L. GAUMONT.

FILM DRIVING DEVICE.

APPLICATION FILED SEPT. 10, 1913.

1,166,453

Patented Jan. 4, 1916

2 SHEETS—SHEET 1.

Fig. 1.

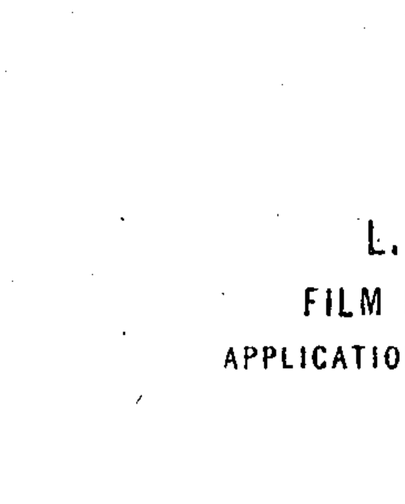


Fig. 2.

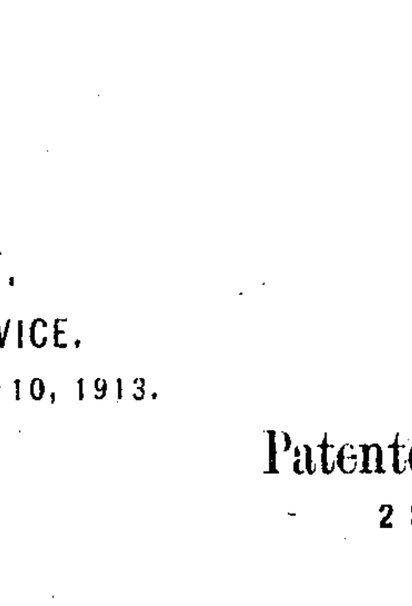


Fig. 6.

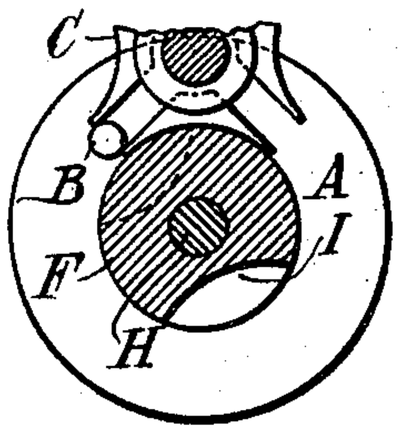


Fig. 7.

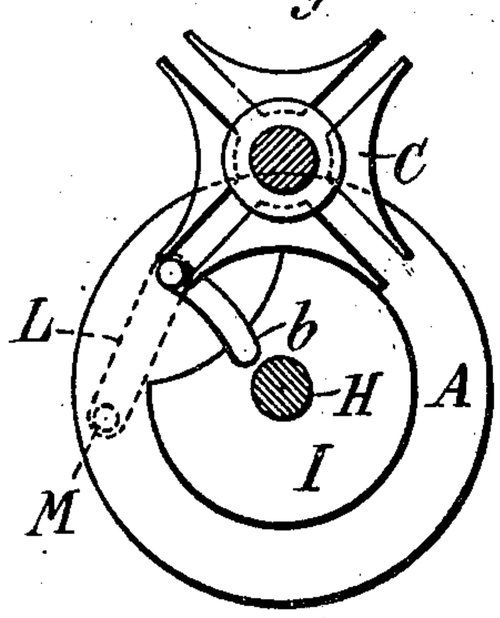
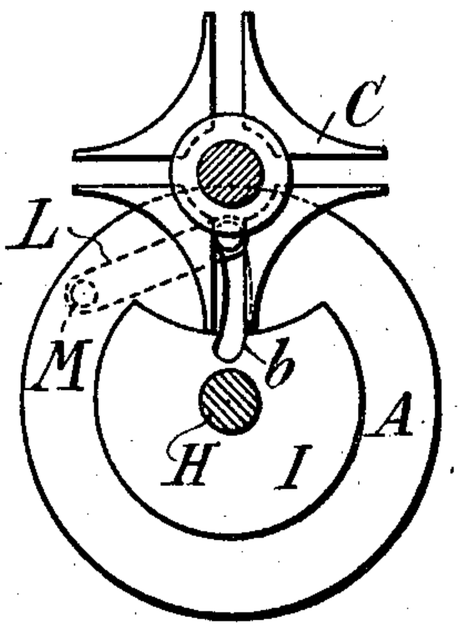


