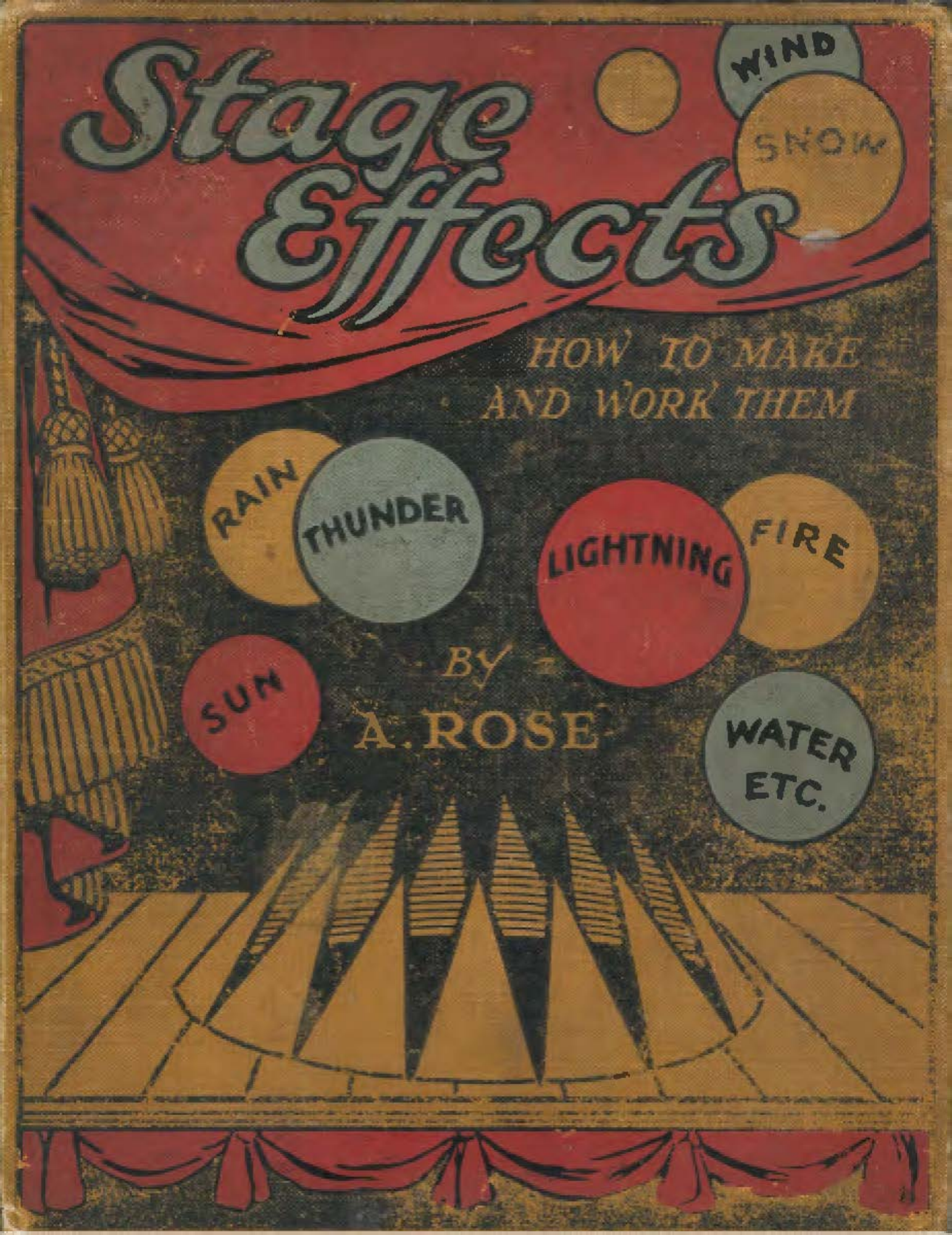
Stage Effects
WIND
SNOW
HOW TO MAKE AND WORK THEM
RAIN
THUNDER
LIGHTNING
FIRE
SUN
WATER ETC.
BY
A. ROSE

STAGE EFFECTS

How to Make and Work Them

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A. ROSE

ILLUSTRATED BY THE AUTHOR

LONDON
GEORGE ROUTLEDGE & SONS, LTD.
NEW YORK : E. P. DUTTON & CO.
TORONTO : THE MUSSON BOOK CO. LTD.

Printed in Great Britain by
MACRAYS LTD., CRATHAM

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INTRODUCTION

THIS book is compiled especially for the amateur stage manager or producer; it gives all the necessary secrets and methods employed for producing a great variety of effects, which are very important for many plays which depend largely on sound and light to carry them through with éclat. Some of the most common effects being thunder, lightning, rain, etc., the author has endeavoured to make this book as complete as possible, so that the merest tyro may make and work the effects with success, although certain effects are worked at the professional theatre with heavy and complicated paraphernalia. The amateur stage manager may get some of the same effects by much simpler apparatus, but, wherever advisable, the professional method is given because it is wise for the amateur to know the means employed at the theatres, for it may guide and help him to work out some scheme to get much the same effect by a more simple method, besides making the work interesting to the ingenious amateur property man, or those who are responsible for a terrific thunderstorm, a bright moonlight night, or a brilliant and sunny day.

It will be noted that in some instances the same effect can be produced by various kinds of apparatus, from the simple to the more complicated piece of mechanism, but it must be remembered that, whatever means are employed, it is of the utmost importance to practise and rehearse the effect over and over again, until the desired result is

obtained, and that it may be relied on for the scene in which the effect has to take place.

Of course, it is obvious that, whatever the effect is, it must represent Nature as near as possible; for example, in producing the sound of wind, it would be absurd to set up a continual whirr without a break, like a knife-grinder at work, because often in Nature's most violent wind-storms there is now and again a few seconds' lull—that is, the wind is heard roaring along at great speed, but now and again there is an interval almost of silence. Then the wind is again heard travelling on its boisterous career. So, practising with the selected piece of apparatus will bring back to the memory of the operator sounds that he has heard on stormy and gusty occasions.

The foregoing hints apply not only to sound, but to all other effects, as light, etc.; for it would be ludicrous in the case of the rising sun to work it so quickly that it would have the effect of a sky-rocket being fired into the clouds, or to work a waterfall too rapidly, or so slowly that the water would seem to be scarcely moving at all. Stage effects are of the greatest importance whenever employed, no matter how small the intended illusion may be; otherwise the intended effect may appear ridiculous, and what should create a serious item may bring forth a general titter from the audience—which would spoil the whole scene, even the clever acting being marred by it. The writer remembers a scene, in which one of the characters had to smash a window pane (an imitation one), which, of course, made little or no noise. The property man who should have given the effect of breaking and fall of the glass, was evidently not ready at the critical moment, but provided the sound of breaking glass when it was too late, many seconds after the actor had smashed the window,

so that a serious situation was turned into a mirth-provoking one. Of course, this was the combined fault of the stage manager and the person told off to give the effect.

It may be noticed that some of the diagrams illustrating this book are in parts a little bit out of perspective ; this has been done purposely, so as to make the details more easily understood.

Mistakes will sometimes happen in the best-regulated schemes, as the following little story proves. Some years ago a certain stage manager, rehearsing a new drama, arrived at the scene wherein a terrific thunderstorm was to take place. Shouting to the property man to be ready, the manager gave the cue for the storm to commence ; then there was rumbling and terrific crashes of thunder, then a lull in the storm. The manager in a great rage called for the property man ; that worthy appearing, the manager said : " What do you mean by representing thunder like that ? Not a bit like the real thing ; you must do better than that ; go and try again, and give us something more natural." To which the property man replied : " I haven't started yet, sir, as I thought you would not hear my effect, there being a real thunderstorm going on outside."

STAGE EFFECTS

THUNDER

THE writer was once attending a little party of young people, who were about to give a fairy play in their Theatre Royal back drawing-room, and just before the performance commenced one of the performers remembered that, in one of the scenes, thunder was to play a prominent part. There was great consternation. "Where's the thunder?" "We must have thunder," "What shall we do?" "How do you make thunder?" Happening to overhear the above remarks, I told them that I would find some thunder for them, if they would allow me to come behind the scenes and work it for them, to which the company gladly assented. Then, finding my way into the kitchen, I detached a large piece of enamelled tin from the wall, which did duty as a splash screen behind the gas stove. The size was about 26 in. × 20 in. When the thunder cue was given some very choice and noisy imitation thunder was obtained by shaking the sheet of tin in a somewhat trembling fashion. The above worked all right for the occasion, but sounded a bit tinny; but a much larger piece of thin sheet iron will give a much better effect and sound nearer to Nature. In some theatres a very large sheet of iron is suspended from some convenient beam, first having two holes bored at one end of the sheet, through which ropes or stout wires are passed, and

by which it is hung, the manipulator holding the lower end of the sheet of iron and shaking it to bring forth tumbling and thunderous sounds. Another method is for one or more assistants to push a rumble or thunder cart about (*see* FIG. 1). This cart is so loaded that the men controlling it can just move the cart about behind the scenes. It will be understood that the thunder cart is a most effective piece of apparatus. The secret lies in the

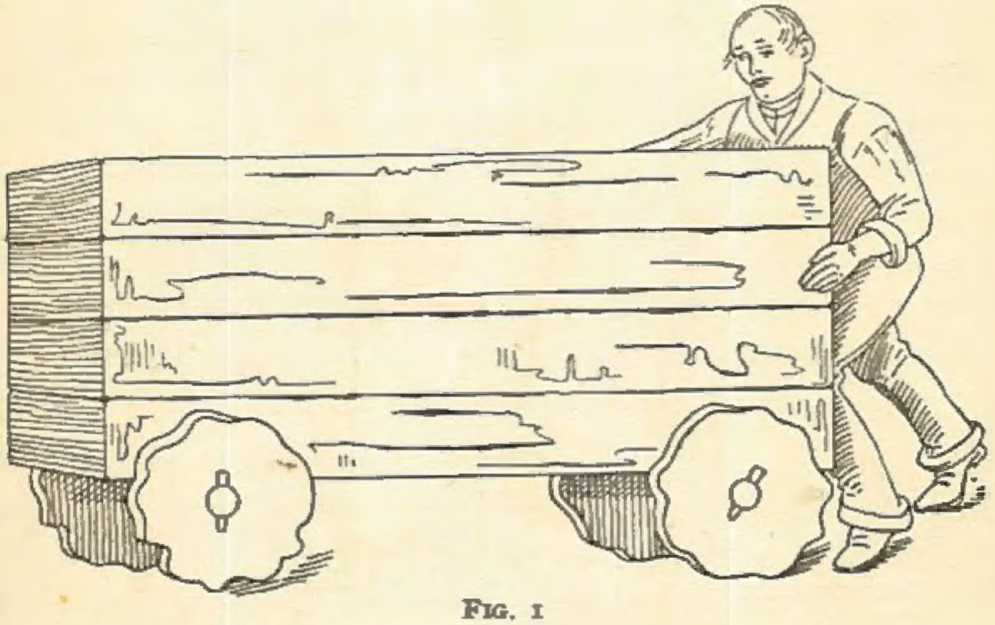

FIG. 1

eccentric cam-shaped wheels. FIG. 2 shows another theatre scheme for thunder, generally named the rabbit-hutch, which is placed upon a table, bench, or other convenient resting place. A is the hutch, made up as a stout wooden box with one or more compartments in it and doors to open outwards, each door being kept in its place by the aid of a couple of hinges. Several cannon-balls, made of wood or iron, are placed in each compartment, the doors being then closed and securely fastened by a simple button at B. The floor of each compartment

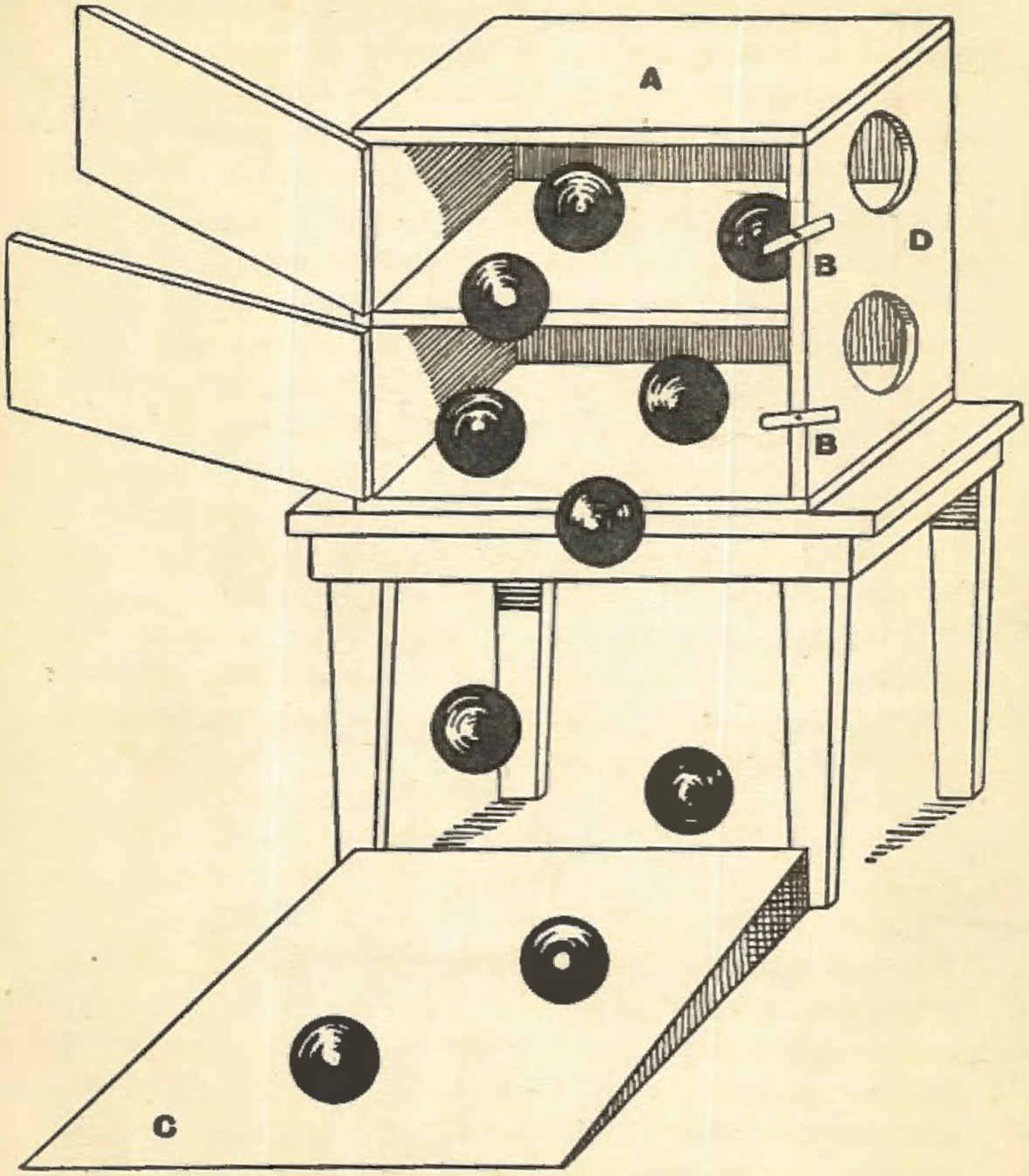

FIG. 2

is slightly raised at the back so as to form an incline, which induces the cannon-balls to escape from the hutch and fall with a thud on to the inclined platform C, then rumbling off and along the stage, where they are gathered up and returned to the hutch through the opening at the side D, the doors having been previously closed. Then it is ready to play its part again. Drums occasionally are brought into use for producing thunder sounds, the big drum being the one to extract booming thunder from. Sometimes a large wooden box frame is employed, over which is tightly stretched a calf- or sheep-skin. It is fixed to the wooden frame with short flat-headed nails, while the skin is moist and supple; when dry, it becomes flat and taut, and is ready to be performed upon with a stick, one end of which is bound round tightly with rag to about the size of an orange; then cover with a piece of soft leather, finishing with several coils of string, in imitation of a big drum stick. So, with any or a combination of the foregoing apparatus a very good imitation of thunder may be produced.

WIND

THE sound of wind is produced by more or less complicated apparatus, depending greatly on the size of the stage and auditorium. FIG. 3 shows a simple piece of apparatus to produce the sound of wind, from a low, moaning sound to a whizzing scream. This piece of simple apparatus is built up by fixing three pieces of board together by the aid of glue, and three screws at either end. A is the foundation or support for the end pieces B. These having been glued and securely screwed to the foundation board, a length of

silk ribbon (not satin), 4 in. or more in width, is stretched tightly from B to B, and secured by drawing-pins or tacks. Next, a piece of wood, C, will be required, about 9 in. in length, 3 in. wide, and a quarter of an inch in thickness. Then finish by carefully smoothing the lower edge by the use of medium-grained glass-paper. Now try the effect by drawing the board C more or less rapidly along the silk. The length of the silk may be from 24 to 30 inches.

FIG. 4 shows a wind machine, as used in many theatres, its height increasing from three feet to greater dimensions according to the size of the building in which it is used.

