H. DUMARS & J. DARBY.

ADVERTISING DISPLAY MACHINE.

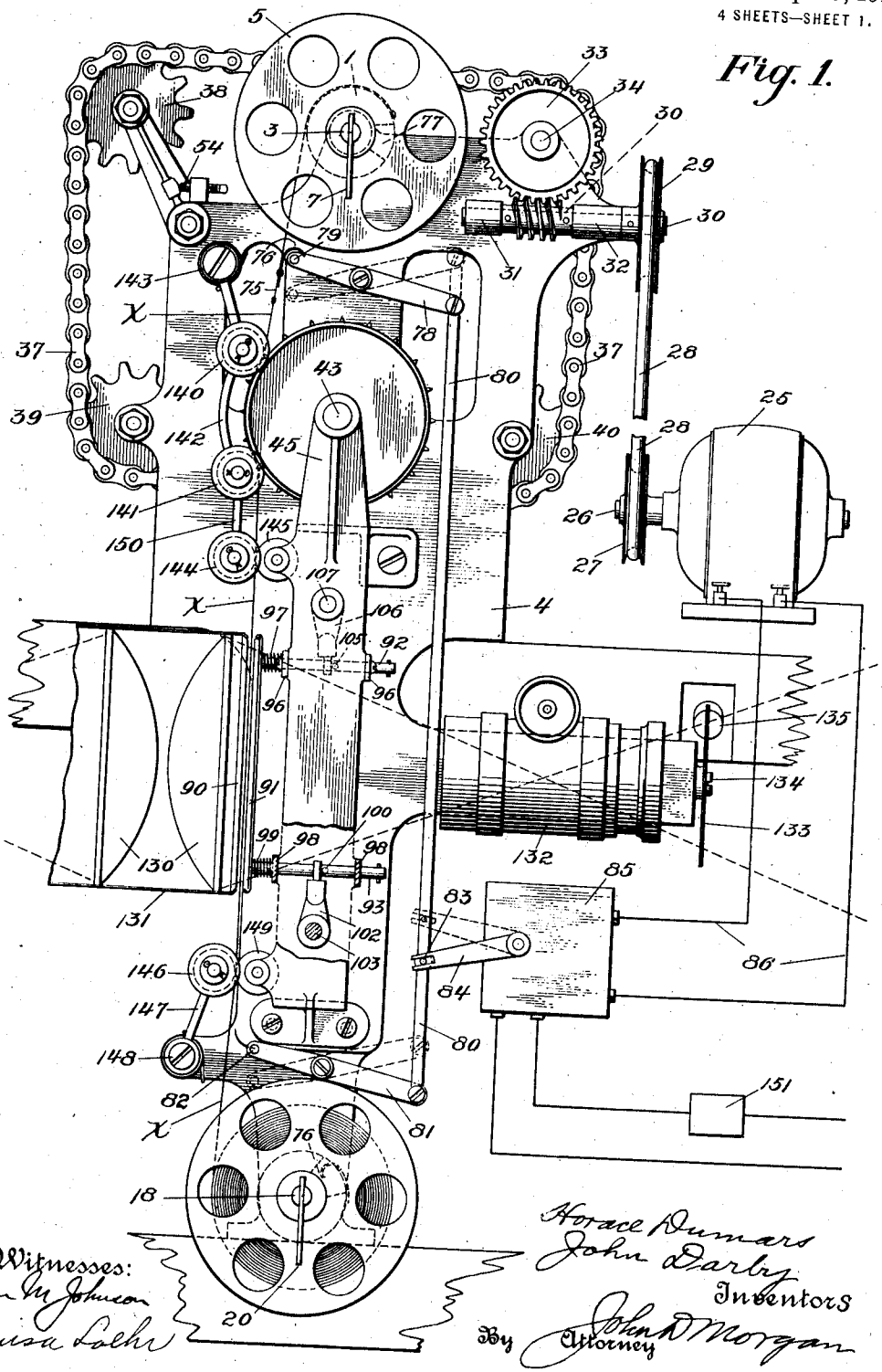
APPLICATION FILED AUG. 31, 1914.

1,277,558.

Patented Sept. 3, 1918.

4 SHEETS—SHEET 1.

Fig. 1.



