March 9, 1926. 1,575,909

M. J. GISELSON

MOVING PICTURE MACHINE

Filed March 10, 1924

Fig. 2.

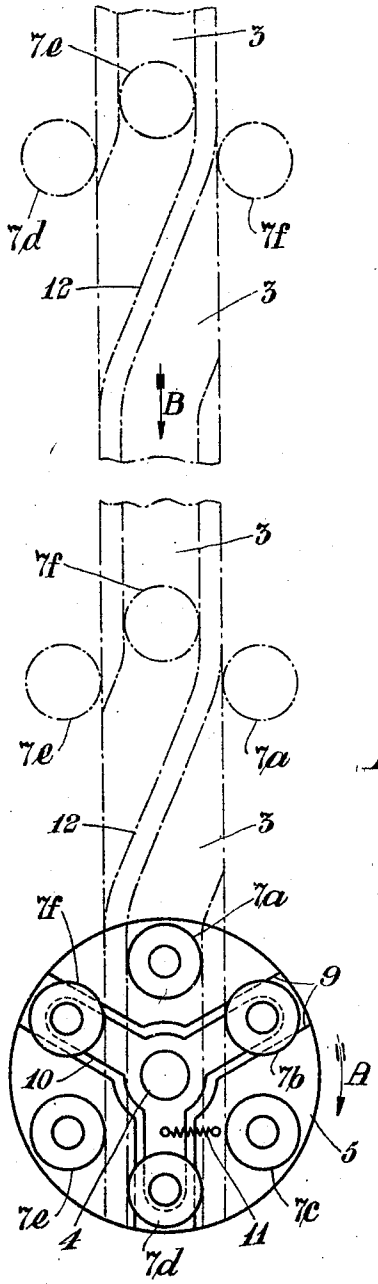


Fig. 1.

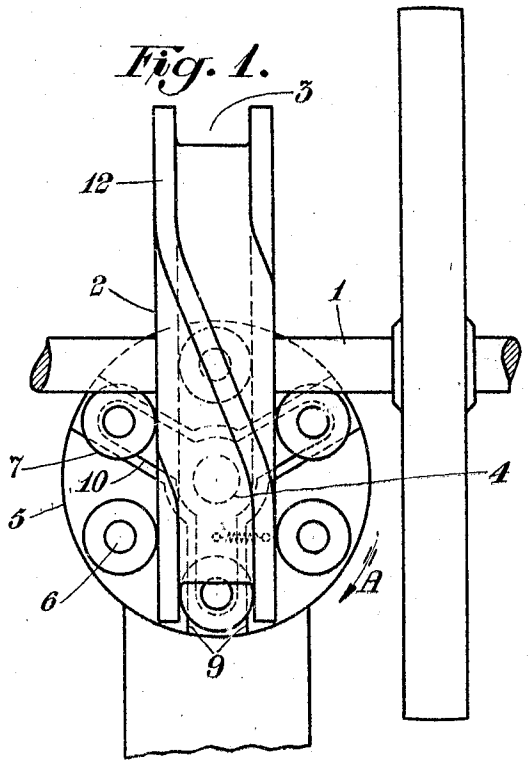
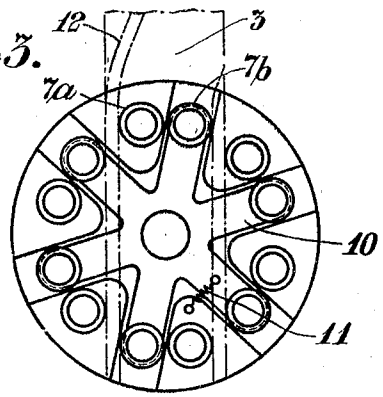


Fig. 3.



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Patented Mar. 9, 1926. 1,575,909

UNITED STATES PATENT OFFICE.

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MOVING-PICTURE MACHINE.

Application filed March 10, 1924. Serial No. 693,023.

To all whom it may concern:

Be it known that I, MATTIAS JONATAN GISELSON, a subject of the King of Sweden, residing at Orsten, Tronodal, Sweden, have invented a new and useful Improvement in Moving-Picture Machines, of which the following is a specification.

The present invention relates to an improvement in moving picture machines for producing a step-by-step feed of the film.

The means hitherto used for effecting a step-by-step feed of the film produce a clicking sound which in a small place is quite audible and irritating. Vibrations of the picture or projection on the screen are also produced when the engaging parts of the mechanism have become worn. It is the purpose of the present invention to avoid these difficulties. The invention relates to such feeding means in which the gearing between the driving shaft and the feeder for the film consists of a disk or the like which is provided with one or more grooves, cams or the like by means of which it cooperates with pins or followers on a wheel connected to the feeding means for the film in such manner that during the continuous movement of the driving shaft said wheel is given an intermittent movement. According to the invention some of the pins, preferably every second pin, on the wheel are movable in relation to the adjacent pins in the plane of rotation of the wheel, and are spring-actuated in such manner that two adjacent pins in position of engagement bear against opposite sides of the groove in the disk or against opposite sides of a cam on the disk. In this manner play between the engaging parts is avoided even if the parts become worn, with the result that the mechanism operates practically noiseless, and such vibrations of the projection or picture on the screen will also be avoided, which otherwise occur when the mechanism has become worn.

