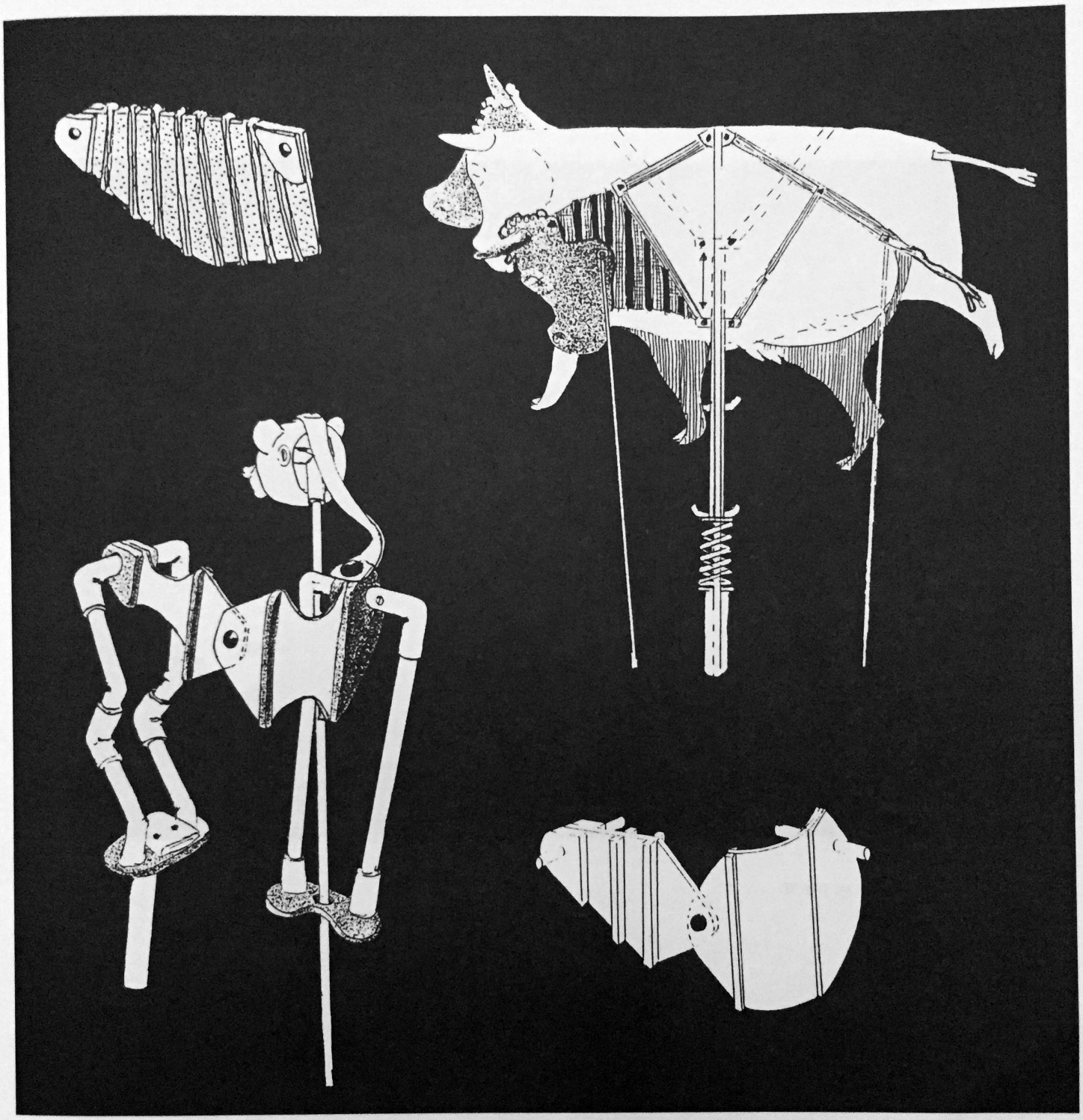
The bull has an internal structure made from an umbrella-type frame, which opens and shuts to give the animal a bucking movement.



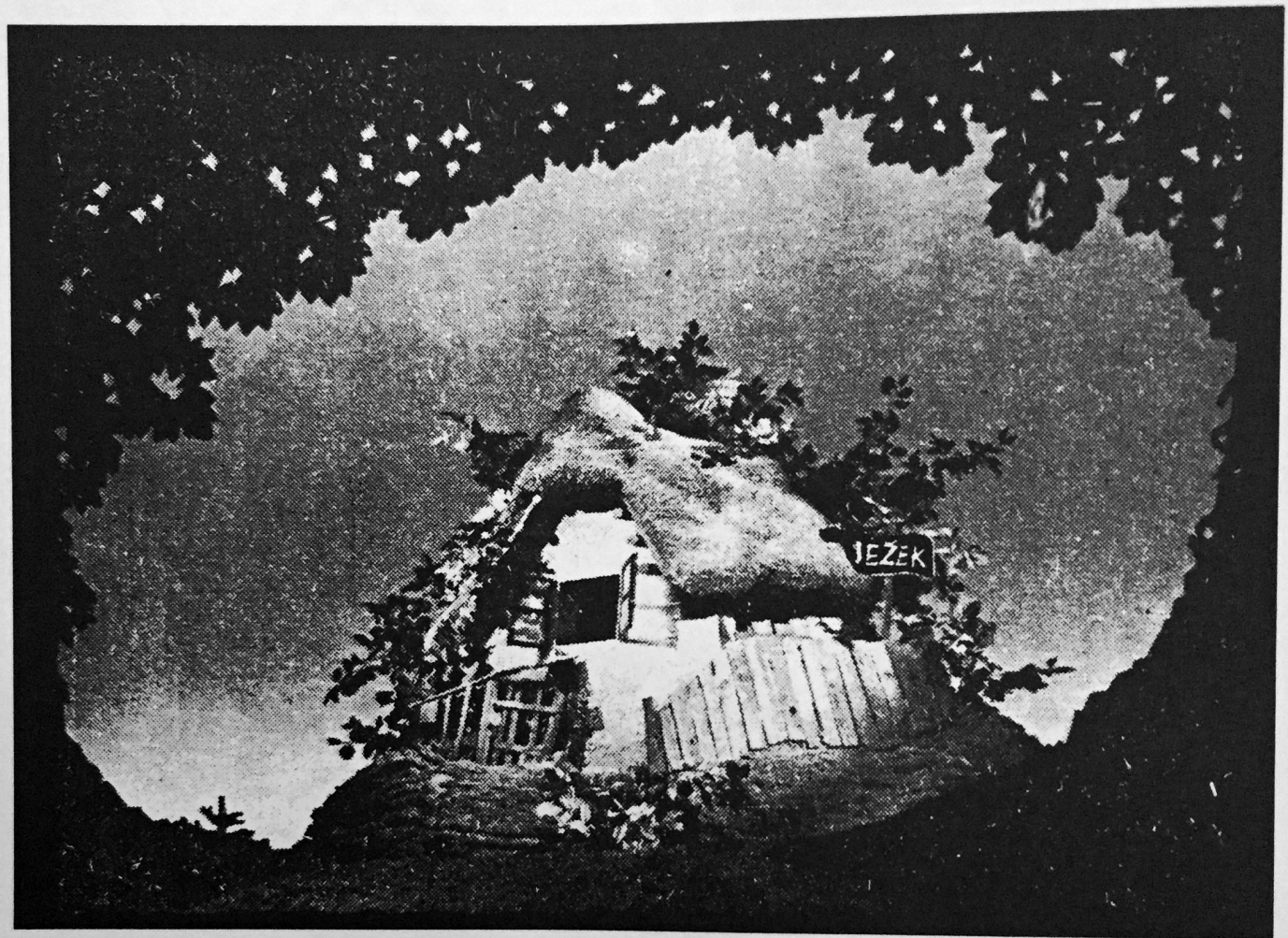
Four-legged table-top puppet with slotting-in leg mechanism



Horse made from cardboard elements and PVC tubes



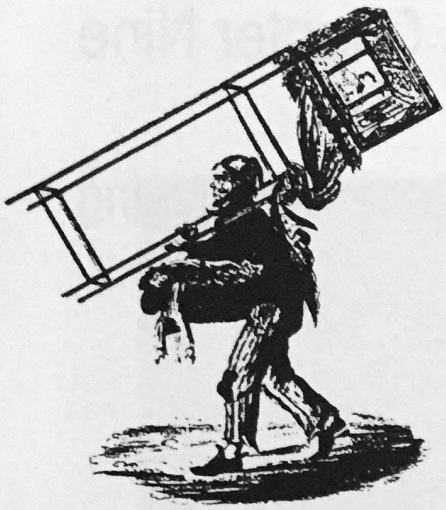
Mechanisms for undulating and bucking movements



Stage with oval proscenium

Chapter Nine

A few Ideas for Staging



Technical Solutions for Sets

As well as creating a visual environment for the puppets, set design often involves solving technical problems relating to the technique used or effects required. For example, the 'black theatre' stage opposite requires a complete black-out and tight lighting on the puppets (the two white patches in front of the stage represent a gauze stretched across the proscenium opening to help disguise the presence of the puppeteers).

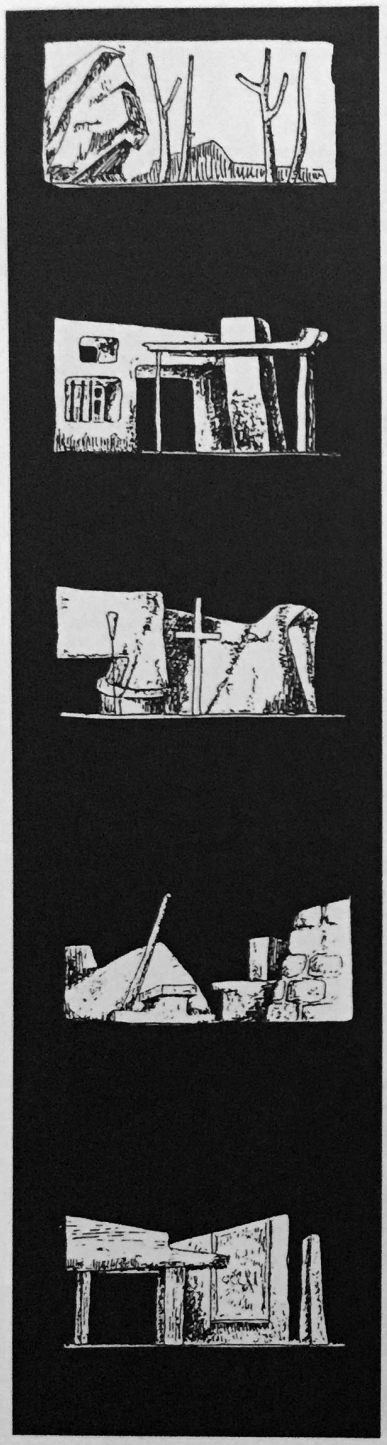
Astonishing effects can be created with the black theatre technique: puppets and objects appear out of nowhere, they turn and float in the air and then, quite unexpectedly, disappear again. To create this illusion, it is important that the performers are not seen. The puppets appear in a horizontal beam of light and the rest of the stage area is completely dark. The spotlights have shutters to exactly define the lit area, and are sometimes covered in black velvet to prevent any spill of light. The puppeteers wear a black costume, gloves and a hood with a gauze at eye level through which to see.

Overleaf is an article by Leo Uttenrodt in which he describes a set for a booth which allows the puppets not only to perform against the playboard in front of a backdrop, but also further back in the space and between items of scenery.

The chapter ends with various technical solutions for sets and scenery - the drawings should speak for themselves.