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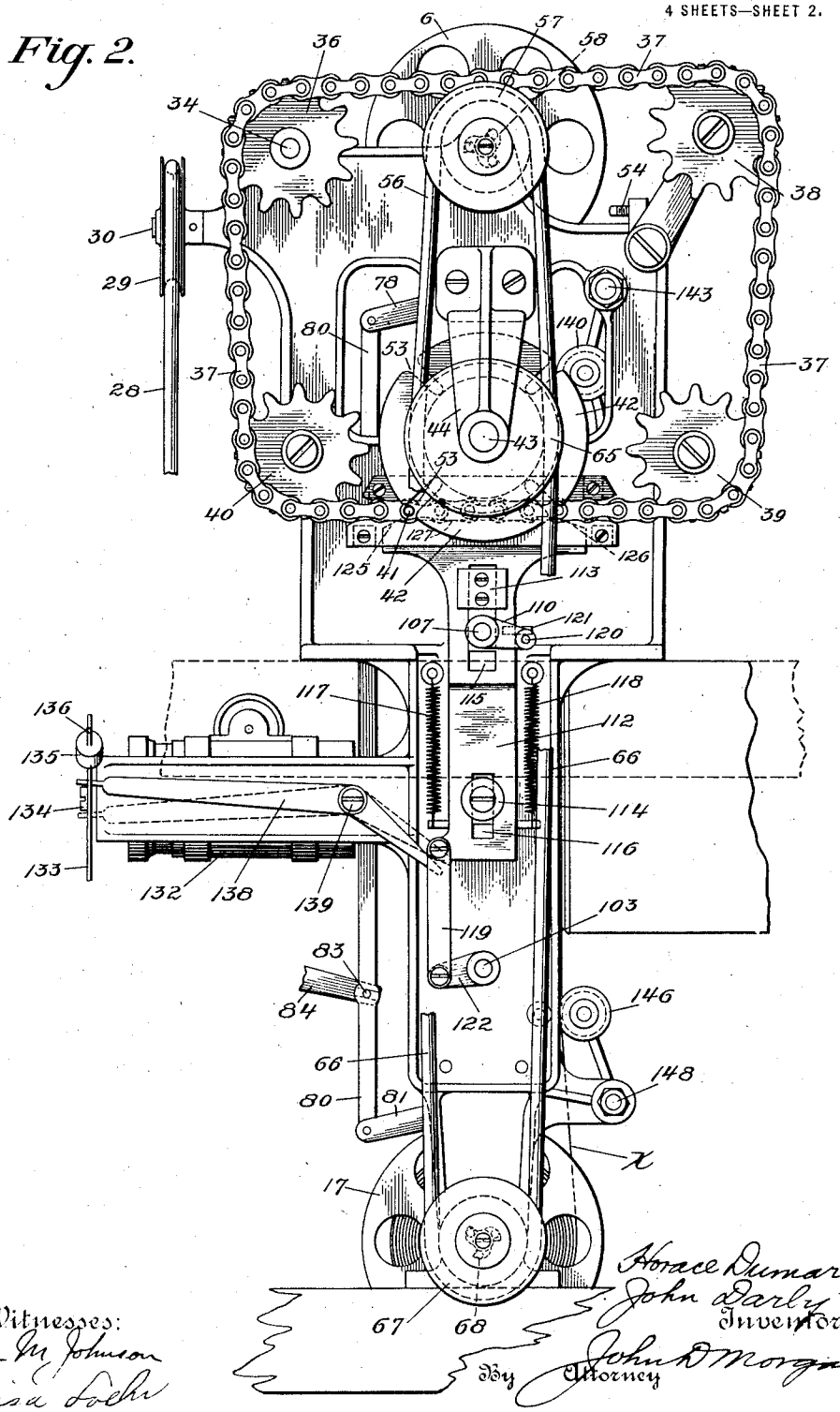
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4 SHEETS—SHEET 2.

Fig. 2.



