

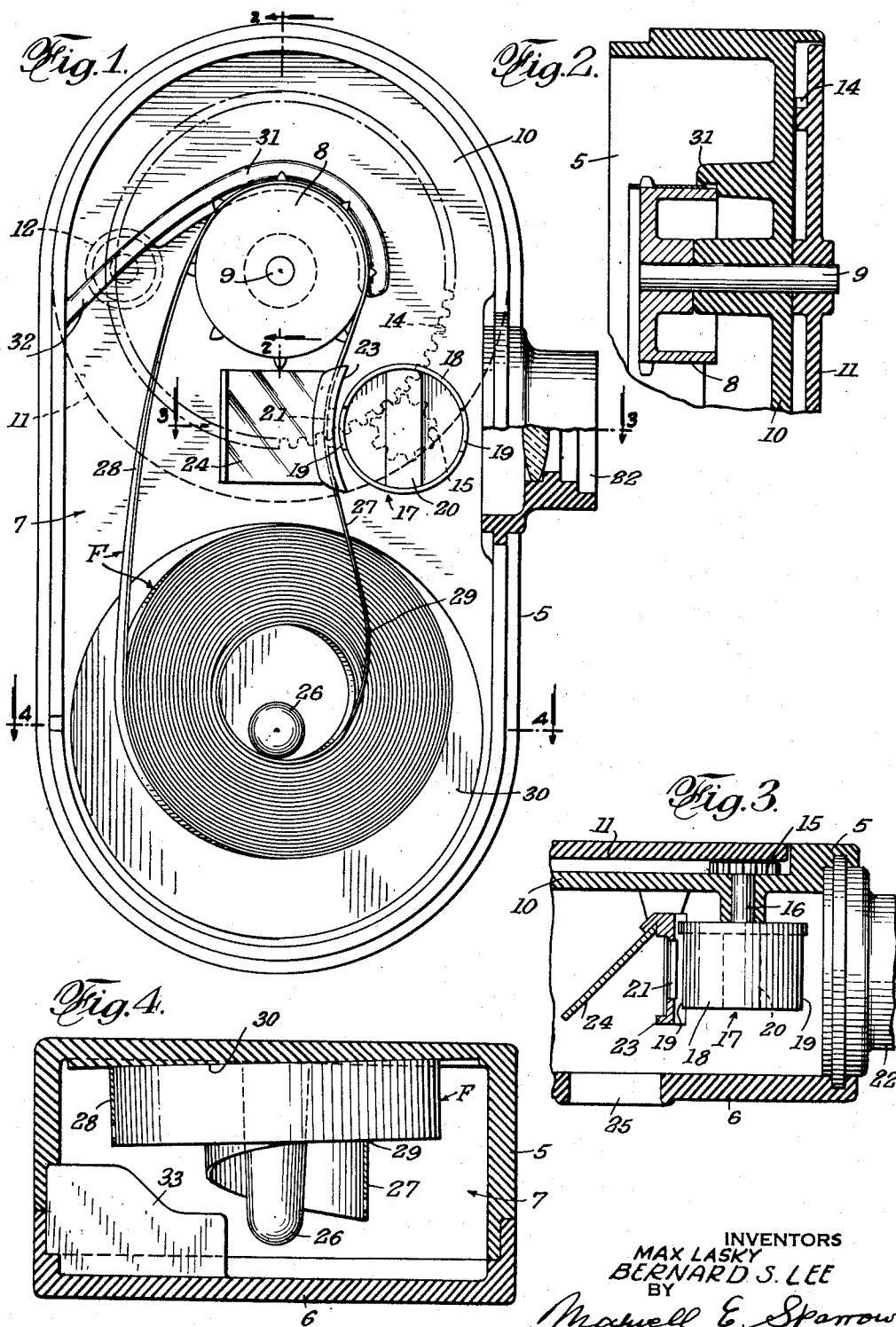
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DIRECT VIEWING MOTION PICTURE APPARATUS

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DIRECT VIEWING MOTION-PICTURE
APPARATUS

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Substituted for abandoned application Serial No.
363,730, October 31, 1940. This application
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3 Claims. (Cl. 88—18.7)

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This invention relates generally to direct viewing motion picture apparatus and more particularly to a portable device of this nature.

It is an object of the present invention to provide a very efficient practical, economical and simple portable direct viewing motion picture device.

It is a still further object of the present invention to provide a portable device for directly viewing images on a continuously advancing movable film in which the operating parts are compactly arranged and relatively few in number.