A ‘black theatre’ stage viewed from the wings



Our Labyrinth Set

by Leo Uttenrodt

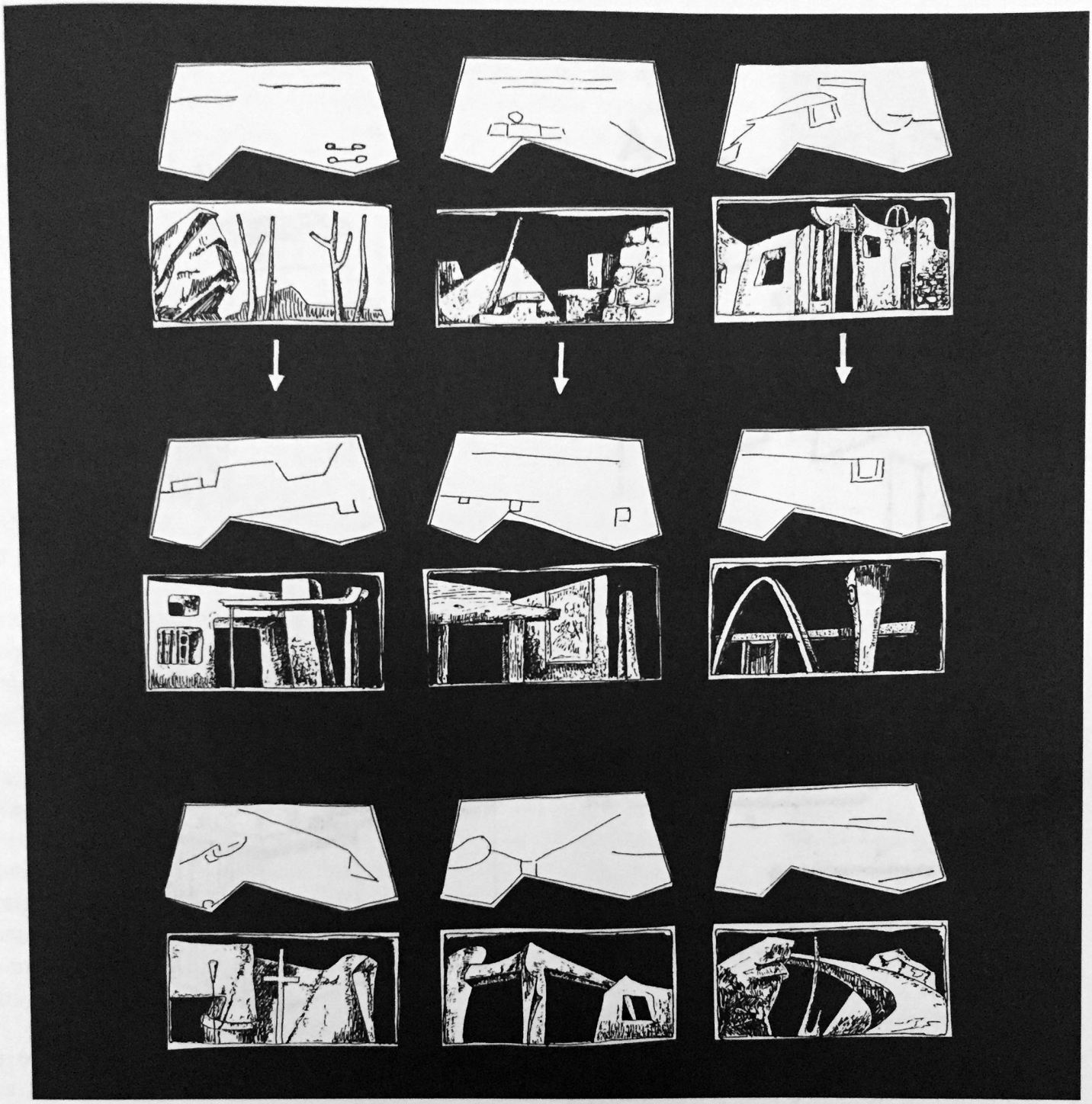
From Perlicko-Perlacko Issue 6, III/1971

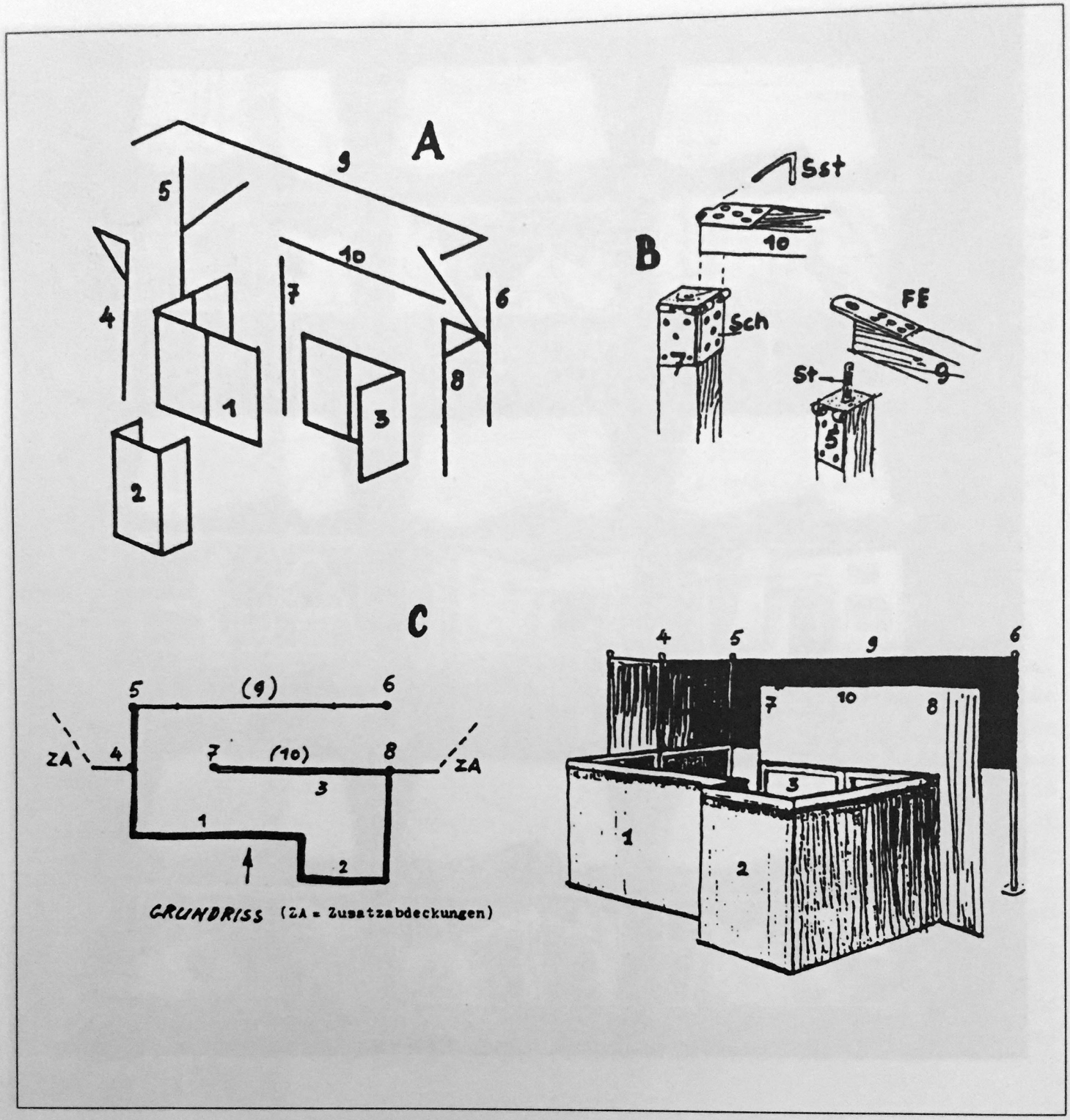
Many set designs have been presented in this magazine, each developed from an individual point of view and for a particular technique. The amount of technical effort involved also plays a part — a touring set, for example, needs to be light and quick to assemble, which requires a cleverly designed construction. Our labyrinth-set, too, was built for a particular type of performance and in order to make its aim clear, I would like to first explain our concept of the play. The technical aspects — construction, manipulation and expression of the puppets — will be omitted, suffice it to say we aim to make figures as simple (with regard to technique), as mobile (in terms of control) and as expressive (in terms of characterisation) as possible.

We are of the opinion that an effective puppet show is only possible through a polyphony of theatrical means, which are: 1. spoken text, 2. atmospheric music, 3. well-choreographed actions. The order is unimportant, any one of these elements can dominate at any time in a performance, and all three are used. They are of equal importance, none can be separated from the whole. It is fairly easy to make elements 1 and 2 of equal strength. It is, however, difficult to give the puppets space. The normal playing area for rod puppets (and hand puppets) is relatively small. We wanted our puppets not only to perform on the playboard in front of a backdrop, but also further back in the space and between the items of scenery. After a few experiments, we built a set which made this possible.

We called it a labyrinth-set because the arrangement of the screens (walls) and the 'topography' of the scenery, created labyrinthine passageways for the puppeteers — although nobody actually got lost in them. The angular arrangement of the screens and the shape of the playboard enabled us to erect scenery in a way that permitted great freedom of movement for the puppets.

Above and opposite: Sets which make effective use of stage depth





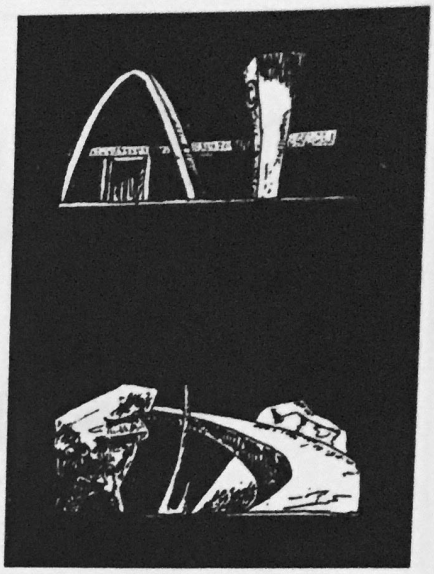
Layout and construction of Leo Uttenrodt's labyrinth booth

As the booth was open, without a proscenium, we decided on simultaneous representation of different locations, ie all the environments are visible during the performance. Simultaneous scenes limit, of course, the choice of play. We therefore sometimes design pieces of scenery so that by flipping, turning or moving them, the impression of a new environment is created. We also avoid building naturalistic sets. Important details are recognisable, but are not true to reality.

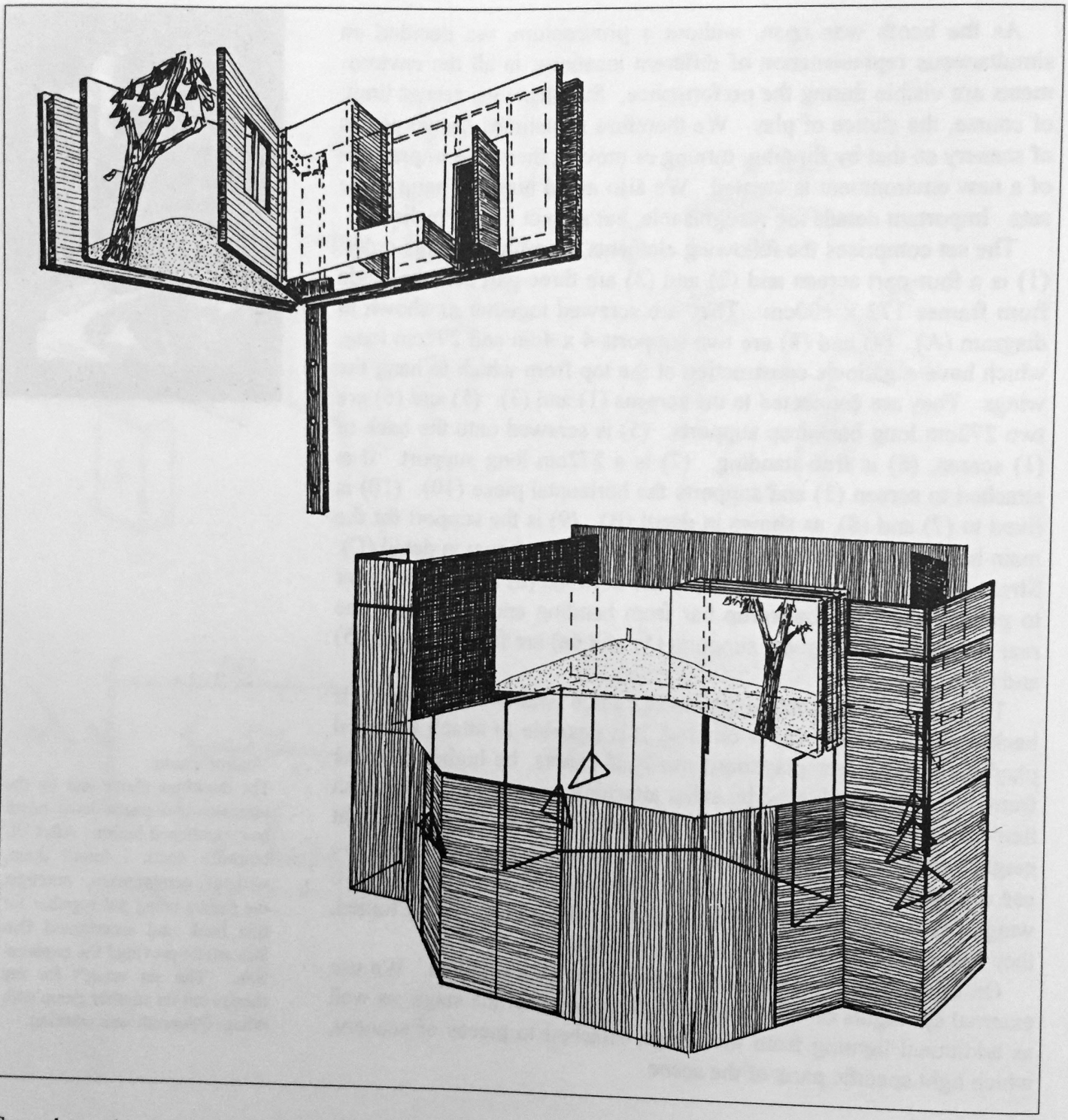
The set comprises the following elements, assembled in this order: (1) is a four-part screen and (2) and (3) are three-part screens made from frames 172 x 100cm. They are screwed together as shown in diagram (A). (4) and (8) are two supports 4 x 4cm and 272cm long, which have a gallows construction at the top from which to hang the wings. They are connected to the screens (1) and (3). (5) and (6) are two 272cm long backdrop supports. (5) is screwed onto the back of (1) screen, (6) is free-standing. (7) is a 272cm long support. It is attached to screen (3) and supports the horizontal piece (10). (10) is fixed to (7) and (8), as shown in detail (B). (9) is the support for the main backdrop. It rests on pins in (5) and (6), as shown in detail (C). Struts are fixed between (4) and (5) and between (8) and (6). In order to prevent the main backdrop bar from bending and to stabilise the rear construction, diagonal supports (5a and 6a) are fixed between (5) and (6) to (9).