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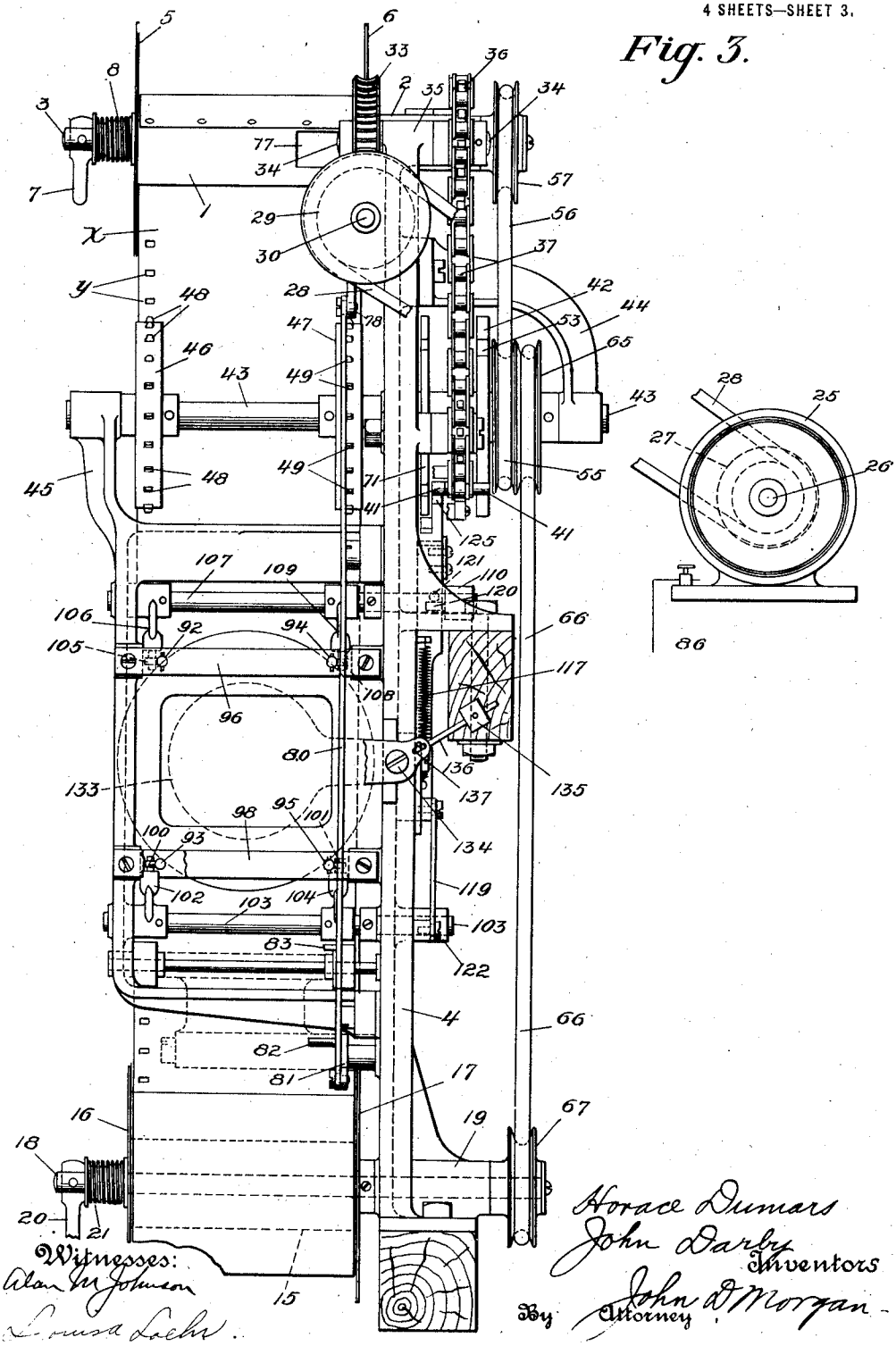
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4 SHEETS—SHEET 3.

Fig. 3.



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4 SHEETS—SHEET 4.

Fig. 4.

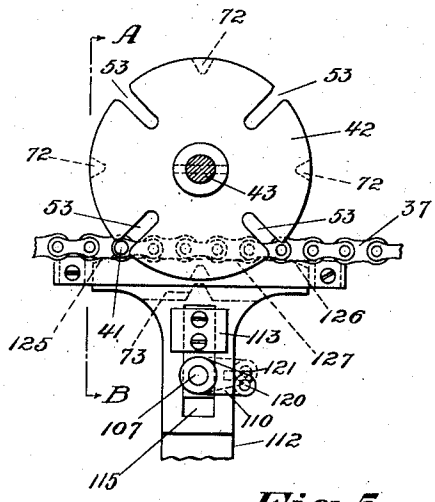


Fig. 6.

