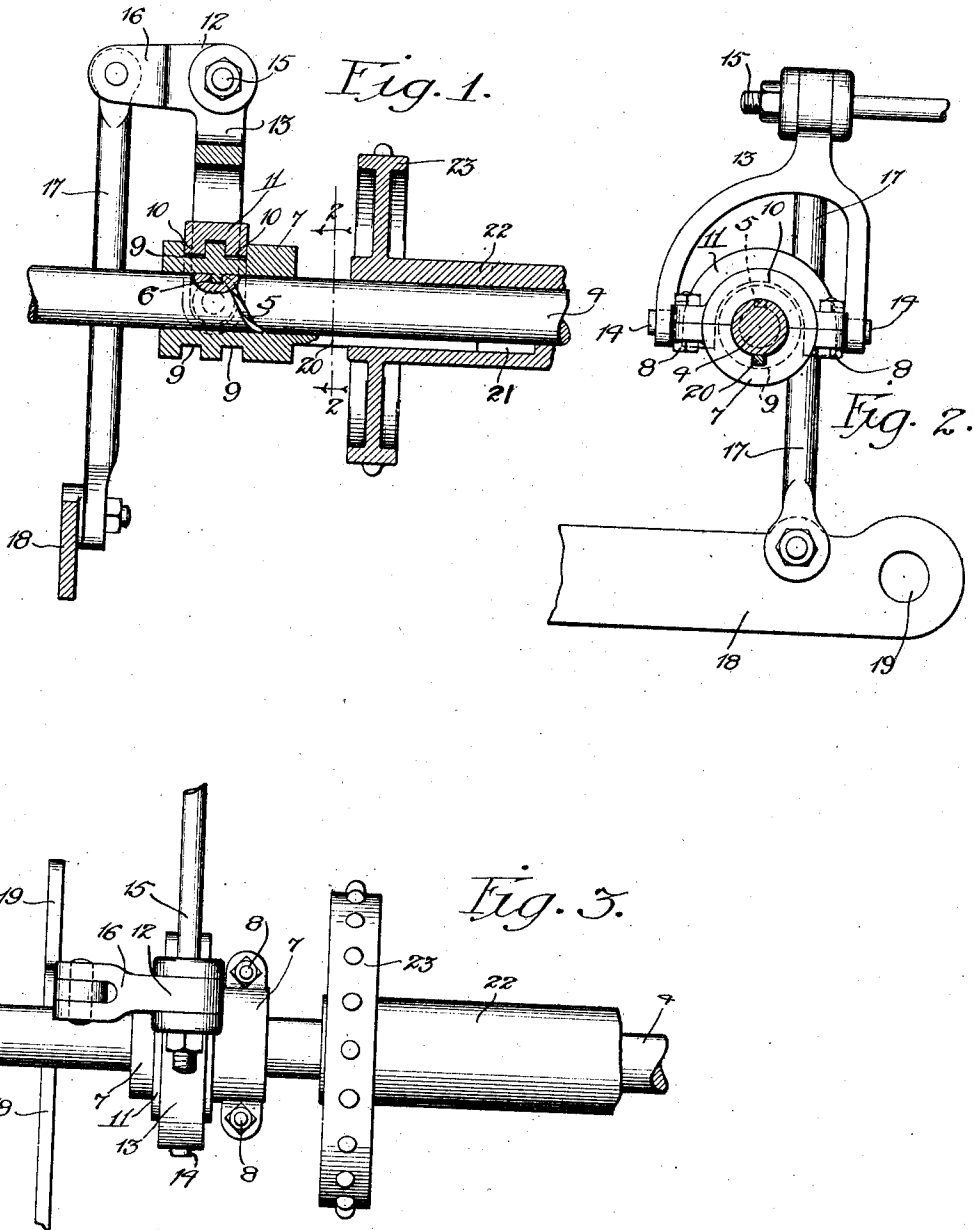


E. H. SPERBERG.
MOVING PICTURE MACHINE.
APPLICATION FILED DEC. 2, 1909.

972,142.

Patented Oct. 4, 1910.



Witnesses:
Frank W. Bannan
Thos. A. Banning Jr.

Inventor:
Edward H. Sperberg
By: Banning & Banning
Attys.

UNITED STATES PATENT OFFICE.

EDWARD H. SPERBERG, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE SELIG POLYSCOPE COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION.

MOVING-PICTURE MACHINE.