This type of construction results in a stage with two backdrops. If backdrop (7) - (10) - (8) is omitted, it is possible to attach a second playboard. The rear playboard must, of course, be higher than the front one. This is achieved by either attaching an extension piece or an item of scenery which allows the puppets to be raised to the right height behind it. If long scenes are played at the rear playboard, we use a platform for the puppeteers to stand on. Occasionally the two wings (4) and (8) are folded forward to create a box. When folded, they can also be incorporated into the scenery.

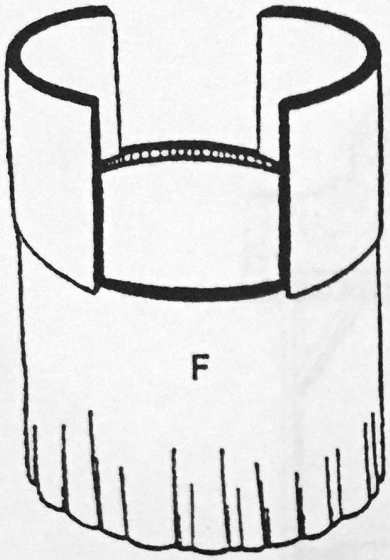
On open booths such as this, lighting can be a problem. We use external spotlights on stands to the left and right of the stage, as well as additional lighting from the wings, attached to pieces of scenery, which light specific parts of the scene.

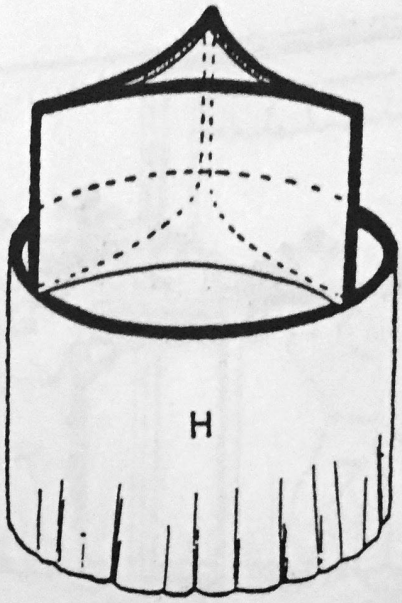


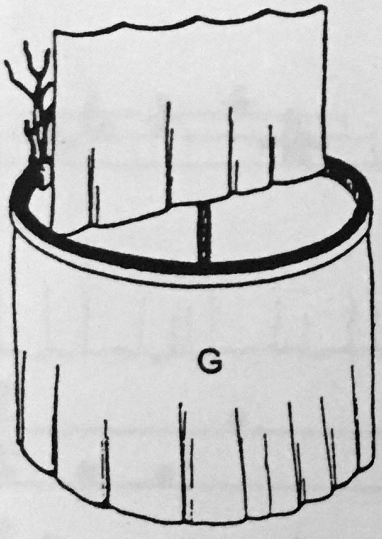
Author's note:
The drawings above and on the previous two pages have never been published before. After Uttenrodt's death I found them, without commentary, amongst the papers being put together for this book and ascertained that this article provided the explanation. The set wasn't for my theatre but for another group with whom Uttenrodt was working.

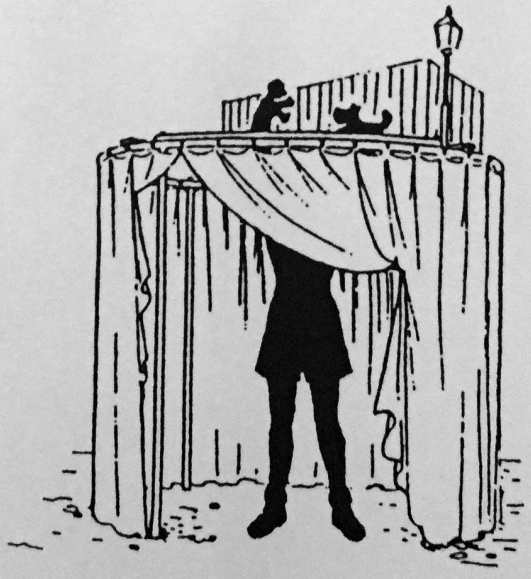


Scene changes by turning the pages of a book

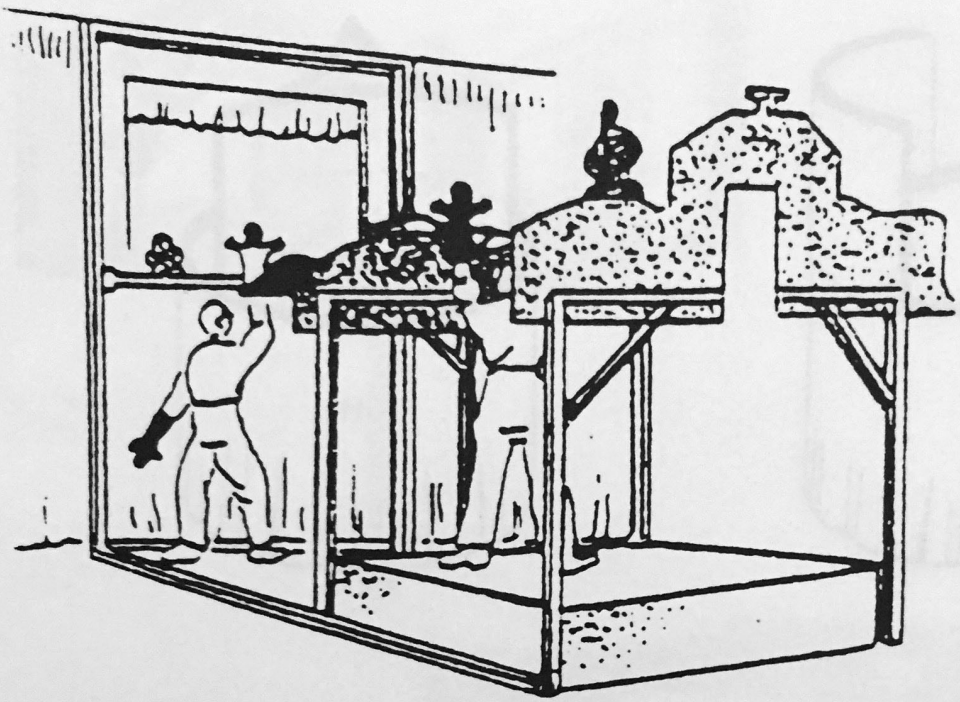


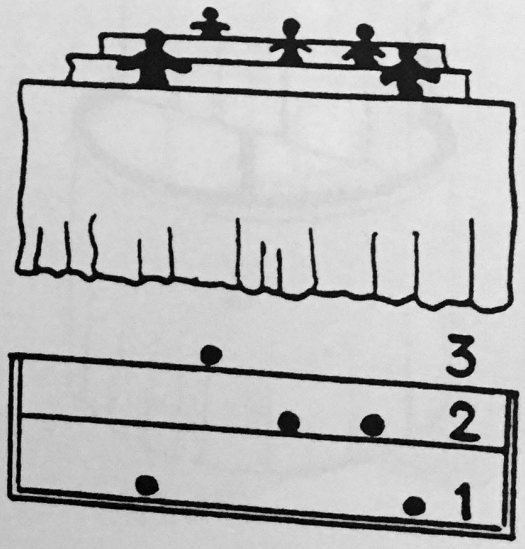




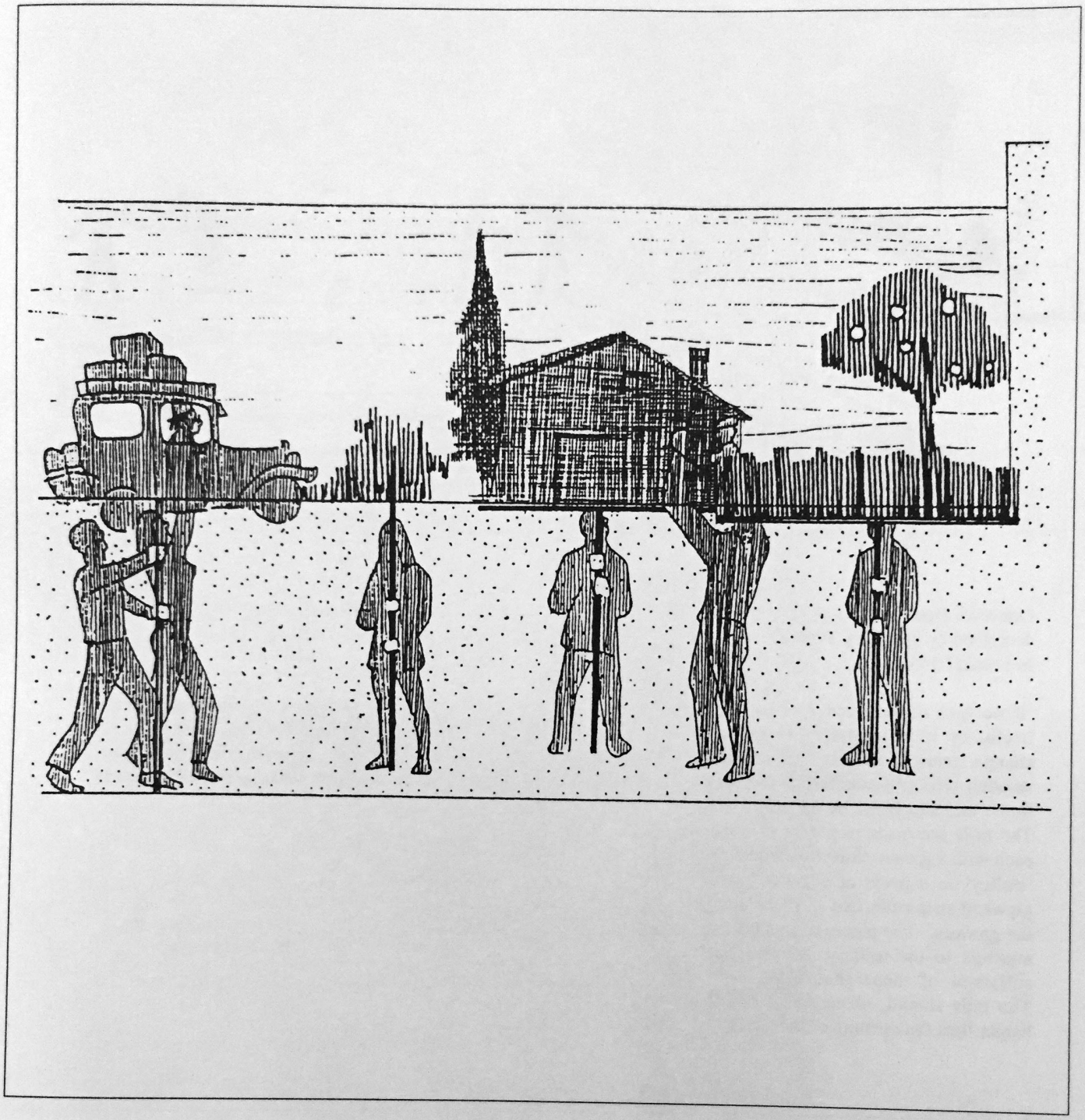


Revolving booths

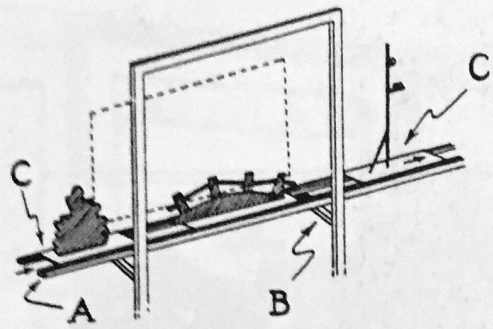


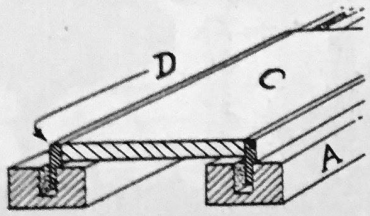


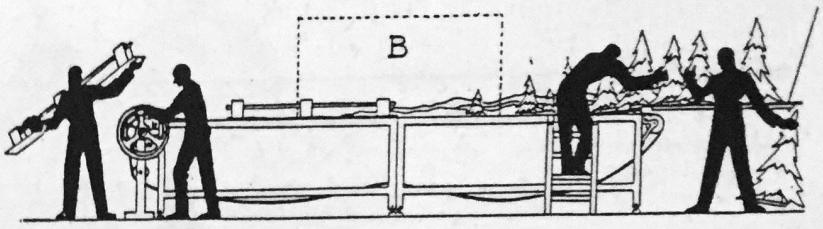
Increasing the playboard height when using the depth of the stage

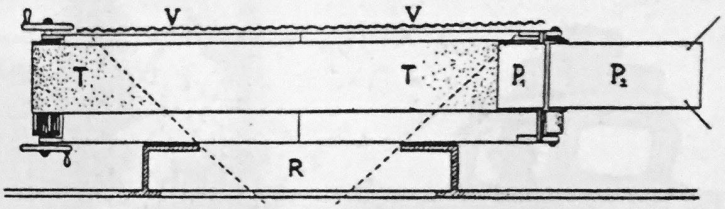


Hand-held scenery to create depth of scene and movement effects









Conveyor Belt
described by František Tvrdek
in Loutkář 1953

'If we wish to use a conveyor belt in a booth, or it is necessary to quickly change items of scenery, we use two wooden rails (A) attached to the back frame and supported by the struts (B). The rails are made of pieces of wood, each with a groove along the middle. A 'trolley' ie a piece of wood (C) with plywood strips attached (D) runs along the grooves. The pieces of scenery are attached to the trolleys and therefore sufficient of these should be made. The rails should, of course, be much longer than the opening of the booth.'

