J. J. HESSE.

DRIVING MECHANISM.

APPLICATION FILED DEC. 24, 1910.

1,016,010.

Patented Jan. 30, 1912.

2 SHEETS—SHEET 1.

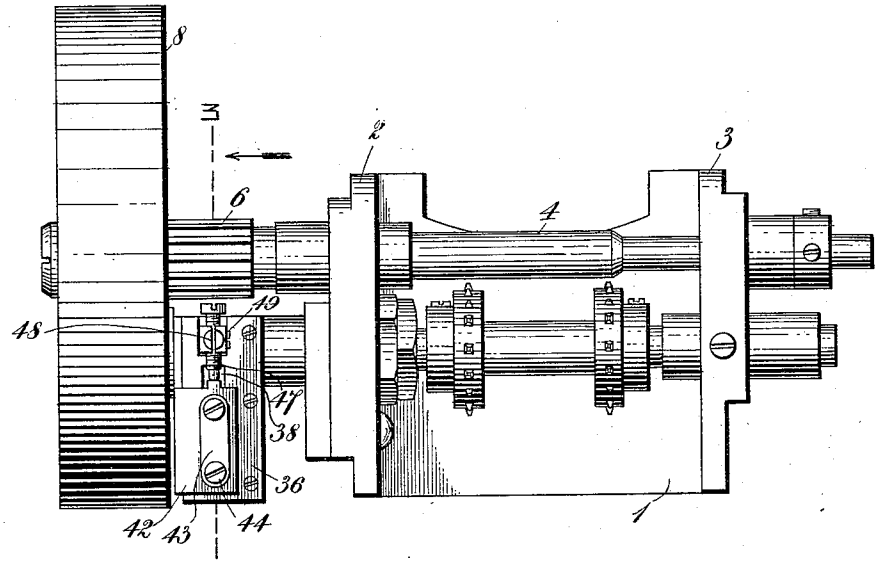

Fig. 1.

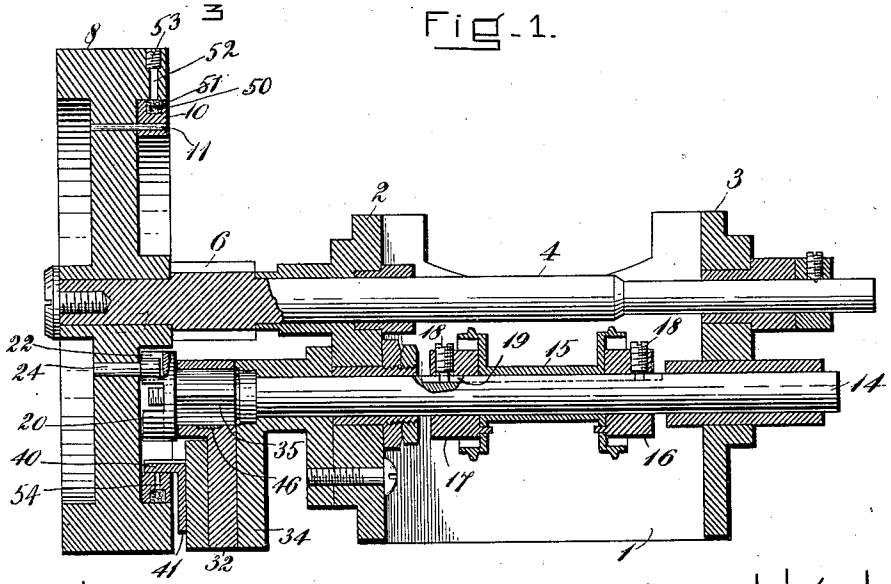

Fig. 2.

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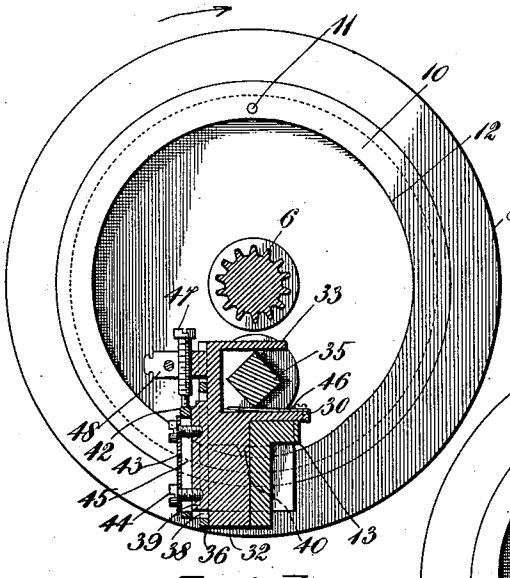

Fig. 3.