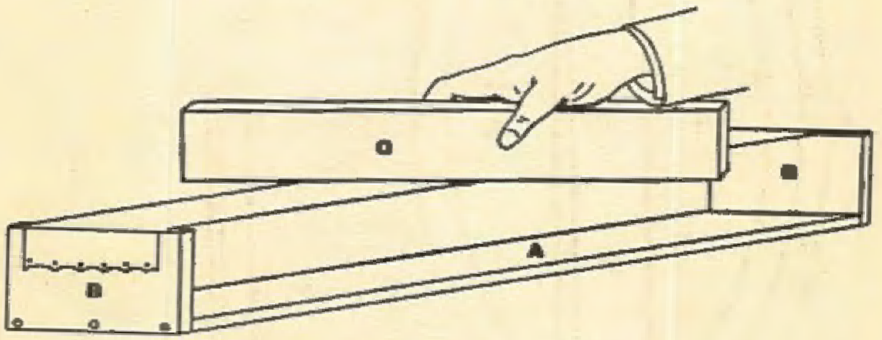

FIG. 3

It is built up in the form of a paddle-wheel; first a wooden cylinder or barrel is made, in the ends of which are fixed two narrow boards, A; through these, and firmly fixed to them, is passed a wooden rod, which rests in an aperture made in the upright supports B; fixed to the wooden rod at one end is a handle, by means of which the cylinder is made to revolve. Around the cylinder at regular intervals are wooden laths, shaped as shown in the diagram, and extending from one side of the cylinder to the other. These laths are kept firmly in position by the aid of glue and screws. C is a piece of silk, about 24 in. in width, which passes round the wheel, the ends meeting on the

vertical support D, where they are secured by small nails. Sometimes, instead of silk, canvas or cloth is used, or several lengths of thread blind-cord, according to the tone of wind required; the thickness and quality of the cord depends on the depth of tone wanted. The strings are to be kept firmly in their places by

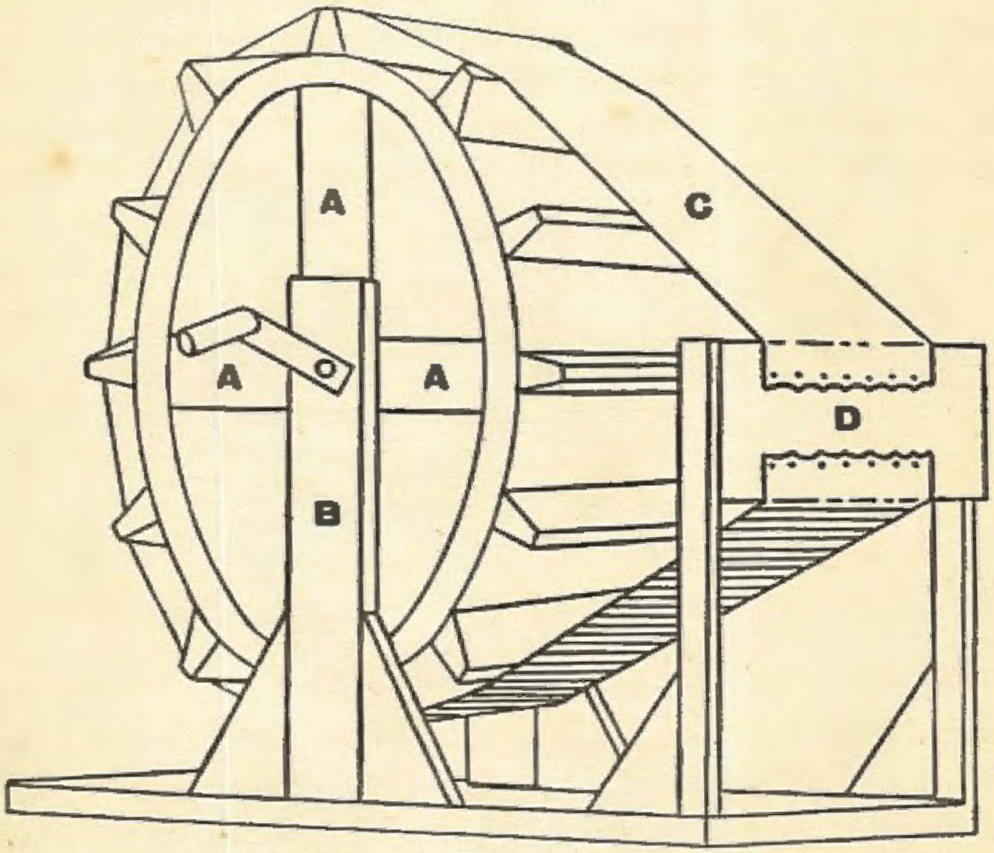

FIG. 4

small French nails driven into the vertical board D. To help the illusion of a gusty wind being in progress, a signboard (FIG. 5), suspended on the front of a village inn, will greatly add to the general effect by swinging to the right and left. This is accomplished by fixing a stout black thread, A, to the sign, the thread being carried off beyond the side wings, where it is manipulated by the

stage manager or property man. At the same time a rusty creaking noise must accompany the movement of the sign, done by rubbing two files together, or two rusty iron rods scraped over each other. The wooden rod (supposed to be iron) is carried through the front of the scene at the dotted line, behind which the rod may be firmly secured to the top of a pair of steps by the aid of two screws or a pair of gimlets. The whole sign should be as light as possible, the sign being made of stout straw-board or three-ply board, the ornamental "iron" work

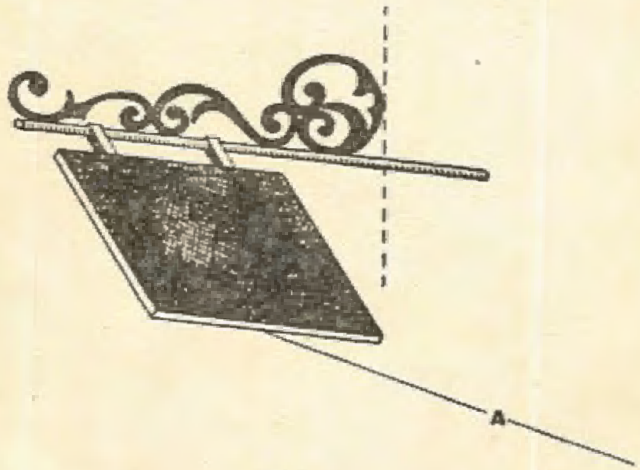

FIG. 5

along the rod being composed of cardboard. FIG. 6 shows a very effective arrangement for stage wind. The heroine, who is driven forth into the pitiless storm, appears on the stage with her clothes being blown about in all directions. The wind howls, the rain is heard beating down, or snow is seen falling. The illustration shows how the lady's costume is apparently blown about. Well managed, the effect is very illusive, but the method simple. The actress has attached to various parts of her costume strong black threads where the costume is to flutter about. The other ends of the threads are tied to

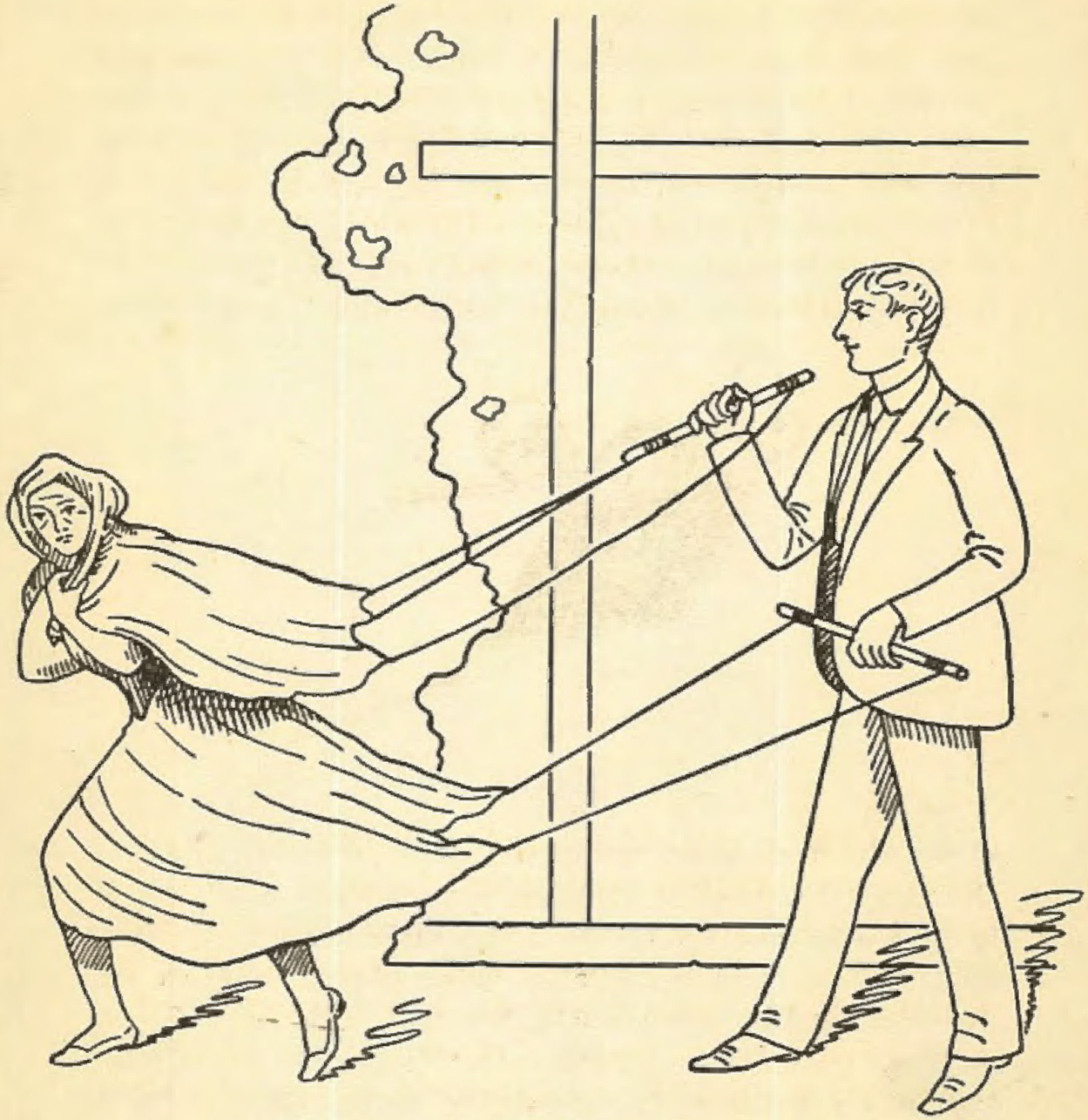

FIG. 6

thin wooden rods, then wound round the rods. The length of the threads must allow the actress to cross the stage and disappear into the side wings. The assistant who manipulates the threads holds a rod in each hand, giving them a see-saw motion, raising and lowering them and now and again giving them a slight pull. The above movements and others brought about by practice will give the effect of the clothes being blown about. The actress, leaning forward as though struggling against the wind, as she walks away from the manipulator of the threads, he slowly rolls the rods in his fingers so as to lengthen the thread. The actress having finished her part in the scene, the threads may be broken at either end and drawn off the stage unnoticed.

RAIN

To give the effect of rain, a simple piece of apparatus is used (*see* FIG. 7), which is a long narrow box crossed with partitions, the latter being the same width as the box. One end of the box is loaded with dried peas, which are allowed to run down this tortuous passage. The box is reversed each time the peas fall to the bottom, so as to produce the effect of a continual downpour. Inclining this instrument at various angles, a noise is produced that sounds like the patter of a heavy fall of rain or hailstones, according to the angle in which the box is held. So the patter becomes softer or louder. There is no regulation size for the above rain box, but one less than 24 inches in length would entail too

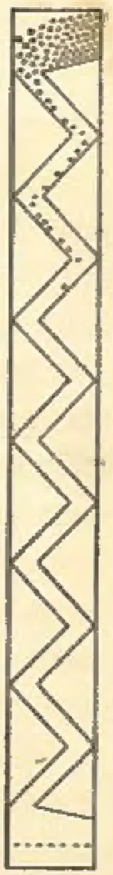

FIG. 7

frequent reversing, and perhaps break the continuity of sound. A box about 24 to 30 inches in length may be about 6 in. wide and 8 in. deep, the depth being the view shown in the diagram. It may be made of wood, a quarter of an inch thick, tin, and even cardboard—of course, the tin gives off a sharper and more rattling sound. A tight-fitting lid at one end, as shown by the dotted lines at A, will be necessary to prevent the peas escaping.

Instead of the above instrument a simple plan is to procure a lid from a large cardboard box, put a handful of small shot in the lid, then move the lid about, so as to keep the shot moving in a circle.

CRASHES

CRASH is a sound that accompanies many incidents, such as a house collapsing, a tree uprooted by a storm, breaking a door open, a tile slipping off the roof, etc., each giving off its intensity of crashing noise. FIG. 8 shows a simple and easily made piece of apparatus consisting of three pieces of wood, two pliable laths about 24 inches long, 3 inches wide, and a quarter of an inch in thickness, with a handle firmly screwed in between the laths. This is a comic pantomime wand to give a crashing blow on the body of an opponent, but it will be found useful where one or more distinct crashes are wanted, as breaking open a door, or a carriage meeting with an accident "off," especially when mixed up with the sound of horses' hoofs.

FIG. 9 gives a side-view of a very useful crash machine, A star-shaped wheel, A, is supported by two vertical supports, B. A pliable lath, C, is firmly screwed on to

a block, D, the whole being fixed on a baseboard, E. The handle when turned allows the lath, C, to fly to the next point of the wheel, which it meets with a crash. It is, therefore, obvious that as the wheel is turned more or less rapidly, a variety of crashing sounds may be made.

The wheel may be about 12 inches in diameter, and about

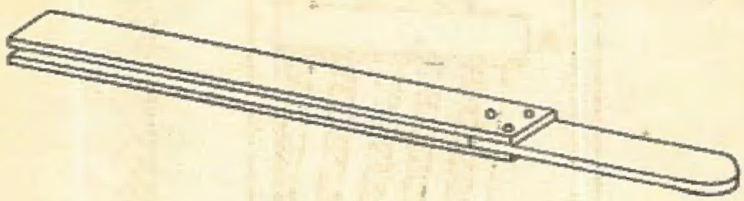

FIG. 8

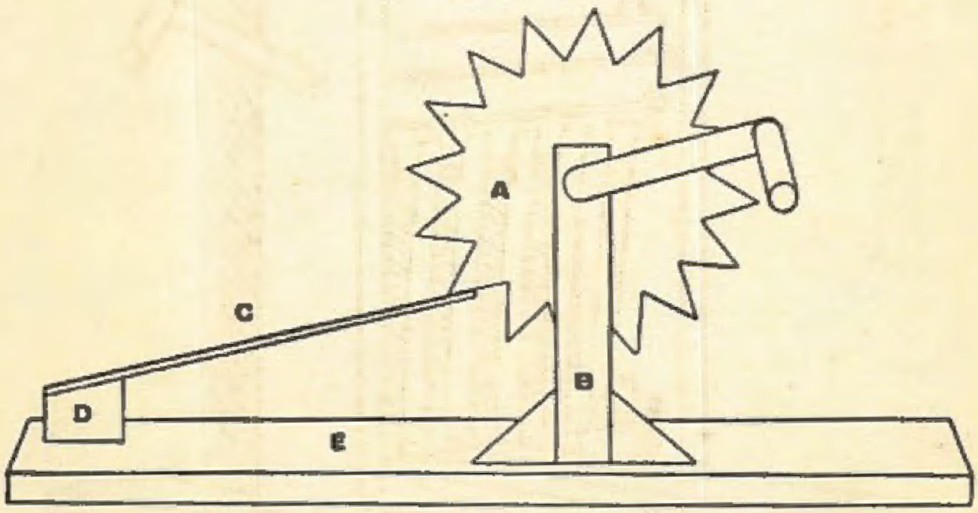

FIG. 9

2½ inches in width. It can be cut from a solid piece of wood, or made up in box form. The free part of the lath may be about 16 inches in length. The larger the machine the louder it becomes. FIG. 10 shows a different type of machine, but the principle is the same. The diagram clearly shows the construction of this type of crash machine, which is often used in the theatres, and is made

in various sizes up to 6 feet in height. A series of laths are screwed on to the horizontal battens, A. The wheel is placed in the centre of the machine. The latter when made to revolve turns the upper laths back and the lower