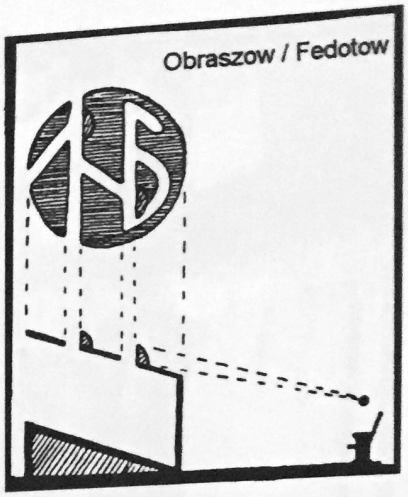
Conveyor Belt
by Dr Jan Malík

Designed for the performance of *Ballchen Scnellchen* to create the impression that the puppets were walking through a landscape.

T	Carpet
P	Platform
R	Reciter's Area
B	Proscenium Opening
V	Black Backdrop

Scene changes using 'conveyor belt'





Scene from *The Tale of Big Ivan* by the Obraztsov Theatre, 1937, which combines a live actor with rod puppets operated from below. Diagram top right shows the raised platform on which the actor performs, which has passageways for the puppets.


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Chapter Ten

A Glimpse into my Cellar Theatre



Ladykillers

Review by P.K. Steinmann

Printed in Stuttgarter Zeitung 24.3.73

Ladykillers, a thriller for rod puppets based on the film of the same name, was written by Hansjürgen Fettig and performed by the Degerlocher Kellerasseln (The Cellar Woodlice).

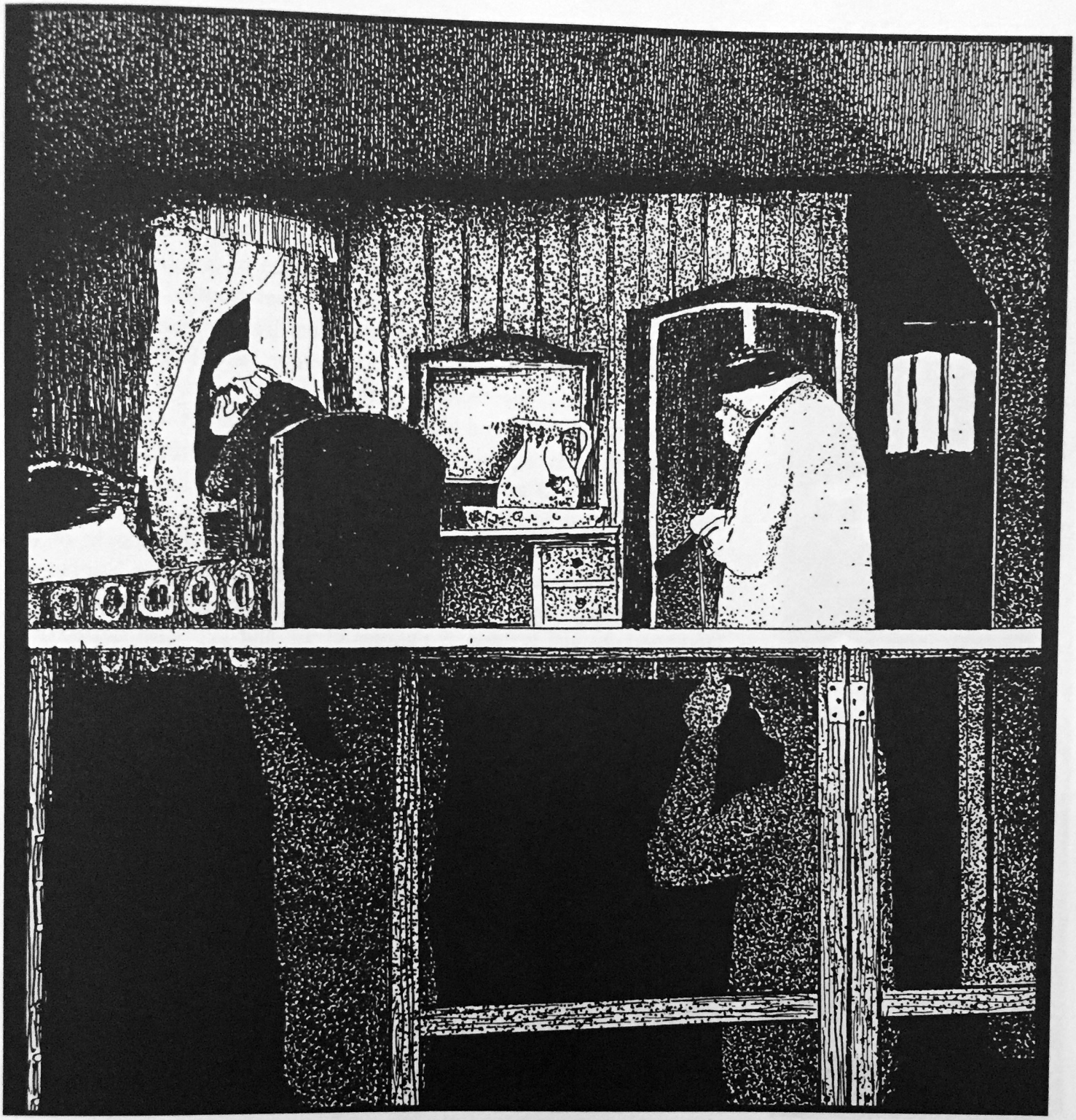
A small cellar theatre with approximately 70 seats in the Degerloch district of Stuttgart is where Hansjürgen Fettig, author of two valuable text books, combines his workshop and theatre. After years of exploring the puppet from a sculptural point of view, Fettig has founded this amateur company and filled its ten members with enthusiasm for puppet theatre.

A black cloth hangs in front of the playboard and behind is a spacious revolving stage with three-dimensional scenery. The effect is not of a cute dolls house, there is no false realism here, but of a harmony between the very physical puppets, which tend towards caricature, and their environment. I have never seen anything so organic. *Ladykillers* is a theatrical delight and has none of the inconsistencies which so often give puppetry the reputation of being a lesser art. One sits, watches and feels naturally entertained. It isn't necessary to think about the artistry, the HOW and WHEREBY, or the question: 'Why did they do that?' One simply accepts that this is how it should be - just like any other visit to the theatre. A rare experience in our field.

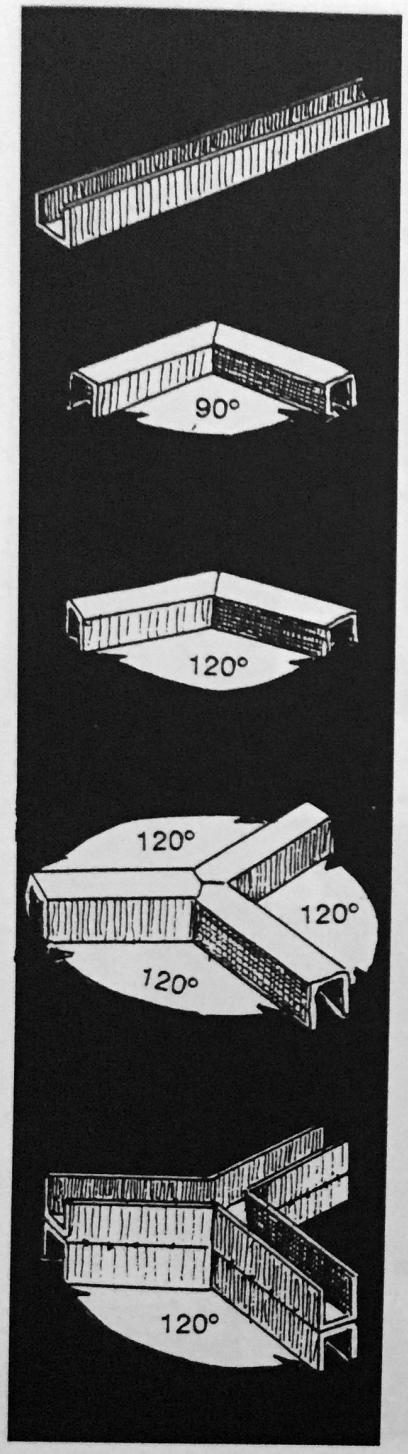
Furthermore, Fettig is a director! He understands how to place puppets in relation to each other, arrange entrances and exits, and inspire amateurs to perform.

Ladykillers is an evening in an amateur theatre, a status which has its limitations but which also has advantages over professional companies: long development times, experimentation without worrying about viability and a large circle of helpers. Hansjürgen Fettig and his cellar woodlice are preparing something new. We wait in anticipation.

PKS. 1973



Scene from *Ladykillers*



The Ladykillers Staging

There were two sets for *Ladykillers*; one in the theatre which didn't need to be dismantled for the whole run of the production, and another for touring. We investigated various ideas for staging that permitted scene changes to be made quickly and unobtrusively (see pages 320-325), and finally chose to adapt the idea of a round booth with revolve to make turning scenery within a screen booth.

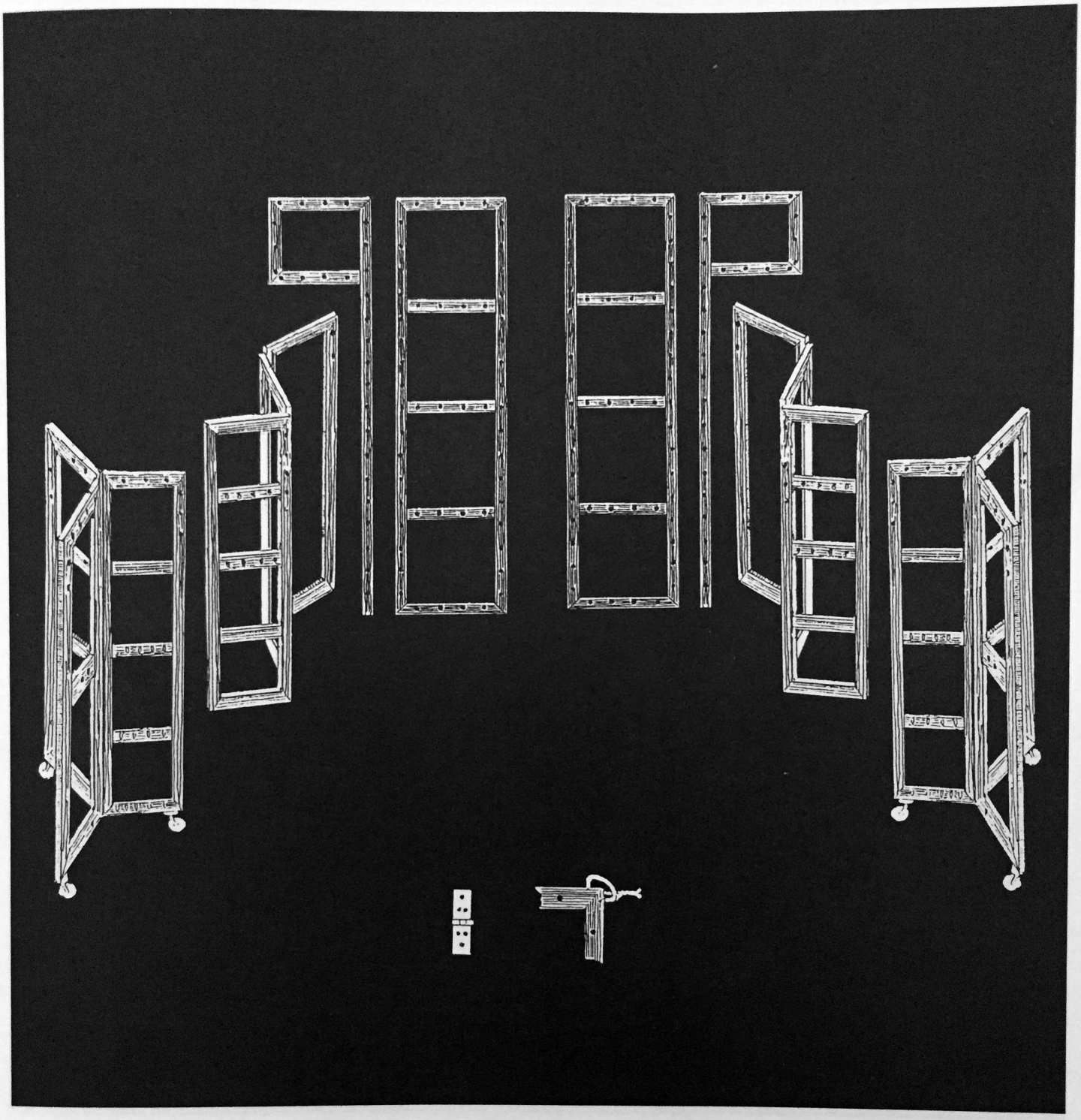
The touring stage consisted of individual frames made from planed roof slats, 180cm high (based on the average height of the company) and 50cm wide. The corners were made like picture frames, with butted joints cut at 45° and glued together. The frames were reinforced with metal bars at regular intervals and the corners fixed with a screw. Holes were drilled at every 10cm along the centre line of each slat. Structures which would later be used as supports for moving scenery and props were made slightly shorter to allow for the height of the castors. When assembled, all the screens were of the same height.

