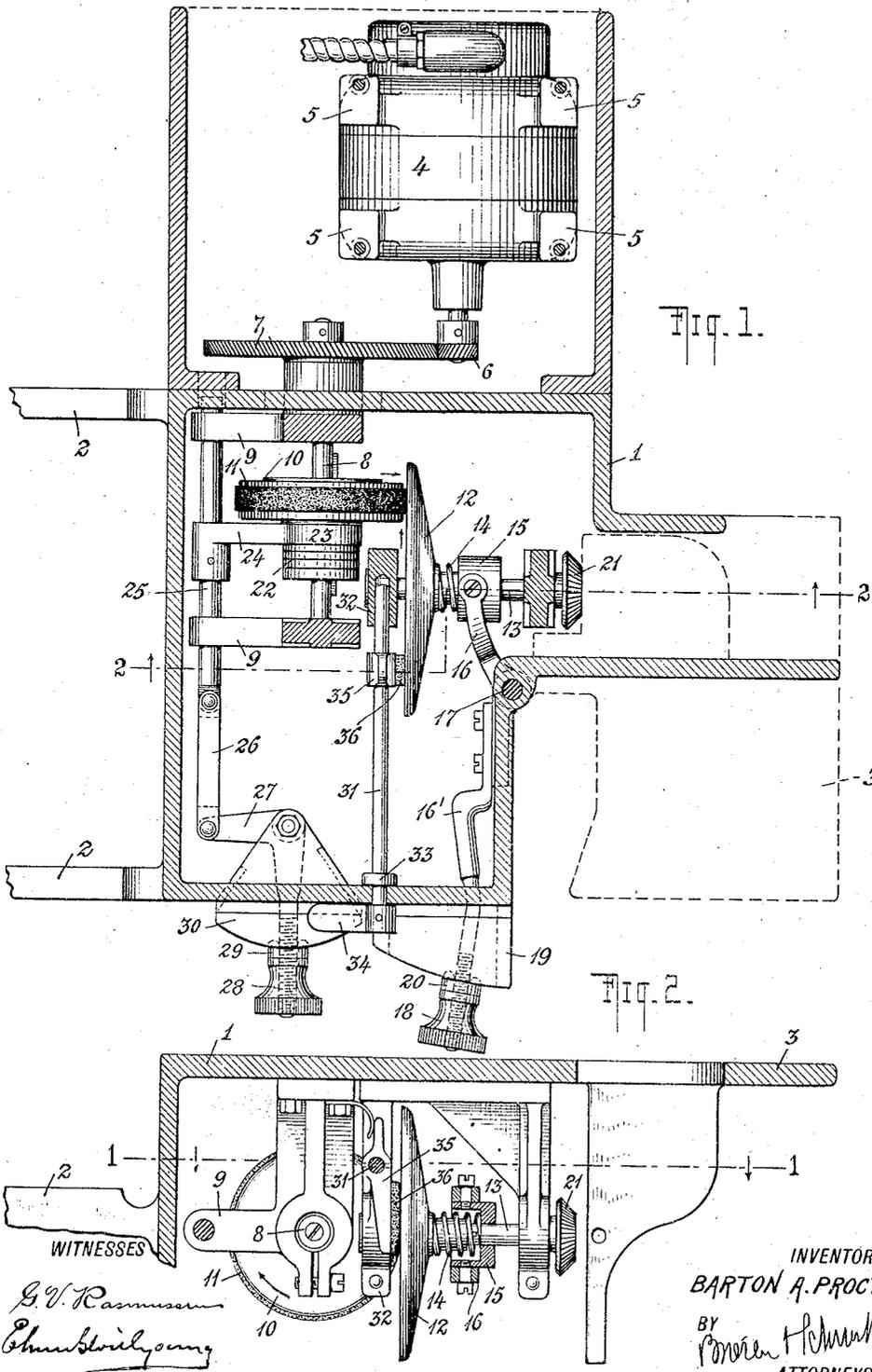


B. A. PROCTOR.
 DRIVING AND RETARDING MECHANISM FOR MOVING PICTURE PROJECTORS,
 APPLICATION FILED JUNE 21, 1917.

1,298,390.

Patented Mar. 25, 1919.



UNITED STATES PATENT OFFICE.

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DRIVING AND RETARDING MECHANISM FOR MOVING-PICTURE PROJECTORS.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, BARTON A. PROCTOR, a citizen of the United States, residing at Bridgeton, Cumberland county, New Jersey, have invented certain new and useful Improvements in Driving and Retarding Mechanism for Moving-Picture Projectors, of which the following is a specification.

My invention relates to projectors for moving pictures and more particularly to those intended for use in exhibiting pictures which are arranged one after the other on long continuous strips of film, as is common in the art.

Moving picture machines of the type referred to are now commonly and almost necessarily, in commercial practice, driven by a motor. It has been found unsatisfactory to connect the motor shaft to the operative mechanism of the projector by belts because of the frequent breakage, stretching and other difficulties of maintaining such belts in good driving condition. If, however, the motor shaft be geared directly to the operative mechanism the effect of closing the motor circuit is to produce an excessive strain upon the parts; this strain will sometimes break the film or tear or enlarge the holes provided to engage the sprockets of the driving mechanism or it may break or produce excessive wear upon some parts of the mechanism.

It is one of the objects of my invention to provide a driving connection between motor and operative mechanism which will permit the motor to be started at full speed without straining or injuring the film in any way or producing excessive strain or wear in any of the individual parts of the mechanism.