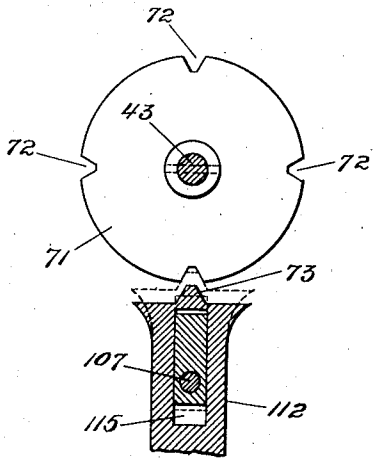
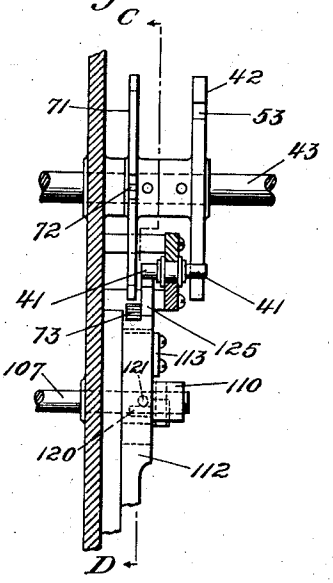


Fig. 5.



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UNITED STATES PATENT OFFICE.

HORACE DUMARS, OF GLEN RIDGE, AND JOHN DARBY, OF SUMMIT, NEW JERSEY.

ADVERTISING DISPLAY-MACHINE.

1,277,558. Specification of Letters Patent. Patented Sept. 3, 1918.

Application filed August 31, 1914. Serial No. 859,275.

To all whom it may concern:

Be it known that we, HORACE DUMARS, of Glen Ridge, New Jersey, and JOHN DARBY, of Summit, New Jersey, citizens of the United States, have made Improvements in Advertising Display-Machines, of which the following is a specification.

The invention relates to machines for automatically displaying and shifting pictures and like matter for advertising or amusement purposes, and in certain aspects thereof, the invention relates more particularly to machines for projecting such pictures and for handling them in strip form. Objects and advantages of the invention will in part be set forth hereinafter and in part will be obvious herefrom.

The invention consists in the novel parts, constructions, arrangements, combinations and improvements herein shown and described.

The accompanying drawings herein referred to and constituting a part hereof, illustrate one embodiment of the invention, and together with the description, serve to explain the principles thereof.

Of the drawings:

Figure 1 is a side elevation of a machine constructed in accordance with the principles of the invention;

Fig. 2 is a side elevation showing the opposite side from Fig. 1;

Fig. 3 is an end elevation looking at Fig. 1 from the right;

Fig. 4 is a fragmentary detail of the intermittent feed for the film strip;

Fig. 5 is a fragmentary view corresponding to Fig. 4, looking thereat from the right, and showing the machine frame in section on the line A—B; and

Fig. 6 is a fragmentary view taken in section on the line C—D of Fig. 5.

Referring by way of example to the accompanying drawings, illustrating one embodiment of the invention, means are provided for intermittently feeding the film strip x in either direction, and in connection therewith means for smoothing and holding the film while it is being shown or projected. In accordance with one feature of the invention said means operate automatically and in connection therewith are means which automatically reverse the direction of travel of the film, the successive pictures or like matter on the film being shown or projected during the intermittent travel in both directions.

In the embodied form of such means, a reel 1 for winding and unwinding the film strip is provided. Said reel 1 is mounted upon a shaft 3, which shaft is carried in a suitable bearing or journal 2 in the frame 4 of the machine. The reel 1 is provided with flanges 5 and 6 for holding and alining the film strip upon the reel. Suitable devices for permitting the insertion and withdrawal of the reel 1 with respect to the shaft 3 are provided, and also means for causing the reel to turn with the shaft. In the embodied form, a pivoted locking lever 7 is mounted in the end of the shaft 3 and a coil spring 8, operating between suitable washers, holds the reel in position. A suitable spline or other device may be utilized to cause reel 1 and shaft 3 to rotate together.

