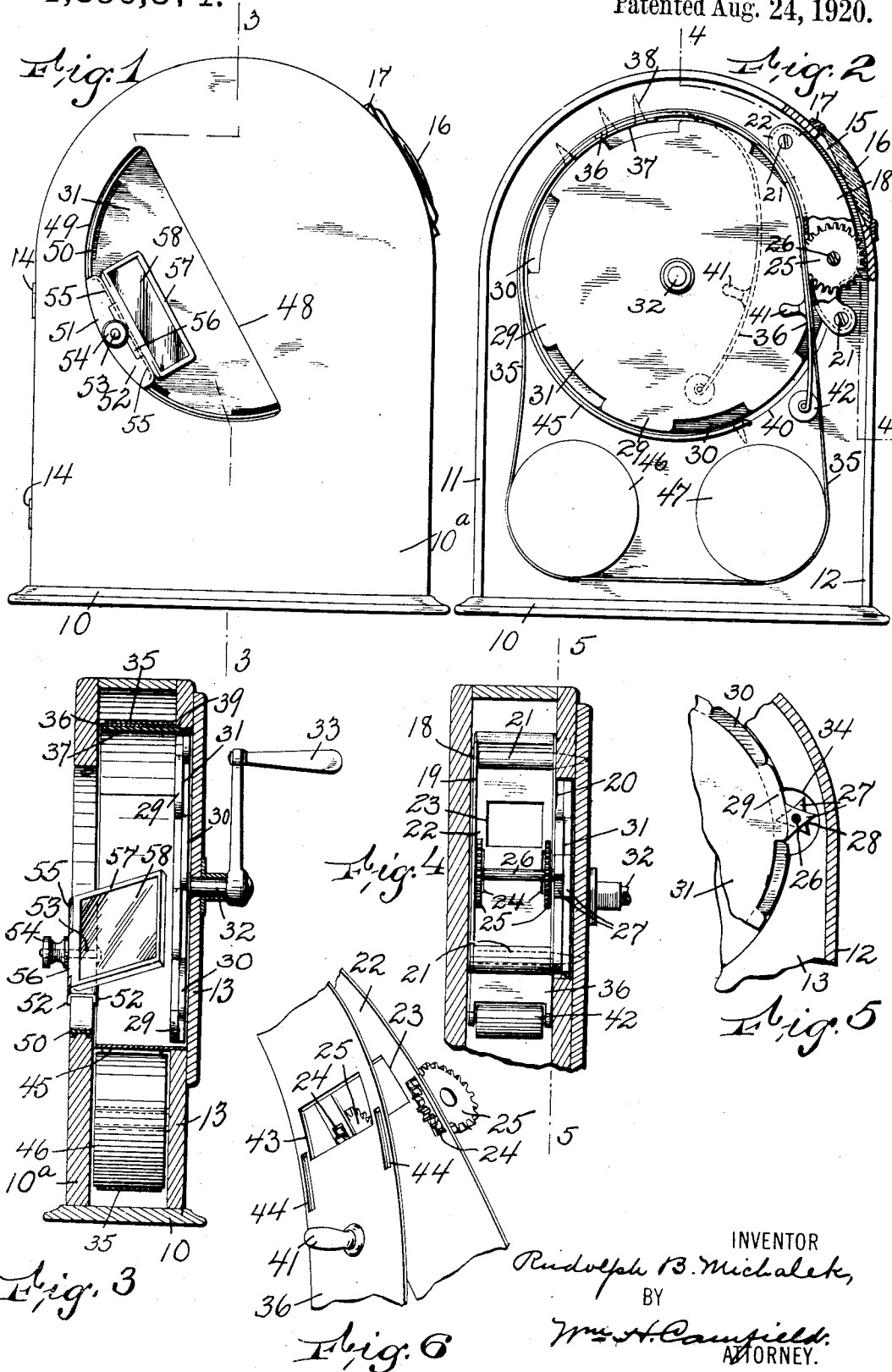


1,350,374.

Patented Aug. 24, 1920.



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CINEMATOGRAF.

1,350,374.

Specification of Letters Patent. Patented Aug. 24, 1920.

Application filed June 13, 1919. Serial No. 303,900.