The frames were joined with hinges or connected by pieces of U-shaped channel welded into angles of 90° and 120° and slotted over the frames to hold the screens at the required angle. These 'stars' could be fitted with castors for revolving scenery, or mounted on top of each other using a double U-star (see diagram bottom left).

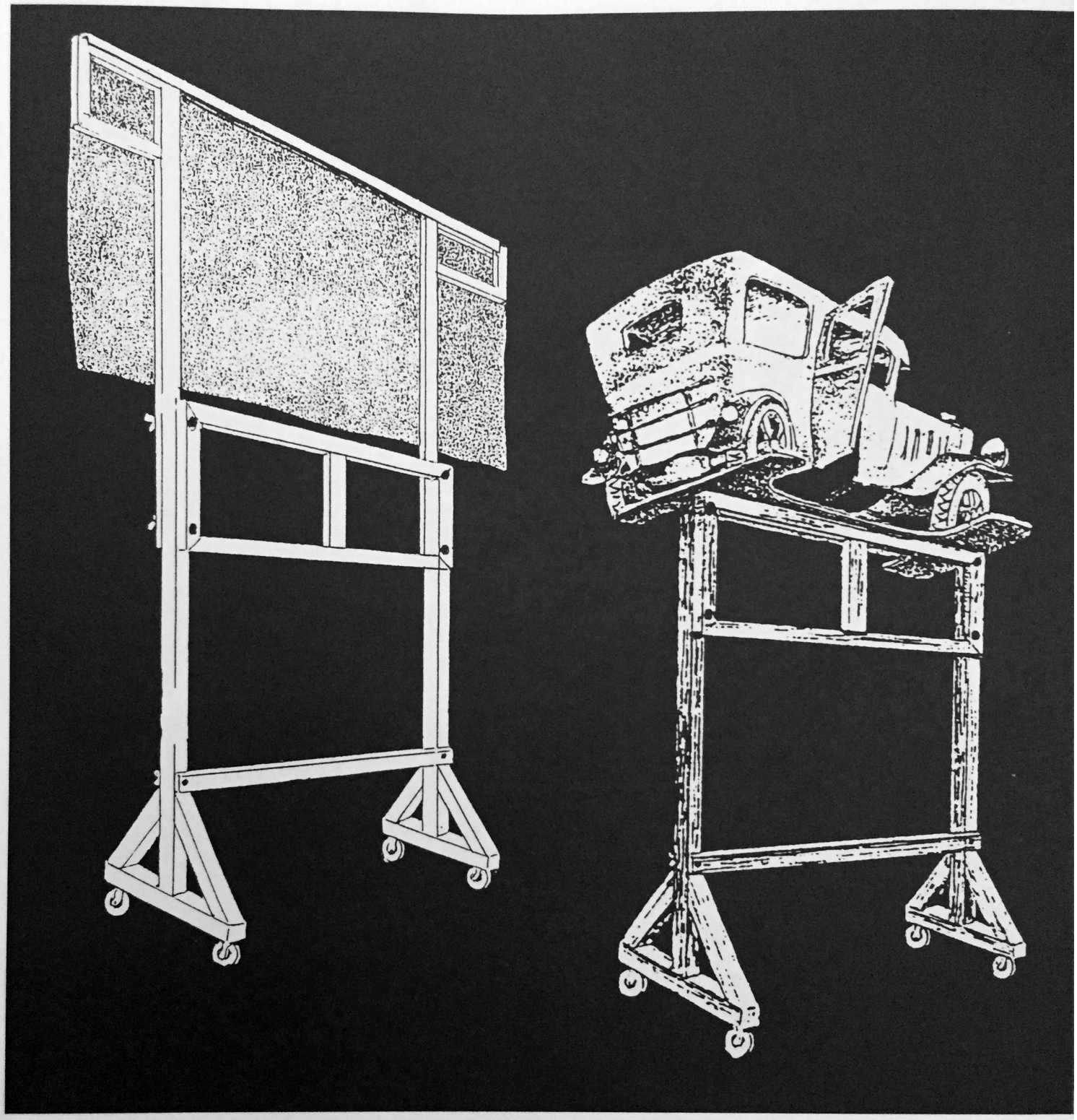
Frames were arranged with gaps for entrances and exits. Individual screens and 'P'-frames were screwed to base frames and connected with pieces of U-shaped channel to make supports for black curtains. All parts of the set were painted matt black and hung with black cloth, which allowed lighting to be used to good effect — eg night scenes were dark and mysterious, with spotlights picking out the action whilst all around was pitch black.

The screens folded flat and when stacked on top of each other, the space between the struts could be used for boxes. Thus a practical unit system was constructed, which served us very well.

Frame connectors made from channel



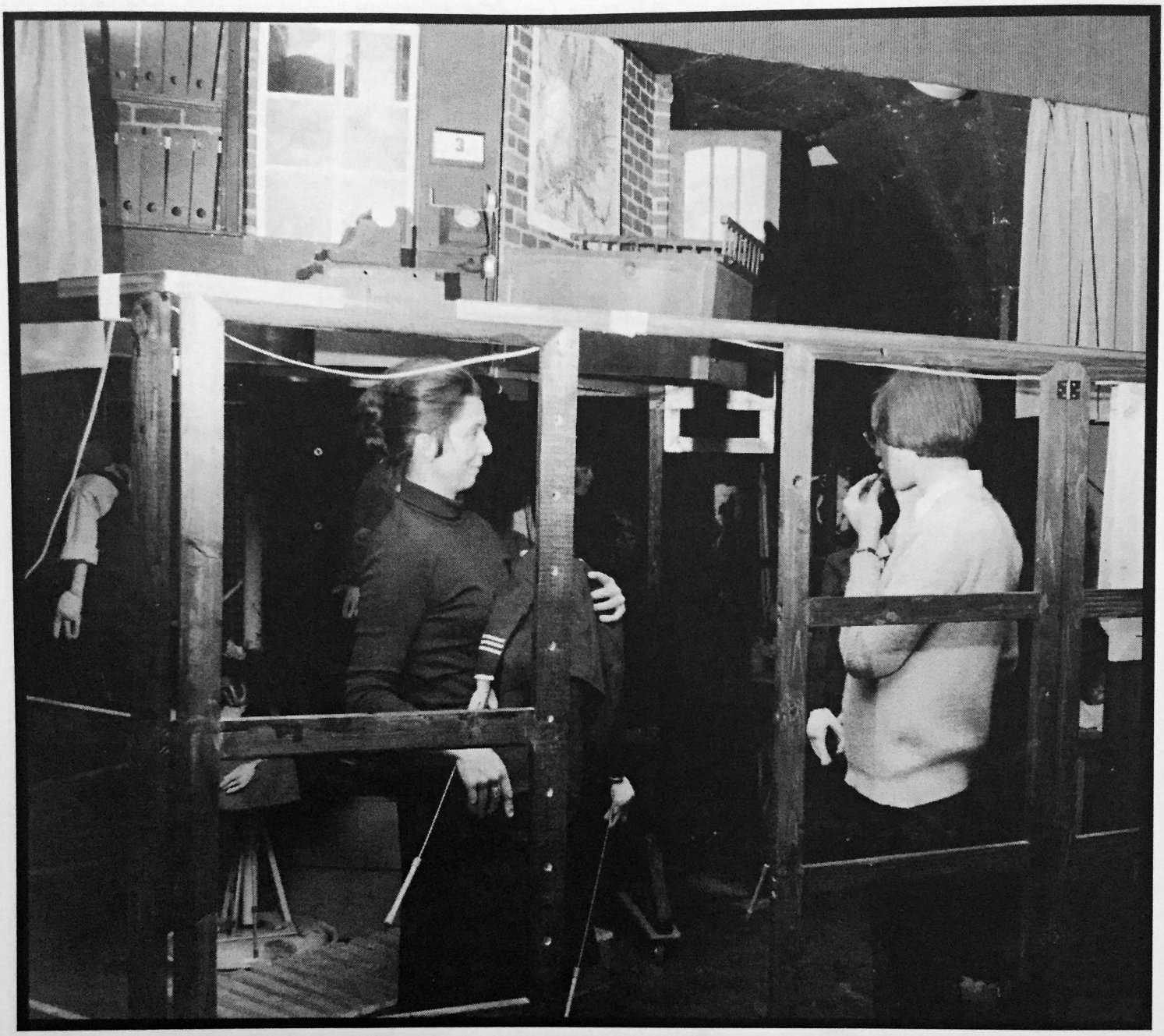
The *Ladykillers* touring set



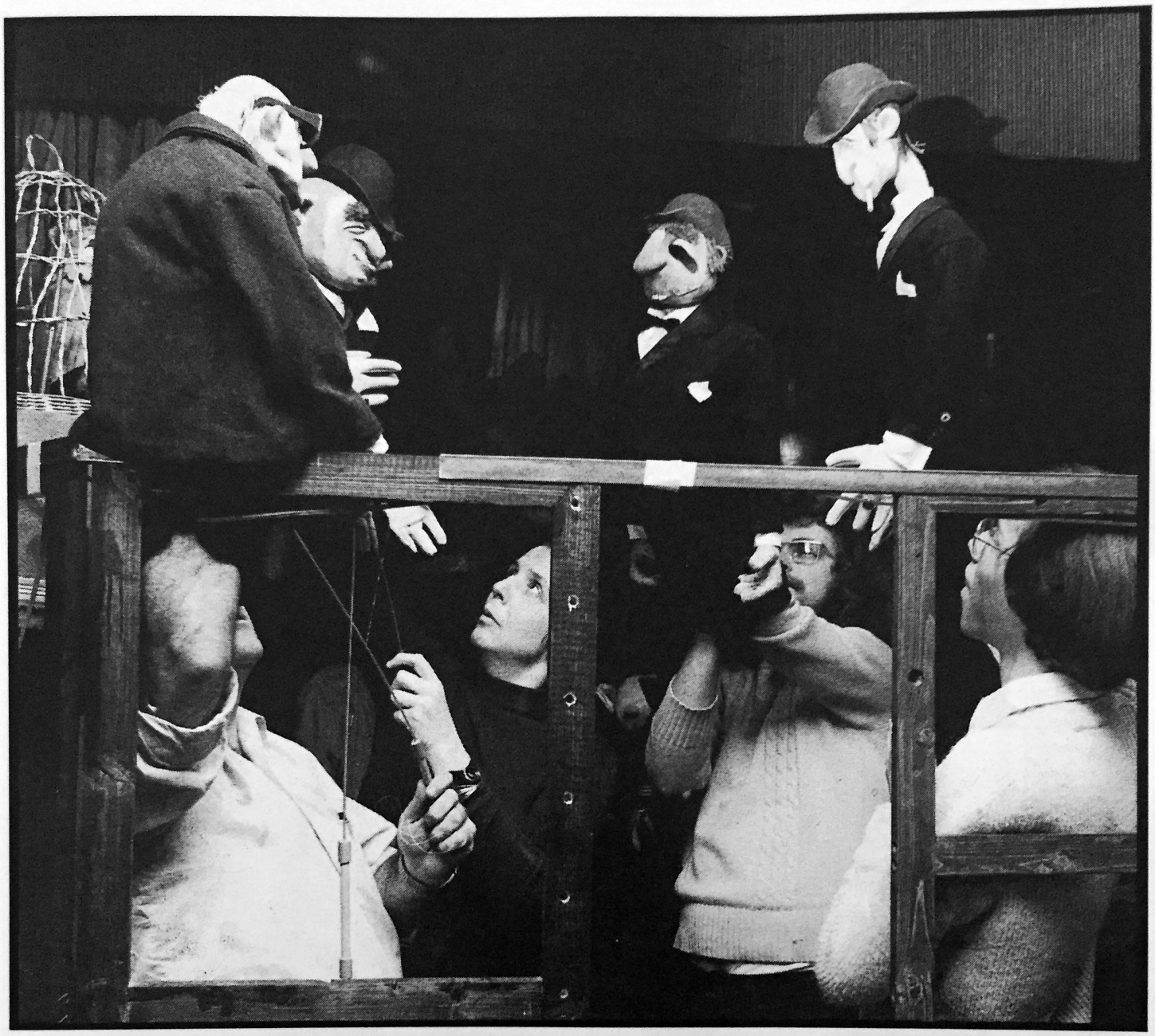
Using frames on castors for adjustable backdrops and moving props



Revolving scenery



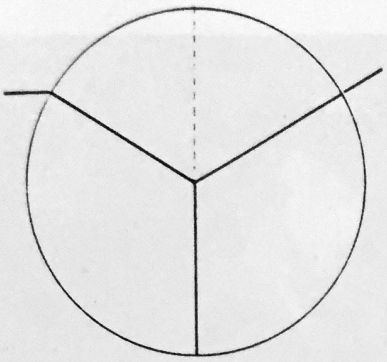
Behind the scenes on the *Ladykillers* set. The puppeteers are Alexandra Kornfeld and Thomas Ludwig.