It has also been found desirable, in the commercial operation of moving picture shows, to provide at frequent intervals throughout the showing of the film a printed legend comprising a greater or less amount of reading matter explanatory of the pictures which immediately follow. This is usually accomplished by photographing, as a part of the picture to be shown, a display board upon which such printed matter is suitably arranged. It is obvious that in projecting, that portion of the film containing the printed matter can be run at a much slower rate of speed than other portions of the picture which contain characters in movement. But inasmuch as the total pe-

riod of time required to display any given legend is extremely short, it is hardly feasible to obtain the desired lengthened period by slowing up the motor. Furthermore, inasmuch as slowing up the speed at which the portion of the film bearing the printed matter is displayed makes it possible to lessen the total number of pictures containing printed matter which are photographed, it is clear that a very substantial saving in cost of film will result if such lessened rate of speed be attained.

It is a further object of my invention to provide a simple, inexpensive and easily operated means by which the speed of display of the film can be instantly checked and as speedily restored to normal whenever a portion of film carrying a printed legend appears in the field of view.

My invention will be better understood by referring to the accompanying drawings in which Figure 1 represents a section along the line 1—1 of Fig. 2, showing a platform or base for the support of a projecting lantern and of the film housing, said base containing a motor and a preferred form of driving and retarding mechanism according to my invention; and Fig. 2 represents a section taken along the line 2—2 of Fig. 1.

In the drawings the base 1, preferably of cast iron, is provided with two integrally attached bracket arms 2, 2 for the support of a projecting lantern (not shown). Upon the top of the base to the right is intended to be bolted a housing 3 (shown dotted) for the film and driving, framing and other mechanism therefor.

The driving motor 4 is attached by brackets 5 to the under side of base 1, and its shaft carries a pinion 6 meshing with a gear 7 fixed to a main drive shaft 8 mounted in suitable bearings formed in brackets 9, also attached to the under surface of the base.

Drive shaft 8 has slidably keyed thereto a disk 10 whose periphery is faced with leather 11 so as to constitute a friction drive with respect to a disk 12 slidably keyed to an operating shaft 13 intersecting but at right angles to shaft 8. A spring 14 is interposed between slidable disk 12 and a collar 15 which fits loosely over shaft 13 and is retained between a pair of forked ends 16 of a lever 16' pivoted in the base at 17 and provided with a handle 18 arranged to move across a metallic segment 19 fixed to the base

1. The handle 18 comprises an outer nut and an inner collar 20; in this way a movement of the handle to right or left (Fig. 1) permits a greater or less amount of slip to take place between the disk 10 and disk 12 and, if the handle 18 be thrown to the extreme left, will break the contact of disks 10 and 12 altogether. If, under such circumstances, it is desired to start up a machine and the circuit or motor 4 be started, only the driving disk 10 will rotate. Handle 18 may now be moved to the right and, owing to the slip which necessarily takes place between two friction disks when they are brought together, the shaft 13 which connects to the shutter and film display mechanism through gear 21 will necessarily start gradually so that no strain of film or operative mechanism will take place. The handle 18 being sufficiently to the right to produce the desired amount of friction between disks 10 and 12, the nut of handle 18 may be tightened, thus holding the gears permanently.

Disk 10 has a hub 22 provided with an annular recess in which loosely lies a collar 23 supported by an arm 24 upon a shaft 25 which is slidable in brackets 9. The outer end of this shaft is pivotally connected by a link 26 to one arm of a bell crank lever 27 the other arm of which has a handle 28, comprising an outer nut and an inner washer 29, arranged to move over a metallic segment 30 attached to base 1. By moving this handle 28 to the right or left over segment 30, the disk 10 is moved inwardly or outwardly with respect to the shaft 13 thereby enabling said shaft to be driven at a variable speed for a constant speed of the motor 4.

A rod 31 has its inner end supported in a bearing formed in the bracket 32 supporting one end of shaft 13, while the outer end of rod 31 passes through the wall of base 1, being held in position by an inner collar 33 and an outer pressure lever 34. Fixed to

the inner end of rod 31 is an arm 35 having a face adjacent to disk 12 covered with leather 36.

When, in the operation of the apparatus, the operator catches his first glimpse of a printed legend upon the screen he immediately presses his finger upon the lever 34 thereby pushing the leather faced arm 35 against the face of disk 12 and slowing up the rotation of such disk and consequently of the film display and shutter mechanism operated by such disk through shaft 13 and gear 21. Very little practice enables the operator to effect just the right amount of retardation and to release the pressure and let the film display mechanism and the shutter mechanism come back to speed the instant that portion of the film carrying the legend is passed. And this the operator can do without affecting the movement of the film carrying the picture proper.

It is obvious that my invention is not restricted to the particular construction illustrated and described but that various details may be changed within the spirit and scope of the following claim.

I claim—

In a projector of the class described, a main driving shaft arranged to be positively and continuously driven, a driving disk keyed to said shaft, a second shaft at right angles with the driving shaft and operatively connected with the shutter and film display mechanism, a driven disk keyed to said second shaft a spring for pressing the driven disk against the driving disk, a brake arm mounted adjacent said driven disk and adapted to be pressed in contact therewith against the resistance of said spring, and an external finger piece for controlling said brake arm.

In testimony whereof I have hereunto set my hand.

BARTON A. PROCTOR.