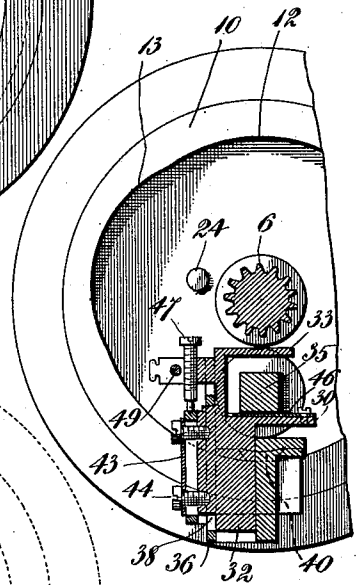

Fig. 5.

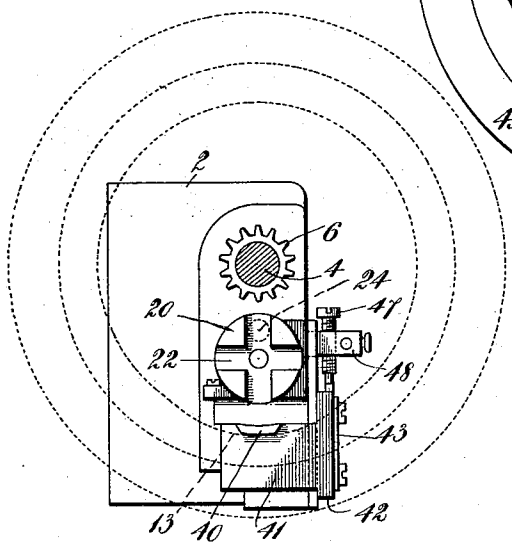

Fig. 4.

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DRIVING MECHANISM.

1,016,010. Specification of Letters Patent. Patented Jan. 30, 1912.

Application filed December 24, 1910. Serial No. 599,166.

To all whom it may concern:

Be it known that I, JOHN J. HESSE, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Driving Mechanism, of which the following is a specification.

This invention relates to apparatus for exhibiting moving pictures, and more particularly to apparatus for exhibiting pictures which are arranged in series upon a translucent film which is fed intermittently across a projection aperture in front of a suitable source of light for illumination.

The object of the invention is to improve the mechanism employed for feeding the film across the projection aperture to insure steadiness of the picture and prevent flickering.

With the above object in view the invention consists in the improved driving mechanism for moving picture machines hereinafter described and particularly defined in the claims, the advantages of which will be obvious to those skilled in the art from the following detailed description.

A preferred embodiment of the invention is illustrated in the accompanying drawings, in which Figure 1 is a plan view, Fig. 2 is a sectional plan with the parts in position to allow the sprocket shaft to be turned, Fig. 3 is a transverse vertical section taken on the line 3—3 in Fig. 1, Fig. 4 is an end elevation as viewed from the left hand side of Fig. 1, with the balance wheel removed, and Fig. 5 is a fragmentary sectional view similar to Fig. 3 with the sprocket shaft in locked position.

As illustrated in the drawing, the device comprises a base 1 having side standards 2 and 3. A driving shaft 4 is journaled to rotate in bearings on the standards 2 and 3, and is provided with a gear 6 by means of which the device may be driven from any suitable set of gearing. A balance wheel 8 is mounted on the end of the shaft 4 and rotates therewith. Secured to the balance wheel is a cam ring 10, which is held in place by a locating pin 11 projecting from the web of the balance wheel and also by screws (not shown). The inner surface 12 of this cam ring is circular except for a slight depression 13, the purpose of which will be hereinafter explained.

Mounted parallel to the shaft 4 is a sprocket or driven shaft 14, also journaled to rotate in bearings on the side standards 2 and 3. A sprocket 15 is mounted on the shaft 14 and is held in place thereon by collars 16 and 17. These collars are provided with set screws 18 which have reduced ends fitting the side walls of a key way 19 formed in the shaft. This construction enables the sprocket to be adjusted longitudinally of the shaft and securely held in adjusted position. There is no cramping action and no tendency to spring the shaft out of alinement as when the sprocket is pinned in place. The shaft can thus be made to run absolutely true, which is a great feature in devices of this character.