It is a further object of the present invention to provide a portable direct-viewing device with a continuously moving endless motion picture film, the major portion of the film being spirally arranged and having a looped portion trained around a sprocket wheel, one leg of the loop coming from the innermost convolution and the other leg from the outermost convolution thereof, the relative disposition of the spiralled film and its support being such as to assure that the legs of the film loop travel a substantially straight course unaffected by lateral forces seeking to twist the film when in motion.

It is yet another object of the present invention to make provision for guarding the film against displacement during its movement and to counteract any wandering tendencies of the spirally coiled portion of the film.

This invention accordingly consists in the features of construction, combination of parts and in the unique relations of the members and in the relative proportioning and disposition thereof; all as more completely outlined herein.

To enable others skilled in the art so fully to comprehend the underlying features thereof that they may embody the same by the numerous modifications in structure and relation contemplated by this invention, a drawing depicting a certain form of the invention has been annexed as a part of this disclosure, and in such drawing, like characters of reference denote corresponding parts throughout all the views, of which:

In the drawings:

Fig. 1 is a side view partly in section of a device made in accordance with the invention, the cover being removed;

Fig. 2 is a sectional view taken along line 2—2 of Fig. 1 looking in the direction of the arrows (parts being broken away);

Fig. 3 is a sectional view taken along line 3—3 of Figure 1, looking in the direction of the arrows (parts being broken away); and

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Fig. 4 is a sectional view taken along line 4—4 of Figure 1 and looking in the direction of the arrows.

In that embodiment of the invention which is illustrated, the device comprises a housing 5 fitted with a substantially light-proof cover 6 to provide an elongated chamber 7 having semi-circular ends as shown.

The housing 5 at the center of one of said semi-circular ends, is provided with a sprocket wheel 8 mounted on a shaft 9 which has bearing in a side wall 10 of said housing 5. A portion of said shaft protrudes through the side wall 10 and is fitted with a driving disc 11 provided with a manipulating handle 12. The driving disc 11 is preferably set into a seat 13 formed in the casing 5 so that the same is substantially flush with the outer wall of said casing and provides no projections except the handle 12.

In the present instance, the disc 11 is provided with gear teeth 14 which are preferably integrally formed on said disc, said teeth being arranged to engage and drive a pinion gear 15. This latter gear is carried by a stub shaft 16 journaled in the wall 10, a barrel-type shutter 17 being carried by said stub shaft.

The shutter 17 is preferably formed with a shell 18 having diagonally opposed openings 19. A transparent wall 20 is mounted in the shell 18 along a diameter thereof normal to a diameter bisecting said openings.

The ratio between the gears 14 and 15 is such that a frame of the film F will traverse the aperture 21 for each half revolution of the shutter. Since the opening 19 of the shutter which is nearest to the aperture and thus to the film, moves in the same direction as the film, no apparent motion of said film is conveyed to the eye of an observer applied to the eye-piece 22. On the contrary, the openings 19 are so proportioned as to give a rapid exposure of the film during the aligned condition of the openings with the eye-piece and a relatively longer dark period during which the film makes its greatest traverse.

The aperture 21 is formed in a shoe 23 fixed to the housing, a mirror 24 being carried by said shoe at an angle to receive light from an opening 25 formed in the casing cover 6.

The device is provided with several feet of film F arranged in an endless manner. The major portion of said film is arranged spirally in the lower portion of the chamber 7 and strung upon a stud 26 protruding inwardly from the side wall 55 of the housing 5 and positioned at the center

of the lower semi-circular curved end of said housing. A loop of the film is trained around the sprocket wheel 8 and engaged with the shoe 23, one leg 27 of said loop coming from the innermost convolution of the spirally arranged portion of the film and the other leg 28 from the outermost convolution thereof.

For successful operation of the device, it is desirable that the leg 27 of the film loop travel a substantially straight course unaffected by lateral forces seeking to twist it. Inasmuch as a portion of this leg must necessarily move by the spirally coiled portion of the film as at 28, a twist would be ordinarily imparted to the film as it seeks a contact with the shoe 23. To obviate this undesirable condition, the wall 10 of the housing 5, on its inner side, is angled as at 30 to cause the spirally coiled portion of the film to assume the angled position shown in Fig. 4. This condition permits the leg 27 to come out of the inside of the spiral to be received by the shoe 23 without distortion.

