

E. L. AIKEN.
KINETOSCOPE.

APPLICATION FILED JULY 14, 1906.

937,746.

Patented Oct. 26, 1909.

2 SHEETS—SHEET 1.

Fig. 1

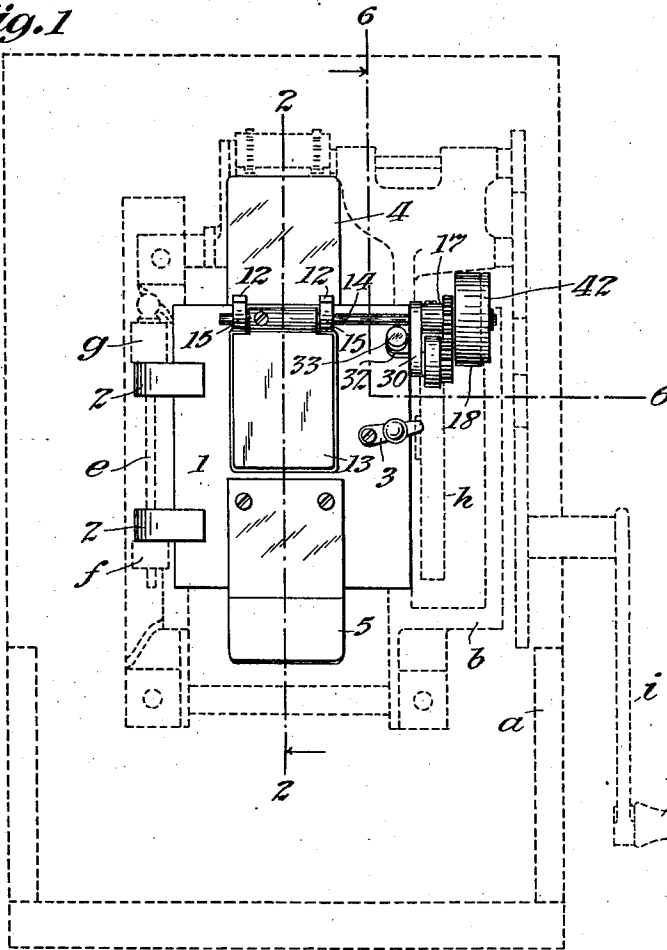


Fig. 2

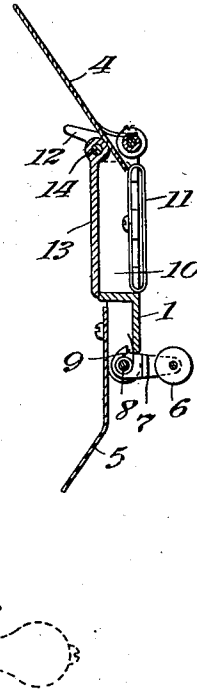


Fig. 3

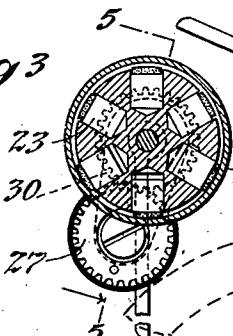


Fig. 4

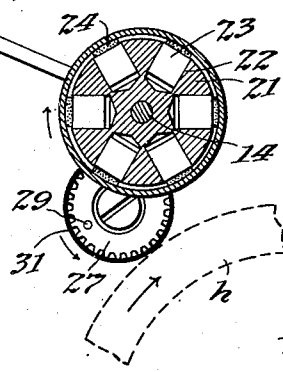
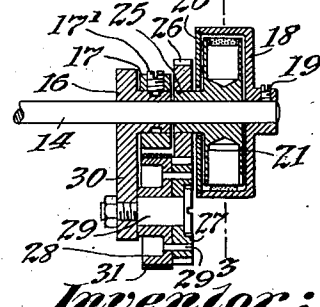


Fig. 5



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2 SHEETS-SHEET 2.