In order to enable an intermittent rotary motion to be imparted to the sprocket shaft, it is provided with a head or wheel 20, having a crossed slot 22 formed on its outer face. This slot is adapted to receive a pin 24 on the opposing face of the balance wheel 8, and by this construction the sprocket shaft 14 is given a quarter turn at each revolution of the balance wheel.

It is essential that the sprocket be held stationary during the time that the picture is in front of the projection aperture, and there must be no vibration of the sprocket which would cause a flickering of the pictures, with consequent unpleasant effect upon the eyes of the observer. The sprocket shaft is therefore locked against rotation during the greater portion of each revolution of the balance wheel and is only released momentarily to allow a quarter turn to be given thereto. In order to effect this locking of the shaft, a plate 30 is provided on a carriage or slide 32 which is mounted to slide in a grooved extension 34 of one of the bearings of the sprocket shaft. The plate 30 is adapted to engage each of the facets of the polygonal portion 35 of the sprocket shaft 14. The number of facets in the present instance is four in order to correspond to the quarter turn mechanism which imparts the intermittent rotation to the sprocket shaft. A plate 33 projects from the carriage 32 opposite the plate 30, the purpose of the plate 33 being to protect the shaft against entrance of dust or other foreign matter. A plate 36 is secured to the top of the extension 34 and keeps the slide 32 in place. The plate 36 is provided with an elongated slot 38 within which an upwardly extending projection 39 of the slide 32 is adapted to slide. A shoe 40 coöperates

with the rotary cam 10, and is carried by a plate 41 having a right angled extension 42 which is secured to the projection 39 of the block 32 by a plate 43 and screws 44, said screws passing through an elongated slot 45 in extension 42. When the shoe 40 is in contact with the circular portion 12 of the rotary cam 10, the plate 30 is in contact with one of the facets of the sprocket shaft, as shown in Fig. 5, and this shaft is held against movement.

When the depression 13 in the rotary cam arrives at the shoe 40, the driving pin 24 is about to enter the slot 22 to rotate the sprocket shaft. The rotation of the sprocket shaft causes the shoe to be pushed into this recess by the engagement of the plate 30 with the corner of the shaft formed by two adjacent facets, as shown in Fig. 3. As soon as the shaft has been turned a quarter turn, the pin 24 emerges from the cross slot 22 and the shoe 40 is moved inward by the surface 12 of the rotary cam, thereby pushing the plate 30 against a facet on the shaft and locking it. A leaf spring 46 may be provided on the plate 30 to rest against the shaft to reduce the noise which would be occasioned by the direct contact of this plate with the facets when the balance wheel is rapidly rotated.

In order to insure a proper contact between the shoe 40 and the circular portion of the rotary cam, I provide an adjusting screw 47, threaded through a split post 48 which is mounted upon the slide 32. The end of the screw 47 is adapted to bear against the end of the extension plate 42. In order to adjust the shoe the screws 44 are loosened and then the screw 47 is turned to move the shoe 40 away from the plate 30 until the desired intimacy of contact is produced between the shoe and the rotary cam. Then the screws 44 are tightened. The adjusting screw 47 is also clamped by a screw 49 carried by the post 48.

In order to lubricate the rotary cam 10, an external peripheral groove 50 is formed therein, in which a suitable wicking 51 is carried. Oil is supplied to this groove through a hole 52 in the balance wheel, said hole being normally closed by a screw 53. The oil is fed through holes 54 to the working face of the cam.

While I have illustrated and described a preferred embodiment of the invention, I am aware that many modifications can be made therein by any person skilled in the art without departing from the scope of the invention as expressed in the claims. Therefore I do not wish to be limited to all the details of construction shown and described, but

What I claim is:—

1. A device of the character described, comprising a shaft having a polygonal portion, means for driving the shaft, and cam controlled means coöperating with the polygonal portion of the shaft for intermittently arresting the rotation of the shaft.

2. A device of the character described, comprising a shaft having a polygonal portion, means for driving the shaft, a rotary cam, and means coöperating with the polygonal portion of the shaft and with said rotary cam for intermittently arresting the rotation of the shaft.

3. A device of the character described, comprising a shaft having a polygonal portion, means for imparting an intermittent rotary motion to the shaft, a rotary cam, and a shoe coöperating with the rotary cam and with the polygonal portion of the shaft for intermittently locking the shaft against rotation.