Conference of Crooks. From left, Boss: Toby van Eck, Monkey: Alexandra Kornfeld, Gunny: Andy Benz, Knife: Thomas Ludwig



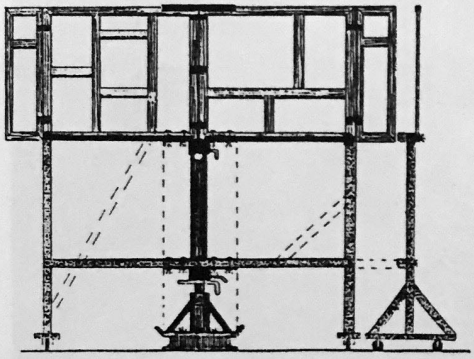
Conference of Crooks. From left, Boss: Toby van Eck, Monkey: Alexandra Kornfeld, Gunny: Andy Benz, Knife: Thomas Ludwig



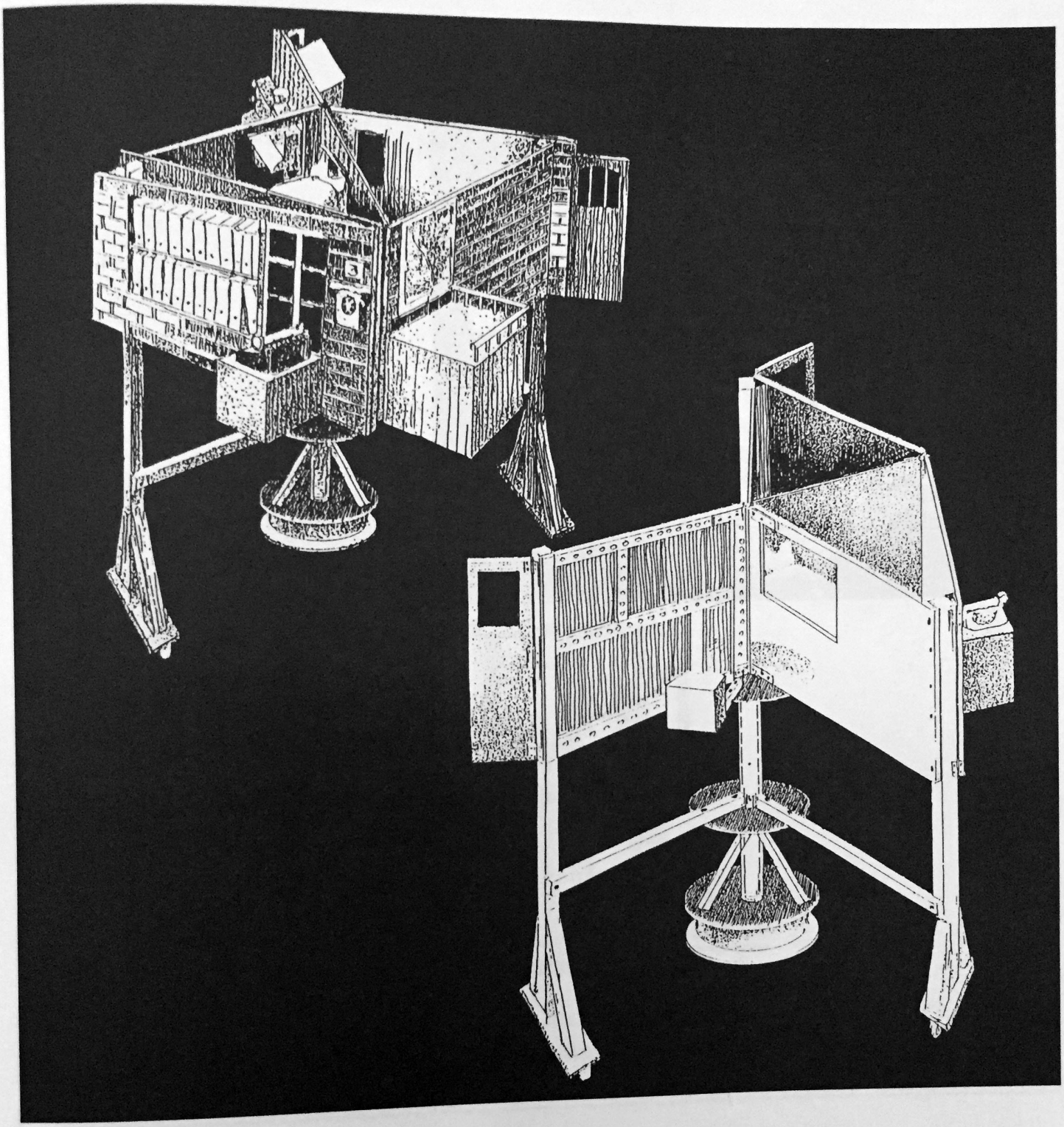
The Second Revolve

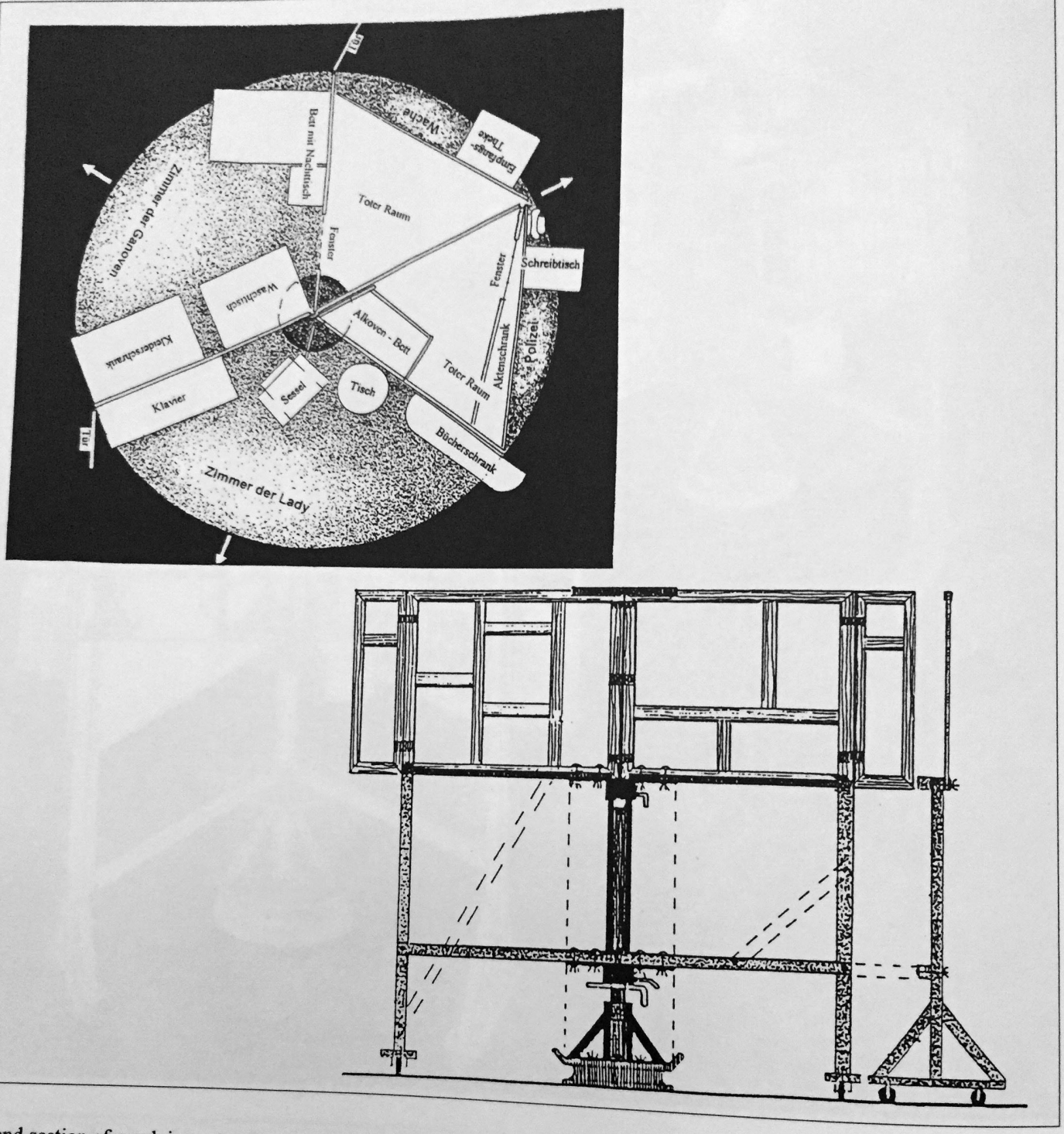
The diagrams on the left, the drawings opposite and the enlarged details on the next two pages show the revolving set which we used in the second version of *Ladykillers* for the cellar theatre.

The central structure is made from metal tubes. The outer tube sits on the right-angled pin which determines the height, and turns freely around the inner support tube. There are two round metal plates, top and bottom, onto which the horizontal struts are bolted. The heavy base is made of concrete, cast in a lorry tyre.