At the other end of the machine there is provided a reel 15, having flanges 16 and 17. The reel 15 is removably mounted upon a shaft 18, which shaft is journaled in a bearing 19 in the machine frame 4. A pivoted locking lever 20 and a spring 21, similar to the lever 7 and spring 8 permit the insertion and withdrawal of the reel 15 with respect to the shaft 18, and suitable engaging means for causing reel 15 to turn with shaft 18 are provided.

The embodied form of intermittent driving means for the film reels 1 and 15 comprise a motor 25, preferably an electric motor, said motor having upon its shaft 26 a belt pulley 27. Over the pulley 27 passes a belt 28, said belt also passing over a pulley 29. The pulley 29 is mounted upon a worm shaft 30, said worm shaft being journaled at 31 and 32 upon the machine frame. Meshing with the worm shaft 30 is a worm wheel 33 fixed upon a shaft 34, said shaft being journaled at 35 upon the frame. Fixed also to the shaft 34 is a sprocket wheel 36. Passing over sprocket wheel 36 and driven thereby is a sprocket chain 37, said sprocket chain also passing over sprocket wheels 38, 39 and 40. Wheel 38 is shown provided with a tension adjusting device 54.

Fixed to the sprocket chain 37 is a pin 41, said pin projecting laterally therefrom into the path of a star wheel or radially slotted rotatable disk 42, mounted to rotate with the shaft 43. The disk 42 is shown with

four radial slots 53 therein. The shaft 43 is journaled intermediately in the machine frame 4 and its ends are likewise journaled in brackets 44 and 45 supported from the machine frame. Fixed upon the shaft 43 are disks 46 and 47 provided, respectively, with sprocket teeth 48 and 49, which sprocket teeth are adapted to engage with holes y in the side edges of the film strip x to give a positive and accurate feed or advancement to the strip.

Means are provided for moving the film carrying reels 1 and 15 in harmony with the movement of the sprocket disks 46 and 47 to wind up the strip as fed by the sprocket disks, and dependent upon the direction in which the film strip is being fed. As embodied, there is mounted on the shaft 43 to rotate therewith a pulley 55, carrying a belt 56, which belt passes over a pulley 57 upon the shaft 3. Connecting the pulley 57 with the shaft 3 is a one way clutch 58, whereby when the pulley 57 is rotated in one direction it will rotate the shaft in that direction, but in the opposite direction the pulley 57 will rotate idly without rotating the shaft. Fixed also to shaft 43 is a pulley 65, over which pulley passes a belt 66, said belt 66 passing also over a pulley 67 mounted upon the end of shaft 18. Pulley 67 is connected to shaft 18 by a one way clutch mechanism 68. Thus the pulley 67 acts to rotate the shaft 18 in one direction, while the pulley rotates idly in the other direction without rotating the shaft. The pulleys 67 and 57 are arranged to clutch their respective shafts in opposite directions, so that when the shaft 43 and the sprocketed disks 46 and 47 rotate in one direction, either the reel 1 or the reel 15, depending upon which reel is winding up, will be positively rotated to the same amount or degree as the movement of the film strip x, while the paying off reel, whether the reel 1 or the reel 15, will rotate freely to give off the necessary amount of the film strip x. The driving pulleys on shaft 43 are somewhat larger in diameter than the driven pulleys on shafts 1 and 18, to insure the reeling of the entire amount of film fed by the sprocketed disks 46 and 47.

Means are provided by the invention for accurately registering or positioning the film strip after each intermittent feed thereof, so that the successive pictures may be correctly and accurately positioned or "framed" with respect to the aperture plate through which the light passes. As embodied, there is fixed upon the shaft 43 a notched disk 71 having therein a series of beveled notches 72. A detent 73 is slidably mounted on a guide 112 on the machine frame, and is adapted to pass into and out of engagement with the respective notches 72, the corresponding beveled shape of the notch and detent giving a very accurate positioning or registration of the film strip. The detent 73 is shown in engaging position with a notch 72 in dotted lines in Fig. 6 and is shown in the disengaged position in full lines in said figure. The actuating means for the detent slide 73 will be later described in detail in connection with the description of slide 112 upon which member 73 is mounted.