972,142.

Specification of Letters Patent.

Patented Oct. 4, 1910.

Original application filed April 17, 1909, Serial No. 490,465. Divided and this application filed December 2, 1909. Serial No. 531,031.

To all whom it may concern:

Be it known that I, EDWARD H. SPERBERG, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Moving-Picture Machines, of which the following is a specification.

This is a divisional application of which the original was Serial No. 490,465, filed April 17, 1909.

In moving-picture machines, the front portion of the body of the machine is generally provided with an aperture of a size and shape corresponding to that of the picture on the film, before which aperture the film passes, and through which the light rays from the lamp within the machine are projected against and through the film. In use, each picture on the film is caused to be arrested before this aperture for the proper fraction of a second, during which arrested motion period, the shutter is removed or opened, allowing the rays of light to come against and penetrate through whatever portion of the film may be before the aperture.

It is evident that to secure proper and satisfactory operation of the machine, the film must be arrested each time, so that one exposure of it is fully and squarely in front of the aperture before the shutter is removed or opened. At the present time, it is customary to shift either that portion of the machine carrying the aperture, or else bodily shift the spools which control the movement of the film, with respect to the aperture. The effect in either case is to shift the film and the aperture with respect to each other, but the means for doing so are found to be cumbersome and not altogether satisfactory.

It is the intent of the present invention to provide new and better means for accomplishing this relative shifting of the film when in arrested motion position, with respect to the aperture. This I accomplish by shifting the film while maintaining the body of the machine stationary. And the invention consists in the features of construction and combination of parts hereinafter described and claimed.

In the drawings, Figure 1 shows a side elevation of my improved film shifting device partly in section; Fig. 2 shows an end

sectional elevation of the device, taken on line 2—2 of Fig. 1, looking in the direction of the arrow; and Fig. 3 shows a plan view of the device.

In the figures, a driving shaft 4 is driven by means of any suitable driving mechanism, not shown. The shaft 4 has cut in its face a helical slot or key-way 5, adapted to receive a suitably formed key 6, attached to a split sleeve 7 surrounding the shaft 4. The two segments of the split sleeve 7 are held together by means of bolts, or other suitable connecting means 8. It is seen that any longitudinal shifting of the sleeve 7 along the shaft 4 will cause the sleeve to rotate, with respect to the shaft, by reason of the engagement of the key 6 with the key-way 5. The sleeve 7 has formed, in its periphery, one or more annular grooves 9, and the tongues 10 of a collar 11 are adapted to engage with the grooves. The collar 11 is supported on a bell-crank lever device 12, one of whose arms 13 is of Y-shaped formation, the collar being attached to the arm by means of bolts or pins 14. The bell-crank is hinged at its fulcrum 15, and its other arm 16 is connected to a link 17, which link is suitably connected to proper operating devices, as, for example, a lever 18, having a fulcrum 19, and properly connected to an operating handle, not shown.

The sleeve 7 has rigidly attached to it a feather key 20, which feather key fits into a key-way 21 in a hub 22 of the film driving wheel 23. It is evident that when the lever mechanism 18 is moved, thereby shifting the bell-crank, causing the sleeve to move longitudinally with respect to the driving shaft 4, and the sleeve 7 to rotate, with respect to the driving shaft, that the feather key 20 will thereby also be rotated, and will carry with it the driving wheel 23, which will thus be rotated with respect to the driving shaft. And the amount of such relative rotation of the driving wheel, with respect to the driving shaft, may be varied by moving the lever mechanism 18 any amount desired within the capacity of the machine.

I do not restrict my invention to the use necessarily of a bell-crank for accomplishing the shifting of the sleeve along the driving shaft, but any other suitable device for doing this may be used without departing from the spirit of my invention.

I claim:

The combination, with a film driving shaft having a helical channel in its surface, of a film driving sprocket rotatably mounted thereon and provided with a longitudinal keyway adjacent to the shaft, a sleeve on the shaft, having an annular groove in its outer periphery, a key on its inner portion for engaging the channel of the shaft, a longitudinal feather key for en-

gaging the keyway of the sprocket, and means engaging the annular groove, for moving the sleeve longitudinally with respect to the shaft, whereby the sleeve, feather key, and sprocket are rotated with respect to the shaft, substantially as described.

EDWARD H. SPERBERG.

Witnesses:

THOS. A. BANNING, Jr.,
MARY R. FROST.