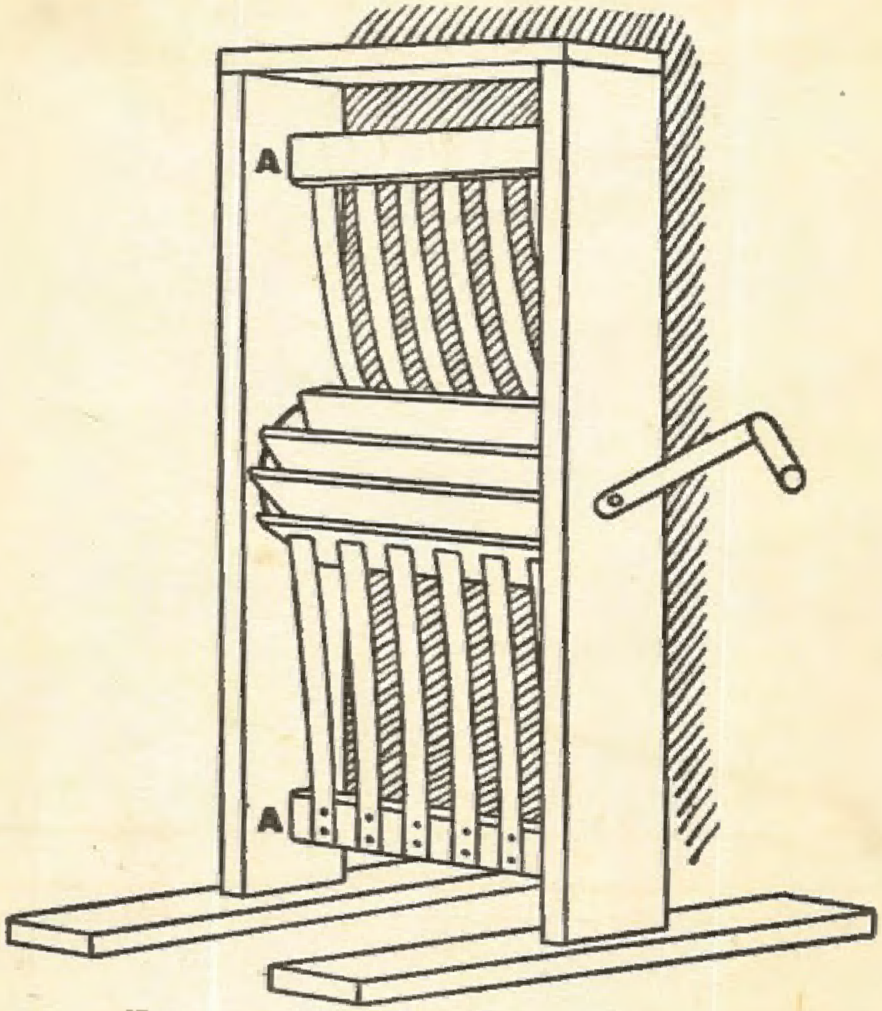

FIG. 10

laths forward. One can easily imagine the crashing effect that it gives. FIG. 11 is another theatre scheme for crashes. A number of thin boards are suspended on cords, knots being made in the cords, under each board, to keep them apart, after the fashion of the domestic Venetian blinds. The whole apparatus is hung on to a pulley block,

which is fixed into some convenient beam, the lower end of the cord A being tied round a stout hook in the wall. When all is ready for the crash the cord is untied at A, and

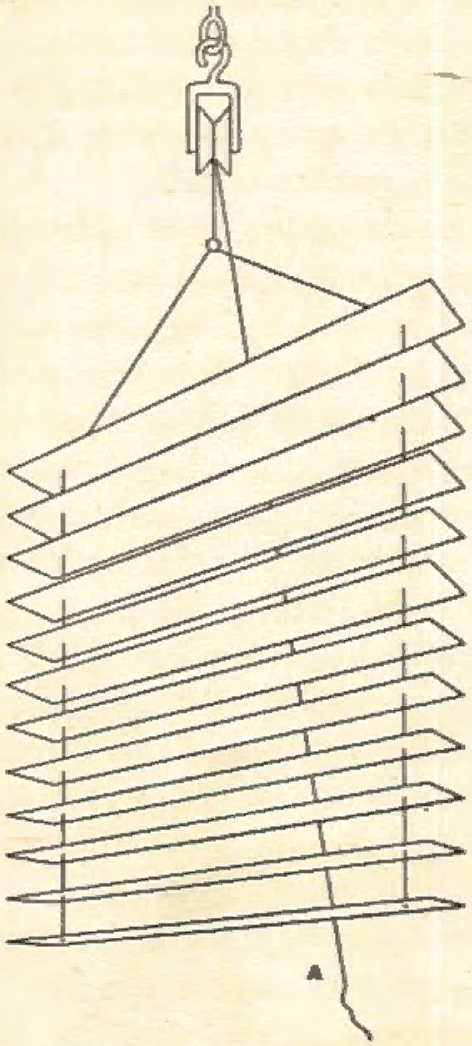

FIG. 11

let loose when the whole pile of boards fall to the floor with a rattling crash.

To imitate the sound of breaking glass and the smashing of china a series of thin iron plates is employed, each plate having a hole at one end, so that they may all be loosely tied together. When these plates are thrown to

the ground they will give the sound of the breaking of glass or chinaware. The size of the iron plates may be about 6 in. by 2 in., and 1-8th of an inch in thickness, but the dimensions of the plates largely depend on the volume of sound required. The above effects may also be obtained by having a quantity of broken china in a basket, then shaking the basket about or throwing it to the ground to give the sound of a sudden smash.

A snowstorm is one of the most difficult effects to produce; that is, to present it in a natural manner, so that the snowflakes fall separately, and now and again swirling round or falling in an oblique direction, as if caught by the wind. Great care must be taken in giving a snowstorm effect. Small masses of flakes clinging together and falling down in a lump upon the stage, and, in other parts of the scene, just a few single flakes fluttering down, will never do. In a snow scene more care must be taken to present it properly than almost any other effect—that is, to imitate Nature as near as possible. Where the stage has plenty of space, as in some big theatres, a snow box is used to distribute the flakes of imitation snow (*see* FIG. 12). This piece of apparatus is generally arranged on the gridiron, above the flies and high up above the scene. Thus, the flakes of snow have time to disentangle before appearing to the audience. The snow box is a light wooden construction with slits cut through on both sides. The box is loaded with snow "imitation." The assistant on the right gives a rocking motion to the box by means of the handle. This allows the snow to gradually escape through the slots. If the snowstorm is a prolonged one, a second assistant supplies more snowflakes to the box, as shown on the left. The above piece of apparatus is rather too cumbersome for amateur theatricals, so a simple

and convenient device may be employed, as shown in FIG. 13. The tray upon which the snow is loaded is a piece of stout strawboard, tacked on to a wooden handle. Next a fan is made of the same materials and shaped as A, the latter acting as a fan to send the pieces of paper snow

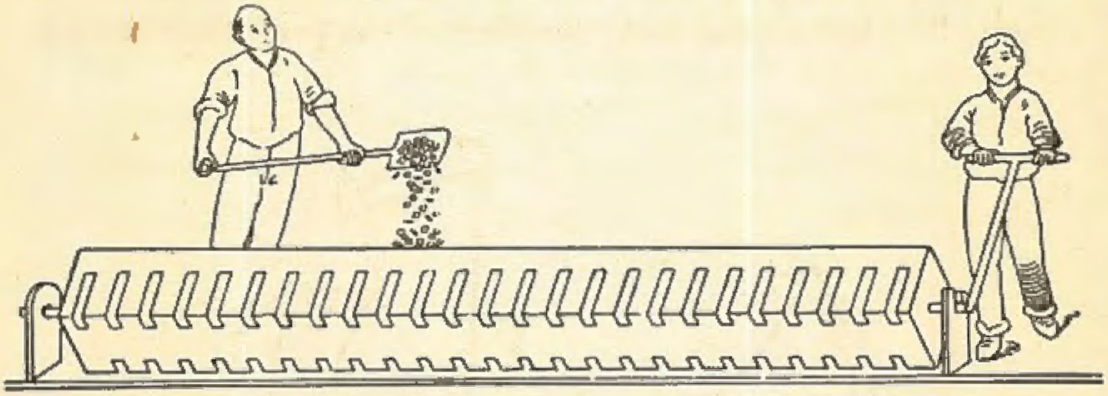

FIG. 12

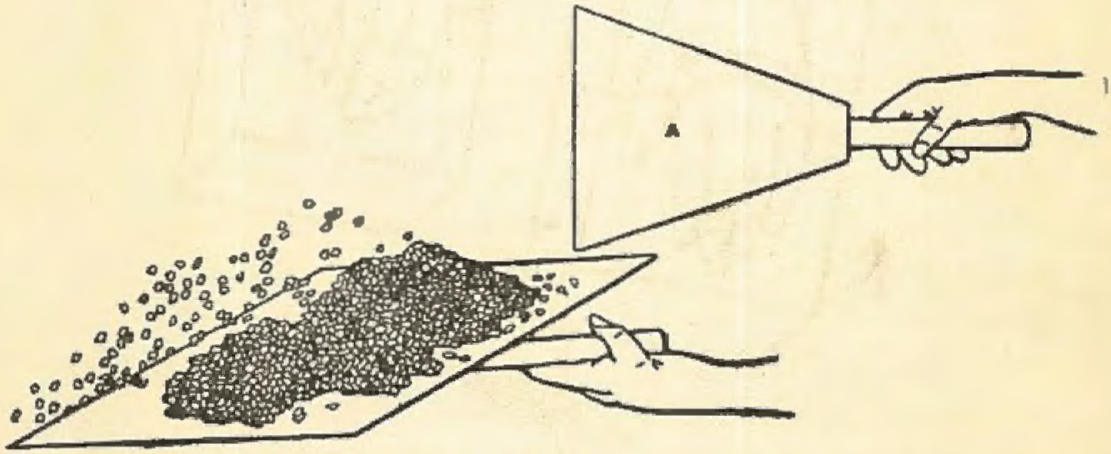

FIG. 13

in a shower upon the stage, one or more assistants being employed (according to the size of the scene), standing on steps or some convenient platform behind the scene and well above it. To add to the effect, a piece of canvas should cover the floor of the stage, the canvas being painted a light greyish white in distemper colour, wh

gives the effect of the snow covering the ground. In some theatres, where the snow scene is an important one, ordinary ground salt is laid upon the cloth on the stage to a depth of two or three inches. The performers' feet disturbing this gives a capital effect. In the case of a character emerging from the exterior to the interior of the scene, the hat, collar and shoulders of the performer should

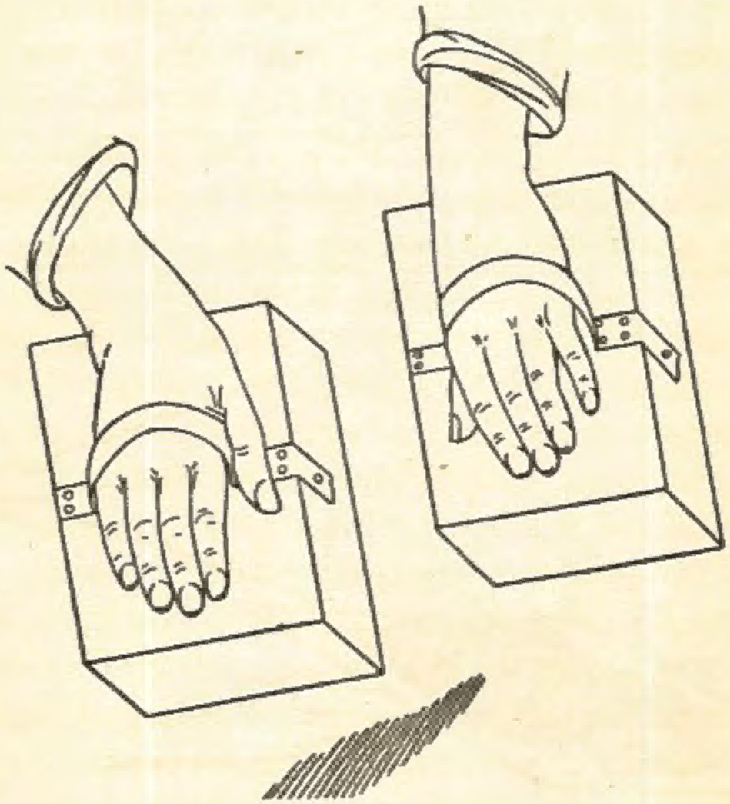

FIG. 14

be well sprinkled with salt. This can then be brushed off by the performers' hands and fall upon the stage, practically disappearing as real snow would do. No matter what quantity of snow may be required, the paper (white tissue) must not be cut into pieces, but torn up by the fingers.

FIG. 14 shows the method employed for giving the sound of horses' hoofs, walking, cantering or galloping along the

road. The apparatus is simply two wooden blocks, to which webbing or leather straps are attached with short flat-headed nails. Into these straps the manipulator's hands are thrust, by which means he is able to lift the blocks up and down, and so beat them upon the floor or a wooden table, so as to give the effect of the horse's hoofs beating upon the ground. If the animal is supposed to be driven over a gravel path, as a carriage-drive leading to the house, a shallow box filled with small pebbles and grit is used to beat the hoofs npon. Also a similar box may be used to give the sound of the carriage wheels, stirring the pebbles round with a stout stick. Two or more pairs of the above blocks may be necessary if a number of horses are to be heard off, as cavalry galloping along. It is advisable to slightly hollow out the under parts of the blocks, somewhat like the under part of horses' hoofs. A wooden handle, to which is attached a number of sledge bells by means of small screw-eyes, is a useful instrument to imitate a sledge rattling along, also to accompany the music to which a jester, or other buffoon, is dancing.

FIG. 15 is three narrow iron or steel plates, loosely screwed on to two pieces of wood, the latter being secured by the aid of screws to the base-board, A. There is no regulation size for these plates, their size largely depending on the volume of sound that they may have to give. The larger plate, B, is intended to bring forth the sound of an anvil being struck, such as the forging of horseshoes off, C and D for the striking of the town clock and the old-fashioned clocks to be found in old inns and cottages. Approximate sizes for the above plates may be, for B, fourteen inches long by three inches wide ; C, eight inches by two inches ; and D, six inches by one and a half inches. If the sound is not heard off, the plate B may be fixed on the property anvil, which is built up of wood and card-

board and struck with a real hammer, or one made of wood for lightness, one end of the hammer-head, that strikes the anvil, having a thin plate of iron screwed on to it. To imitate the striking of clocks, on the smaller plates, of course, a small hammer is used, similar to a tack hammer.

FIG. 16 shows a simple piece of apparatus for giving the whirring sound of the aeroplane: A, the base-board, to which at either end is fixed a vertical board, B, which supports the cat-gut strings, C. A toothed wheel, D, plays upon the strings. E is a wooden rod with a handle attached to its upper end at F, by which means the rod E is turned to the right or left. A series of small holes is made in the rod E, through which the ends of the cat-gut strings are passed, and then securely tied; the other ends of the strings pass through the opposite holes in B. The lower end of the rod E has a small wooden peg, which is placed into a hole in the base-board. The upper end of the rod is supported by a wooden slot H, firmly fixed to the board B with glue and screws. H is open at one end, to allow the rod E to be easily taken out. The wheel D is cut out of a solid piece of wood, about three-eighths of an inch in thickness, the teeth of the wheel being smoothly rounded off so as to prevent any damage to the cat-gut strings. The wheel is held in position by two wooden supports, which are glued and screwed to the base-board A, and made extra firm by a small angle iron screwed on to the uprights and the base-board, as shown by the solid black lines. A wooden rod is passed through the centre of the wheel, where it is to be firmly fixed by gluing the rod, the latter resting in the apertures in the uprights, where it must move freely. The rod then passes through the board B, terminating with a wooden handle, as shown. On each side of the wheel a cardboard washer, shown by the

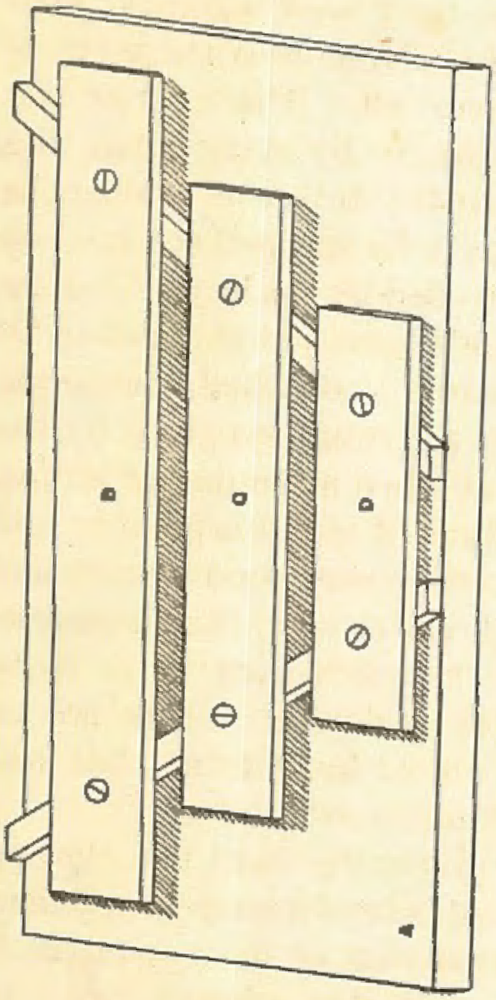

FIG. 15

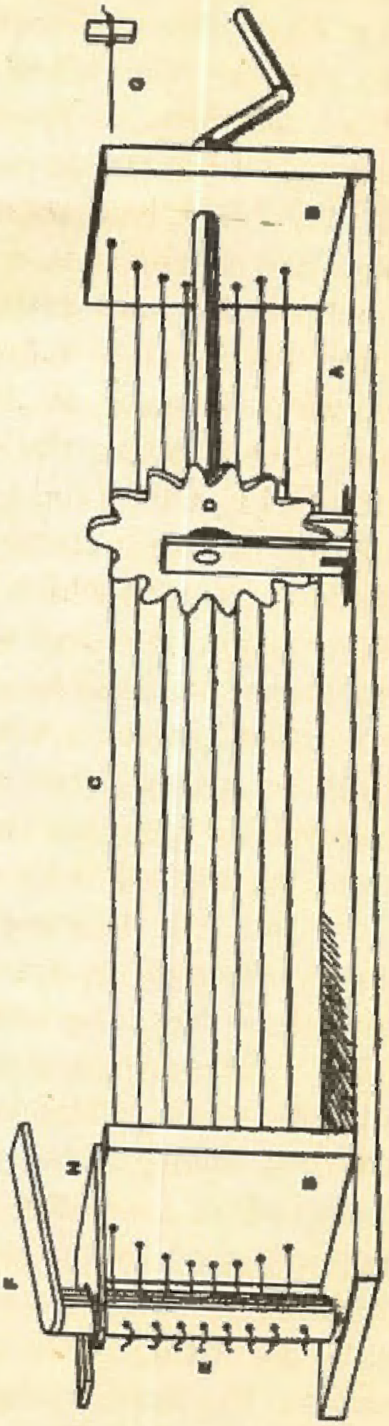

FIG. 16

black semi-circle at D, with a hole in the centre a little larger than the rod upon which it is to be put, so as to prevent the wheel from grinding up against the vertical supports. These washers, as well as all the moving parts of the apparatus, may be well black-leaded with dry black-lead to ensure their easy working. The strings are arranged in a semi-circle, so that the teeth of the wheel, D, may touch them all. The strings are secured to the right-hand board, B, by tying them to a small piece of wood, as shown at G; this rests against the board, thus allowing the strings to be strained or tuned up by the rod E, which rod is controlled by the lever F. Now if a banjo or guitar string is made loose or tightened up by turning the peg to which the string is attached, a moaning and variation of sound will be the result, as given by the propellor of an aeroplane; but when a number of strings are worked in unison, the volume of sound is greater, and may be so manipulated as to give a very good imitation of an aeroplane speeding through the clouds; this apparatus should be worked behind the first side-wing, so as to be well within the hearing of the audience. There are no definite dimensions for the above instrument, but one about three feet long will be found a useful size.