Fig. 8.



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2 SHEETS—SHEET 2.

Fig. 3.

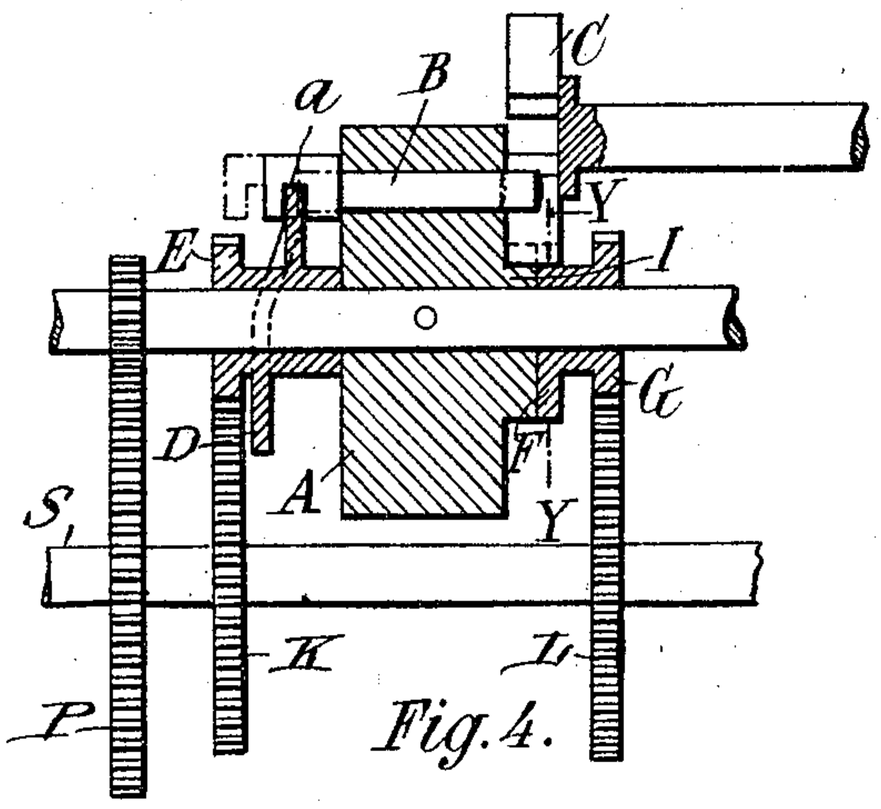


Fig. 4.

