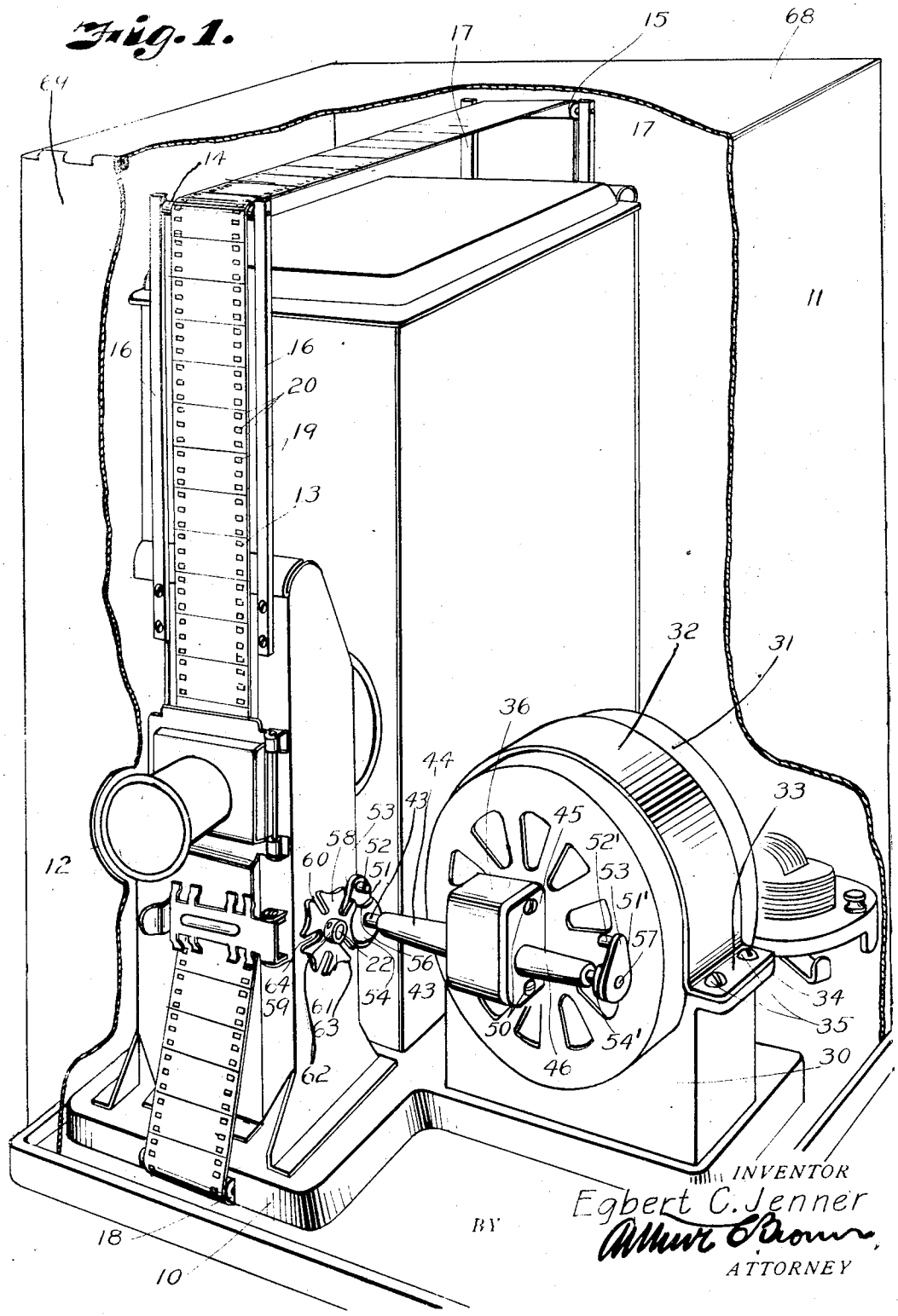
July 17, 1928. 1,677,237

E. C. JENNER

PROJECTING MACHINE

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Fig. 1.



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Fig. 2.

