H. J. CRUDGE.

KINEMATOGRAPH.

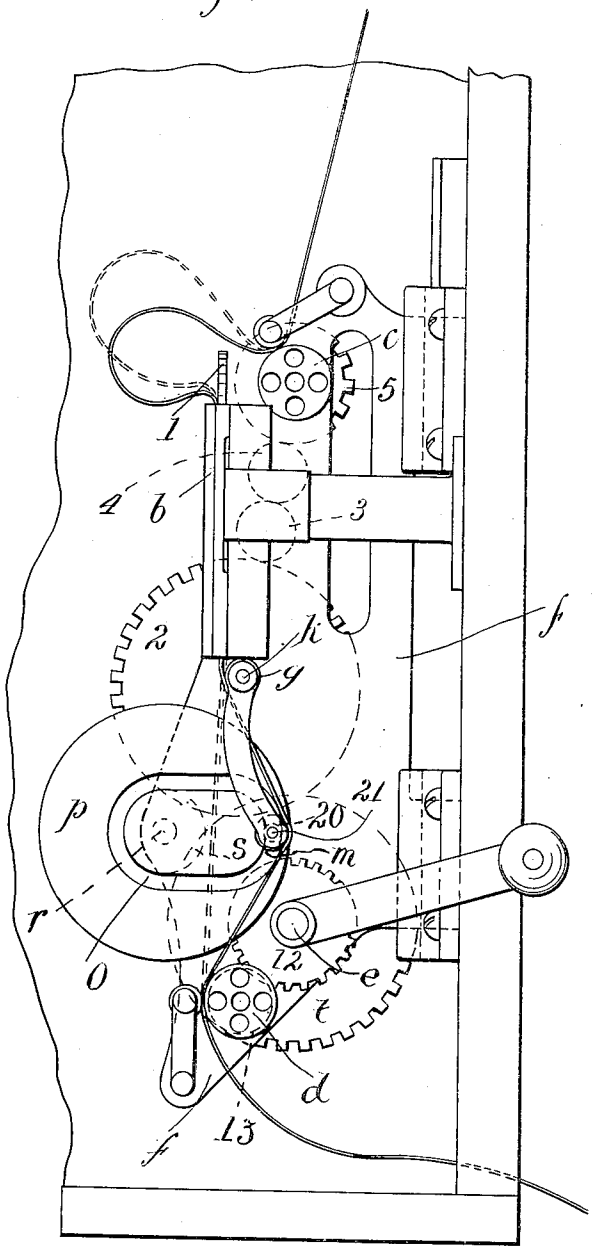
APPLICATION FILED SEPT. 12, 1907.

912,365.

Patented Feb. 16, 1909.

2 SHEETS—SHEET 1.

Fig. 1.



Witnesses

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KINEMATOGRAPH.

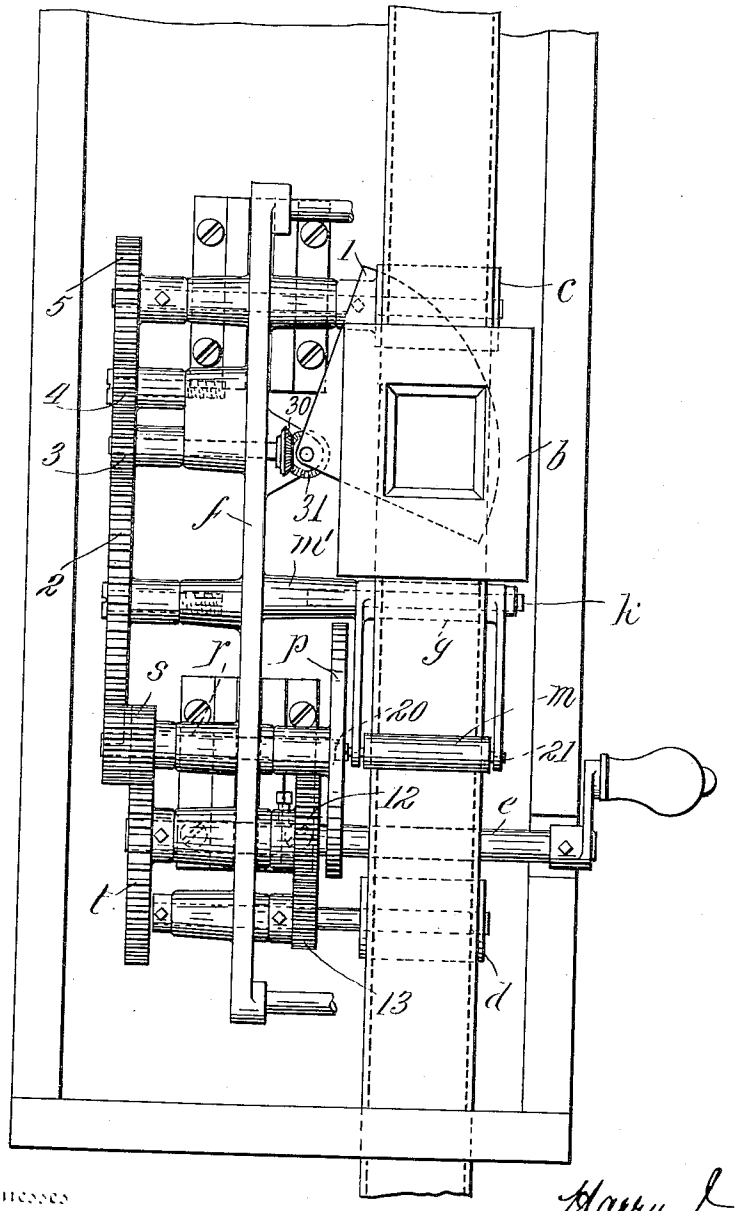
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912,365.