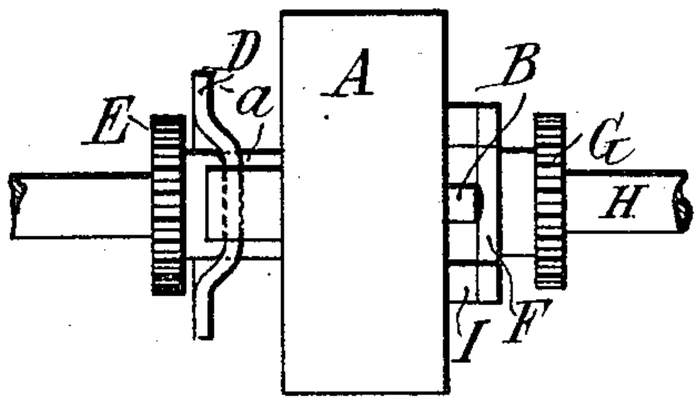


Fig. 5

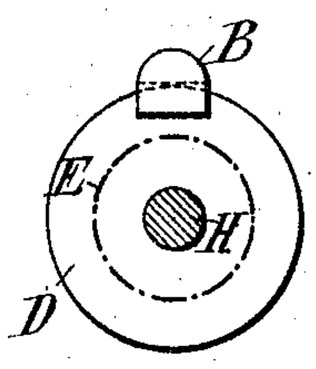


Fig. 9.

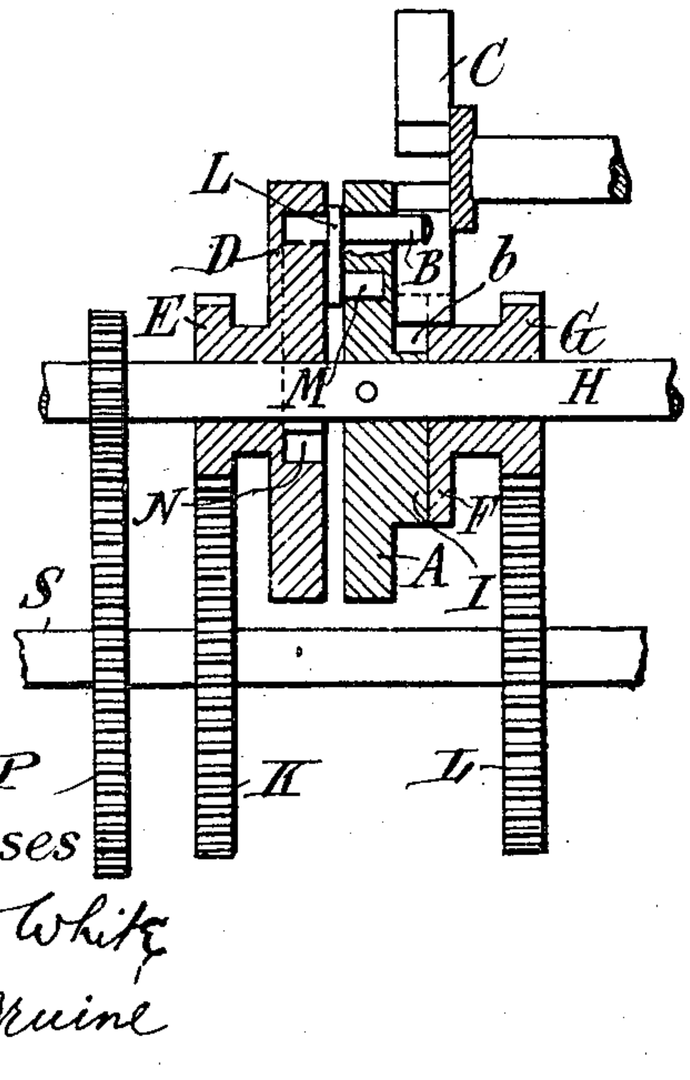
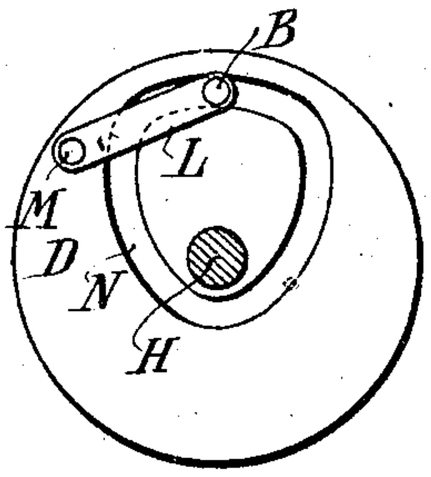


Fig. 10.



Witnesses

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UNITED STATES PATENT OFFICE.