To all whom it may concern:

Be it known that I, RUDOLPH B. MICHALEK, a citizen of the United States, and a resident of Newark, county of Essex, and State of New Jersey, have invented certain new and useful Improvements in Cinematographs, of which the following is a specification.

This invention relates to a cinematograph which is of compact form, easily portable and adapted for use by day, requiring no artificial light within the apparatus.

The invention is designed to provide a cinematograph which can be adapted for use as a kinetoscope or can be used, if desired, as a projecting machine, but it is particularly designed to be used as a portable toy moving picture machine adapted for use by daylight, and of such simple construction that it does not readily get out of order.

A further advantage of the invention is the construction which permits of a cheap manufacture, due to the arrangement of the parts permitting their ready coöperation. The machine may be constructed to be but little wider than an ordinary commercial moving picture film, as but little space is taken up, except what is necessary in the casing, as the arrangement of the operating parts is such that only enough space is necessary on each side of the film to insure its proper feeding, and enough clearance is provided for slight deviations from the straight path of travel.

The invention is further designed to provide a cinematograph of this kind with a conveniently and compactly arranged reflector which can be adjusted to reflect daylight or a light from another source of illumination through an aperture over which the film is passed, so that it can be easily seen if the opening in the casing through which the film is seen is used as an eye-piece.

The invention is further designed to provide a cinematograph in which the installation of the film into the machine can be quickly accomplished and is very simple, thereby making the machine suitable for use by children in a smaller or toy type. The machine in general is designed to provide a substantially flat casing but little thicker than the film is wide, the preferred arrangement of the parts being with the entrance for light in the front, the eye-piece being ar-

ranged on a narrow side and an operating handle arranged on the back.

The invention is illustrated in the accompanying drawing, in which one type of cinematograph is illustrated. In said drawing, Figure 1 is a front view of a cinematograph made according to my invention. Figure 2 is a similar view with the front removed, part of the mechanism being broken away to more clearly illustrate the construction. Figure 3 is a section taken on line 3—3 in Figure 1. Figure 4 is a section on line 4—4 in Figure 2. Figure 5 is a detail section taken on line 5—5 in Figure 4, and Figure 6 is a perspective view showing the manner in which the fixed and swinging plates which embrace the film can be separated to permit the introduction of the film.

The casing is made of a substantially flat form and is preferably placed upright, and consists of a base 10, sides 11 and 12, which are preferably merged at the top to form a curved top, although this form is not essential, and a back 13. The front 10^a is preferably removably arranged and can be fastened by suitable hinges 14 so that it can be swung like a small door and expose the whole interior of the machine.

The casing is provided with an opening through which the film can be seen, or through which the light passing through the film can be projected, and in the present type illustrated the opening is made in one of the narrow sides of the casing and is illustrated at 15 and is shown as an eye-piece, in which case it is provided with a suitable lens 16, which makes the reproduction from the film easier to see by reason of its magnifying power, the lens being fastened by a suitable bezel or rim 17.

There is in the casing a means for guiding the film and also a means for feeding the film, and I will first describe the film feeding means, which, in the form shown, is mounted in a suitable bracket 18 having side plates 19 and 20 held by suitable screws 21, and to which is secured a plate 22, which plate forms a flat surface along which the film can slide, and which is provided with an aperture 23 into which the successive pictures of the film are adapted to be framed.

This aperture, as will be seen from Figure 2, is substantially in line with the opening 15. The fixed plate 22 is provided with slots 24 through which the sprockets 25 project, the

sprockets 25 being mounted on a shaft 26, on which shaft is mounted an element to co-operate with the actuating wheel to give a step-by-step movement to the sprockets so as to feed the film and provide for the periodic and successive stops of the film with pictures before the aperture, as is usual in machines of this kind.

The form illustrated comprises a Geneva movement, which is modified, however, to minimize the noise and to make its operation easy, so that each point is in a different plane, from the one preceding, this being brought about by arranging two triangular wheels 27 side by side on the shaft 26, each face 28 of each triangular wheel being slightly curved so as to fit against the outer face of the projections 29 and 30, which are arranged alternately on the two edges of the wheel 31, so that the staggered projections 29 and 30 engage first one and then the other of the staggered points of the triangular wheels 27 and thus provide not only means for giving the shaft 26 and the sprockets 25 a step-by-step movement, but also act to hold them against rotation when they are not being positively rotated.

