

D. C. WOODWORTH.
MOTION PICTURE APPARATUS.
APPLICATION FILED MAY 7, 1909.

959,675.

Patented May 31, 1910.

2 SHEETS—SHEET 1.

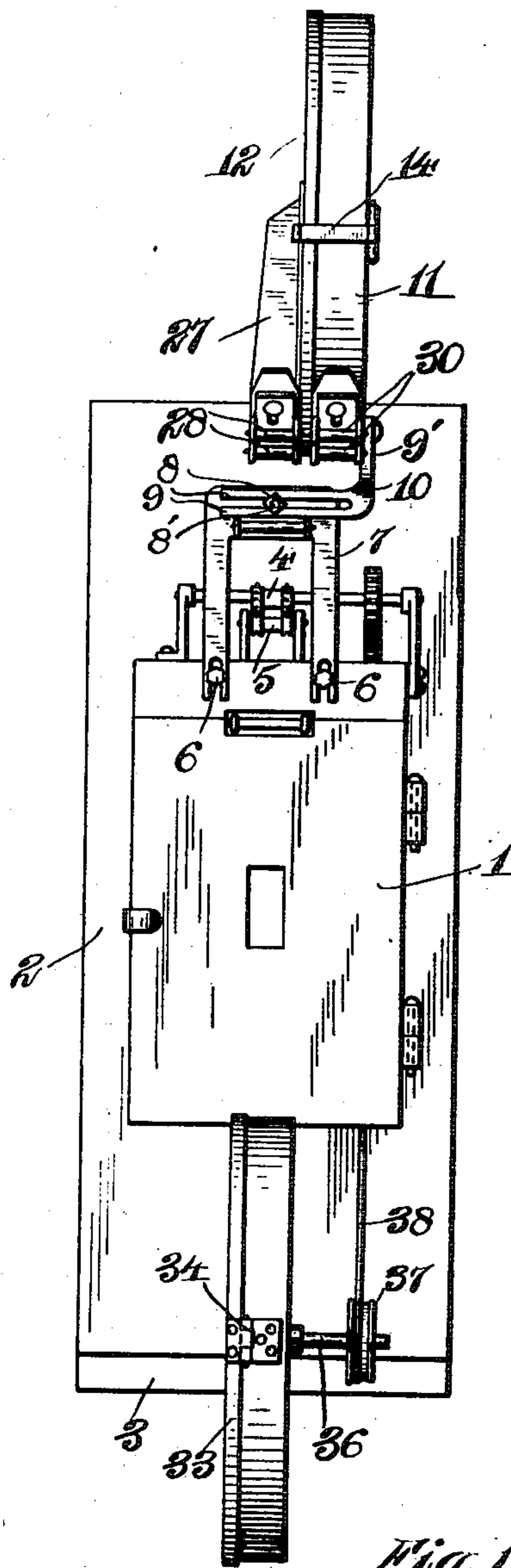


Fig. 1.