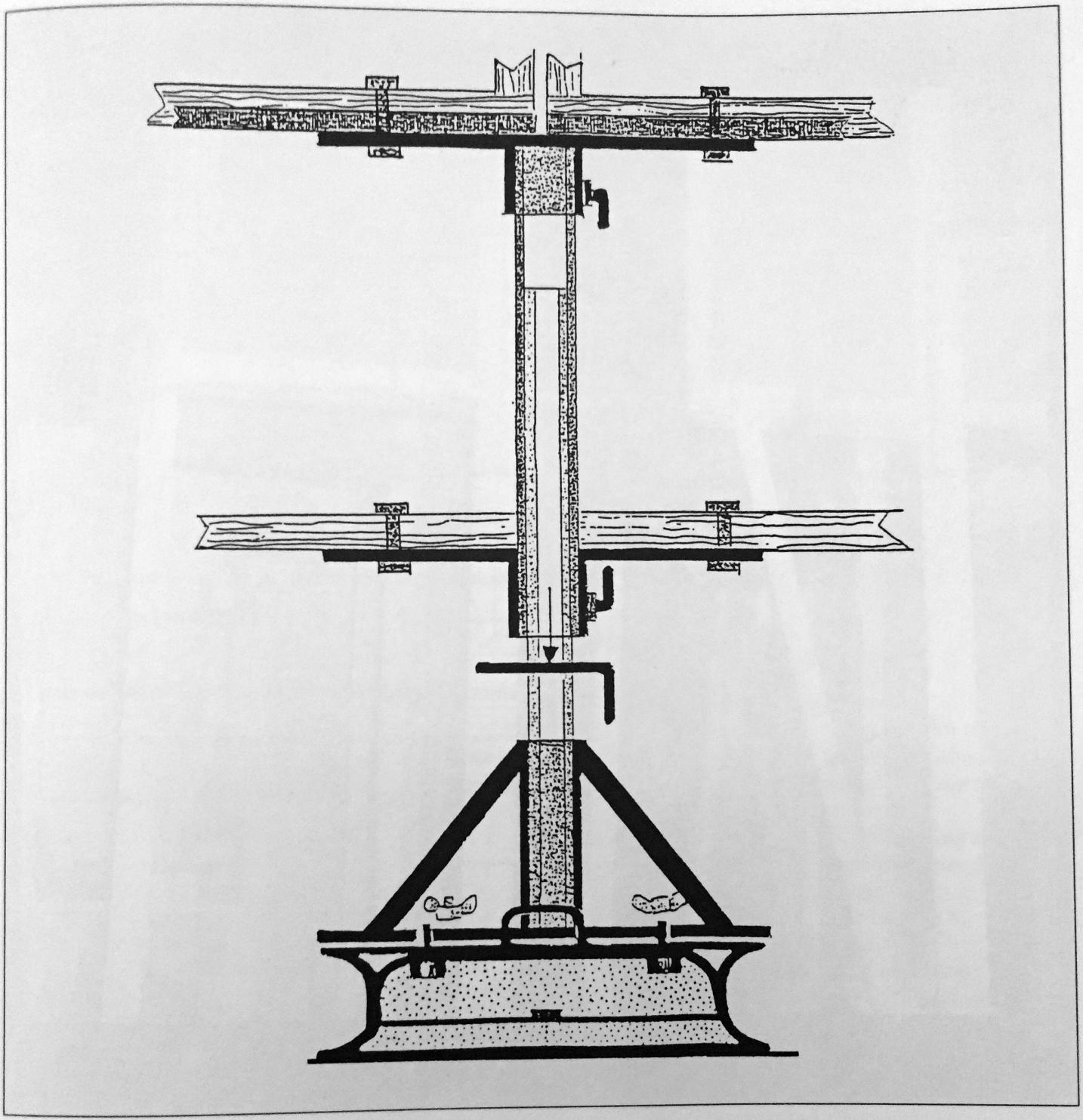


Above and opposite: Revolving set for second version of *Ladykillers*





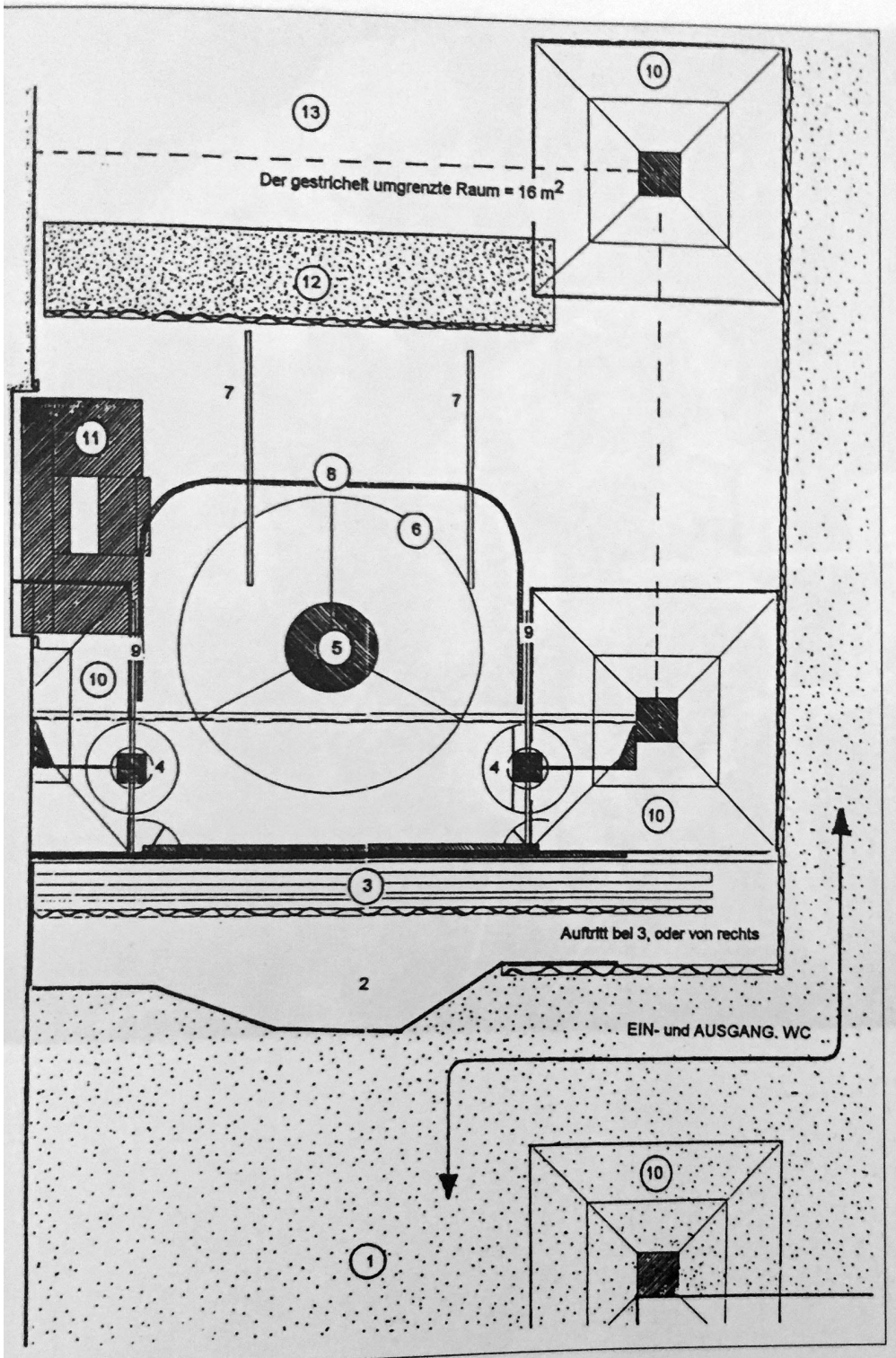
Plan and section of revolving set

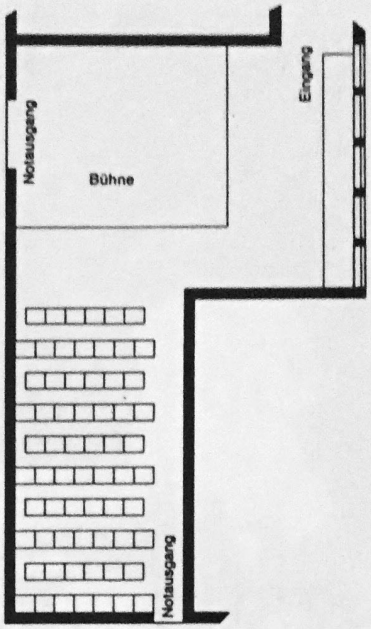


Detail showing central support of revolving set used in *Ladykillers*



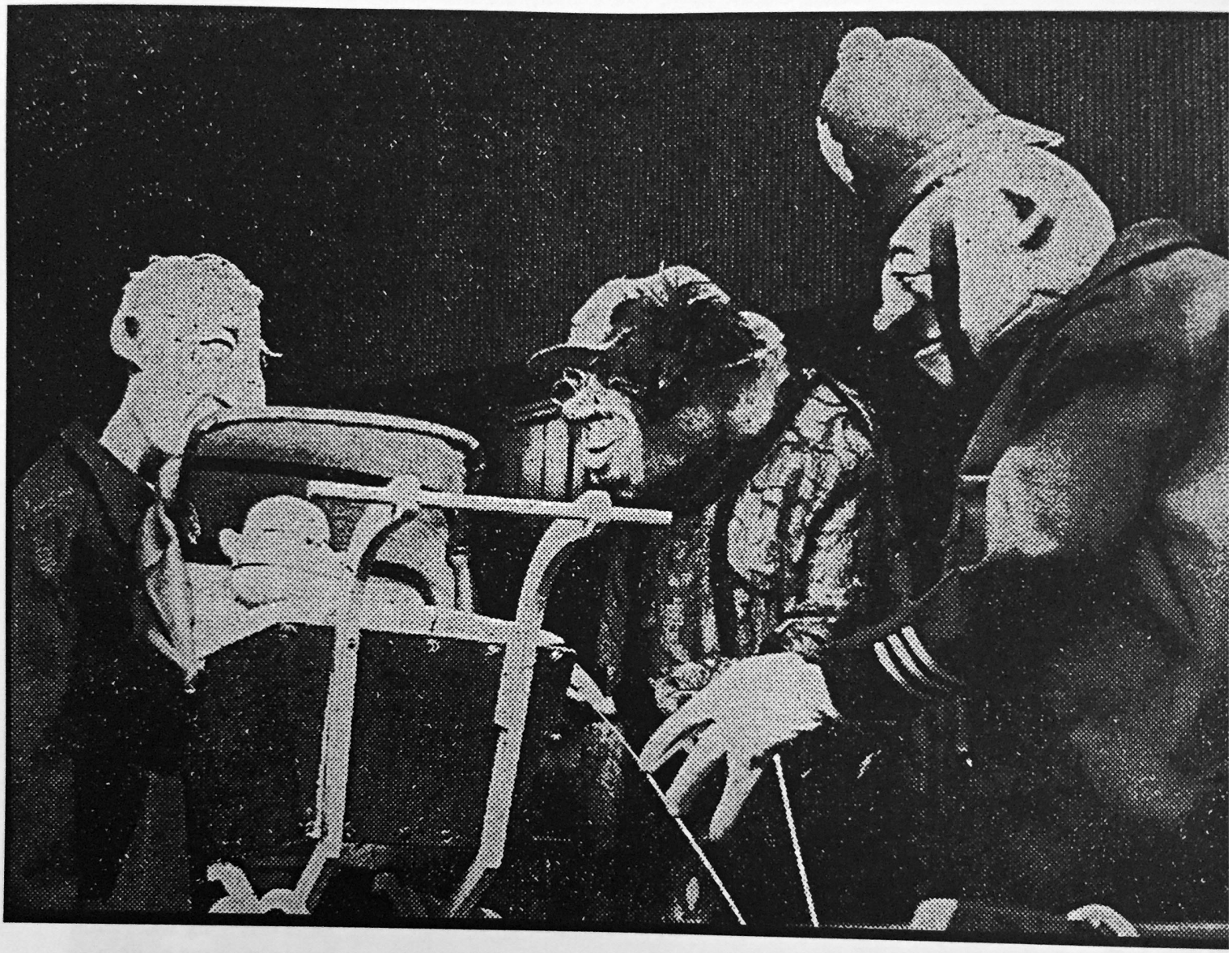
Backstage at the cellar theatre — the technician's alcove





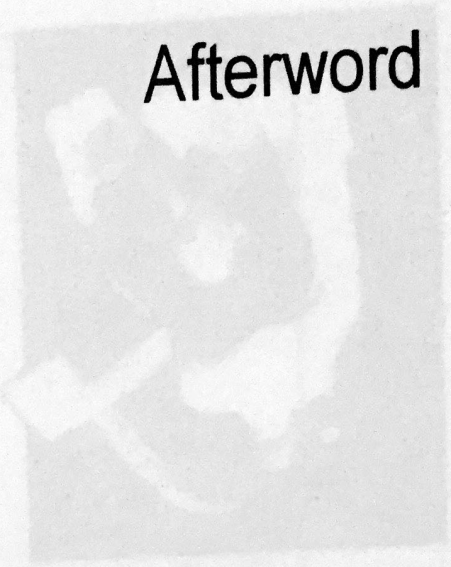
1. auditorium
2. proscenium
3. flying rig with main curtain and lighting
4. additional suspended revolves
5. large revolving stage with three projecting booms
6. radius of 5
7. rear rails for 8
8. cyclorama
9. front rails for 8
10. plinth for support rails
11. stage manager's desk
12. cupboard with curtain
13. meeting room/green room

Plan of stage and auditorium



Scene from *Ladykillers* (Photo Maucher)

Afterword





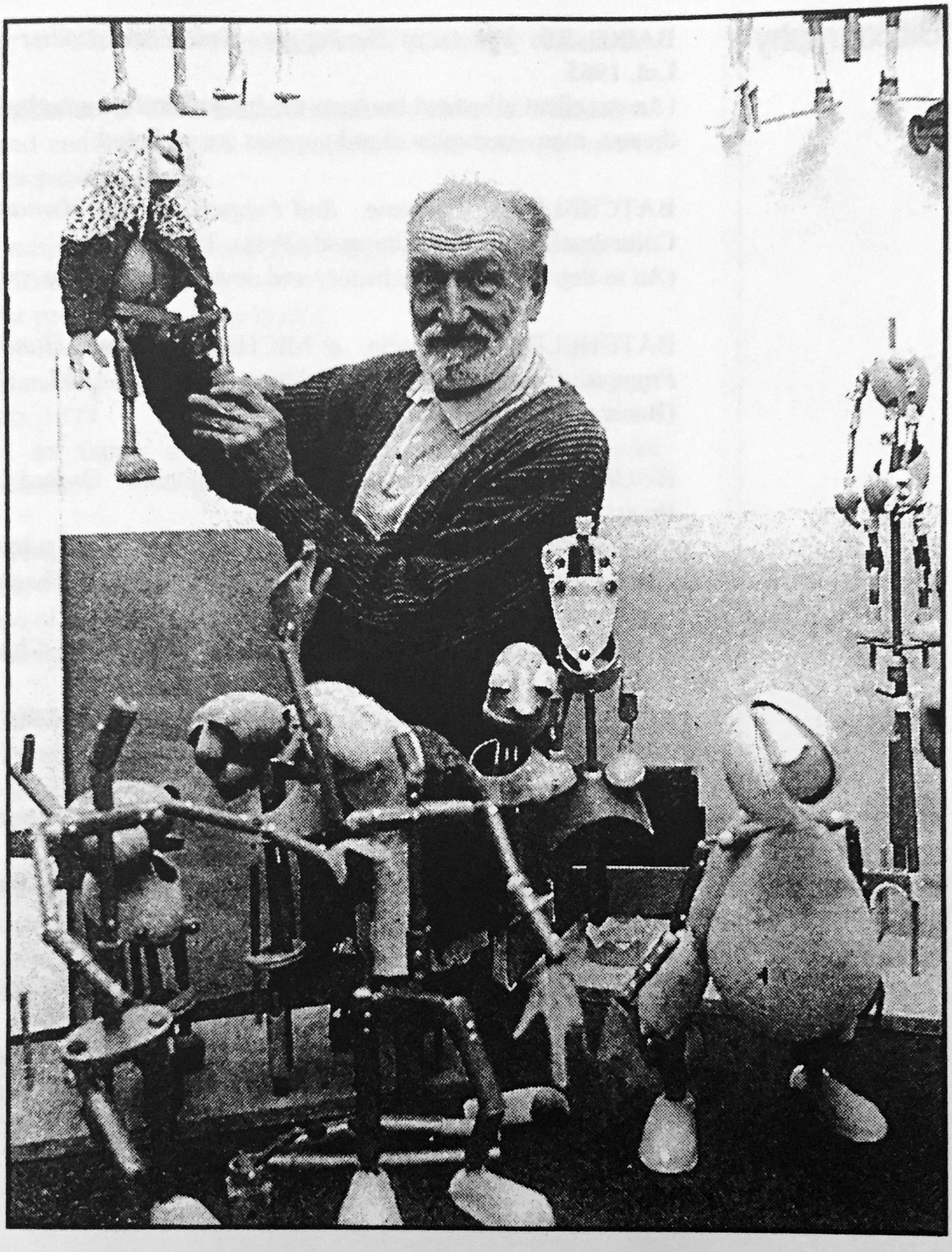
For fifty years now I have been intensively involved with all aspects of designing and making puppets. I incorporated puppetry into my work as an art teacher and thereby united my career and private interests to make a fascinating ongoing occupation. Each day has involved creative thinking, putting into practice what I observed and learned from other people, developing these ideas and occasionally discovering something quite new.