4. A device of the character described, comprising a shaft having a polygonal portion, means for imparting an intermittent rotary motion to the shaft, a rotary cam, a shoe coöperating with the rotary cam and with the polygonal portion of said shaft for intermittently locking the shaft against rotation, and means for adjusting said shoe to vary its frictional contact with said rotary cam.

5. A device of the character described, comprising a shaft, means for imparting an intermittent rotary motion to the shaft, a rotary cam, and a shoe coöperating with said cam for intermittently locking the shaft against rotation.

6. A device of the character described, comprising a shaft having a squared portion, means for driving the shaft, a rotary cam, a slidably mounted shoe coöperating with the rotary cam and the squared portion of said shaft, and means for adjusting said shoe to vary its frictional contact with said rotary cam.

7. A device of the character described, comprising a shaft having a squared portion, means for driving the shaft, a rotary cam, means for supplying oil to the bearing face of the cam, and a shoe coöperating with said rotary cam and with the squared portion of said shaft for intermittently arresting the rotation of the shaft.

8. A device of the character described, comprising a shaft having a polygonal portion, a balance wheel, a cam mounted on said balance wheel, a slotted wheel mounted on said shaft, a pin on said balance wheel coöperating with said slotted wheel, and a shoe coöperating with said cam and the polygonal portion of said shaft to intermittently lock said shaft against rotation.

9. A device of the character described, comprising a shaft, a balance wheel, a cam on said balance wheel having a peripheral groove, means in said groove for retaining a supply of oil, means for feeding the oil

from said groove to the face of said cam, means for imparting intermittent rotation to said shaft, and means controlled by said cam for intermittently locking said shaft against rotation.

10. A device of the character described, comprising a shaft, a balance wheel, means coöperating with the balance wheel for imparting an intermittent rotary motion to said shaft, a cam on the balance wheel having a depression, and a shoe coöperating with the cam on said balance wheel to lock said shaft against rotation, said shoe being adapted to enter said depression to allow the shaft to make a partial revolution.

11. A device of the character described, comprising a shaft, a balance wheel, means coöperating with the balance wheel for imparting an intermittent rotary motion to said shaft, a cam ring on said balance wheel having a depression, a slidable shoe coöperating with said cam ring to control the locking of said shaft against rotation, said shoe being adapted to enter said depression to allow said shaft to make a partial revolution, and means for adjusting said shoe.

12. A device of the character described, comprising a driving shaft, a balance wheel mounted on the shaft, a driven shaft, a slotted head on the driven shaft, means on the balance wheel coöperating with said slotted head for imparting an intermittent rotary motion to said driven shaft, a cam ring on said balance wheel having a depression, a slidable shoe coöperating with said cam ring to control the locking of said driven shaft against rotation, said shoe being adapted to enter said depression to allow the driven shaft to make a partial revolution, a screw for adjusting said shoe with relation to said cam ring, and means for securing the screw in adjusted position.

13. A device of the character described, comprising a shaft, a head on the shaft, means coöperating with the head for imparting an intermittent rotary motion to the shaft, a rotary cam, and a slidably mounted shoe coöperating with the rotary cam and with said shaft for intermittently locking said shaft against rotation.

14. A device of the character described, comprising a shaft, means for imparting an intermittent rotary motion to the shaft, a rotary cam comprising a circular portion and a depression, and a shoe coöperating with said cam and with said shaft, said shoe when in contact with the circular portion of the cam operating to lock the shaft against rotation and when in said depression allowing the shaft to be rotated.

15. A device of the character described, comprising a shaft having a polygonal portion, a head on said shaft having a crossed slot, a wheel having a pin adapted to enter said slot to impart an intermittent rotary motion to said shaft, a rotary cam, a slidably mounted block adapted to engage the facets of the polygonal portion of the shaft and having a member coöperating with said rotary cam, and a spring on the face of the block which engages the facets.

16. A device of the character described, comprising a rotatable member having flat portions, means for imparting an intermittent rotary motion to said rotatable member, a rotary cam, and means coöperating with said cam and with said flat portions of the rotatable member for intermittently locking said rotatable member against rotation.

In testimony whereof I have affixed my signature, in presence of two witnesses.

JOHN J. HESSE.

Witnesses:
FRANCIS M. PHELAN,
WILLIAM J. SPERL.