The wheel 31 is operated from a suitable shaft 32 provided with a handle 33, this being preferably arranged on the back of the machine, and as the wheel 31 is placed in a recess in the back 13 of the machine, a narrow structure is provided, the back being also recessed as at 34 to provide for the introduction of the two wheels 27. By making the wheel 31 of two similar plates with the spaces between their projections 29 of the same length circumferentially as the projections, and mounting one plate on the other so as to place the projections on one opposite the spaces on the other, the triangles 27 are alternately operated, and altogether they form six points, and by making the sprockets 25 with twenty-four teeth and with four openings in the film, providing for one picture in the aperture 23, one revolution of the wheels 27 provides for the exposure of six successive pictures. This proportion as recited is not essential, but is merely set forth to show how simple the device can be designed and its operation assured. By making the wheels 27 and the wheel 31 of comparatively smooth material, such as fiber, the operation of this part of the mechanism is without unpleasant noise.

In order to hold the film and also to provide for easy insertion of the film 35 into the machine, I provide a movable film guide 36, which is preferably made so that it yieldingly presses against the fixed film guide and can be made of a sheet of material, preferably sheet metal, and is fastened at one end to a suitable support, as a plate 37, which is fastened by screws 38 at its inner end 39 to the edge of the recess 40 in the back 13

of the casing, this recess also receiving the wheel 31. The free end of the guide 36 is thereby adapted to be pulled away from its contact with the fixed guide, to the shape of which it conforms.

A handle 41 can be provided for pulling back the movable guide, and a wheel 42 can be arranged on the end thereof to feed the film between the guide plates without undue friction. The movable film guide 36 has an aperture 43 which is disposed so that it is in line with the aperture 23 when the plates are together, and is provided with slots 44 which are in line with the slots 24 of the fixed guide 22, the slots 24 and 44 permitting the sprockets 25 to project through them to engage the film and to operate without hindrance in its rotation.

A shield 45 is arranged in extension of the end of the plate 36 to form a continuous surface over which the film passes, the film either being permitted to run loosely within the casing in the bottom part thereof, or, if desired, it can be positively directed, in case of a short film, over the rollers 46 and 47 which run loosely on their bearings.

The casing has provision for the admission of light to it in back of the film, in the form shown the front being cut away, as at 48, to form an entrance for light, this entrance for light having one side curved, as at 49, with a guide 50 on which a slide 51 can be moved in an arc of a circle, the slide 51 having side pieces 52 which embrace the track or guide 50, and a screw 53 and a nut 54 clamp the device in any desired position.

The guide 51 has knuckles 55, and a knuckle 56 on a frame 57 coöperates therewith to form a hinge for the frame, the knuckle 56 being arranged so that the nut 54, when screwed up tight, bears against it and thus not only locks the slide 51 in position, but locks the frame 57 in any swung position within its limit of movement, the frame 57 having a suitable reflector, such as a mirror 58.

It will thus be evident that ordinarily the slide 51 can be adjusted to the proper height and the mirror 58 adjusted at the proper angle relative to the apertures over which the film passes to reflect daylight through the apertures, and through the film when the film is in position, but in the case of artificial light, or if the device is used indoors and the light comes from a particular point, instead of shifting the machine the mirror can be adjusted to positively reflect the light where it is desired.

In this form of machine the film is fed in a comparatively smooth path without any quick changes of direction and moves for a large part of its travel substantially circumferentially relative to the wheel 31.

The device can have its parts disposed as desired, but it is thought that the illustra-

tion shows a good arrangement, as when the machine is placed in front of the observer on a suitable stand or table, with the narrow edge toward him, and the mirror adjusted to direct light through the aperture toward the eye-piece, the handle, being on the right side, is conveniently arranged, and with the wheel 31 of comparatively large size, it does not require very rapid rotation of the handle to give enough speed to the film to make the pictures succeed each other without appearing to halt.