FIG. 17 is an apparatus for giving the effect of a glowing and radiant sun, which is placed behind a semi-transparent part of a scene. The principal part of the apparatus is supported on a wooden rod attached to a base-board; to the upper part of the rod is fixed a very bright and well-polished reflector, in front of which are one or more electric lights, according to the degree of brilliancy required. Also fixed to the supporting rod is the cage which casts the rays of the sun. This may be easily made by cutting a piece of cardboard or millboard as the pattern shown in

FIG. 18. The length, width, and number of divisions depend on the size of the sun to be exhibited, but this is

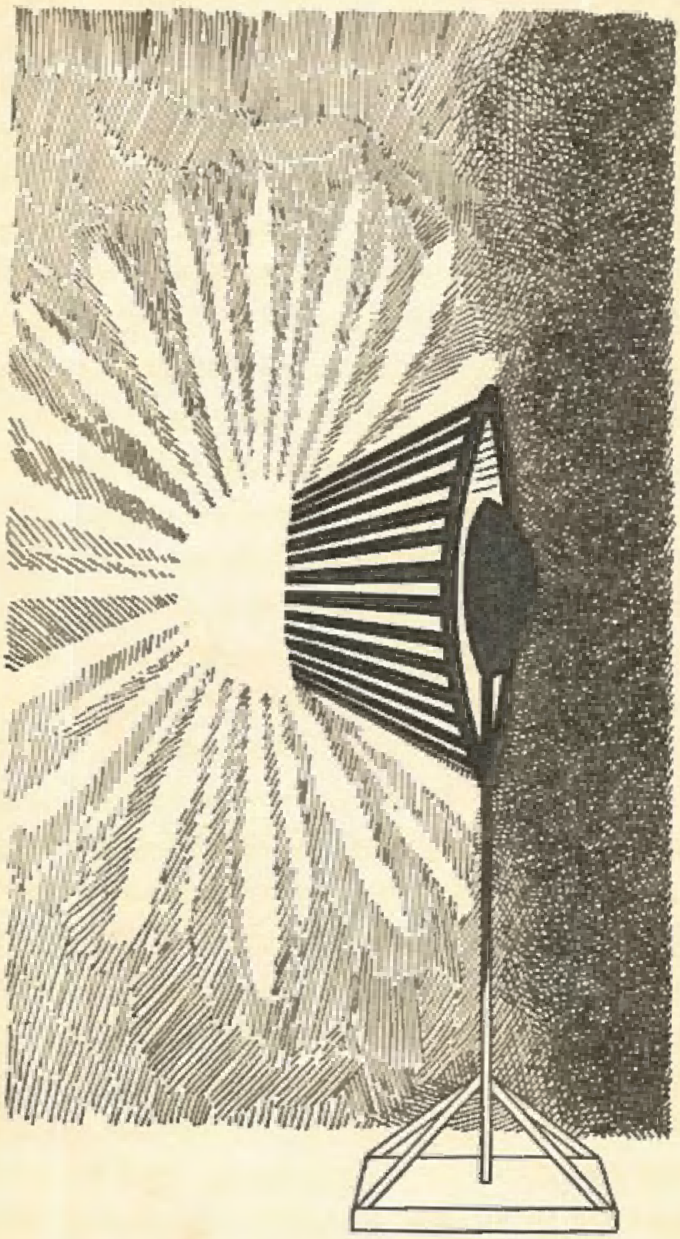

FIG. 17

easily arrived at by first cutting a pattern out from a piece of stout brown paper. When the finished article is made,

the margin A is to be bent back as shown by the dotted line, this band being fixed to a wooden hoop by the aid of tin-tacks. Those wooden hoops, which are to be obtained in various sizes at the toy shops, answer well for the purpose. The points of the cage are bent down towards each other until they form the required circumference for the sun. The points may be kept together by passing a thread round and within an inch of the points. The thread may be kept in position by a touch of glue here and there. When finished, the hoop can be screwed on to the supporting rod. Pieces of coloured gelatine may be put in front of the electric lights and reflector to give colour to the sun, as deep red, orange or yellow, the scene in front being illuminated with a warm red or orange tint.

FIG. 19 illustrates fork-lightning, from photographs taken during a storm. FIG. 20 is a simple but useful and convenient form of lightning box, which is open in front, with a groove arranged each side, so that a glass or cardboard slide may be passed into the grooves. The back of the box has a door, working on two hinges, with a small door knob fixed to the outside to allow the door to be rapidly opened and shut. To prevent any noise being made on closing the door, a narrow piece of thick felt or flannel must be glued along the edges of the box, where the door meets the box. One or more electric lights are to be in the centre of the box, either suspended or arranged upright on a block of wood ; the more powerful the light the better. To give the effect of sheet-lightning, a piece of cardboard must be cut to fit in the grooves, which are on each side of the front of box, thus shutting the light off from outside. The door at the back is then closed, the manipulator holding the box with his left hand and arm, and against his body, to steady it, holds the knob of the door in his right

hand. Standing in a convenient spot and behind the side wing, he very rapidly opens the door and closes it, lighting up the stage and scenery for an instant to give the effect of sheet lightning, which, of course, is followed a few seconds

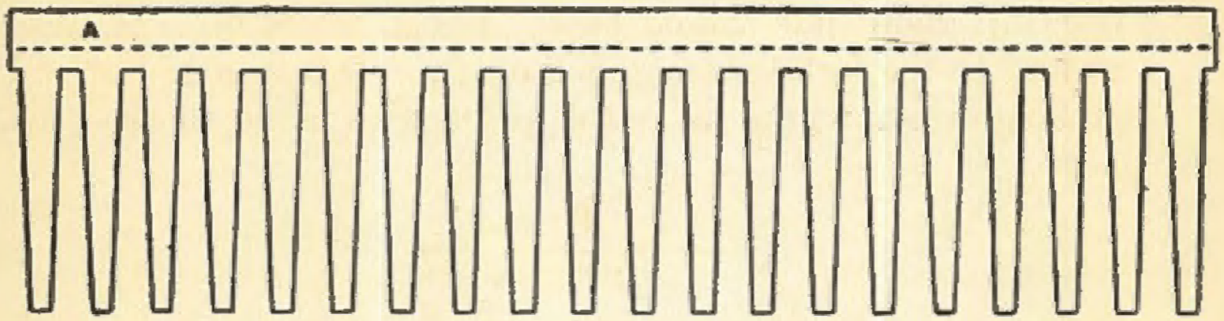

FIG. 18

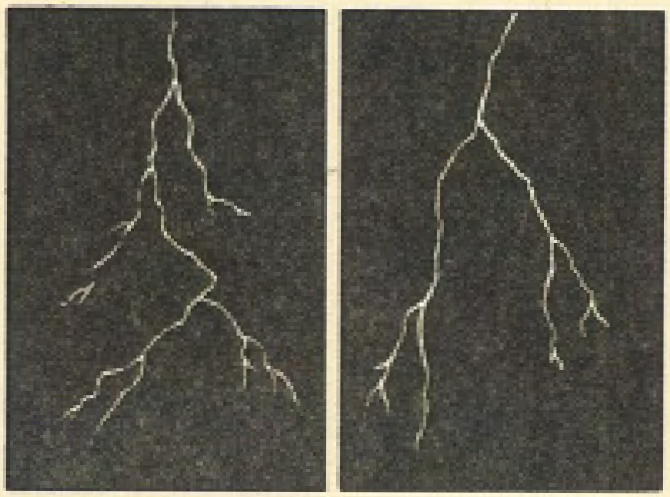

FIG. 19

after by peals of thunder. Remember, lightning first, then thunder. In the case of fork-lightning, this should always be shown in the far distance or background, and from behind the scenes, and, of course, where the fork-lightning is to appear the scene must be semi-transparent, that is,

very little colour on the front and back of the scene where the lightning is to be shown. A piece of glass that fits into the grooves of the box is to be blacked all over the surface on one side with thin oil paint, Brunswick black, or water-colour mixed with a little liquid gum. When quite dry, this glass slide should have a design made upon it, similar to the fork-lightning in FIG. 19. This is done by etching or scratching away the paint with some sharp-

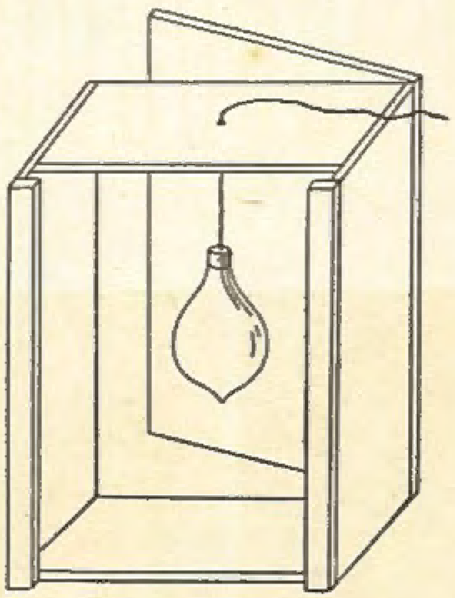

FIG. 20

pointed instrument, as the point of a pen-knife, a thick darning needle, or a sharp brad-awl. The width that the streaks of lightning are to be made depends on the size of the slide and the space to be covered on the scene, for it must be noted that this slide and box must be held very near the scene, or a blurred and unnatural effect will be the result. Cardboard slides with circular holes cut in them are passed into the grooves of the box to represent the sun and moon, the apertures being covered with pieces of red or blue gelatine. In the case of the moon appearing

to be stationary, the box may be placed upon some convenient pedestal, as a pair of steps. In the event of the sun or moon rising or setting, this is a very easy matter, as the assistant raises or lowers the box. Failing the above box, a toy magic lantern will be found useful, as shown in FIG. 21. It may have one long slide with the sun, moon, and lightning on it, or a separate slide for each subject. The lantern has one advantage over the box,

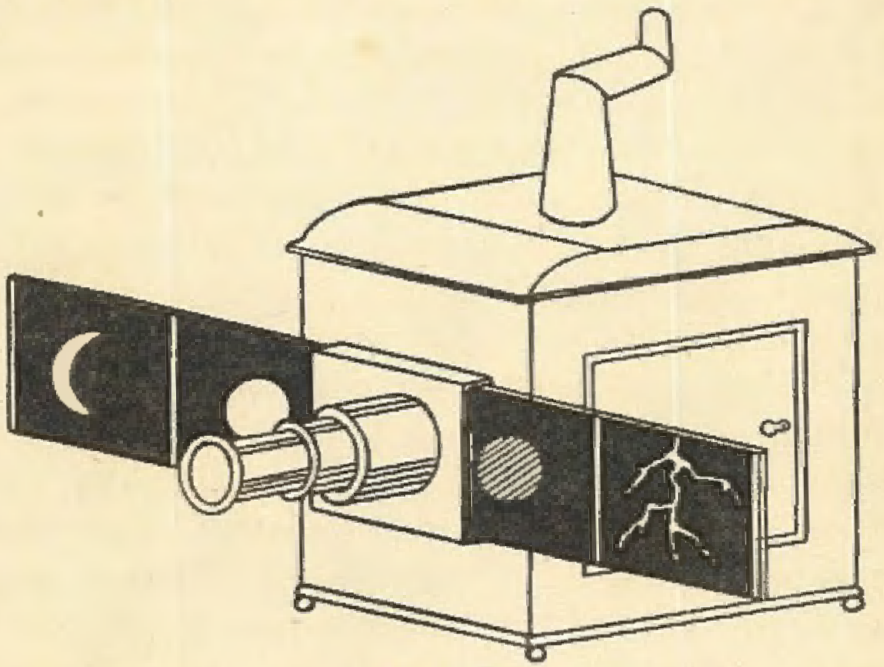

FIG. 21

and that is, owing to the lens in front, the objects may be made to appear larger without losing their sharpness. Use as powerful light as possible in box or lantern.

Among the many effects in sensational dramas, the railway train holds first place, but the property locomotive of cardboard, canvas and wood would have very little effect without its attendant noises, all of which sounds are arrived at by various methods brought about by the very clever devices invented by the theatre machinist and the

property man. First, and important, is the shrill scream of the locomotive. FIG. 22 gives details of a method by which the steam whistle may be imitated. This piece of apparatus can be easily made. Three ordinary tin whistles are connected with the wind chest, A, the latter getting its supply of wind from a pair of bellows that are worked by the manipulator's fingers. In the diagram the nearest bellow is pressed down by the left-hand fingers, then the second bellow is pressed down by the right hand, and so on alternately, thus keeping up a continual supply of wind as long as necessary. The bellows are raised about three-quarters of an inch from the base-board by resting on two lengths of wood, this allowing the air to enter the bellows from below. A stout piece of india-rubber, such as boys make a catapult with, is tied on to a screw-eye, which is fixed into one end of the bellows. The other end is attached to a screw-eye fixed in the board that supports the whistles. By this means the bellows are drawn up. There is no limit to the number of whistles that may be employed, but three will give a pretty good scream, ; increasing the number of whistles means larger bellows. Some of the holes in the whistles may be covered with pieces of gummed paper, then bound round with tape, thereby getting a higher note.