Patented Feb. 16, 1909.

2 SHEETS—SHEET 2.

Fig. 2.



Witnesses

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UNITED STATES PATENT OFFICE.

HARRY JAMIESON CRUDGE, OF MONTREAL, QUEBEC, CANADA, ASSIGNOR OF ONE-HALF TO FREDERICK PASSMORE GUTELIUS, OF MONTREAL, CANADA.

KINEMATOGRAPH.

No. 912,365. Specification of Letters Patent. Patented Feb. 16, 1909.

Application filed September 12, 1907. Serial No. 392,558.

To all whom it may concern:

Be it known that I, HARRY JAMIESON CRUDGE, of the city of Montreal, Province of Quebec, Canada, have invented certain new and useful Improvements in Kinematographs; and I hereby declare that the following is a full, clear, and exact description of the same.

My invention relates particularly to the means for causing the film to move intermittently past the lens, and it has for its object to provide means for this purpose adapted to act gently upon the film and allow the latter to dwell for a brief period each time a picture arrives in correct position opposite to the lens.

The invention may be said briefly to consist of the combination and arrangement of parts hereinafter described and pointed out in the claims. For full comprehension, however, of my invention, reference must be had to the accompanying drawings in which like symbols indicate the same parts and wherein,

Figure 1 is a transverse vertical sectional view of the portion of a kinematograph machine to which my invention has particular reference; Fig. 2 is a rear view thereof.

The film guide and dark chamber *b*, and feed and take-up rolls *c* and *d* respectively, and their operating shaft *e* and carrying frame, *f*, are as usual and need not, therefore, be described in detail.

My improved means for intermittently moving the film consists of a member in the form of a furcated oscillatory arm *g* pivoted upon a spindle *k* set rigidly in a bearing, *m'*, upon the frame, *f*, and having an anti-friction roller, *m*, mounted in the ends of its prongs. This arm is oscillated by a cam groove, *o*, cut in a disk *p* mounted rigidly upon one end of a shaft *r* carrying a spur pinion *s* rigidly upon its opposite end, such pinion intermeshing with and being driven by a spur gear *t* mounted rigidly upon the usual driving shaft, *e*, while the relative speed of this gear to the pinion is one to four. This pinion forms a member of the train of gears operatively connecting the driving shaft to the feed drum and shutter 1 and comprising a reduction gear 2 rotating once to four rotations of the pinion, a pair of pinions 3 and 4, the former of which drives the shutter 1, through intermeshing intergears 30 and 31 and a driven gear 5 having a speed of two to one of the gear 2, and mounted rigidly upon the shaft bearing the feed drum. Two rotations of the feed drum are thus secured for one of the driving shaft and four beats of the arm *g*. The operative connection between the anti-friction roller *m* and the cam is effected by the trundle roll 20 mounted rotatably upon the spindle 21 which carries such roller *m*, the trundle roll engaging the cam groove and receiving movement therefrom.

In order to cause the take-up drum to rotate in synchronism with the feed drum, a gear 12 mounted upon the driving shaft is caused to transmit double its speed to a pinion 13 upon the shaft of such take-up drum.

The cam groove is shown clearly in Fig. 1 and is in the form of an oval with flat sides and semi-circular ends one of which latter is concentric to the disk and, consequently causes the arm to dwell while such concentric portion is being traversed by the trundle roll 20, the film remaining stationary during that interval and also during the time the arm takes to return from the film to the said dwell in the cam. While the film is thus remaining stationary the shutter will be out of the line of the lens, and the required exposure thus made.

What I claim is as follows:—

1. In a kinematograph machine the combination with the film guide, means for feeding the film to the film guide, and a film take up device, of a cam, an oscillatory arm pivoted at one end to a stationary part of the machine and constructed and arranged to have its free end reciprocate across the path of the film, a trundle roll carried by one side of the arm and being in direct operative engagement with the cam, and a device upon the opposite side of the said arm and projecting across the path of the film and adapted to act intermittently upon the same under the influence of the cam for the purpose of feeding the said film through the film guide.

2. In a kinematograph machine the combination with the film guide, means for feeding the film to the film guide and a film take-up device, of a cam disk having a cam groove, an oscillatory arm pivoted to a stationary part of the machine, a spindle mounted in the free end of such arm and projecting therethrough one end of such spindle being

in operative connection with such cam groove and the other end projecting across the path of and bearing upon the film.

3. In a kinematograph machine the combination with the film guide, means for feeding the film to the film guide and a film take-up device, of a cam disk having a cam groove, an oscillatory furcated arm pivoted to a stationary part of the machine, a spindle mounted in the free ends of the prongs of such arm and having one end in operative connection with such cam groove and the said ends of the prongs being adapted to reciprocate across the path of the film.

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

HARRY JAMIESON CRUDGE.

Witnesses.
WILLIAM P. MCFEAT,
FRED J. SEARS.