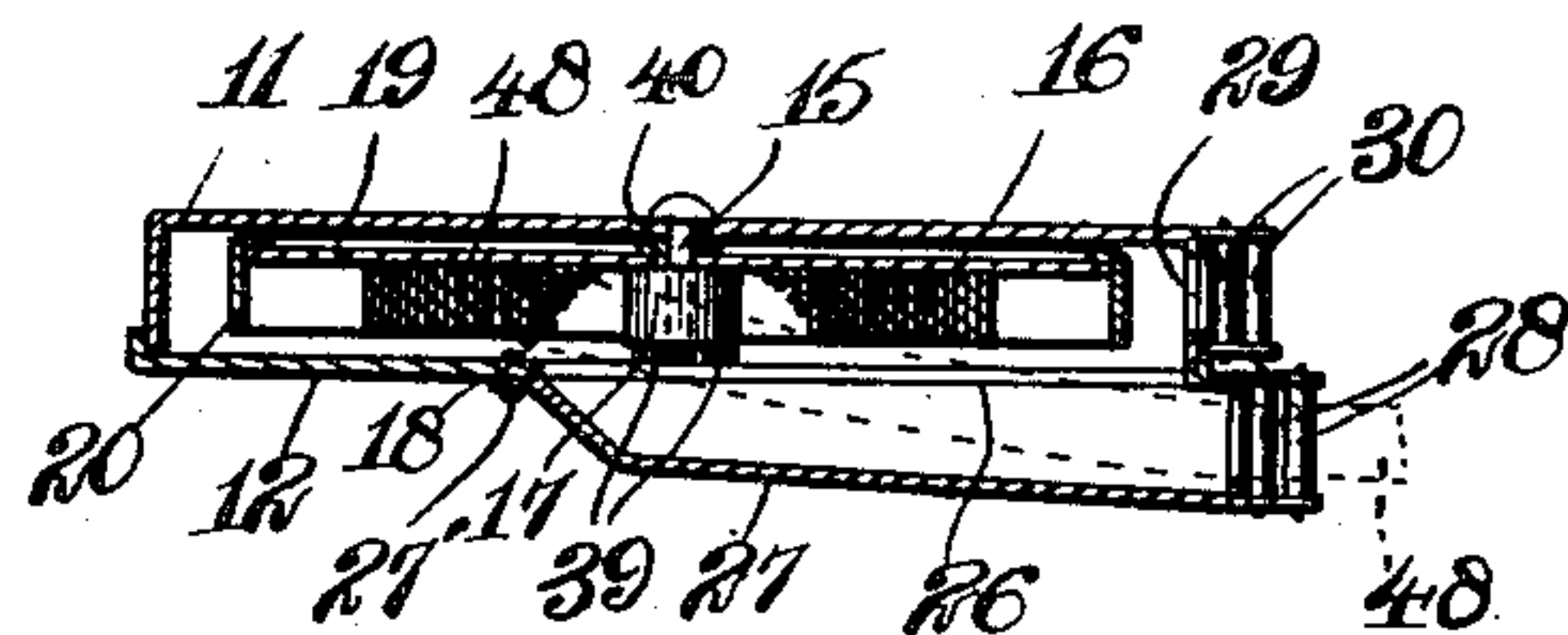
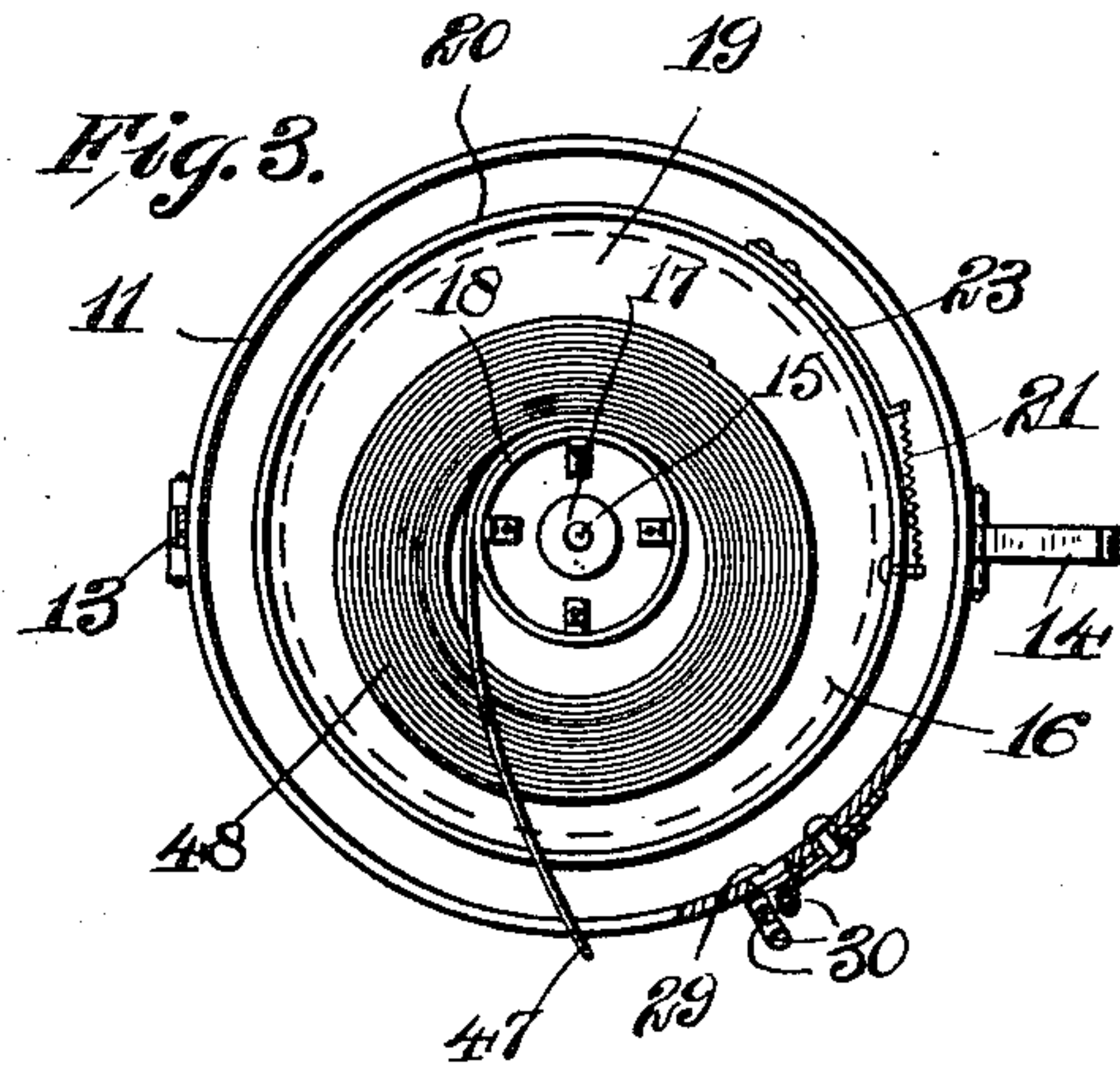