The effect and sound of the locomotive's steam may be arrived at by various methods, one of which is illustrated by FIG. 23, which is simply a tin cylinder, in which is a quantity of steel shot, such as those used for air-guns. The diagram is a semi-sectional view of the apparatus, showing the shot in the tin cylinder and the axle that passes through the centre of cylinder and is supported by the vertical wooden posts, of which there are four, two at each end, to support the axle, the centre of which is four-

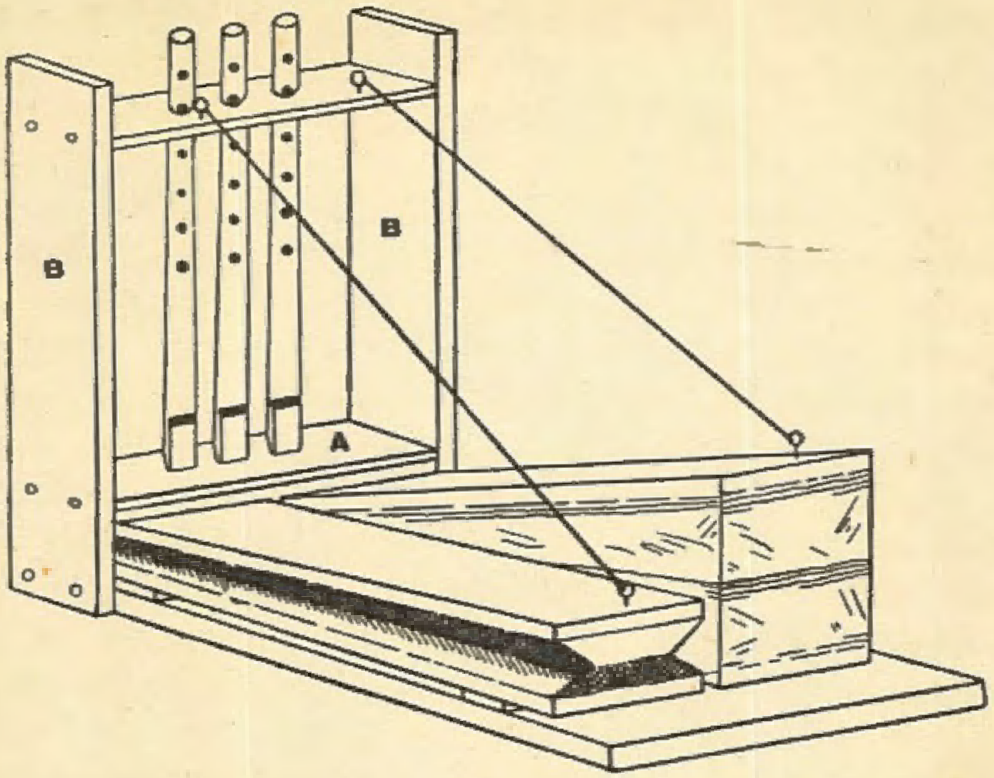

FIG. 22

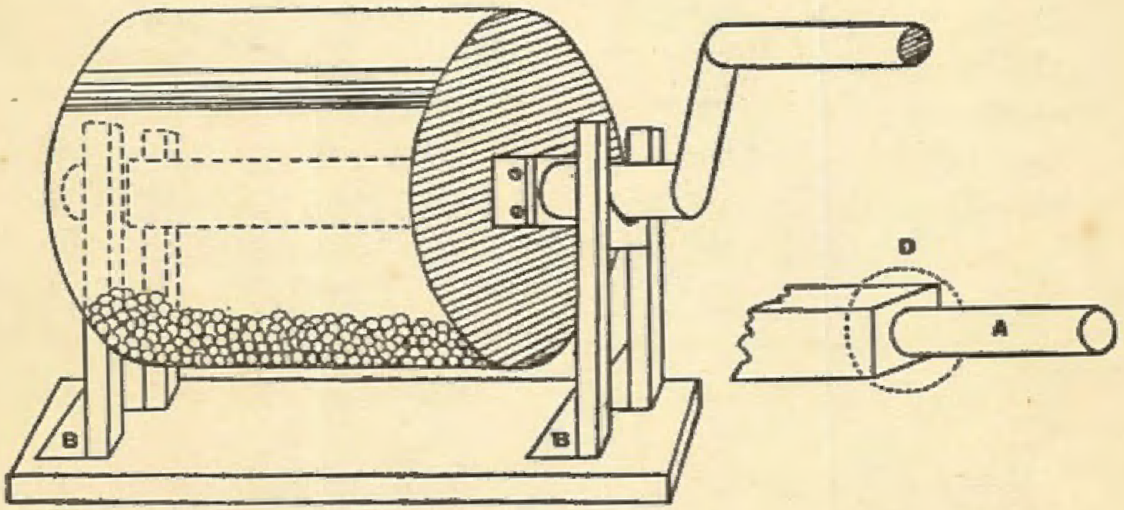

FIG. 23

sided, and the ends shaped as rods, shown in detail at **A**, so as to allow them to easily revolve between the vertical posts. Between these posts a piece of wood is fixed, the upper part being hollowed out for the ends, **A**, to rest in. The vertical posts are made secure and extra firm to the baseboard by gluing and screwing to them angle-shaped pieces of wood, as B, at each end of the tin cylinder, and in the centre a square hole is cut, leaving on each side the piece of tin, which must be bent outwards at right angles. Through each of these tin flaps two small screw holes must be made. The axle is now passed through the centre of the cylinder, the flaps then are screwed close up to the sides of the axle, thus securing the cylinder to the axle. At each end of the latter, and before fixing the wooden handle to it, place a washer on the axle, one at each end to prevent the friction of the cylinder against the vertical posts, as shown by the dotted circular line D. These washers may be made of stout cardboard or thin pieces of wood, and well black-leaded on both sides. When the cylinder is made to revolve by turning the handle, the shot rolling round within the cylinder should give a very fair effect of the hissing of escaping steam. There is no definite size for this piece of apparatus, but as it increases in size, as the shot must do also, the louder the noise. An approximate and useful size may be sixteen inches long by nine inches diameter. The shot is to be put into the cylinder before the axle is passed through. To get somewhat the same effect, a modified type of the rain apparatus may be employed.

The approaching train is heard in the distance by its whistle sounding. One of the best instruments to use for this effect is a small wooden organ pipe about seven inches long, which may be purchased from an organ builder. Failing this a large B-flat tin whistle can be used.

If a play is being produced where the shadows of the carriages and illumination of the train are to be reflected through the windows of the station waiting-room, as in the play of the " Ghost Train," the above effect may be given by using an endless band running through a magic lantern (shown in FIG. 24). At first glance this may

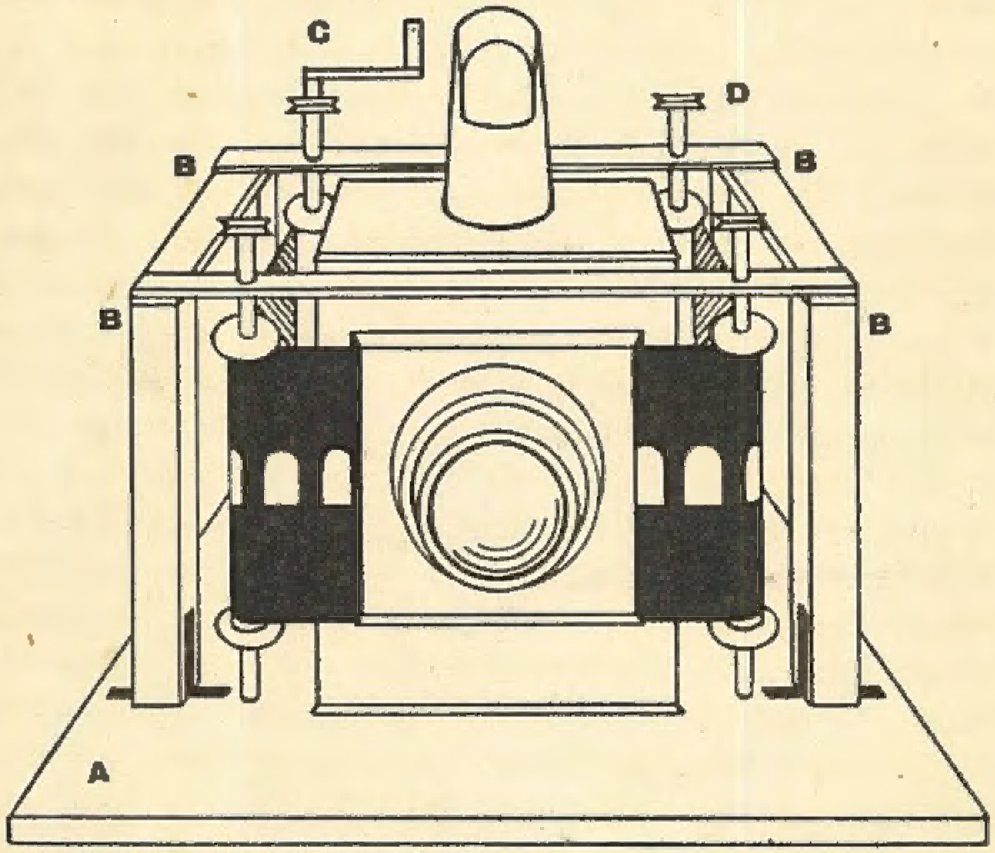

FIG. 24

appear to be a rather complicated piece of machinery, but on investigation will be found quite an easy bit of paraphernalia to make, A being the base-board on which are four wooden posts at B, which are firmly fixed to the base-board by means of small angle-irons, shown by the solid black lines. Connecting one post with another are four wooden laths. In the front and back lath two holes are

drilled to receive the vertical rollers on which the endless band runs. This band may be cut out from a piece of American cloth, or thin table baize, but if for one performance only, stout brown paper will answer the purpose. The band is just cut wide enough to pass easily through the slide carrier of the magic lantern. The band revolves on the outside of the four rollers, the ends being fastened with a touch of thin glue. Care must be taken in cutting out the carriage windows, so that at least three windows will be in register in front of the lantern lens. So, will three windows be thrown on to the windows of the scene depicting the railway waiting-room. As there are two windows, two lanterns will be required, but these need only be toy lanterns. One professional-sized lantern would do, but in this case six or seven windows would have to be registered with the lantern lens and the lantern a considerable distance from the back of the scene. The lantern must be firmly fixed on some pedestal, such as a box or table, so that when the handle, C, is turned, the machine remains steady. On the upper ends of the rollers grooved wooden wheels are fixed, similar to those fixed on to the domestic window-blind roller by the aid of two or three thin nails, using no glue, as the rollers may have to be taken out for repairs. So with the wooden laths that support them; they should be kept in their place by a couple of small screws, long enough to reach into the wooden posts. The grooved wheels must have a string (band not shown in the diagram) running in the grooves of the four wheels, so that when the handle, C, is turned, all the wheels move simultaneously. Should scenic band not properly grip the rollers, a piece of fine glass-paper glued round the roller will give a bite. The lower ends of the rollers fit into holes in the base-board. A

simpler form of apparatus, to produce a similar effect to the above machine, is a three-cornered or triangular box, A (*see* FIG. 25). It will be seen that the principle is the same, but without the magic lantern. The cord running round the grooved wheels is shown in this diagram. It has only three rollers, two at the front of the box and one at the back. The size of the scenic band depends on the distance that it is worked from the back of the scene. This

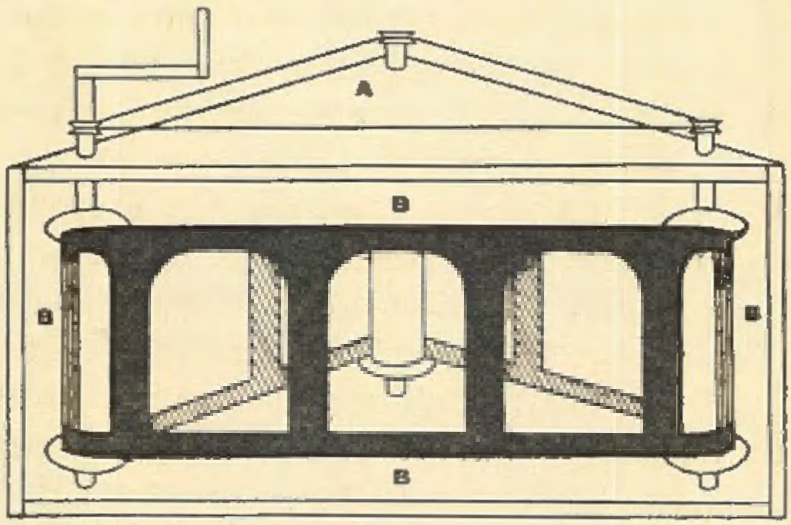

FIG. 25

can only be determined by actual experiment, that is, if the front of the box is brought up to within a few inches of the scene, the scenic band would have to be about the same size as a railway carriage window, but as the distance is increased from the scene the windows in the band may be smaller. But the apparatus must not be so far back that only a blurr is shown. It is not necessary for the shadow to be very sharply defined, because it would not be so in reality, a train being perhaps eight or ten feet from the waiting-room. Cut out the shape of one of the windows from a piece of cardboard, then, having a light behind this experimental pattern, move it towards and away from the

scene, then the width of the scenic band can be decided upon. The top, bottom and sides of the front of the box at B must be covered with cardboard and just overlapping the scenic band, so that no light is allowed to escape from the box, except through the windows. Of course, two of these boxes will be required, one for each window. That is supposing there are two windows in the scene, as in the waiting-room scene of "The Ghost Train." FIG. 26 gives details of the scenic rollers complete, turned out of one solid piece of wood, excepting the grooved wheel at the top, which must be detached, as already mentioned, or it may be built up of several pieces, completely of wood, another method being wood and cardboard. A, upon which the scenic band works, may be a cardboard cylinder, such as those sent through the post to protect maps and engravings; B, a stout wooden rod, as those sold for window casement blinds; the circles C, which guide the scenic band, may be of stout straw-board, or thin wood about a quarter of an inch thick; D, a wooden grooved wheel, for the endless cord. Having cut the cardboard tube the required length, also the rod B, the latter must be well in the centre of A, and kept in its position by inserting four or more pieces of wood, glued and wedged in between A and B. When dry and firm, then the circular guides, C, are to be glued on to their places, the grooved wheel being left until later on. As already explained, the sound of a train passing over the rails is the

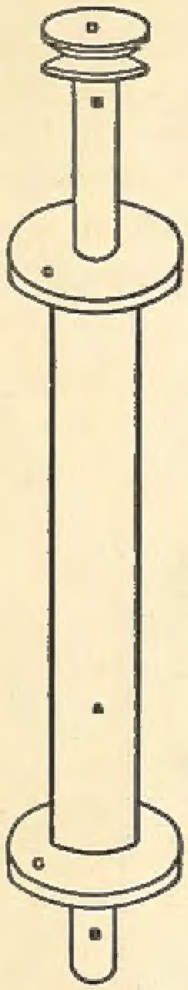

FIG. 26

well known sound of Thud —1–2–3, there being a longer interval between 2 and 3, as Thud 1—2——3, Thud 1—2——3, Thud 1—2——3, and so on. This may be reproduced by muffled drumsticks upon a fairly large or big drum.

All being ready for the train effect to be given, for example, suppose the "Ghost Train"; first, the organ pipe is blown, which suggests the approaching train. Then the sound on the drum is given, Thud 1—2——3, louder and louder, as the train gets nearer. It is close upon the station. The steam whistle (the tin whistles) shrieks, the escaping steam hisses (the steel shot in cylinder), the lights are flashed on to the moving scenic band, the ladies in the waiting-room give their best screams, which adds to the effect, and the train has passed.

The above applies to all train effects, with certain modifications. The effects of the hissing of steam may be accompanied by two small boxes (such as shallow cigar boxes), the lids being covered with coarse-grained glass paper, leaving about one inch margin to be turned under the lid. The box is then shut up, which should keep the glass paper firmly on the lid of the box. These two boxes, so prepared, rubbed together, imparting a circular motion to them, will add to the effect of the tin cylinder which is loaded with shot.

FIG. 27 is a very useful piece of apparatus, as by turning the handle connected with the toothed wheel A, various effects may be obtained, from the crack of a pistol shot to the roar of artillery,the noise of motor cars, and train effects. The wooden toothed wheel A, when turned, presses the lath B down until the point of the wheel in revolving allows it to escape, when the lath rises again, which action is brought about by the india-rubber spring

C, which is merely a stout piece of india-rubber, one end being tied on to a screw-eye, which is fixed to the under side of the lath B, the other end being attached to the base-board. One end of the lath B is narrowed off, which acts as a drum-stick, and on to which a wooden ball is glued. This ball may in some effects have to be padded by tying around it a piece of thick baize, the latter being necessary when the 1—2——3 thud of the train is to be sounded. the drum-stick then being directed on to a drum-head or a large tambourine. The ball is left uncovered for such

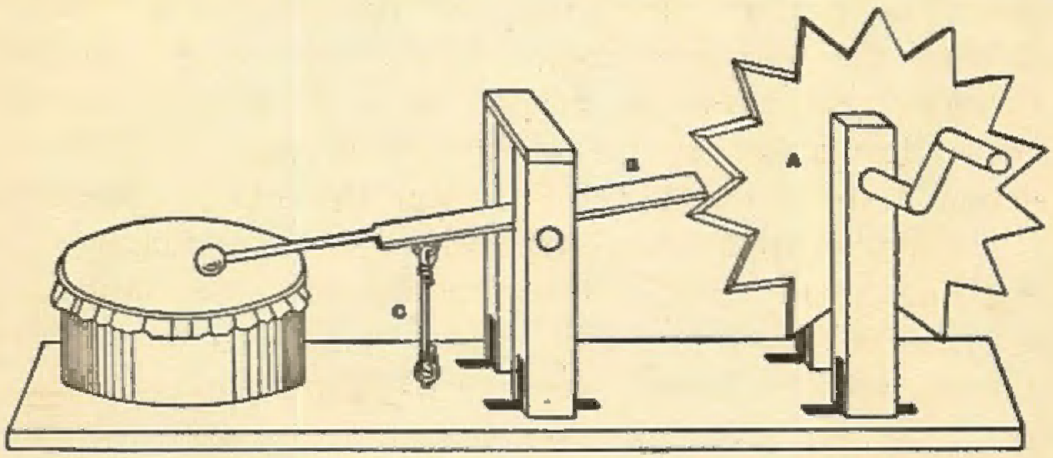

FIG. 27

effects as a motor car. The drum-stick then plays upon the lid of an empty wooden box ; upon the lid of the box several pieces of thin brass, or tin, may be loosely fixed by a tack to one end only, so as to get a slight jingling sound, as sometimes heard when a car is running. Another and somewhat similar effect may be derived by playing upon an empty tin box or canister. To soften the sound as for a car in the distance the boxes can be muffled by wrapping round them a piece of baize or cloth. The diagram shows a small drum made from a tin box, such as tobacco is packed in. A piece of parchment is made quite soft by

dipping it in water. It is then tightly stretched over the open end of the box and secured by binding it round with thin string. A shoulder of wire is soldered around the top edge of the box, under which the string is bound ; thus the string and parchment is prevented from slipping. A box of this description and about four inches diameter, will give a sharp pinging sound, as a pistol being fired, but in this effect a drum-stick should be used without the ball at the end. Of course, according to the speed that the wheel is made to revolve so various effects are obtained. The vertical wooden posts that support the wheel and the