Means are provided by the invention for automatically reversing the intermittent feed of the film strip at the end of its travel. In the embodied form of such means, the film strip x is detachably attached to a short sheet or strip 75, the other end of the strip 75 being attached to the reel 1, at the top end. A similar arrangement is provided in connection with the reel 15 at the bottom end. Fixed to the strip 75 in proper position is a hook 76, which hook is adapted to fit into a recess 77 in the reel 1 when wound thereon. Pivotally mounted on the frame of the machine is a lever 78, having in one end thereof a pin 79, which pin projects into the path of the hook 76. The other end of the lever 78 is pivotally connected to a rod 80, the other end of the rod 80 being pivotally connected to one end of a lever 81. The lever 81 is pivoted on the machine frame and is similar to the lever 78. Lever 81 has a pin 82 projecting into the path of the corresponding hook 76 of the strip 75 which is fixed to the lower reel 15. Carried upon the rod 80 is a pin 83, which pin is embraced by the slotted end of a lever 84. The lever 84 is connected to a double pole switch 85, which switch is in the circuit 86 of the motor 25.

Thus when the film x has been run off or exhausted from one reel or in one direction, the switch 84 is thrown and the motor 25 is reversed and then rotates or drives the machine in the opposite direction, thereby feeding the film intermittently in the opposite direction. In Fig. 1, the lever 78 in the full line position is adapted to be engaged by the hook 76 of the reel 1 and to be moved thereby into the dotted line position, thus reversing the polarity of the switch 85. The lever 81, by means of the rod 80 is at the same time moved to the dotted line position. It is then adapted to be engaged by the hook 76 of the reel 15, when the film strip has reached the other end of its travel.

Means are provided by the invention for smoothing and holding firmly the film strip x at the point of exposure or projection while the picture is being exposed or projected and for releasing the film strip while it is being fed. In the embodied form of such means, there are provided two transparent plates 90 and 91 preferably of glass and located upon either side of the film strip x at the place of exposure or projection. The

plates 90 and 91 are relatively movable toward and from each other to alternately firmly press the film strip therebetween and to release it for its feed or travel. As embodied plate 90 is stationary and plate 91 is movable. Plate 91 is mounted upon supporting rods, preferably four in number, and identified by numerals 92, 93, 94 and 95. The rods 92 and 94 are slidably mounted in cross bars 96 carried upon the machine frame, and coiled springs 97 act to press the plate 91 against the plate 90. The rods 93 and 95 are similarly mounted in cross bars 98, and are similarly acted upon by springs 99. Thus, as embodied, the plate 91 is continuously spring impelled toward the plate 90, and means are provided for retracting it against the action of the springs to release the film strip x during its feeding movement. In the embodied form of such means, there is provided upon the rod 93 a lug 100, and upon rod 95 is a corresponding lug 101. The lug 100 is in the path of an arm 102 fixed to a shaft 103, said shaft being mounted in the machine frame. The lug 101 on rod 95 is in the path of an arm 104 likewise fixed to the shaft 103. Fixed on the end of shaft 103 is an arm 122.

The rod 92 is provided with a lug 105, which lug is in the path of an arm 106, fixed to a shaft 107, which shaft is journaled in the machine frame. The rod 94 is provided with a lug 108 in the path of an arm 109, said arm being likewise fixed to the shaft 107. The shaft 107 has an arm 110 fixed to the end thereof. Slidably mounted upon the frame 4 is a plate 112, said plate being held in position by guiding members 113 and 114 passing respectively through slots 115 and 116 in the plate 112. The plate 112 is impelled in an upward direction by the springs 117 and 118. The plate 112 is connected by a pivoted link 119 to the arm 122 on shaft 103. The arm 110 on shaft 107 has in the end thereof a pin 120 engaging with a pin or lug 121 fixed in the sliding plate 112. Thus the shafts 104 and 107 are rocked in conformity to the sliding movement of the plate 112, and the glass plate 91 is accordingly successively and automatically moved toward or away from the glass plate 90.