LÉON GAUMONT, OF PARIS, FRANCE, ASSIGNOR TO SOCIÉTÉ DES ETABLISSEMENTS GAUMONT, OF PARIS, FRANCE.

FILM-DRIVING DEVICE.

1,166,453. Specification of Letters Patent. Patented Jan. 4, 1916.

Application filed September 10, 1913. Serial No. 789,167.

To all whom it may concern:

Be it known that I, LÉON GAUMONT, a citizen of the Republic of France, residing in Paris, France, have invented certain new and useful Improvements in Film-Driving Devices, of which the following is a specification.

In the usual kind of moving picture apparatus employing a Geneva movement, the film cylinder actuated by the Geneva wheel has usually a development corresponding to four pictures and it follows therefrom that the Geneva wheel has four arms. As a consequence thereof, and, in order to avoid shocks on the introduction of the operating finger into a slot of the Geneva wheel, this operating finger is mounted upon a plate having a suitable radius the center of which is located at such a distance from the Geneva wheel that the angle which the finger forms on entering the slot and its position on leaving therefrom, is a right angle. It follows from this that the time of stoppage of the Geneva wheel can only be three-quarters of the time taken by the plate to effect one revolution, that is to say that in these projecting apparatus the film is stationary during three-quarters of the time and the other quarter being necessary for substitution of one picture for another. In order to increase this period of immovability it is necessary to decrease the aforementioned angle between the two end positions of the finger; this would result in a Geneva wheel having a number of arms greater than four and the cylinder would also increase in diameter thus increasing substantially the masses intended to receive successively a movement of operation and a period of rest. To avoid this drawback applicant has conceived a device wherein the cylinder and the Geneva wheel remain exactly similar as has been hereinbefore described, that is to say for four pictures, but the driving plate of which rotates at twice the usual speed and is provided with a finger which instead of being secured to this plate is displaced once in every two revolutions. It follows therefrom that the speed of displacement of the Geneva wheel is doubled as the plate rotates twice as fast, and that, nevertheless, there is no shock, as the driving finger enters and leaves the slots always tangentially thereto. In consequence thereof the period of immovability of the film is increased from three-quarters to seven-eighths.

The following description and the accompanying drawing show, and describe, by way of example, two constructions of the mechanism for displacement of the finger and will serve to make clear the features and advantages derived from this invention.

In the first construction, Figures 1 to 6, the Figs. 1 and 2 show in end elevation, the driving plate and the Geneva wheel in two positions; Fig. 3 is a longitudinal section of the whole device on line X X of Fig. 2; Fig. 4 is a plan of Fig. 3, the Geneva wheel being assumed to be removed; Fig. 5 is an end view of the cam actuating the movable finger and Fig. 6 is a section on line Y Y of Fig. 3, the parts occupying another position than that shown in this figure. Figs. 7 to 10 inclusive illustrate a second construction, Figs. 7 to 10 inclusive corresponding to Figs. 1, 2, 3 and 5 respectively.

The device consists of a driving plate A provided with a finger B transversely movable therein, said finger engaging a slot of the Geneva wheel C once in every two revolutions of the plate A. The finger B is formed, at one of its ends which constitutes an abutment projecting from the plate A, on the side opposite to that of the Geneva wheel, with a slot *a* in which a cam D engages. The cam D is integral with a pinion E. On the other side of the plate an auxiliary sector F is provided, which sector is integral with a pinion G. The cam D and the sector F are mounted loosely upon the shaft H driving the plate A. Gears K and L on a shaft S drive the gears E and G of the cam D and sector F. A gear P drives a pinion R on shaft H, the pinion R being driven at a multiple of the speed of the gears E and G.