The device is constructed to operate with but little noise, but sufficient to simulate the sound of a large moving picture machine, and in the toy forms this is desirable. The film is easily inserted by pulling back on the handle 41, as shown in dotted outline in Fig. 2 and as shown in perspective in Fig. 6, and the film is placed, in the case of an endless film, over the shield and over the guide 36, and the guide 36 is then allowed to spring in position with the teeth of the sprockets 25 in openings at the two edges of the film. In the case of a film that has ends, one end is placed so that it is in position with the teeth of the sprocket through the openings in the side edges of the film, and the loose part of the film is, in the absence of the rollers 46 and 47, simply laid loosely or coiled in the bottom part of the device and the door 10^a is then shut, thus completing the space underneath, and it is fed through the film guide and around on the shield 45, after it has been displayed, from getting into loops high enough to become entangled or to in any way engage the wheel 31.

I claim:

1. A cinematograph comprising a casing, a fixed guide for a film, a movable film guide adapted to be held against the fixed guide, a sprocket projecting through the guides, the guides having apertures therein for framing pictures on the film and having slots for the sprocket, the front of the casing having an entrance for light, the narrow side of the casing having an opening substantially in line with the apertures of the film guides, and means for imparting a step-by-step movement to the sprocket.

2. A cinematograph comprising a casing, a film feeding mechanism, a fixed film guide, a movable film guide, the two film guides having apertures therein, the movable film guide being made of resilient material and held by such resiliency in contact with the fixed guide, and being adapted to bend away from said fixed guide to permit the insertion of a film.

3. A cinematograph comprising a casing of substantially flat shape, an actuating wheel mounted on the back wall thereof, the actuating wheel having staggered projections, a bracket carrying a fixed film guide

and a sprocket projecting through said film guide, a wheel connected with the sprocket and having staggered points to be engaged by the projections of the actuating wheel, a shield for supporting a film, said shield being substantially concentric to the actuating wheel, and a movable film guide of resilient sheet material secured at one end to the end of the shield and having its bendable end extending normally in contact with the fixed guide, and a handle for operating the actuating wheel, the casing having an eye opening and the guides having apertures so that a film passing between the film guides can be observed.

4. A cinematograph comprising a substantially flat casing with an eye opening in its narrow side, actuating mechanism for a film within the casing, a handle on the back of the casing for operating the actuating mechanism, film guiding means having apertures so that light can be directed through the film, the front of the casing having a light opening therein, one edge of the light opening being curved, means for supporting a mirror, and means for mounting the mirror support on the curved edge of the opening so as to permit the angle of the mirror to be adjusted.

5. A cinematograph comprising a substantially flat casing with an eye opening in its narrow side, actuating mechanism for a film within the casing, a handle on the back of the casing for operating the actuating mechanism, film guiding means having apertures so that light can be directed through the film, the front of the casing having a light opening therein, one edge of the light opening being curved, a mirror, a mirror support, the mirror being hinged to its support, and means for mounting the mirror support on the curved edge of the opening so that it can be adjusted thereon.

6. A cinematograph comprising a substantially flat casing with an eye opening in its narrow side, actuating mechanism for a film within the casing, a handle on the back of the casing for operating the actuating mechanism, film guiding means having apertures so that light can be directed through the film, the front of the casing having a light opening therein, one edge of the light opening being curved, a track on the curved edge of the light opening, a slide movable on the track and having side pieces embracing the side edges of the track, a clamp to hold the slide in adjusted positions, and a mirror frame mounted on the slide.

7. A cinematograph comprising a substantially flat casing with an eye opening in its narrow side, actuating mechanism for a film within the casing, a handle on the back of the casing for operating the actuating mechanism, film guiding means having

apertures so that light can be directed through the film, the front of the casing having a light opening therein, one edge of the light opening being curved, a track on the curved edge of the light opening, a slide
5 movable on the track and having side pieces embracing the side edges of the track, a mirror frame, the frame and the slide having knuckles whereby the frame is hinged
10 to the slide, a screw passing through the

side pieces on the slide, and a nut on the screw adapted to bear on the hinge of the frame, whereby the frame is locked in position on the slide and the slide is locked in position on the track.

In testimony that I claim the foregoing, I have hereto set my hand, this 12th day of June, 1919.

RUDOLPH B. MICHALEK.