The financial security provided by my job enabled me to set up a theatre that was free from the constraints of financial viability, where I could experiment and take the time to create work that fulfilled my most important goal: to show how puppet theatre can make critical and unsentimental adults forget where they are and, for the duration of the play, perceive things as naturally and innocently as children.

Writing and drawing this book over the years has been a meaningful way of spending my spare time (the little I had!) and I would like to thank all those who have helped and supported me, as well as those who have permitted me to include their knowledge and experience in these pages.

Vaclav Hávlík, who has always been a great inspiration to me, once wrote 'One shouldn't regard technical articles of this kind as infallible recipes but as interesting suggestions'. I would like to echo this sentiment, and hope that this book will not only help solve any technical problems you may have but will serve as an inspiration to experiment and find some solutions of your own.

Hansjürg Fehr



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(A collection of diagrams of many types of rod puppet staging used by the Obraztsov Theatre.)

PURSCHKE, Hans R. *The Puppet Theatre in Germany*. Trans. W Mass. Därmstadt: Neue Damstädter Verlagsanstalt, 1957.
(Mainly photographs of puppets; several of the work of puppeteers mentioned in this book)

PURSCHKE, Hans R. *The Puppet Theatre in Germany Today.* Trans. P Crampton. Cologne: Inter Nationes, 1979.
(Similar to above, with another selection of photographs.)

PURSCHKE, Hans R. *Perlicko Perlacko.* Frankfurt/M: Privately circulated, 1950-1985.
(Home-produced magazine containing wide range of information, which provided inspiration for puppeteers worldwide.)

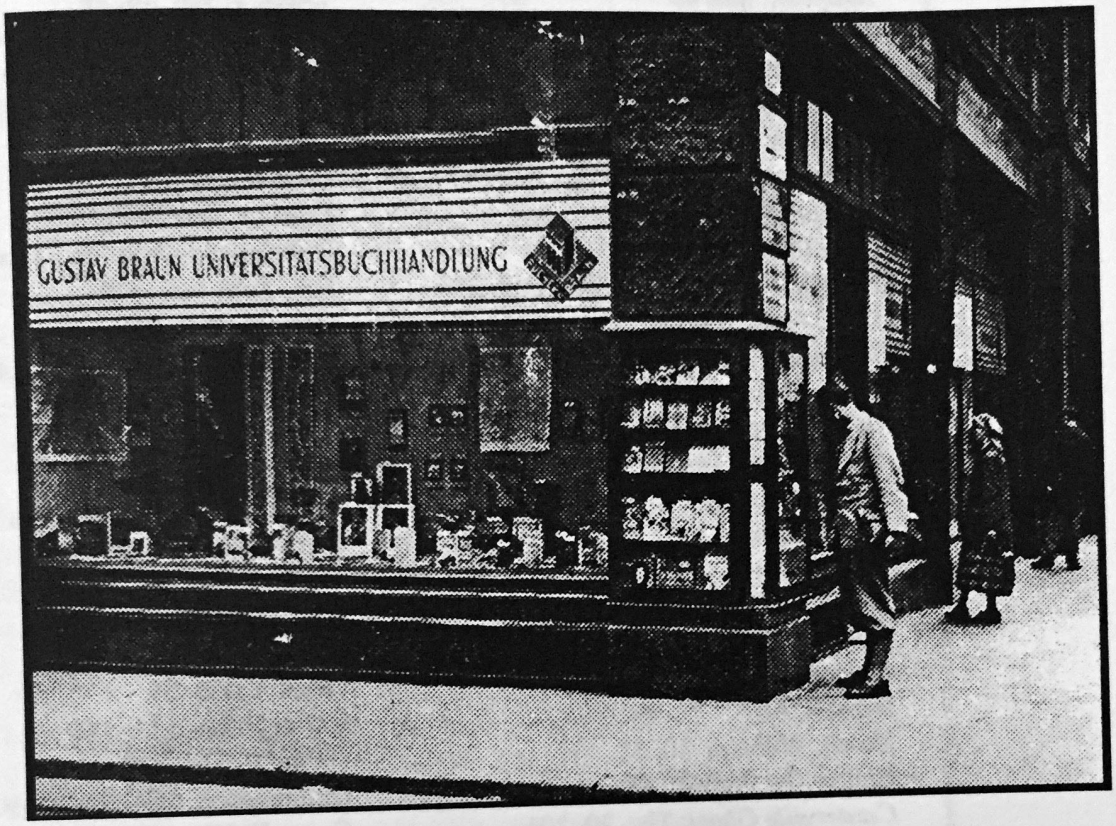
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(A well-illustrated life and works of surrealist rod puppeteer.)

SOLOMONIK, Inna. *The Oriental Roots of Soviet Rod Puppets.* Contemporary Theatre Review, Vol 1. Reading, UK: Harwood 1992.
(Research paper on historical development of Russian rod figures.)

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(A collection of diagrams showing many techniques with various types of puppets including rod and table-top figures.)

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(An extension to the above.)

WEISSENBOCK, Jarmilla. *Der Figurenspiegel: Richard Teschner.* Vienna: Böhlau Verlag, 1991.
(A well-illustrated account of legendary rod puppet pioneer.)



Braun's Book Shop in Heidelberg — a fond memory (see page 26)

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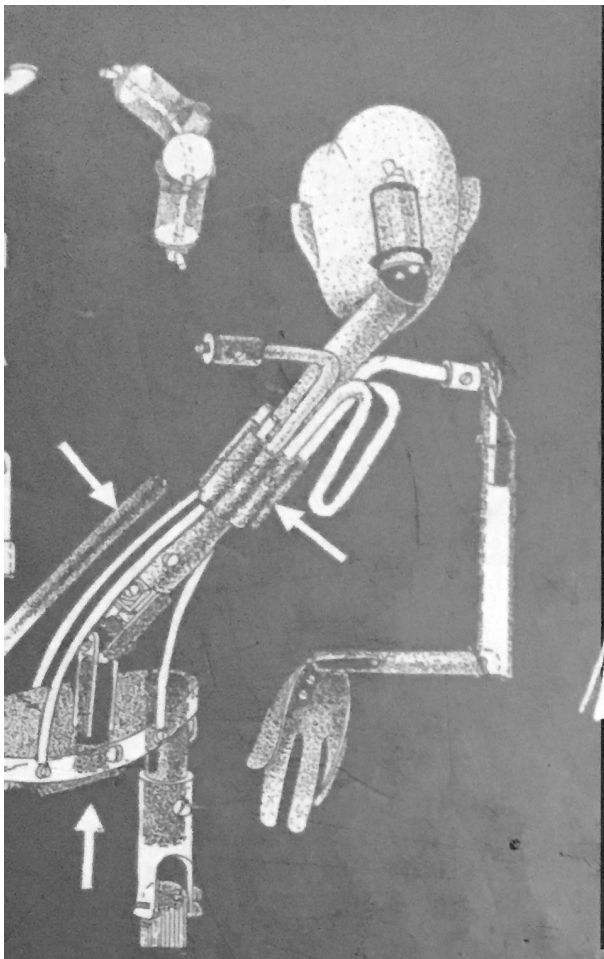
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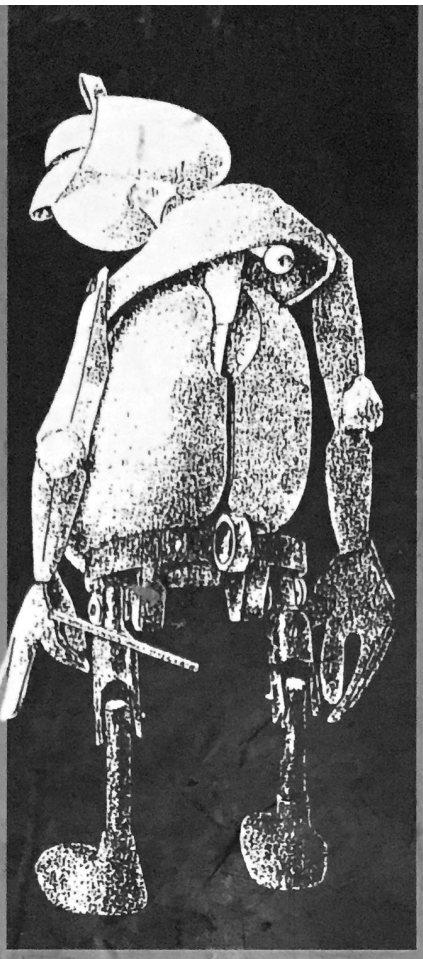
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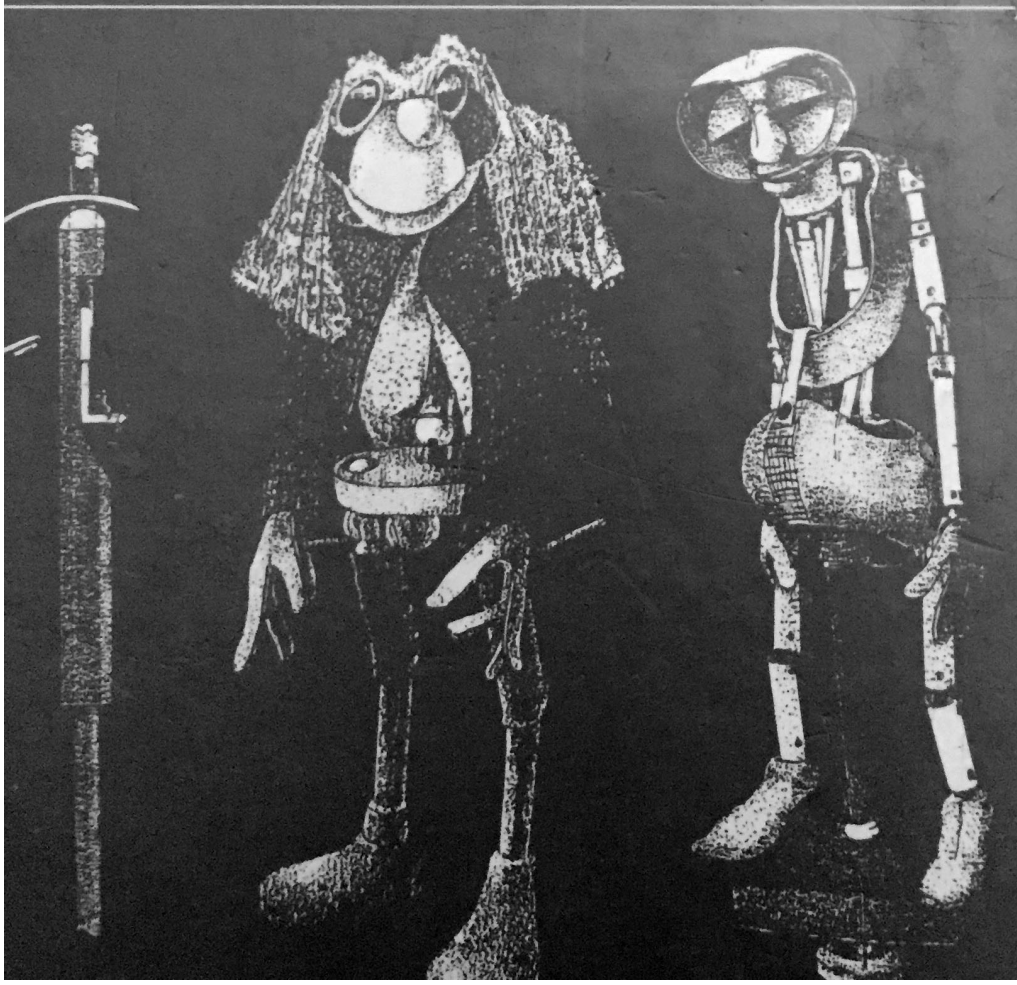


Tailpiece: Visitors to the author's Stuttgart theatre. Left to right: Hansjürgen Fettig, Dr Hans R Purschke, Leo Uttenrodt (with puppet) and Mrs Oehmichen of the Augsburg Puppet Theatre.





l Puppets & Table-Top Puppets



HANSJÜRGEN FETTIG

Hansjürgen Fettig's two previous books, long out of print, are sought after by puppeteers worldwide. In this new comprehensive work, translated by Rene Baker, the author describes his lifelong passionate involvement with the design and construction of puppets.

The revised text and layout of the English edition sharpens the focus on Fettig's personal innovations and brings together the best material from his other books plus his many new ideas for rod puppets and table-top figures. The technical information is clearly illustrated by detailed drawings to make an invaluable and enjoyable sourcebook for creative solutions and inspiration.

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