The embodied form of moving and controlling means for the sliding plate 112 comprises two inclined cams 125 and 126 at either end of the enlarged or T-shaped head of the slide 112 together with a level or smooth bearing surface 127 between the cams 125 and 126 (Figs. 2, 4 and 5). Thus when the pin 41 travels to the right along the bottom reach of the sprocket chain in Fig. 1, it will engage the cam 125, and move the sliding plate 112 downwardly against the springs 117 and 118, and thus rock shafts 103 and 107 to move plate 91 away from plate 90. So long as the pin 41 travels along the straight face 127 on the plate 112, said plate is held in the downward position and the plate 91 is held retracted from the plate 90. When the pin 41 reaches the cam 126 (Fig. 1), the plate 112 slides upwardly, and the shafts 103 and 107 rock to permit the plate 91 under the action of springs 97 and 99 to move forward and press the film strip against the plate 90.

The detent and registering device 73, heretofore referred to, is mounted on the slide 112. When slide 112 is in the lower position, the detent and registering device 73 is retracted and when slide 112 is in the upper position, the member 73 firmly holds and registers or centers the film strip.

It will be understood that after the plate 112 has been slid downwardly and the plate 91 has been drawn away from the plate 90, pin 41 enters one of the radial slots 53 in the slotted disk 42, thus rotating the sprocketed disks 46 and 47 and therewith either the reel 1 or the reel 15 thereby giving a feeding movement or travel to the film strip x. When the pin 41 passes out of the radial slot 53 in the disk 42 (which in the considered instance would be at the right in Fig. 2), the feeding movement of the film strip would be stopped, and also by reason of the pin 41 passing the cam 126, plate 122 moves upwardly and the plate 91 would move backwardly against the film just after the film has come to rest.

As embodied, the invention provides projecting means for projecting the picture upon a screen, and in connection therewith an automatically operating shutter mechanism for shutting off the light during the feed of the film. As embodied, a set of condensing lenses 130 are provided, the plate 90 being conveniently mounted at the front of the carrier 131 for the condensing lenses. An aperture plate may be provided back of plate 91. Projecting lenses of suitable form may be provided, and a lens tube 132 for lenses is shown. In front of the lens tube 132 is a shutter disk 133, pivotally mounted at 134 upon a forward projection of the machine frame. A counter weight 135, which may be adjustable along its supporting arm 136 is provided. Projecting through a slot 137 in the arm 136 is a lever 138, which lever is pivotally supported at 139 upon the machine frame. The other end of the lever 138 projects into the path of the sliding plate 112, or some part connected therewith. The shutter 133 is thus swung in front of the lens during the feed of the film strip.

Means are provided for alining and holding the film strip x in position. In the embodied form thereof two sets of rollers 140 and 141 are carried upon a swinging spring pressed frame 142 mounted at 143 upon the

machine frame. The sets of rollers 140 and 141 are flanged and grooved to coöperate with the disks 46 and 47 and having their grooves located over the sprocket teeth 48 and 49 in a well-known manner. Below said rolls, a pair of rolls 144 are pivotally mounted on a spring-pressed frame 150 swung on the lower part of the swinging frame 142 and cooperates with a pair of rolls 145 mounted upon the machine frame to preserve the film strip x in alinement with the opening between the plates 90 and 91, and to cause the film strip to move free and not adhere to plate 90 just prior to the feeding movement. Below the plates 90 and 91 a pair of rollers 146 are mounted on a swinging spring pressed frame 147 mounted at 148 on the machine frame. The rollers 146 coöperate with a pair of rollers 149, mounted on the machine frame. The said arrangement of the rollers 144, 145 and 146 and 149 whereby they move the film strip free from stationary transparent plate 90 just prior to the feeding movement is shown in Fig. 1, the rollers being mounted or centered so that the line of feed of the film is a slight distance in front of plate 90, plate 91 moving the film slightly backwardly just before it is pressed smooth between the two plates. The rollers 146 and 149 coöperate to move the film strip away from plate 90 and serve to aline the film strip and to direct it to the reel 15.

From all the foregoing it will be understood that a machine has been provided which embodies and realizes the object of invention and the advantages herein set forth, together with other objects and advantages. It will be understood also that in its broader aspects the invention is not limited to the precise form of mechanism shown and described, but that departures may be made therefrom within the scope of the accompanying claims, without departing from the principles of the invention and without sacrificing its chief advantages.

What we claim as our invention and desire to secure by Letters Patent, is:—

1. A machine for exhibiting pictures, advertising matter and the like, including in combination means for intermittently feeding a film strip, means for illuminating a part of the strip and a transparent plate covering the illuminated part of the film strip pressing the film strip smooth at said illuminated part while it is being exhibited and releasing it while it is being fed.