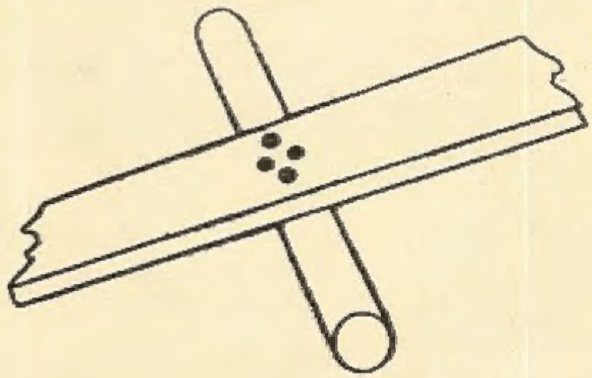

FIG. 28

lath are held firmly in their place by small angle-irons, shown by the solid black lines. The lath B is fixed to a wooden rod by four small screws, as shown in FIG. 28. The diagram of the toothed wheel (FIG. 29) is designed to give an intermittent effect, as for the train with its 1—2 ——3 sound. This would prevent a possible mistake being made as to the number of beats made by giving one too many. A padded cushion covered with leather or American cloth gives the effect of gun and artillery firing. Two pliable canes are used, one in each hand, they being brought down upon the cushion with a sharp decisive blow. Canes such as sold at oil shops for the correction of naughty

children answer the purpose well. For the heavy firing of cannon and loud explosions heard off, FIG. 30 shows a well-supplied arsenal, and an absolutely safe one to those who have to give the effects of big guns and explosions, the ammunition being composed of paper bags filled with air and securely closed up at the mouth by tying round with thread. A variety of sizes may be required, the small bags to imitate a gun or pistol shot may be easily blown into from one's mouth, but large bags would require

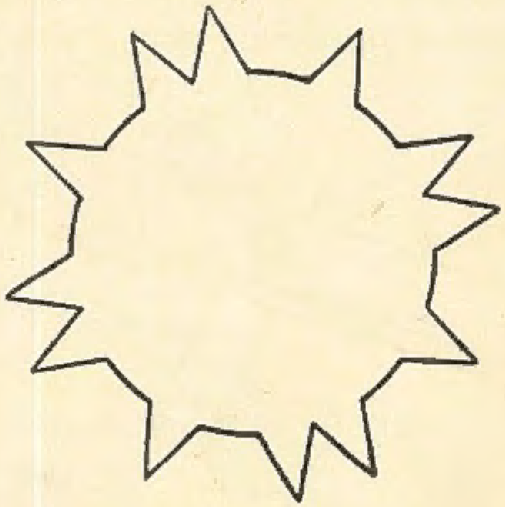

FIG. 29

too much lung exertion. So a bicycle pump can be used for filling the larger bags. The small bags may be exploded by placing a bag upon the left hand. Then, raising the right hand, bring it smartly down upon the bag so as to burst it. Very large bags can be burst by quickly bringing a board down upon them, as shown in the diagram.

The cracking and slashing of whips may be easily imitated by folding in half a wide leather belt or strap. Each end is held in the hands of the manipulator. The hands being brought towards each other should cause the

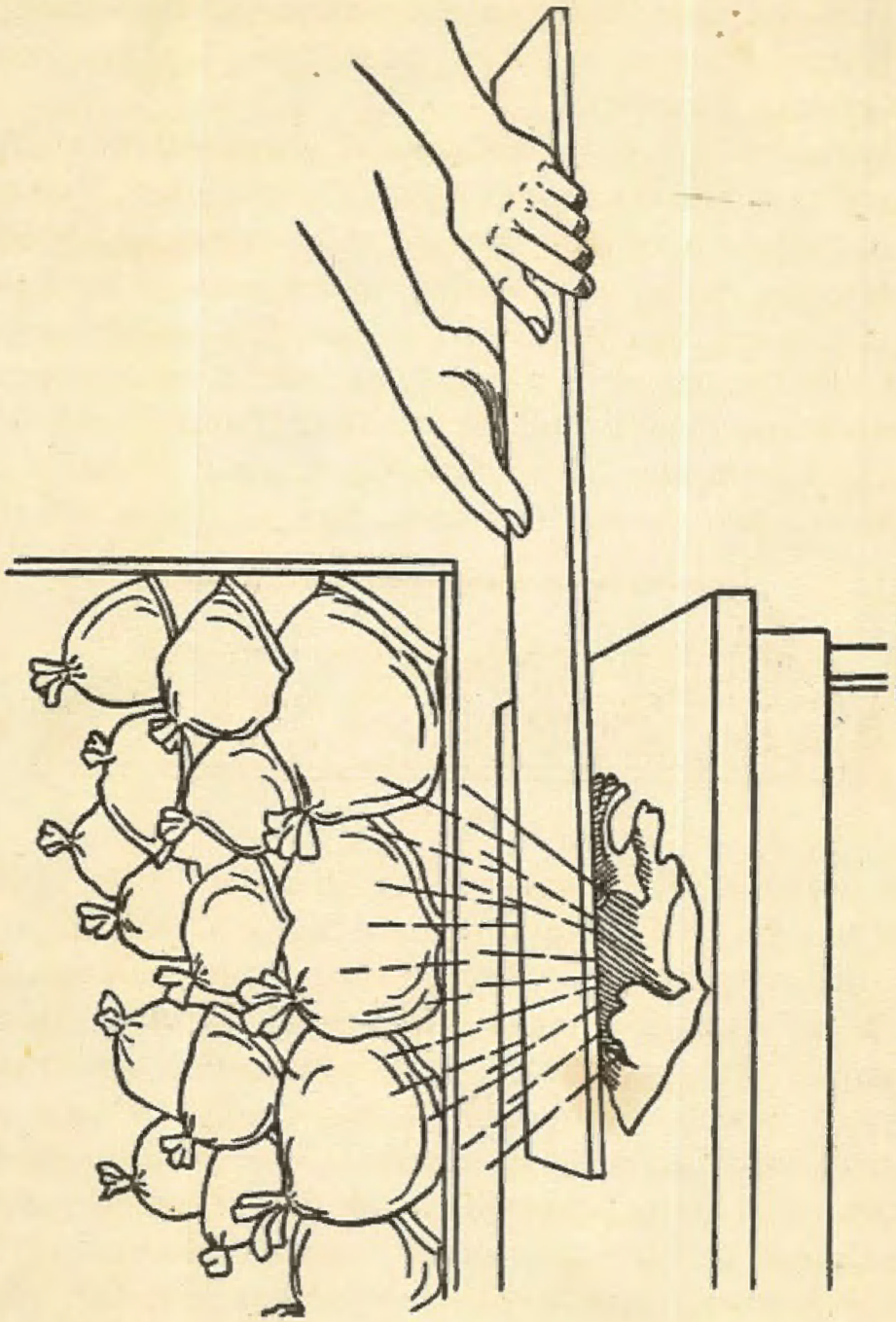

FIG. 30

strap to form an oval shape. The strap is now suddenly closed by the hands being quickly distended, thus causing the strap to give a cracking sound like a whip being slashed and heard off.

FIG. 31 brings us to the finish of sound effects. This piece of apparatus is intended to give the effect of water running along a stream, broken with stones and rocks, also for the sound of splashing water from a fountain. The apparatus is a thin wooden box, the bottom being lined with tin, the ends of which are turned up in a semi-circular form so as to prevent the shot that is in the box coming to a sudden halt. A series of small French nails are driven into the bottom of the box, against which the

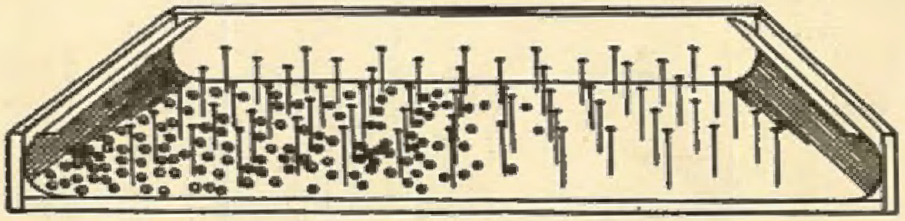

FIG. 31

shots strike on their journey when the box is tilted to the right or left. The diagram shows the box with the top and the near side off. FIG. 32 is a revolving drum, on which is suspended an endless band of silver tissue material. This contrivance is placed between two scenes of rocky aspect to represent a waterfall. If just an ordinary waterfall is to be presented, the ordinary illumination of a white light will suffice, but in the event of some fantastic fairy production various coloured lights may be thrown upon it with very pleasing effect.

To give the effect of a kettle or other vessel boiling and steam issuing forth, place in the kettle two or three pieces of unslaked lime (about the size of one's closed fist), to

which add half pint of water. The kettle will steam in two or three minutes, and steam away for about fifteen minutes.

FIG. 33 shows a trick or collapsible chair, which causes much boisterous fun in fairy plays and comic scenes. A is, to all appearances, just a very ordinary and plain wooden chair, strongly made, for it has to put up with some rough usage. The legs from the seat of the chair to the floor are four separate pieces, that is, they are capable of spreading outwards when the actor sits upon the chair, which

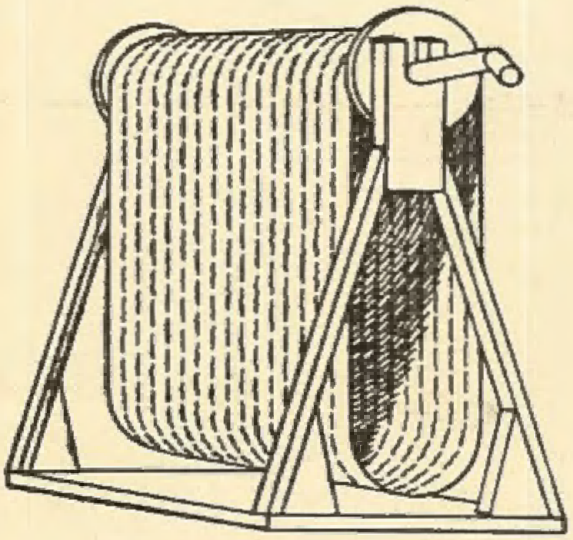

FIG. 32

suddenly brings him down level with the stage, when he tumbles off the chair. Then, to his astonishment, the chair springs back into its original form, which effect is brought about by some fairly strong steel or rubber springs attached to the legs under the seat. Between the legs are pieces of wood shaped as at B. These appear to be necessary for the strength of the chair, but their real purpose is to shield the springs, one end of which is attached to the back of B, the other end of the spring to the leg of the chair, as shown in FIG. 34. A is the leg which should be

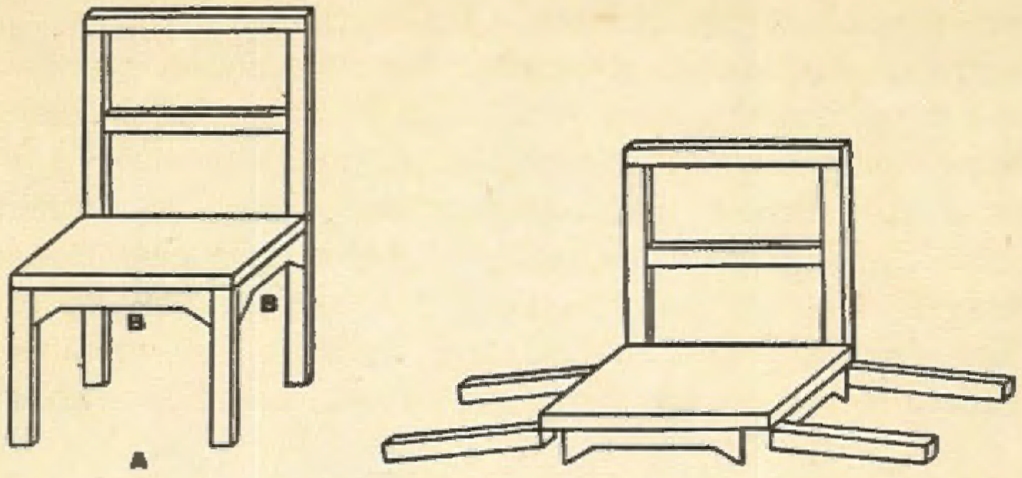

FIG. 33

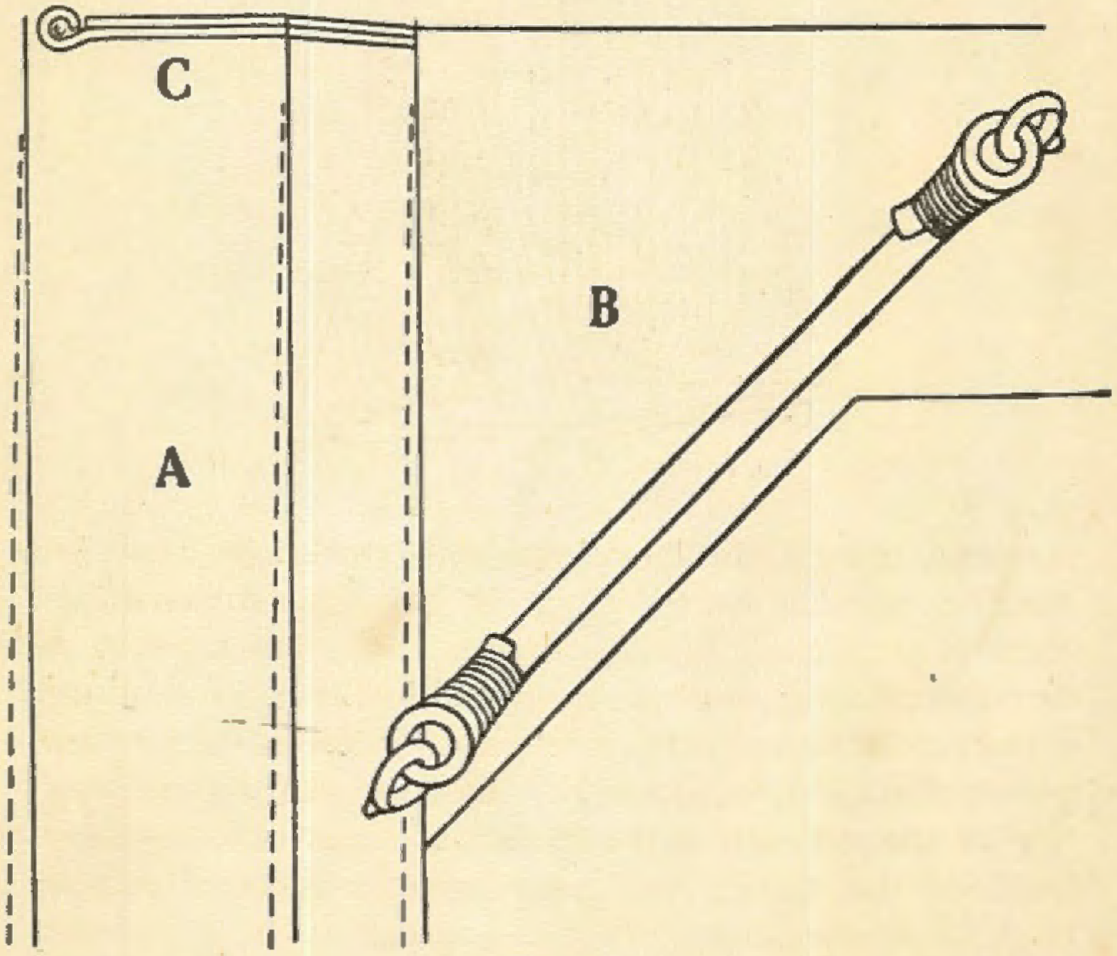

FIG. 34

inclined outwards at a slight angle, as suggested by the dotted lines, this helping to start the legs in spreading outwards. To the leg one end of the rubber spring is fixed, the opposite end of spring to the shield B; C, the hinge that holds the top of the leg to the under side of the seat of chair. Well-greased castors should be screwed on to the bottom of each chair leg (not shown in the diagram), so that the legs will move rapidly outward.

Traps and trap-doors often play an important part in dramas and pantomimes. FIG. 35 shows a rising platform which gradually brings the fairy queen up to the level of the stage, A. Just before the lady's head is level with the stage, assistants make an opening in the stage by pulling back the trap-door B, which runs in grooves, where it is brought to rest, the platform on which the fairy stands taking its place. The platform at each corner slides in grooves, which are in the four vertical posts C. The platform is raised by means of a rope passing over grooved wheels D. To the end of the rope counterweights, E, are attached, these counterweights being sufficiently heavy to raise the platform with the figure upon it. If a rapid ascent is to be made, more weights are added, the usual shape of the counterweights being like F. The opening on one side allows them to be easily placed on the vertical iron rod which supports them before the platform is raised. The weights are at rest on a small shelf, G; this shelf is hinged so that it may be slightly raised, so as to turn the angle supporting piece, H, to the right or left. This allows G to fall. The weight then descends until brought to rest on the floor, and which is so calculated that the platform upon which the fairy stands is now level with the stage.