The operation of this device is as follows:—The shaft H rotates the plate A wherein the finger B is engaged and the cam D is driven by the gear E connected by means of suitable members, to the initial driving mechanism of the apparatus, at half the speed of the shaft H. It follows therefrom that the finger B can occupy two positions; either that shown in full lines in Fig. 3 in which it penetrates a slot of the Geneva wheel C; or that shown in dash-dotted lines in the same figure in the position which the

finger will occupy when it has revolved 360° and the cam D has effected one half rotation, in which position the finger B exerts no influence upon the Geneva wheel. However, in the latter case, it should be pointed out that the notch of the sector I integral with the plate A and which is provided for the purpose of preventing the Geneva wheel from moving during the rotation of the plate, would permit this wheel to rotate when the finger is displaced and occupies the position shown in dash-dotted lines in Fig. 3.

In order to insure the immovability of the Geneva wheel during the passage of the displaced finger, the sector F which is also driven by its pinion G at half the speed of the shaft H, presents its full portion opposite the recess of the Geneva wheel and consequently opposes any movement thereof.

In the second construction, Figs. 7 to 10, there is a similar device in which the driving finger B instead of being displaced at right angles to the plate A, is displaced across the face of the plate R so as to locate itself at the end of a slot permitting it to pass without touching the Geneva wheel. The finger B is displaced once in every two revolutions of the plate A, so as to turn the Geneva wheel a quarter revolution at every other revolution of the plate A. The finger B can move in a slot *b* formed in the plate A. To this end, it is mounted upon a small rod L adapted to pivot about a pin M secured to the said plate. However, the finger B passes through the rod L and one of its ends engages a slot N of suitable shape formed in the cam D.

The operation is very similar to that of the former construction, the cam D causing the finger B to occupy two positions of different radius as it passes in front of the Geneva wheel, in one of which positions it actuates the Geneva wheel, and in the second of which positions it does not act to move the Geneva wheel. The cam D is turned at one half the speed of the shaft H through a pinion E. The sector wheel F is turned at one half the speed of the shaft H, and operates to immobilize the Geneva wheel in the same manner as it does in the preceding construction.

This device can be adapted to any driving mechanism comprising a cam or a member taking the place of the Geneva wheel.

What I claim and desire to secure by Letters Patent of the United States is:—

1. A Geneva movement for driving a film in cinematographic apparatus, comprising a Geneva wheel having slots therein at 90° apart, and a driving plate having a driving finger adapted to enter and leave the slots in said Geneva wheel at a tangent, said finger being transversely movable in said plate, and a cam for displacing said finger for a predetermined interval so as not to act on said Geneva wheel.

2. A Geneva movement for driving a film in cinematographic apparatus, comprising a Geneva wheel having slots therein at 90° apart, and a driving plate having a driving finger adapted to enter and leave the slots in said Geneva wheel at a tangent, said finger being movable across the face of said plate, and means for displacing said finger for a predetermined interval so as not to act on said Geneva wheel.

3. A Geneva movement for driving a film in cinematographic apparatus, comprising a Geneva wheel having slots therein at 90° apart, and a driving plate having a driving finger adapted to enter and leave the slots in said Geneva wheel at a tangent, and means for displacing said finger for a predetermined interval so as not to act on said Geneva wheel, and a sector wheel, moving independently of said driving plate adapted to immobilize said Geneva wheel during the interval that said finger is displaced.

4. A Geneva movement for driving a film in cinematographic apparatus, comprising a Geneva wheel having slots therein at 90° apart, and a driving plate having a driving finger adapted to enter and leave the slots in said Geneva wheel at a tangent, and means for displacing said finger once in every two revolutions of said driving plate, whereby at alternate revolutions the finger does not act on said Geneva wheel, and a sector wheel adapted to turn once in every two revolutions of the driving plate and adapted to immobilize said Geneva wheel during the interval that said finger is displaced.

In witness whereof, I have hereunto signed my name in the presence of two subscribing witnesses.

LÉON GAUMONT.

Witnesses:
LUCIEN MEMMINGER,
GABRIEL BELLIARD.