The accompanying drawing illustrates two embodiments of the invention. Fig. 1 shows one construction, and Fig. 2 shows a face view of the pin wheel of the same, and illustrates also diagrammatically the function of the mechanism illustrated in Fig. 1. Fig. 3 shows a face view of the pin wheel of a second embodiment.

Referring to Fig. 1, a circular disk or wheel 2 is secured to the driving shaft 1 of the mechanism. Said wheel 2 is provided at its periphery with a groove or camway 3 formed by a raised flange 12 consisting of two parallel annular portions joined by a helical portion cutting obliquely across the surface of the wheel 2 so that the camway 3 opens in opposite directions at one point of the periphery of the wheel, as will be seen in Fig. 1. A shaft 4 which is coupled to the film feeder, which is not shown in the drawing, carries at one side of the shaft 1 a disk or wheel 5 which carries a number of pins 6 placed equidistant from the shaft 4 and each carrying a roller 7 rotatable thereon and adapted in a certain position of the wheel 5 to cooperate with the camway 3. The mutual distance between the pins 6 is designed to suit the lead of the camway 3, so that the cooperation of the wheels 2 and 5 will be similar to that of the worm and worm wheel of a worm gearing.

In the wheel 5 there is provided a recess 9, Fig. 2, of a shape adapted to accommodate a spider 10 which is rotatable on the shaft 4 and capable of turning through a small angle relatively to the wheel 5 against the action of a spring 11 inserted between the spider 10 and the wheel 5. Every second roller 7^a, 7^c, and 7^e is carried by the wheel 5 and every second roller 7^b, 7^d and 7^f by the spider 10. In this embodiment adjacent rollers 7^a and 7^b, and so forth, are to engage the opposite sides of the flange 12. For this purpose the spring 11 tends to turn the spider 10 in an opposite direction to that in which the wheel 5 is to be turned for effecting the feeding of the film. Fig. 2 illustrates diagrammatically three different relative positions of the wheels 2 and 5. It is assumed that the wheel 5 shall turn in clockwise direction, as indicated by the arrow A, and that the wheel 2, a development of which is shown in dotted and dashed lines, is rotated in such direction that the flange or cam 12 moves downward in the direction of the arrow B. In the lower position in Fig. 2 the roller 7^a engages with the camway 3. Owing to the spring 11 acting on the spider 10 the roller 7^b on the right-hand side of the roller 7^a and the wheel 2 is forced against the outer side of the flange 12 and the roller 7^a is forced to bear against the inner side of said flange. When the wheel 2 has been turned through such angle that the rollers occupy

the middle position in Fig. 2 the roller 7^a previously engaging the camway 3 has been moved out of said camway and occupies a position to the right of the wheel 2. The roller 7^f which previously occupied a position to the left of the wheel 2, has now moved into the camway 3 and owing to the action of the spring it is forced against the inner side of the flange 12 and simultaneously the roller 7^e is forced against the outer side of said flange. In the upper position in Fig. 2 the roller 7^e has moved into the camway 3, while the roller 7^f has been moved out of the same. It will be understood that owing to the spring 11 always forcing the two rollers of a pair against the opposite sides of the cam or flange 12, play between the engaging parts of the wheels 2 and 5 is prevented, as are also vibrations of the picture on the screen, even if the parts in question have become worn.

Fig. 3 illustrates a construction of a pin wheel in which the rollers are arranged adjacent one another in pairs, one roller 7^a of each pair being supported by the wheel and the other roller 7^b of the pair being carried by the spider 10 between which and the wheel the spring 11 is inserted in such manner that it tends to move the rollers of each pair away from each other. According to this construction the rollers enter the camway 3 by pairs and owing to their tendency to separate they press against the walls of the camway and thus prevent play due to wear of the parts.

It will be understood that the embodiments illustrated may be modified in several respects without departing from the principle and scope of the invention.

I claim:

1. In a mechanism of the kind described the combination of a driving wheel provided with a camway, a driven wheel, and pins carried by said driven wheel and adapted to cooperate with said camway, some of said pins being rigidly attached to said driven wheel and the other pins being resiliently attached to said driven wheel and spring-actuated in a direction towards an adjacent rigid pin.

2. In a mechanism of the kind described the combination of a driving wheel provided with a camway, a driven wheel, and pins carried by said driven wheel and adapted to cooperate with said camway, every second pin being resiliently attached to said driven wheel and spring-actuated in a direction towards an adjacent pin.

3. In a mechanism of the kind described the combination of a driving wheel provided with a camway, a driven wheel, pins carried by said driven wheel and adapted to cooperate with said camway, a spider located coaxially to said driven wheel and rotatable in relation thereto, pins carried by said spider and located intermediate said pins on said driven wheel and adapted to cooperate with said camway on said driving wheel, and a spring inserted between said driven wheel and said spider and adapted to produce such relative rotation of said wheel and spider that the pins on said wheel are moved in a direction towards the pins on said spider.

MATTIAS JONATAN GISELSON.