FIG. 36 is a star trap, taking its name from the V-shaped

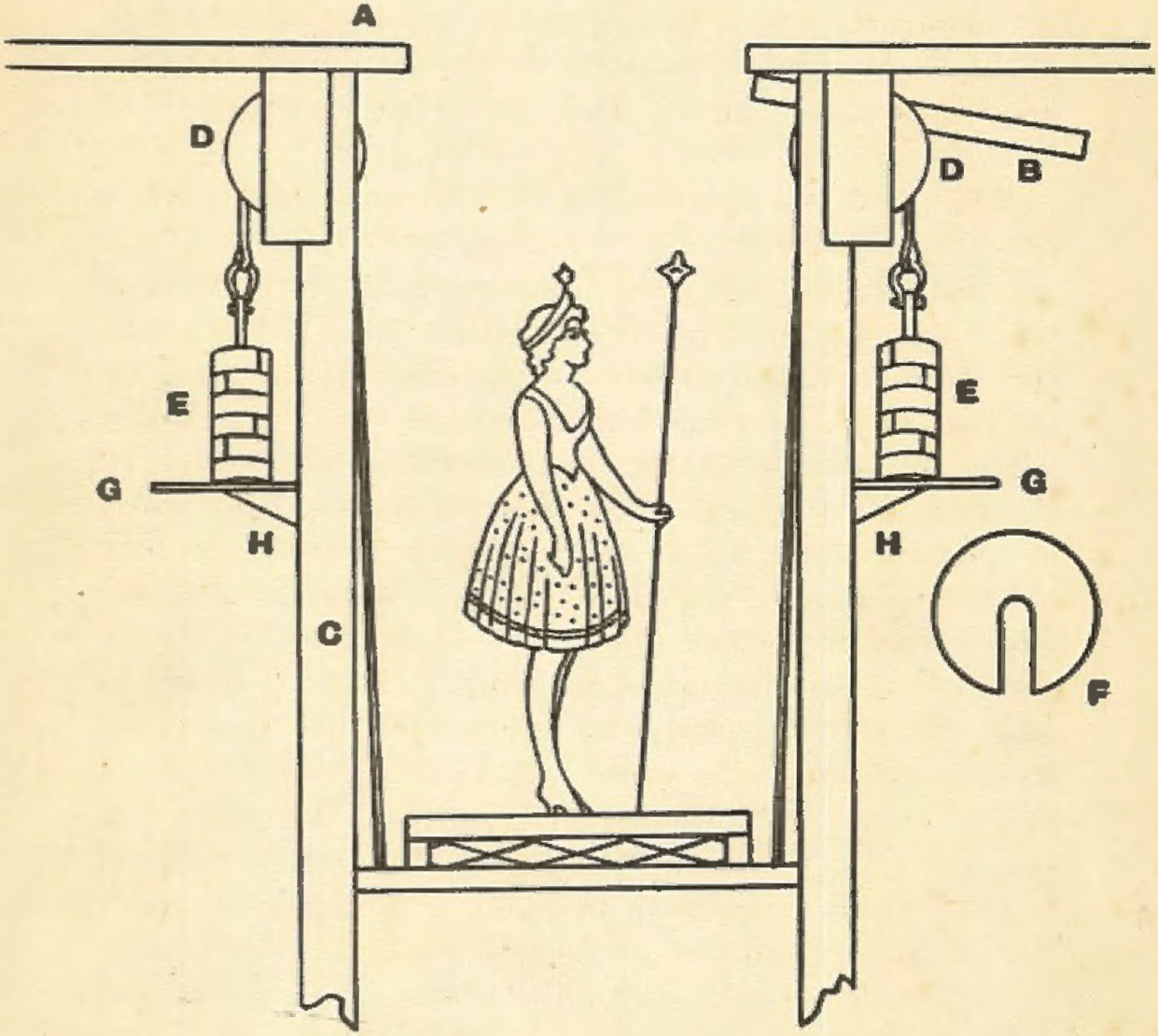

FIG. 35

sections of which it is composed (*see* A). This is a very important and tricky trap for the sudden appearance of the demon or sprite, who suddenly emerges from it and is thrown several feet above the trap, then to alight on his feet and proceed with his maledictions to the fairy queen. B shows the feet of the demon just leaving the trap, the sections of which immediately fall back in their place. The platform on which the performer stands is similar to FIG. 35, but there are four counterweights, one for each

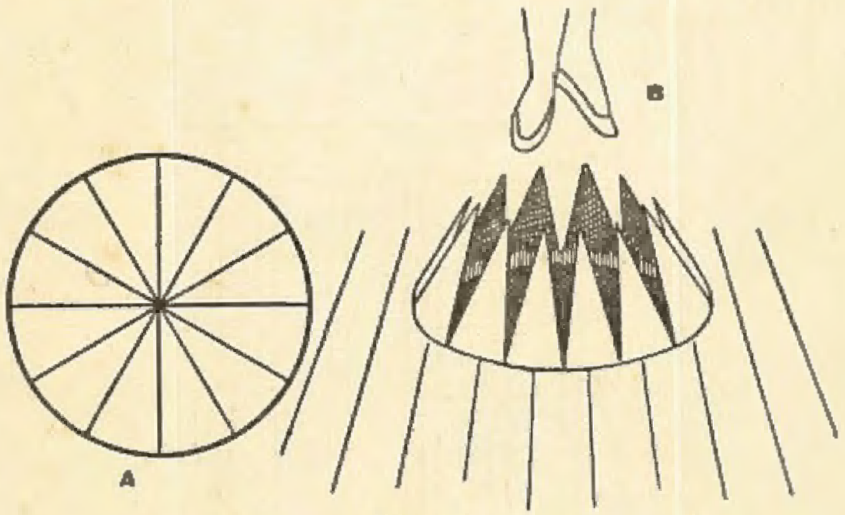

FIG. 36

of the four vertical posts, so as to accelerate the speed of the demon being thrown upwards, the principle being much the same as a ball being held in the open palm of the right hand, which is instantaneously lifted upwards until it is brought to a sudden stop by the left hand, which is held horizontal and rigid, thus causing the ball to leave the right hand and fly upwards. In detail the machinery may vary in each theatre, but the principle is practically the same. For amateur performances, a very useful trap for sudden appearances may be arranged as shown in FIG. 37. This is an upright pair of doors fixed to the back of a scene

and firmly held in its place by a wooden batten at each side of the doors, the battens being held in position by four glorified screw-eyes, as used at most theatres for a like purpose, or stout and strong gimlets would answer. The

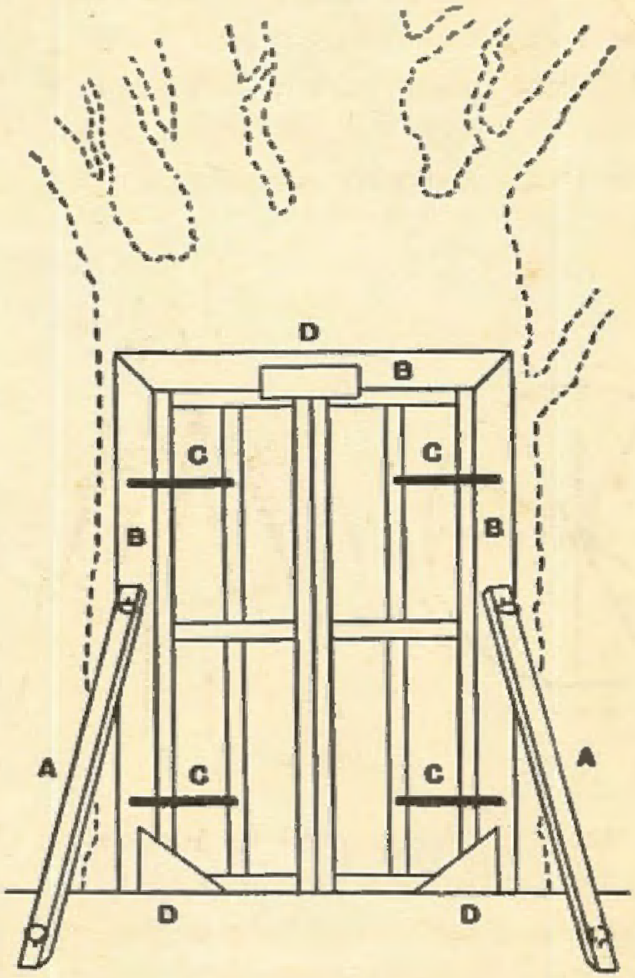

FIG. 37

dotted lines here shown are the outline of a tree that is painted upon the front of the scene, part of the trunk of the tree being painted on the doors, so as to disguise them as much as possible. Of course, the design of the front of scene may not, according to the plot of the play, be a tree, hut perhaps a brick wall, a fountain, or an interior

wall, and so on. The battens, A, are secured to the door framework, B. The doors are built up of light wooden battens, and covered with canvas in front. Attached to the framework, B, and the door battens, is a rubber spring C, shown by the solid black lines. There are four springs, two for each door. Pieces of wood, D, are screwed to the door framework to act as buffers, so that the doors will not open inwards. These buffers must be well padded with pieces of thick felt or indiarubber, that the door when closing upon them will be silent. When fixing the rubber springs they should be stretched somewhat, so that when in action they will have a fairly good tension. All being ready, the actor awaits his cue, then, very quickly, pushes the doors open, passes through, when the doors immediately close behind him. Well rehearsed, and quickly done, this should give an instantaneous and surprising effect. There is another trap for disappearances, which is arranged in the floor of the stage. It has two doors or flaps, through which the performer dives on to a mattress or other convenient receptacle below the stage, the flaps closing up immediately level with the stage. The mechanism is the same principle as described for FIG. 37. The enchanted box (FIG. 38) produces very pretty and magical effects. It is simply a wooden box tastefully decorated on the exterior. Its secret lies in its having a clear glass bottom, which latter must be kept from the knowledge and view of the audience. It is filled with some light and fanciful costume pieces of white and coloured silks or muslin. It is now placed on the stage in an assumed haphazard manner, but exactly over and covering a trap-door in the stage. The trap-door is now opened from below, and a flood of concentrated electric light is thrown through the glass bottom of the box. The lid is now raised, and the

pieces of material lifted up, but held well within the rays of the light coming through the box. The lid may now be closed, then again opened, when the material has changed in colour owing to the fact that a piece of coloured gelatine or glass is placed between the rays of light and the bottom of the box. At the finish the assistant under the stage closes the trap-door, A, and the box is carried away.

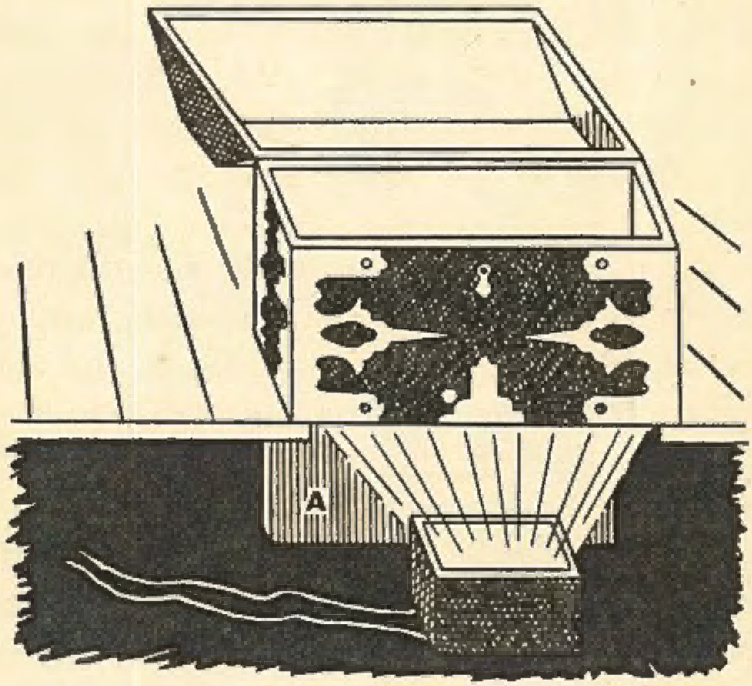

FIG. 38

FIG. 39 is the mysterious book, which, when approached by the actor with the intention of consulting its pages, magically opens, laying bare the page that he wishes to read. Having read the enchanted page, the actor still gazing at the book, it suddenly closes up. The above effects are brought about by a very simple contrivance. To commence, the book is closed. Then, when the actor goes towards the book, a strong black silk thread, A, that is fixed to the cover of the book, is pulled by an assistant

behind the side wings, which opens the book. Next, a second assistant behind the opposite wings operates the thread B, which turns the pages over to the desired one ; a third thread, C, pulled by the second assistant, closes the book.

When the story of a play demands it, a ship at sea, gently tossing on the billows, is always of interest, whether

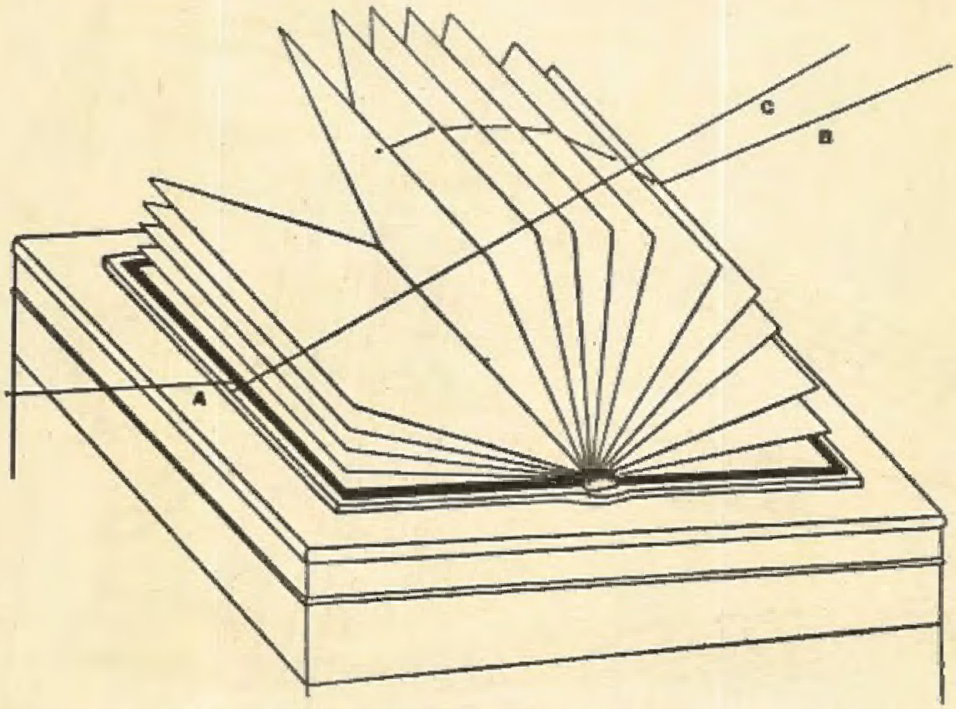

FIG. 39

the play be a serious drama, operatic, or a comedy, most people being interested and attracted by moving objects. FIG. 40 shows a section of a ship at sea, which may be built up of fairly light material, so that the assistants who are told off to give the necessary movement to the ship may do it with as little exertion as possible ; but the decks upon which the actors strut must be sufficiently strong and firm to carry their weight. The plot of the play may require two decks, the upper and lower, with a practical