Fig. 4.

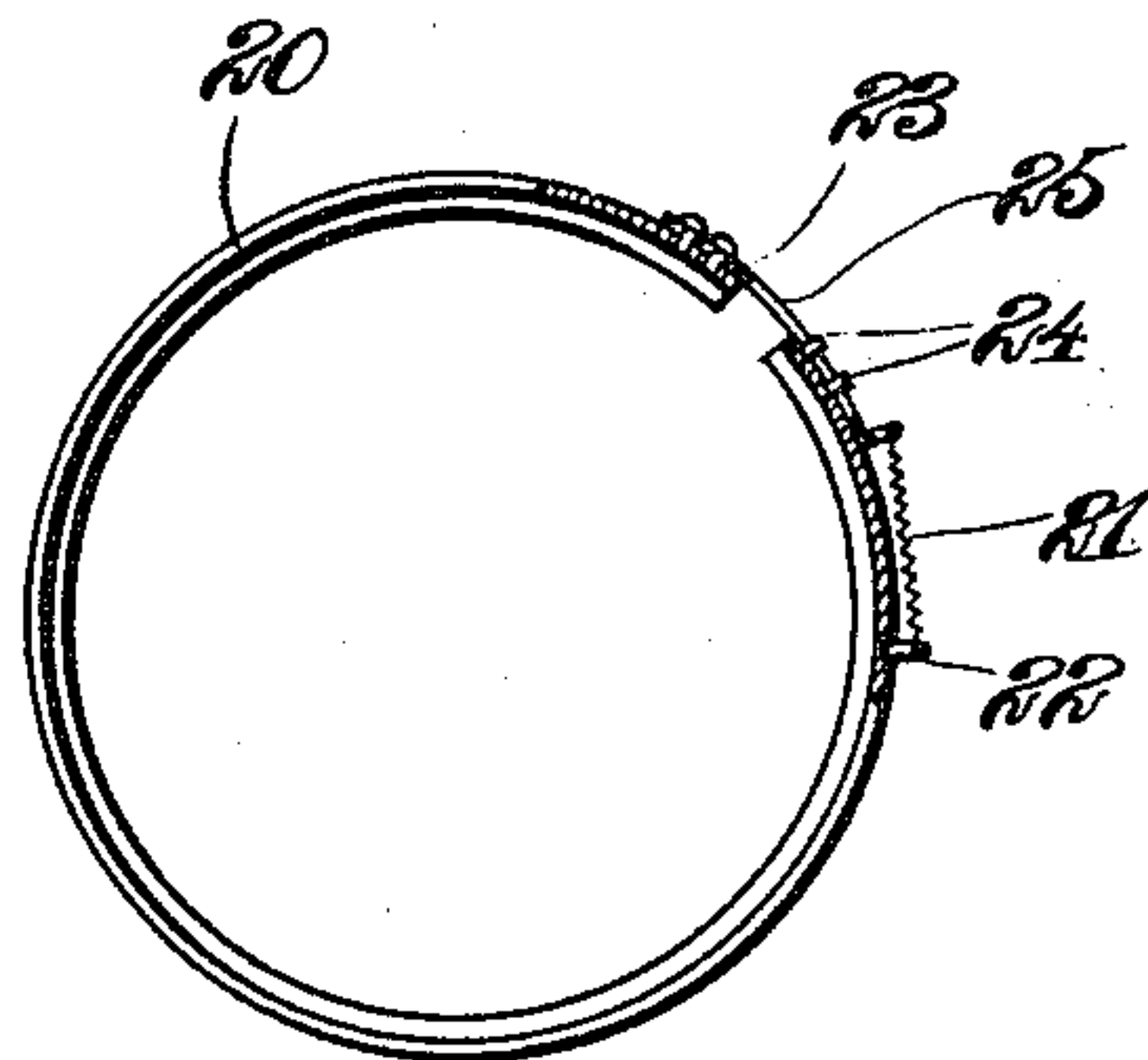


Fig. 5.

Witnesses:
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W. E. Smith