2. A machine for exhibiting pictures, advertising matter and the like, including in combination means for intermittently feeding a film strip, means for illuminating a part of the strip and a pair of opposed transparent plates covering the illuminated part of the film strip between which the film strip is pressed smooth at the place of illumination while it is being exhibited and releasing it while it is being fed.

3. A machine for exhibiting pictures, advertising matter and the like, including in combination means for intermittently feeding a film strip, means for illuminating a part of the strip and means for pressing the strip smooth at said illuminated part while it is exhibited and releasing it while it is fed, and means moving the film strip transversely to its plane to prevent adherence of the strip to the pressing means.

4. A machine for exhibiting pictures, advertising matter and the like, including in combination means for intermittently feeding a film strip, means for illuminating a part of the strip and a transparent plate pressing the film strip smooth at said illuminated part while it is being exhibited and releasing it while it is being fed, and means for moving the film strip transversely to its plane to prevent adherence of the film to said transparent plate.

5. A machine for exhibiting pictures, advertising matter and the like, including in combination means for intermittently feeding a film strip, a stationary plate and a movable plate between which the film is pressed while being exhibited, and means for moving the film away from the stationary plate in a direction transversely to its plane, and means for moving the movable plate away from the film.

6. A machine for exhibiting pictures, advertising matter and the like, including in combination means for intermittently feeding a film strip, a stationary plate and a movable plate between which the film is pressed while being exhibited and guide rolls over which the film runs, and located out of alinement with the stationary plate on the same side thereof as the film.

7. A machine for exhibiting pictures, advertising matter and the like, including in combination means for intermittently feeding a film strip, a stationary plate and a movable plate between which the film is pressed while being exhibited and guide rolls for the film strip at either side of said plates slightly out of alinement with said stationary plate on the same side thereof as the film.

8. A machine for exhibiting pictures, advertising matter, and the like, including in combination means for intermittently feeding a film strip, means for illuminating a part of the strip and means for pressing the strip smooth at said illumiated part while it is exhibited and releasing it while it is being fed, means for moving the film transversely to its plane to prevent adherence to the pressing means, and means for causing said strip feeding means and said pressing means to operate alternately and automatically.

9. A machine for exhibiting pictures, advertising matter and the like, including in combination means for intermittently feeding a film strip, means for illuminating a part of the strip and a transparent plate pressing the film strip smooth at said illuminated part while it is being exhibited and releasing it while it is being fed, means for moving the film transversely to its plane to prevent adherence to the pressing means, and means for causing said strip feeding means and the pressing and releasing movements of said plate to take place successively and automatically, said film moving means operating when the plate releases the film.

10. A machine for exhibiting pictures, advertising matter and the like, including in combination means for intermittently feeding a film strip, means for illuminating a part of the strip and a pair of pressing members located respectively on opposite sides of the film strip and pressing it between them while it is being exhibited and releasing it while it is being fed, means for moving the film transversely to its plane at the illuminated part, and means for causing said strip feeding means and said pressing means to operate alternately and automatically.

11. A machine for exhibiting pictures, advertising matter and the like including in combination intermittently operating film feeding means comprising a star wheel, a continuously running motor, driving mechanism operated by the motor and including an endless chain, a shutter, shutter operating mechanism, and engaging means upon the chain for operating the star wheel and the shutter operating mechanism.

12. A machine for exhibiting pictures, advertising matter and the like including in combination intermittently operating film feeding means comprising a star wheel, a continuously running motor, driving mechanism operated by the motor and including an endless chain, a shutter, shutter operating mechanism, film clamping means, and means upon the chain for operating said star wheel, said shutter operating means and said film clamping means.

13. A machine for exhibiting pictures, advertising matter and the like including in combination intermittently operating film feeding means, locking and registering means for the film feeding means, shutter operating means, film clamping and releasing means, a continuously running motor, driving means actuated thereby, including a device for intermittently actuating and controlling the film feeding means, shutter operating means, the film clamping and releasing means and the locking and registering device for the film feeding means.

In testimony whereof, we have signed our names to this specification, in the presence of two subscribing witnesses.

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JOHN DARBY.

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