In order to guard against displacement of the film during movement thereof, a retaining shoe 31 is provided to engage an edge of that portion of the film which is passing over the sprocket wheel 8. The shoe 31 is preferably formed with a slightly downwardly directed portion 32 to engage and confine the film should the direction thereof be reversed.

While the spirally coiled portion of the film will ordinarily retain its position against the angled face 30, being held there by the leg 27, a rib 33 is provided on the cover 6 to counteract any wandering tendencies of said film portion.

The device is used by placing one eye against the eyepiece 22, holding the casing so that light is admitted through the opening 25 and turning the handle 12 in a counter-clockwise direction. The film leg 27 is drawn upwardly past the aperture 21 and around the sprocket wheel 8 to form the leg 28 which builds upon the outside of the spirally coil film by means of the light reflected by the mirror 24 which passes said light through the aperture 21.

From the foregoing, it is evident from the embodiment of the invention set out herein and clearly shown in the drawings that the film is substantially parallel with the side wall 10 of the housing and in substantial alinement with the shoe 23 and sprocket wheel 8; that the mirror or reflector 24 is in alinement with and angularly disposed with relation to the light admitting opening 25 and the frame aperture 21; that rib 33 is adapted to keep leg 28 of the film F in alinement with the spiral or coil portion of the film; and that sight opening 22, shutter 19 and shoe 23 are in substantial alinement, with the coil or spiral portion of film F below these devices and the sprocket wheel thereabove.

It will thus be seen that there has been provided by this invention a very compact and efficient portable direct viewing motion picture apparatus in which the various objects hereinabove set forth, together with many thoroughly practical advantages, are successfully achieved.

As many possible embodiments may be of the above invention, and as many changes might be made in the embodiment above set forth, it is to be understood that all matter hereinbefore set forth or shown in the accompanying drawings is to be interpreted as illustrative and not in a limiting sense.

This application is a "substitute" for the forfeited application, Serial No. 363,730, filed October

31, 1940, and allowed on September 1, 1943. In said application the second-named inventor Bernard S. Lee, was formerly known as Sydney B. Levy.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent, is:

1. In combination with an endless film having a spirally coiled portion and an elongated loop formed with leg portions, of a housing for said film, an apertured member engaging one of said leg portions, means within said housing adapted to maintain the other of said leg portions in substantial alinement with said spirally coiled portion, means for driving said film, and retaining means for guarding said film loop against displacement during movement of said film, said retaining means having a downwardly directed portion for engaging said film in the event of reversal of direction of movement of said film.

2. A device of the character described comprising a substantially elongated housing, a closure for said housing and having an opening, said housing and said closure providing an elongated chamber, a shaft extending within said housing from a side wall thereof and near one end thereof, a sprocket wheel mounted on said shaft, an end of said shaft projecting through said side wall, a driving disc fitted on said shaft end, said disc having a manipulating handle and being provided with teeth, a pinion gear engaging said teeth to be driven thereby, a stub shaft journaled in said wall and carrying said pinion gear, a barrel-type shutter carried by said stub shaft, a shoe fixed to said housing and having an aperture, a reflecting member carried by said shoe disposed at an angle to receive light from said opening in said casing, said chamber adapted to receive an endless film with its major portion arranged spirally in the lower portion of said chamber adjacent said wall and a loop thereof trained around said sprocket wheel and engaging with said shoe; said chamber having a wall in said lower portion provided with an angled surface for positioning said spirally coiled portion at an angle with respect to said shoe when said film is positioned in said casing.

3. A device of the character described comprising a casing, having an opening, a rotatable sprocket wheel within said casing, a manipulating handle external of said casing, a rotatable shutter in said casing, means operatively connecting said handle with said wheel and said shutter to drive them synchronously, said shutter comprising a shell having diagonally opposed openings and a transparent wall fixed in said shell along a diameter thereof normal to a diameter bisecting said openings, a shoe fixed to said casing and having an aperture, a reflecting member carried by said shoe disposed at an angle to receive light from said opening in said casing, said chamber adapted to receive an endless film with its major portion arranged spirally in the lower portion of said chamber, and a loop thereof trained around said sprocket wheel and engaging with said shoe at its said aperture, a wall in said lower portion of said chamber being angled for positioning said spirally coiled portion at an angle with respect to said shoe when said film is positioned in said casing.

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The following references are of record in the abandoned application Serial No. 363,730 filed October 31, 1940, of which this application is a substitute:

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