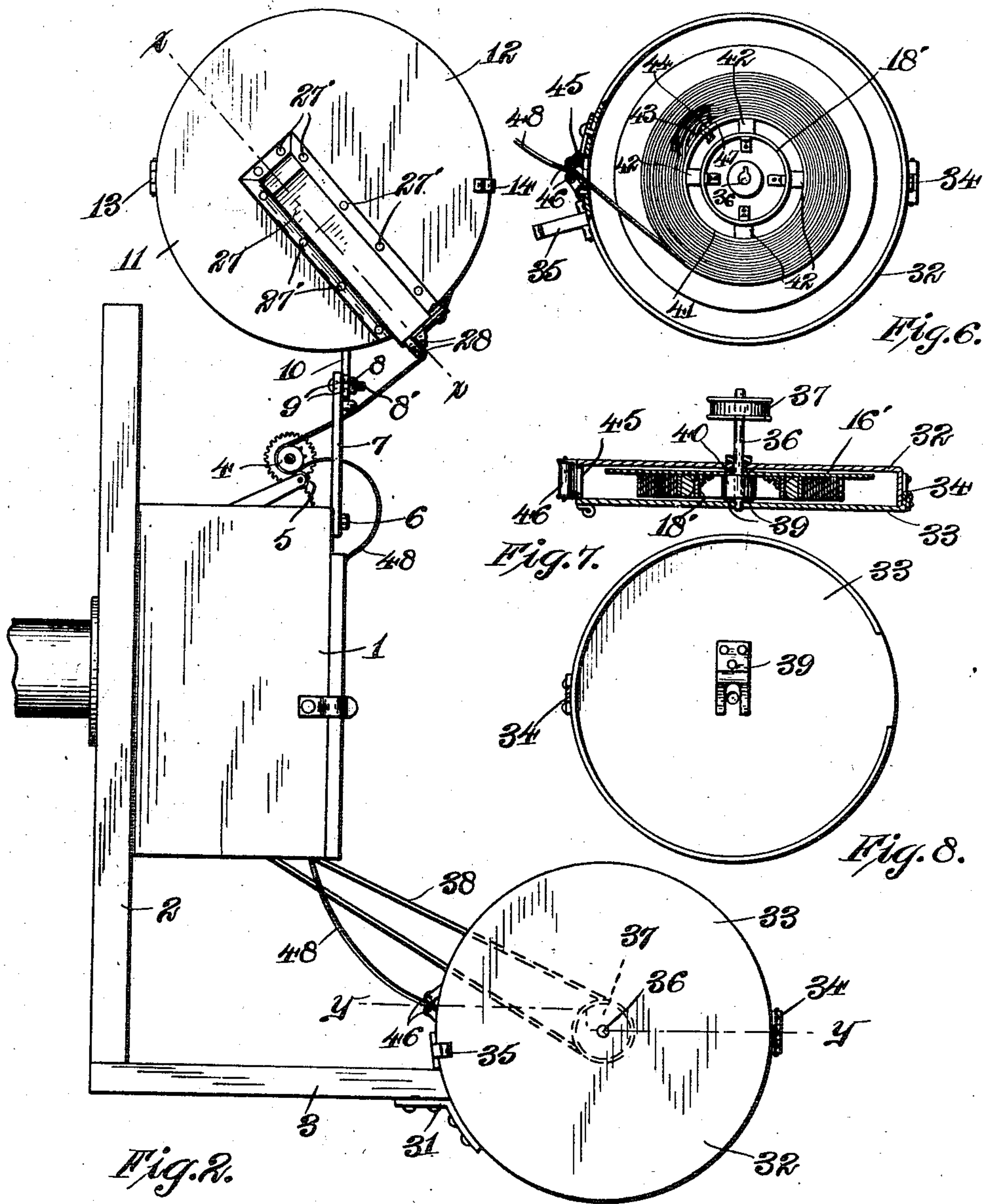
Inventor:
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by Joshua R. H. Rose
his Attorney.