Fig. 9

Fig. 10

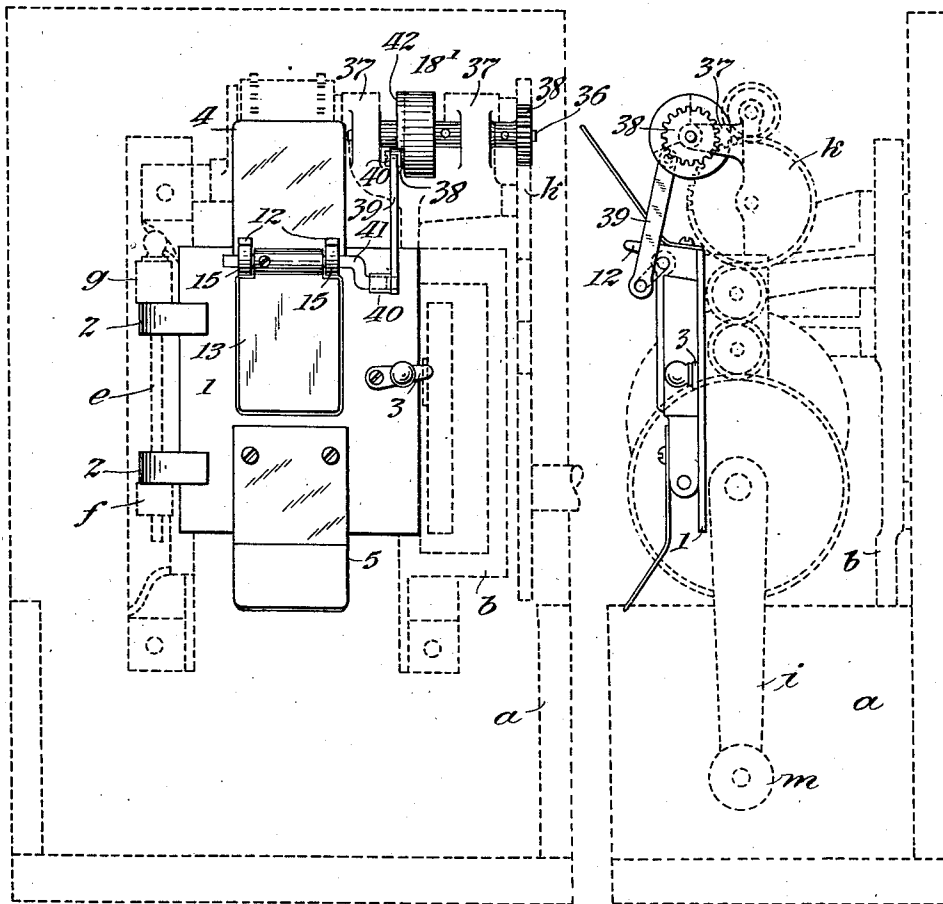


Fig. 7

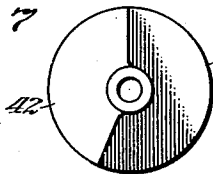


Fig. 6

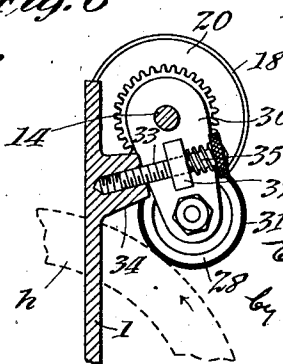
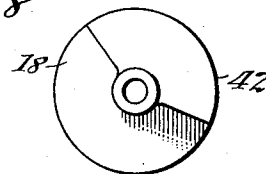


Fig. 8



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UNITED STATES PATENT OFFICE.

EDWARD L. AIKEN, OF ORANGE, NEW JERSEY, ASSIGNOR TO EDISON MANUFACTURING COMPANY, OF WEST ORANGE, NEW JERSEY, A CORPORATION OF NEW JERSEY.

KINETOSCOPE.

937,746.

Specification of Letters Patent.

Patented Oct. 26, 1909.

Application filed July 14, 1906. Serial No. 326,275.

To all whom it may concern:

Be it known that I, EDWARD L. AIKEN, a citizen of the United States, residing at Orange, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Kinetoscopes, of which the following is a description.

My invention relates to kinetoscopes or apparatus for the projection of moving pictures and more particularly to the provision of means for cutting off the projecting light from the film when the latter is stationary, so that it will be impossible for the film to be ignited from this cause, and has for its object the provision of an improved shutter controlling mechanism which will be simple and easy to apply to kinetoscopes of standard construction now on the market, which will be reliable and certain in operation, and comprise a minimum number of parts.

With these ends in view my invention consists in the features hereinafter described and claimed.