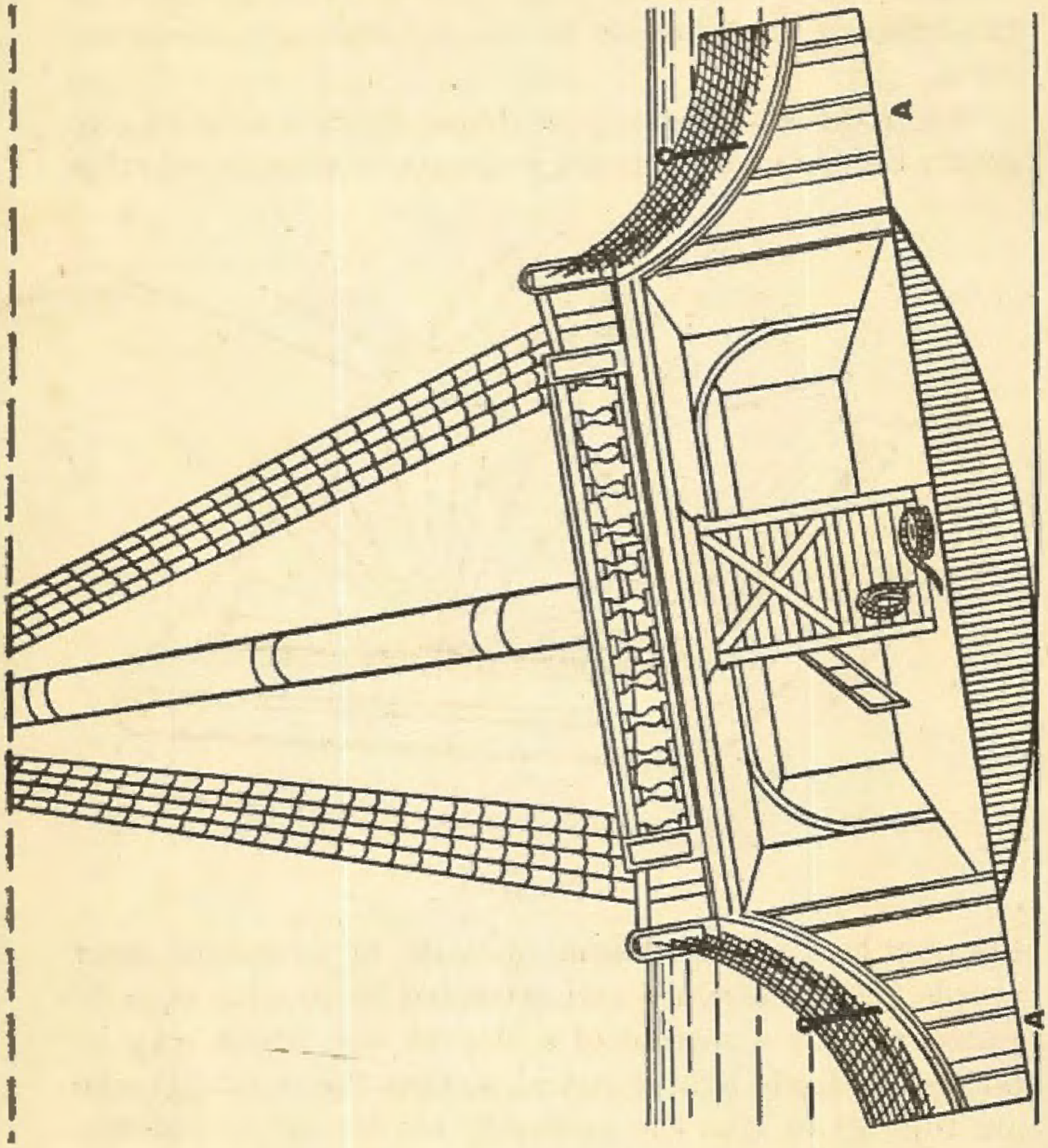

FIG. 40

gangway or staircase leading from the upper deck to the cabin, or only the deck may be required. Then the cabin below is not shown. In many large theatres a very complicated mass of machinery is often employed to give the rolling movement to the ship. This is quite beyond the means of amateur players, but much the same effect may be arrived at by simple means, as seen in FIG. 40. The ship is resting on a curved foundation, which is made to roll to the right and the left, in fact, on the principle of the old-fashioned rocking-horse. The bulwarks, A, on the sides of the ship are held firmly suspended in their place

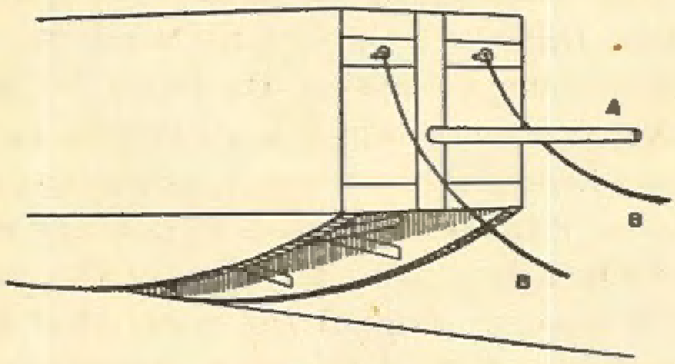

FIG. 41

by battens at their upper part. The canvas at the bottom at A is not backed up, but left quite loose, so that the canvas, on meeting the floor of the stage, will not give any resistance, and partly crumple up. FIG. 41 gives a method by which the ship may be made to rock. A is a stout pole, which may be raised and lowered by one or more assistants. B are ropes, fixed to stout screw-eyes at both sides of the ship. These ropes may be worked independently of the pole A, which may be dispensed with. The dotted line above the rigging (FIG. 40), is the bottom of the sky border. A finishing touch is given to the scene by a foot-piece representing waves and extending right across the

stage. This foot-piece must be high enough to perfectly shield the rockers, also the lower ends of the bulwarks.

Where great conflagrations and large buildings are involved they cannot be well presented on a small stage, so that, if the fire is supposed to be on the immediate spot, the effect is best made, off, by the use of coloured lights, red, yellow, now dark and then lit up again, with a flickering effect upon the scenery, stage and actors, being worked from one side of the stage only.

The general method when the building on fire is presented full view to the audience is by means of various coloured lights illuminating the interior of the building, and real flames being seen through the windows. Finally, parts of the building collapsing, the latter being brought about by hinged scenery, which is allowed to fall forward by attendants loosening the ropes A, as shown in FIG. 42. The upper part of the scene is made to fall very rapidly on the back of which is painted a replica of the part of the scene that it covers. Behind the scene that has fallen away is another section of the scene, showing dislodged bricks, charred woodwork, and broken beams, the latter here and there being edged with narrow strips of red crinkled tinsel paper. A realistic effect may be got by having a blind at some of the windows, apparently not yet having caught fire (*see* FIG. 43), the upper part, A, first being seen. Down to the dotted lines, which is the bottom of the window, the blind is now pulled up by an unseen assistant. The lower part, B, is now exposed, showing a torn and burnt curtain; this in ascending will give the effect of the curtain being consumed by fire. Of course, it is wound right up out of sight. FIG. 44 is the fire torch, by which flashes of flame may be produced. This torch is worked by a series of forward jerks, which allows the

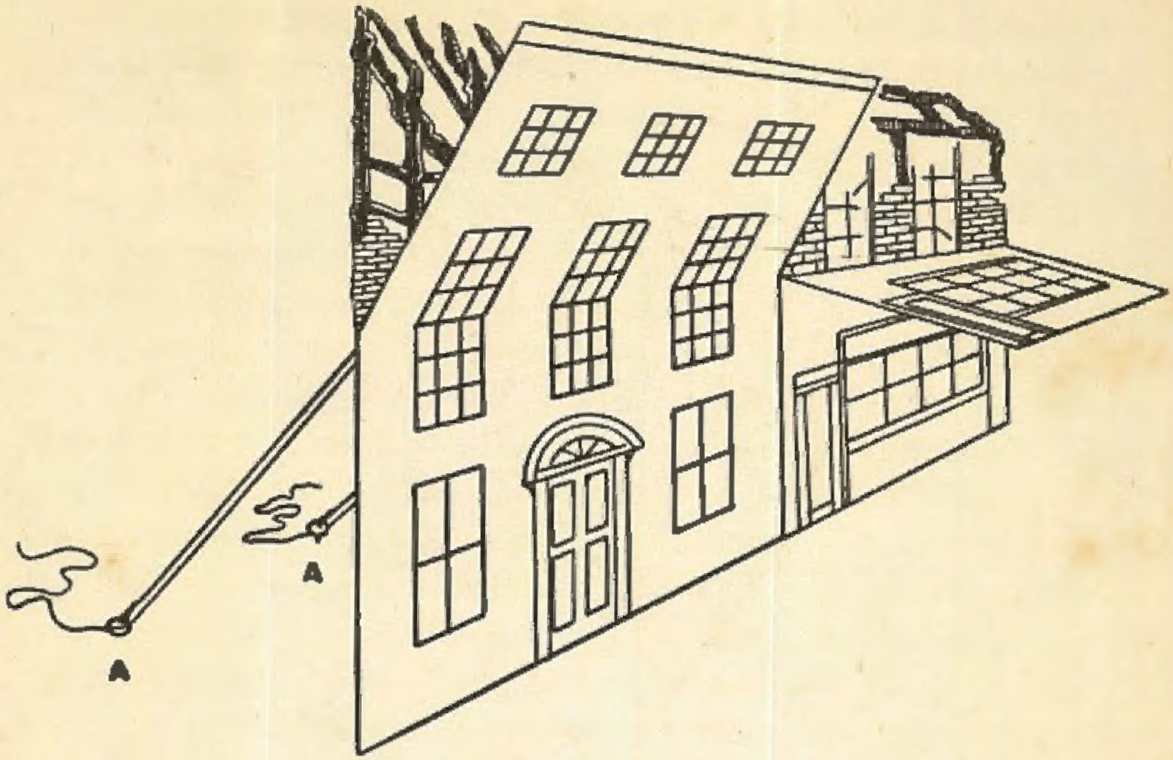

FIG. 42

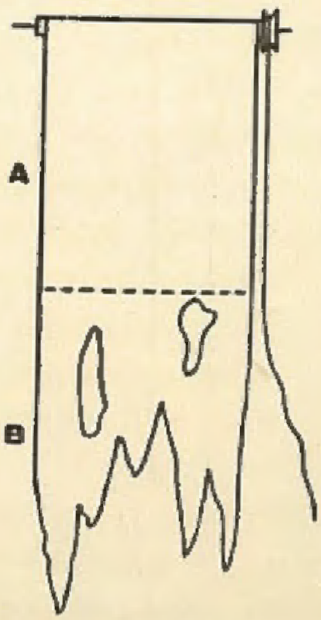

FIG. 43

lycopodium powder with which it is loaded to escape through the holes. The lycopodium passing through the

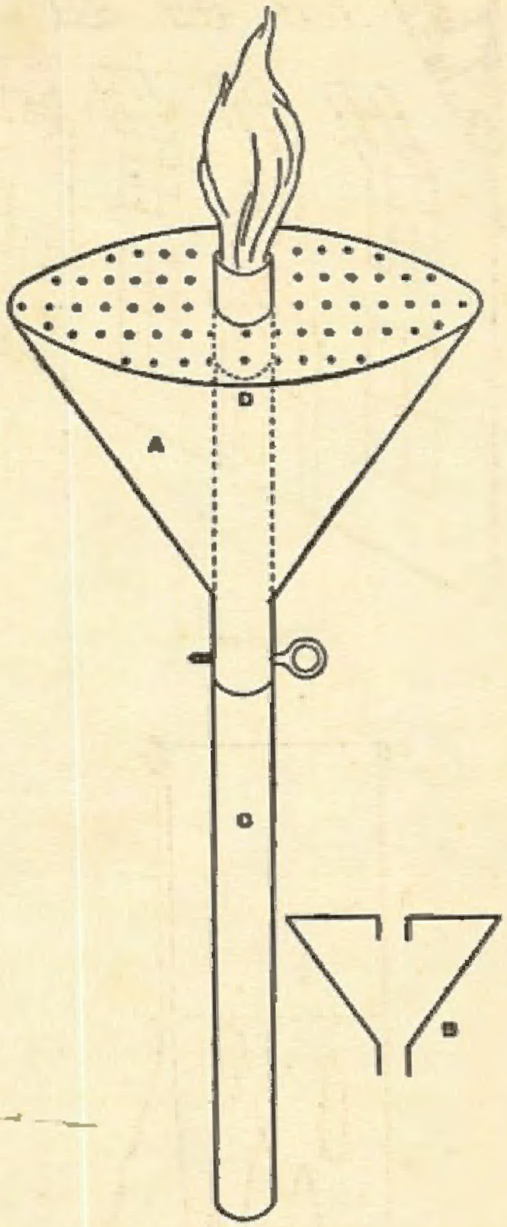

FIG. 44

flame causes a big flash. There is little or no danger in this flame, as it instantly dies out. Worked behind a

window frame it is very effective. This torch or flambeau is constructed in the following manner. A is a tin case having a series of holes made through the upper part, after the fashion of a pepper-box, a sectional diagram of which is shown at B. A wooden handle, C, is passed through A, finally protruding through a circular hole made for its reception in the top of A. The top of the rod, C, has a tin cap attached to it, open at the top, and closed in at the bottom at D. Into this metal cap a small piece of sponge or cotton wool is placed, and well saturated with methylated spirit. A is firmly secured to the wooden handle, C, by a screw-eye passing right through. To load A with the lycopodium powder, first stop up the metal cap, D, with a cork, draw the handle, C, down so that circular opening in A may receive the powder, then, pushing the rod, C, into position and making all firm with the screw-eye. Taking the cork out of the methylated cap, it is ready to be operated when a light has been put to the spirit-soaked sponge. When it is not imperative that a whole building should be in flames in the foreground, a good effect may be given by a distant building in the middle distance, or background, when all the mechanism shown in FIG. 42 can be worked; and if it be a fort or some structure where an explosion is to take place, a small iron saucepan, into which a limited quantity of sawdust, lycopodium and gunpowder is mixed, will give a very realistic effect, followed by a bang on the drum. Experiment out in the open-air first, as a small quantity will suffice, and can be discharged by dropping a lighted match on to the mixture. Don't stand over it. It must not be forgotten that a conflagration should be accompanied with various sound effects, as the crackling of burning wood. A few turns of a watchman's rattle or the crash machine will give this. Then there is the occa-

sional sound of heavy beams falling, which sound may be got by a muffled big drum, or a heavy piece of wood, as a post is held vertically and brought down with a thud upon the stage, where several pieces of carpet are laid so as to muffle the thud of the wooden post upon the floor of the stage. Or a cannon ball may be dropped now and again.

FIG. 45 shows a useful piece of apparatus to attach to a scene where an instantaneous change in the scenery is to

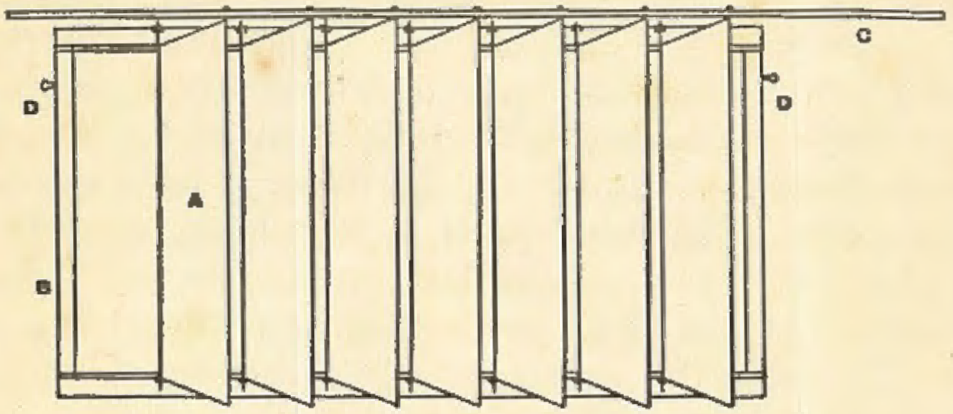

FIG. 45

be made, as a distant castle suddenly becoming ruins, or disappearing altogether, and a forest taking its place, or it may be an interior scene with bare walls, when instantly an open cupboard appears, filled with luxurious trifles, as pies, puddings, hams, jellies, etc. These changes are brought about by a series of flaps or shutters, A, made of stout cardboard, or three-ply wood. These shutters are suspended and worked in a wooden frame, B, the latter being fixed to the chosen part of a scene. A series of screw-eyes are fixed along the top and bottom of the framework, each pair of screw-eyes supporting a shutter, the shutter having on one side, at the top and bottom, a stout wire pin, French nail, or thin screw, fixed into it. The pins are now inserted into the screw-eyes at the top

and bottom of the framework B. The shutters when closed up should just touch each other. A thin thread blind cord, C, runs along the shutters, and is fixed to each shutter with a stout gimp pin. Now, the shutters being closed, a steady and rapid pull on the cord at either end

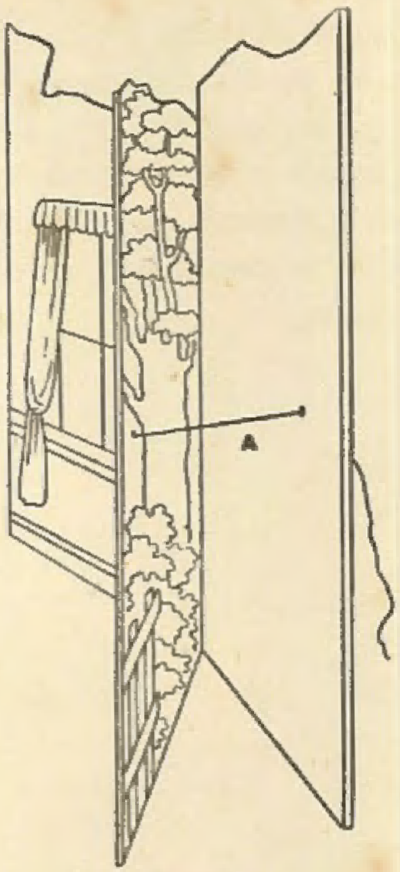

FIG. 46

turns the shutters, so presenting a change of scene. The end of the cord pulled is now fastened around the nail, D, in the side of the framework. This piece of apparatus may be used vertical or horizontal. Another method for a quick change of scene in view of the audience is done as shown in FIG. 46, which is simply two or more side wings, or parts of a scene, hinged together and worked by pulling

the cord A. In the diagram a forest scene is being changed into a cottage interior. It will much facilitate the working of the above if the bottom of the scene that moves across the stage has a few domes-of-silence hammered in, such as those that are fixed to chair legs to make them move easily across the carpet without being lifted.

There are various sound effects, that may be required from time to time, as birds singing, a policeman's or railway guard's whistle, ducks quacking, a foghorn for a ship at sea, and other small semi-musical instruments, all of which the amateur property man need not attempt to make, as they may be purchased cheaply at the music stores and fancy shops.