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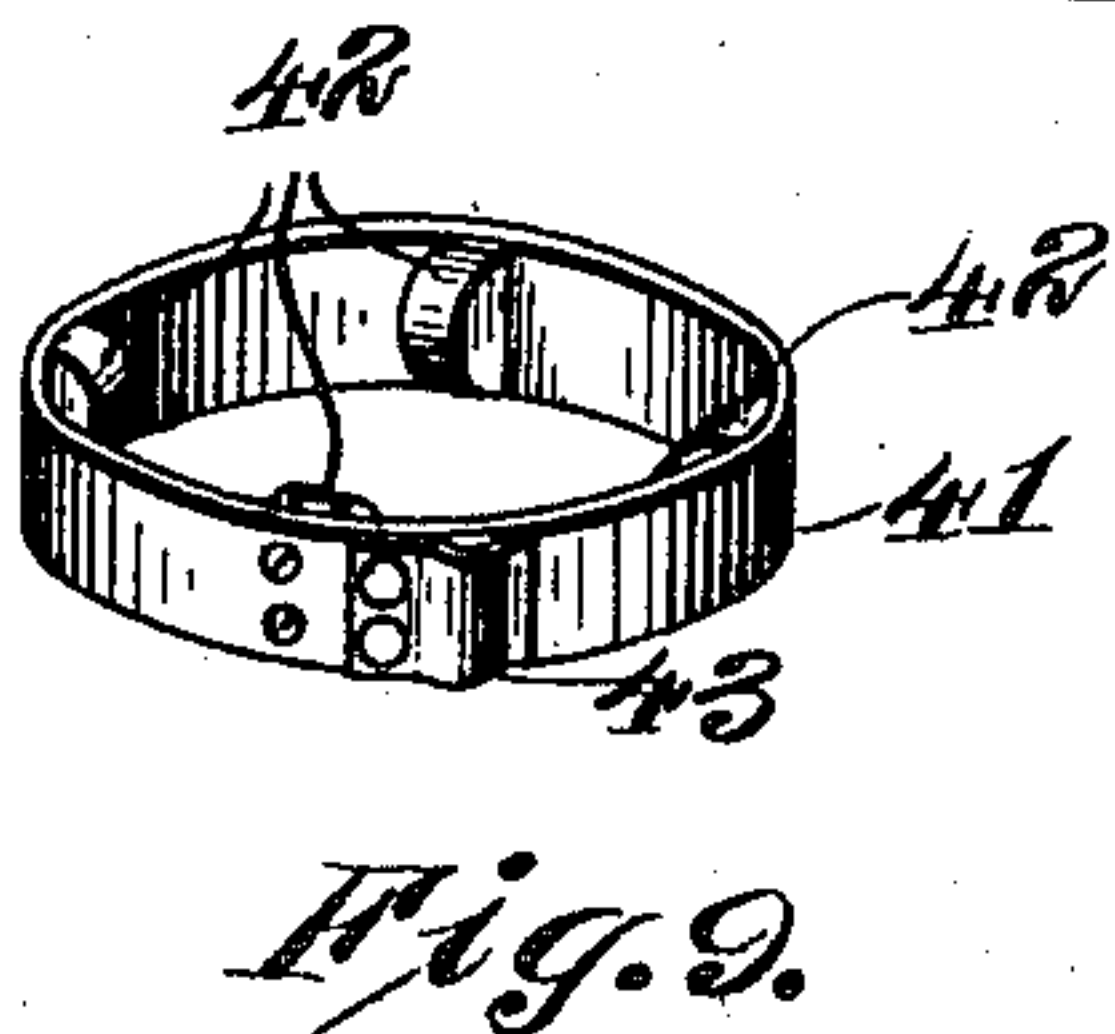
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2 SHEETS—SHEET 2.