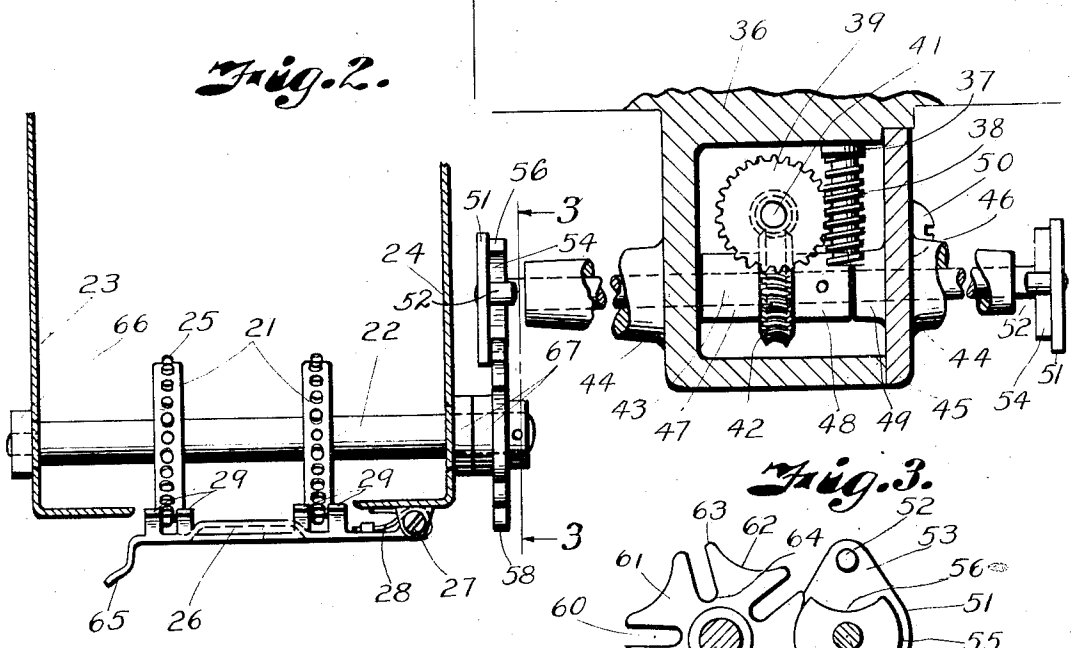


Fig. 3.

Fig. 4.

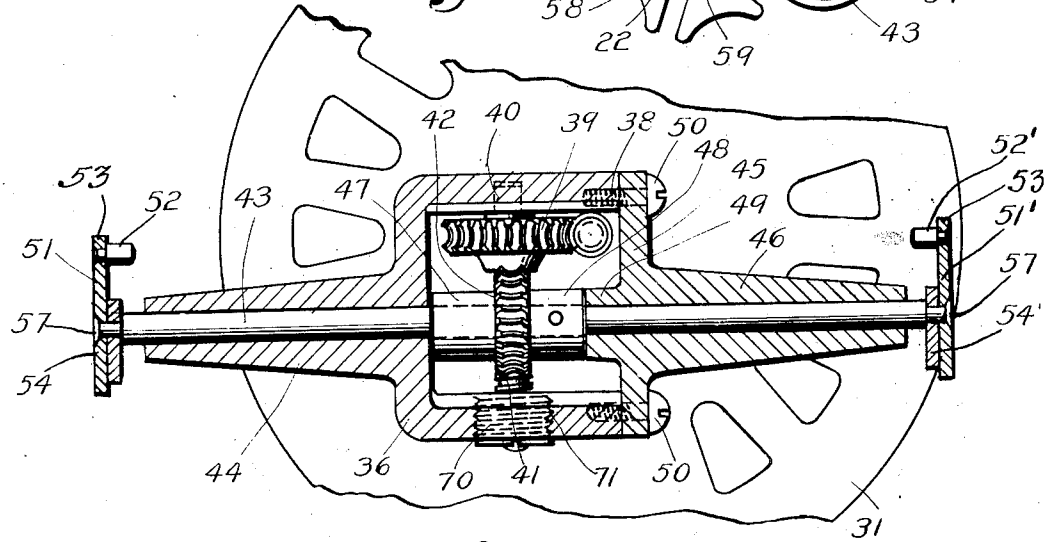
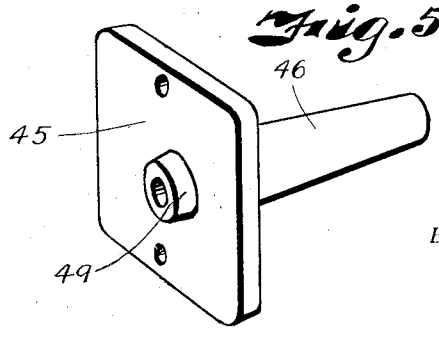


Fig. 5.