Reference is hereby made to the accompanying drawings of which—

Figure 1 is a rear elevation showing in dotted lines a projecting machine of the Edison type, with one form of my invention in full lines applied thereto; Fig. 2 is a section on line 2—2 of Fig. 1; Fig. 3 is a section on line 3—3 of Fig. 5, showing the shutter controlling mechanism when the driving mechanism is at rest; Fig. 4 is a similar view showing the positions assumed when the driving mechanism is in motion; Fig. 5 is a section on line 5—5 of Fig. 3; Fig. 6 is a section on line 6—6 of Fig. 1; Fig. 7 is a face view of the hollow friction member which forms a part of the shutter controlling mechanism, in the position of Fig. 3; Fig. 8 is a similar view of the same member in the position of Fig. 4; Fig. 9 is a rear elevation similar to Fig. 1 of a modified form of attachment, and Fig. 10 is a side elevation of Fig. 9.

In all of the views corresponding parts are designated by the same reference characters.

In the apparatus shown the kinetoscope comprises the usual main support *a* which carries the frame *b* in which are mounted the usual gears and sprockets for intermittently feeding the film past the display opening which is formed in a plate supported from the body *a* in the usual manner. The frame *b* is provided with the usual ver-

tical pin *e* upon which is ordinarily hinged a gate which has been removed from the machine shown in the drawings and is replaced by the improved attachment which forms the subject matter of the present application. This attachment comprises a gate or support 1 provided with laterally extending bearings 2 which are hinged upon the pin *e* between the bosses *f* and *g*, so that the gate 1 can be swung on its hinges into an open position when it is desired to thread a film through the apparatus, and can then be turned into a closed position as shown in Fig. 1, being locked by the engagement of a latch 3 with a suitable portion of the frame *b*. The gate takes the place of the usual gate with which projecting machines are provided and can be substituted therefor by merely withdrawing the pin *e*, removing the said gate and applying the gate 1. This gate is provided with upper and lower guards 4 and 5 respectively for preventing the film from getting into the path of the projecting light. The gate 1 is also provided with a roller 6 journaled in the free end of the frame 7 which is hinged upon a pin 8 and is adapted to be pressed against the film by a spring 9. An opening 10 is formed in the gate 1 and when the latter is in its operative position this opening is directly back of the display opening of the kinetoscope. On each side of the opening 10 are springs 11 which press upon the film to prevent the same from buckling. The gate 1 has a pair of rearwardly projecting ears 12 which act as stops for the movable shutter which will now be described. This shutter is composed of a plate 13 preferably formed of aluminium, although other heat resisting materials may be used. This plate is secured to a horizontal shaft 14 which is journaled in bearings 15 formed integral with the gate 1. This shaft also passes through a sleeve 16 which is journaled in a bearing 17, carried by the gate 1, the sleeve 16 being exteriorly grooved to receive the end of the screw 17 threaded in said bearing. To the outer end of the shaft 14 is secured a hollow friction member 18, any suitable securing means such as a set screw 19 being used. The friction member 18 may be in the form of a cup as shown and I prefer to close the open end thereof by an annular plate 20 which fits tightly within the same. I prefer to form one face of the hollow member 18 with a

weight 42 which may be in the shape of a sector as shown in Figs. 7 and 8. This weight is so placed as to perform a double function. When the shutter is open as in Fig. 8 the weight partially counterbalances the shutter, and therefore aids in sustaining it, and when the shutter is released and falls into a closed position as in Fig. 7, the weight 42 moves the shutter from the slightly open position to which it rebounds into a tightly closed position. Within the hollow friction member 18 is a centrifugal friction member which is composed of a hub 21 journaled upon the shaft 14 and having radially extending recesses 22 within which are loosely fitting plugs 23, the parts 21 and 23 being preferably of metal, such as brass.