Witnesses:
A. A. Olson
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UNITED STATES PATENT OFFICE.

DALLAS C. WOODWORTH, OF CHICAGO, ILLINOIS.

MOTION-PICTURE APPARATUS.

959,675.

Specification of Letters Patent.

Patented May 31, 1910.

Application filed May 7, 1909. Serial No. 494,563.

To all whom it may concern:

Be it known that I, DALLAS C. WOODWORTH, a citizen of the United States, residing at Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Motion-Picture Apparatus, of which the following is a specification.

My invention relates to motion-picture machines, and more specifically to means employed therein for winding and unwinding the film strip.

The object of my invention is to provide an apparatus of the character mentioned by means of which the loss of time and labor incident to the operation of motion-picture machines at the present time, because of the necessary rewinding of a film coil after each employment thereof, will be eliminated.

A further object of my invention is to provide an apparatus of such character which will be of such improved construction as to adapt the same to be applicable to all motion-picture machines of ordinary design.

A further object is to provide a film apparatus as mentioned which may be readily manipulated and which will be durable, efficient, and comparatively simple of construction.

Other objects will appear hereinafter.

With these objects in view my invention consists in an apparatus characterized as above mentioned and in certain details of construction and arrangement of parts all as will be hereinafter fully described and particularly pointed out in the claims.

My invention will be more readily understood by reference to the accompanying drawings forming a part of this specification and in which—

Figure 1 is a front elevation of my apparatus in its preferred form, showing its application to a motion-picture machine, Fig. 2 is a side elevation thereof, Fig. 3 is a side elevation of the upper film magazine, the cover thereof being removed and a portion broken away to better illustrate its construction, Fig. 4 is a transverse section taken on substantially the line $x x$ of Fig. 2, Fig. 5 is a side elevation of an adjustable rim employed in the upper magazine, portions thereof being broken away to better illustrate the construction thereof, Fig. 6 is an elevation similar to that shown in Fig. 3 of the upper film magazine, illustrating the construction of the lower film magazine.

Fig. 7 is a transverse section taken on substantially the line $y y$ of Fig. 2, Fig. 8 is an elevation of the inside of the lower film magazine closure detached, and Fig. 9 is a detail perspective of a detachable ring employed in the lower film magazine.

Referring now to the drawings 1 indicates the casing of a motion-picture machine or projection lantern of any ordinary or preferred design, the support 2 of which is mounted upon a suitable base 3. The motion-picture machine or projection lantern as seen is conventionally illustrated inasmuch as it forms no part of the invention.

4 is the usual continuously driven sprocket wheel of the machine mechanism, and 5 its accompanying roller.

Adjustably secured, as by bolts 6, to and upwardly extending from the casing 1, is a supporting member 7 to the upper end portion of which is adjustably secured as by a nut 8 and a bolt 8' extending through the bifurcated end portion 9 thereof an angular bracket 10. Secured to the upper extremity of the arm 9' of said bracket is a film magazine 11 an open side of which is closed by a flanged closure 12 hingedly secured as at 13 to said magazine.

14 indicates a hook or catch for holding the closure 12 in closing position.