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UNITED STATES PATENT OFFICE.

EGBERT C. JENNER, OF INDEPENDENCE, MISSOURI.

PROJECTING MACHINE.

Application filed May 12, 1926. Serial No. 108,553.

My invention relates to projecting machines and more particularly to means for moving the film in a machine of this character intermittently.

It is the purpose of my invention to provide new and improved means for intermittently moving a film in a projecting machine and for holding said film from movement.

It is a further purpose of my invention to provide driving means for intermittently moving the film comprising a motor, a reduction gearing and a shaft carried by the motor, said shaft having means thereon for engagement with co-operating means that rotates a member engaging with the film.

The driving means on the shaft is preferably provided on both ends thereof so that the direction of movement of the film can be reversed by inverting the motor in its support.

It is a further purpose of my invention to provide an intermittent driving means for moving a film through a predetermined distance and then halting the same for a definite period, comprising a rotatable member engaging with the film having a toothed member thereon and a driving member carried by a driven shaft that engages with the teeth of said toothed member to rotate the same through a predetermined arc and which, furthermore, has means thereon for holding said toothed member against rotation when said first-mentioned means is out of engagement therewith.

Other objects and advantages of the invention will appear as the description of the accompanying drawings proceeds; however, I desire to have it distinctly understood that I do not intend to limit myself to the exact details shown or described but that I intend to include as part of my invention all such obvious changes and modifications of parts as would occur to a person skilled in this art and as would fall within the scope of the claims.

In the drawings,

Fig. 1 is a perspective view of my improved projecting machine, a portion of the cover being broken away.

Fig. 2 is a horizontal, sectional view, partly broken away, through the driving means and the adjoining portion of the projecting machine.

Fig. 3 is a section taken on the line 3—3 of Fig. 2.

Fig. 4 is an enlarged, sectional view of the driving means taken substantially at right angles to Fig. 2, and

Fig. 5 is a perspective view of one of the bearing members for the drive shaft.

Referring in detail to the drawings:

My improved projecting machine comprises a base portion 10, upon which is mounted the usual projecting machine 11, which is provided with a lens 12 through which the picture or other matter on the film 13 is projected by means of a suitable lighting apparatus in the machine 11. The film 13 used in conjunction with my invention is preferably a continuous loop and extends over the rollers 14 and 15 mounted on the brackets 16 and 17 and over the roller 18 mounted in the forward end of the base of the machine and a similar roller mounted at the rear thereof.

The film 13 is preferably divided into equal divisions 19, which may contain any desired illustrations, such as advertising matter; each section being adapted to be placed in position in alignment with the lens 12 to project the same on a suitable screen or other surface, and said film is preferably provided with a plurality of openings 20 therein, along the side edges thereof, there being a predetermined number of such openings for each section 19 of the film.

My invention comprises apparatus for intermittently moving the film 13 so that a section 19 is placed in alignment with the lens 12 and is maintained in such position for a predetermined period of time, after which the same is moved away and the succeeding section is quickly moved into position to remain in position in alignment with the lens 12 for the same period of time.

In order to accomplish this, the rotatable members 21 are mounted on the shaft 22, which is mounted in suitable bearings in the frame members 23 and 24; said rotatable members 21 being provided with projections 25 that are adapted to enter the openings 20 in the side edges of the film 13. In order to hold the film in proper engagement with the rotatable members 21 so that the projections 25 will mesh with the openings 20, a retaining member 26 is provided, which is pivoted at 27 on the frame member 24 and

is provided with a spring 28 urging the member 26 into engagement with the film and toward the rotatable member 21. Paired fingers 29 are provided on opposite sides of the member 26, between which the projections 25 are adapted to pass.

The base member 10 is provided with a motor supporting seat 30, in which the motor 31 is adapted to rest; said motor being held in position in the seat by means of the strap 32 having flanges 33 thereon, engaging with the flanges 34 on the seat 30 and secured thereto by means of the securing members 35. The motor 31 is provided with a reduction gear housing 36, into which the motor shaft 37 extends; said motor shaft being provided with a worm 38 that meshes with the worm wheel 39, which is mounted on a shaft 40, supported by the opposite walls of the housing 36 and provided with a worm 41 that meshes with a worm wheel 42, provided on the shaft 43.

The housing 36 is provided with an elongated bearing 44 for the shaft 43 and with a detachable cover plate 45, which is provided with a similar elongated bearing 46 for the shaft 43. Collars 47 and 48 are mounted respectively between the closed end wall of the housing 36 and the inwardly projecting hub 49 on the cover plate 45, the cover plate being held in position by any suitable means such as screws 50.

The shaft 43 has secured to opposite ends thereof so as to rotate therewith the cam-shaped plates 51 and 51′ which are provided with the projections 52 and 52′ respectively on the elongated ends 53 thereof. Projecting from the outer faces of the plates 51 and 51′ are the stop members 54 and 54′. Said stop members are shown as being made of separate plate-like members, which are provided with convexly curved edge portions 55, which are curved on the axis of the shaft 43 and with concave cut-out portions 56, which lie on the same side of the shaft 43 as the pins 52 and 52′. While the members 54 and 54′ are shown in the drawings as being made of a separate piece of material, this is immaterial as long as a convex shoulder is provided at 55 and a concave shoulder at 56. The parts are shown as being held in position on the shaft 43 by means of the rivets 57.

Co-operating with either the members 51 or 51′ is a toothed member 58, which is mounted on the shaft 22, so as to rotate therewith; being held in position by means of the collar 59. The toothed member 58 is provided with a plurality of substantially radially extending slots 60, which define the teeth 61, said teeth being provided with concave outer edges 62 and which have relatively sharply curved portions 63 merging with said concave portions 62 and with the walls of the slots 60. The inner ends of the slots are preferably curved, as shown at 64. The curvature of the concave edges 62 is substantially on the same radius as that of the convex shoulder 55 on the members 51 and 51′.

In the drawings the member 51 is shown as being in engagement with the toothed members 58. This is the usual arrangement but if it is desired to drive the film 13 in the opposite direction by means of the motor 31, this can be done by removing the strap 32 and turning the motor upside down when the member 51′ will engage with the toothed member 58.

The members 51 and 51′ operate in the same way; the operation of the member 51 being only described as the operation of both members would be substantially identical.

When the pin 52 engages with a slot 60, it rotates the member 58 through a predetermined arc, rotating the shaft 22 through a predetermined arc and also the rotatable members 21, thus advancing the film a predetermined distance; the number of projections 25 on the members 21 and the number of openings 20 to each section of the film being so proportioned that each arcuate movement of the toothed member 58 will advance the film 13 through the length of one section 19. As the pin or projection 52 leaves the slot 60, the convex shoulder 55 on the member 53 engages with the concave outer edge 62 of the tooth 61, following the pin 52, and locks the member 58 against rotation; this condition being maintained until the pin 52 has made a complete turn around the axis of the shaft 43 and moves into engagement with the next slot 60. When this occurs, the cut-out concave portion 56 of the member 53 is opposite the concave portion 62 of the tooth, thus permitting the toothed member 58 to rotate, due to engagement of the pin 52 in the slot 60. This is repeated for each slot 60, the sections of the film thus remaining in position to be projected by the machine for a relatively long period of time while the time used for moving one section away and bringing the next section in position is relatively quite short. The shaft 43 obviously operates slowly because of the reduction gearing comprising the two worms and the two worm wheels.

The member 26 may be provided with a handle 65 for moving the same out of engagement with the film 13. The shaft 22 is preferably held in position by means of the nut 66 engaging with the screw-threaded outer end thereof and the spacing collars 67 are preferably provided between the wall 24 and the toothed wheel 58. A suitable cover member 68 may be provided for the machine, which may have a hinged front wall portion 69.

The shaft 40 is provided with an adjust-

able bearing member 70, which is made in the form of a screw-threaded plug engaging in a screw-threaded opening 71 in the bottom wall of the housing 36.

What I claim and desire to secure by Letters Patent is:

1. In a projector, means for advancing a film comprising a motor, a motor support, reduction gearing and shaft carried by said motor, a driving member on each end of said shaft, a film-engaging member, and a member rotating therewith and engageable with either of said driving members, whereby said motor may be inverted in its support to reverse the direction of movement of said film.

2. In a projector, means for advancing a film comprising a motor, a motor support, reduction gearing and a shaft carried by said motor, a driving member on each end of said shaft, a film-engaging member, and a toothed member rotating therewith and engageable with either of said driving members, whereby said motor may be inverted in its support to reverse the direction of movement of said film, said driving members comprising means engaging the teeth on said toothed member to rotate said toothed member through a predetermined arc, and means engaging said toothed member to hold the same stationary when said first means is disengaged therefrom.

In testimony whereof I affix my signature.

EGBERT C. JENNER.