Rotatably and removably mounted upon a stud shaft 15 inwardly projecting from the side wall of the magazine 11 is a reel 16 comprised of a hub 17, a cylinder 18, and, for reasons which will be obvious as the description proceeds, and single side wall 19. Encircling the periphery of said reel wall 19 is a removable split rim 20 preferably angular in cross section. A coil spring 21 extending between a pin 22 secured to and projecting from said rim close to one extremity thereof and the free extremity of a strip 23 secured to the opposite or adjacent extremity of said rim serves as a means of holding the latter in position upon said reel. Pins 24 projecting from said rim engaging an elongate slot 25 provided in the strip 23 serve as a means of holding the rim extremities in alinement position.

Obliquely extending in the closure 12 is an opening 26, the same being positioned therein so as to extend tangentially to cylinder 18 when said closure is in closing position. Inclosing said opening the same being secured to said closure preferably by means of rivets 27' is an enlargement 27 of a width

such as to adapt the same to accommodate the passage of a film strip therethrough. Arranged forward of the mouth of said enlargement are suitable rollers 28, those shown in the accompanying drawings being of a design such as at the present time is required by law. Arranged in the peripheral walls of the magazine 11 preferably in horizontal alinement with the forward opening of the enlargement 27, is an opening 29 of a width such as to accommodate the passage of film strip therethrough. Arranged forward of said opening are rollers 30 similar in construction to rollers 28.

Supported, preferably by means of a bracket 31, to the base member 3 in vertical alinement with the forward opening of the magazine enlargement 27 is a lower magazine 32 provided with a flanged closure 33 hinged thereto as at 34, 35 indicating a suitable catch for holding said closure in closing position. Journaled in said magazine is a shaft 36 provided at one extremity of which is a pulley 37 over which travels a belt 38 communicating with the drive mechanism of the accompanying machine and by means of which said shaft may be driven. Splined to said shaft is a removable reel 16' of a construction similar to that of the reel 16 before described. In order to hold said reels 16 and 16' in a positive position upon their respective shafts 16 and 36 respectively a slotted spring leaf 39 is provided upon the inner surface of each of the closures 12 and 33. The free ends of said spring members being adapted to contact the outer extremities of the hubs of said reels when the magazine closures are in closing position, the same are evidently adapted to hold the latter in engagement with a washer 40 interposed between each of said reels and the rearward walls of the magazines.

Encircling the cylinder 18' of the reel 16' is a detachable ring 41 provided upon its inner surface with a plurality of wedge-forming projections 42 suitably secured thereto, the same being adapted, when said ring is arranged about said cylinder to engage the outer surface of the latter. Said ring being held in position upon said cylinder by frictional contact of said projections 42 with the latter, the same may evidently be readily arranged thereon or detached therefrom. A spring clip 43 secured to the outer surface of said ring operative by means of an inwardly projecting stem 44 is adapted to engage the extremity of a film strip in effecting the coiling of the latter upon the ring 41.

Provided in the peripheral wall of the magazine 32 adjacent the machine mechanism is an opening 45 of a width such as to permit of the passage of a film strip therethrough. 46 indicates suitable rollers arranged forward of said opening.

In operation (it being presumed that the film is so coiled that the commencement of the film is at the inner convolution of the coil) the inner end 47 of the film 48 coiled upon the reel 16 is led through the opening 26 and enlargement 27 of the film closure 12, thence between the rollers 28 through the mechanism of the projecting lantern or motion-picture machine, and thence between the rollers 46 through the opening 45 in the magazine 32. Here said film extremity is secured by means of the clip 43 to ring 41 arranged upon the cylinder 18' of the reel 16'. Upon the film having been completely coiled upon the reel 16', the member 41 may readily be removed from the reel cylinder. The film coil may now be readily forced from said member 41 and replaced in initial position upon the reel 16, whence it may again be passed through the apparatus in a manner as just described. In the unwinding from the reel 16 the free or outer extremity thereof, as is seen, is perfectly free, it being to guard or protect such extremity thereof that I provide the rim 20.

Owing to the fact that the paying out reel is mounted upon a horizontal axis and the film coil loosely suspended therefrom, the weight of the coil tends to hold the same to the reel and cause rotation of the whole coil without friction on the film and insures a true unwinding of the film from a constant point. By withdrawing the film downwardly the widest open space between film coil and reel, which occurs below, is afforded for outward creeping of the film to clear the coil.

By providing the opening 29 in the magazine 11, if the film is coiled with the commencement extremity thereof at the outer convolution of the coil in which event the same must be uncoiled from the outer periphery thereof, the magazine 11 may be moved laterally, by simply loosening the bracket bolt 8, into vertical alinement with the magazine 32 and the film led through said opening.

While I have shown what I deem to be the preferable form of my apparatus I do not wish to be limited thereto as there might be many changes made in the details of construction and arrangement of parts without departing from the spirit of the invention comprehended within the scope of the appended claims.

Having described my invention what I claim as new and desire to secure by Letters Patent is:

1. The combination with a motion-picture machine, of a film magazine, a paying-out reel mounted in said magazine on a horizontally disposed axis, a film coil loosely suspended on said reel, guiding means for directing said film from its innermost convolution to said machine, and a receiving

reel arranged to receive said film from said machine.

2. The combination with a motion-picture machine, of a paying-out reel mounted on a horizontally disposed axis and adapted to support a film coil loosely suspended thereon, and guiding means adapted to direct a film suspended on said reel from its innermost convolution to said machine, substantially as described.

3. The combination with a motion-picture machine, of a film magazine, a paying-out reel rotatably mounted in said magazine on a substantially horizontal axis, a film coil loosely suspended on said reel, guiding means for directing said film from its innermost convolution to said machine, and a receiving reel arranged to receive said film from said machine.

4. The combination with a motion-picture machine, of a film magazine, a paying-out reel rotatably mounted in said magazine on a horizontally disposed axis and adapted to support a film coil loosely suspended thereon, and guiding means adapted to direct a film suspended on said reel from its innermost convolution to said machine, substantially as described.

5. The combination with a motion-picture machine, of a film magazine mounted above said machine, a paying-out reel mounted in said magazine on a horizontally disposed axis, a film coil loosely suspended on said reel, guiding means for directing said film from its innermost convolution to said machine, said guiding means being arranged to withdraw said film in a substantially downward direction, and a receiving reel in vertical alinement with said guiding means and arranged to receive said film from said machine.

6. The combination with a motion-picture machine, of a film magazine mounted above said machine, a paying-out reel rotatably mounted in said magazine on a substantially horizontal axis, a film coil loosely suspended on said reel, guiding means for directing said film from its innermost convolution to said machine, said guiding means being arranged to withdraw said film in a substantially downward direction, and a receiving

reel in vertical alinement with said paying-out reel and arranged to receive said film from said machine.

7. The combination with a motion-picture machine, of a vertically disposed film magazine, a film-paying-out reel revolubly and removably mounted in said magazine, a passage-forming enlargement formed in one of the wide walls of said magazine for guiding a film strip coiled upon said reel in unwinding from its inner convolution, a second vertically disposed magazine in vertical alinement with said enlargement in said first named magazine, a revoluble film receiving reel mounted in said magazine, and a detachable film receiving ring carried by said reel, substantially as described.

8. A receiving reel for films comprising a ring provided with inwardly extending projections adapted to take over a hub, a spring clip on the outside of said ring adapted to engage the end of a film, and means on the inside of said ring adapted to release a film end from said clip.

9. The combination with a motion-picture machine, of a vertically disposed film magazine supported for lateral adjustment above said machine, a film paying-out reel removably and revolubly mounted in said magazine, a passage-forming enlargement formed in a hinged side of said magazine for guiding a film strip coiled upon said reel in unwinding from its inner convolution, a removable rim encircling said reel, a second magazine mounted in substantially vertical alinement with said first named magazine below said motion-picture machine mechanism, a film receiving reel mounted in said magazine, a removable film receiving ring carried by said reel and held thereon by frictional contact therewith, and means provided upon said ring for engaging the extremity of a film strip, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

DALLAS C. WOODWORTH.

Witnesses:

JOSHUA R. H. POTTS,
A. A. OLSON.