Secured to the outer end of each of the plugs 23 is a friction pad 24 adapted to engage the inner surface of the friction member 18 when the plugs 23 are subjected to centrifugal action. The pads 24 may be composed of leather which will produce sufficient friction upon the member 18 when composed of metal, such as steel, even when oil is present, and which will wear for an indefinite period of time. The hub 21 is provided with a circular boss 25 upon which is fixed a gear 26 which meshes with a gear 27 which is secured to the face of a friction drive wheel 28 by means of pins 29. The drive wheel 28 is journaled upon a stud 29 carried by the free end of the arm 30 which is integral with the sleeve 16. The periphery of the friction drive wheel 28 is covered with a layer 31 of suitable material such as leather for increasing the driving power thereof. The leather 31 engages the periphery of the usual fly wheel *h* of the kinetoscope and furnishes power for operating the centrifugal friction member 21. It will be noted (Fig. 4) that the axis of the drive wheel 28 is so situated with respect to its point of support, that is, the axis of the shaft 14, that the movement of the fly wheel *h* in the direction of the arrow, and the engagement of the drive wheel 28 therewith tend by a wedging action to increase the engaging pressure of the said friction drive wheel upon the fly wheel, so that the weight of the arm 30 and the parts carried thereby is sufficient under ordinary conditions to produce an engagement which will transmit sufficient power for driving the shutter operating mechanism. In order, however, to provide against any emergency which might arise, I prefer to provide means for increasing the pressure of the drive wheel 28 upon the fly wheel and for adjusting the same to any desired extent. I therefore provide the arm 30 with a lug 32 (see Figs. 1 and 6) through which passes an adjusting screw 33 threaded into a boss 34 formed integral with the gate 1, a coil spring 35 being placed between the lug 32 and the head of the screw 33 as shown.

The operation of the device is as follows: Power being applied to the apparatus in the usual manner through the handle *m* and crank *i*, the film driving mechanism including the fly wheel *h* is set in motion. The periphery of the drive wheel 28 being held in engagement, as heretofore described, with the surface of the fly wheel, is caused to rotate in the direction indicated by the arrow in Fig. 4. The gear 27 rotates with the friction wheel 28 and drives the gear 26. This gear being fixed to the hub 21 causes the same to rotate at a rapid rate of speed and therefore on account of the centrifugal action of the plugs 23 causes the friction pads 24 to press against the interior surface of the hollow friction member 18. The frictional engagement of the pads 24 tends to rotate the member 18 in the direction of the arrow, which rotation is opposed by the weight of the shutter 13. The friction produced is sufficient, however, to overcome said resistance and the shutter is raised from its closed position as shown in Figs. 1, 2 and 3, into the open position of Fig. 4, in which position the shutter 13 contacts with the stops 12 and further movement is prevented. The friction pads 24 continue to exert a driving torque upon the member 18 thereby sustaining the shutter 13 in its open position as long as the driving crank *i* is moved at or above a given speed, which is a little below that required for the exhibition of the pictures upon the film. Whenever the operator ceases to drive the crank *i* or allows its speed to become so slight as to endanger the film, the centrifugal action of the plugs 23 is reduced to such an extent that the pads 24 cannot impart sufficient driving torque to the member 18 to sustain the shutter in its open position and it falls into its closed position shown in Fig. 2. It is impossible to prevent the shutter 13 from closing when the movement of the crank *i* is arrested or its speed falls below a definite rate.

It should be noted that the arrangement of the shutter controlling mechanism is such as not to interfere in any way whatever with the opening and closing of the gate 1, and that whenever the gate is locked in a closed position the periphery of the friction drive wheel 28 will be in proper driving relation to the surface of the fly wheel *h*.

Various modifications of my invention will be apparent; for instance, it is not necessary to mount the friction members of the shutter controlling mechanism upon the gate 1 as they may be mounted upon the frame *b* as shown in Figs. 9 and 10. In this modification the shaft 36 is journaled in bearings 37 carried by the frame *b*, and is driven by a gear 38 affixed thereto and meshing with one of the gears *k* of the usual driving train. The shaft 36 is provided with a centrifugal friction member similar to the member 21

previously described and the same operates to turn the hollow friction member 18' which is similar to the member 18 previously described except that it is provided with a boss 38 to which one end of a link 39 is secured by a screw 40 which acts as a pivot for said link. The lower end of the link 39 is provided with a socket 40 adapted to receive one end of the crank shaft 41 which is journaled in the bearings 15 of the frame 1 and carries the depending shutter 13. When it is desired to turn the gate 1 into an open position the link 39 is first sprung laterally so as to release the end of the shaft 41 and the gate may then be opened.

Having now described my invention what I claim as new and desire to secure by Letters Patent is as follows:

1. In a kinetoscope, the combination of a main frame provided with film driving mechanism, including a fly wheel, an auxiliary frame having an open and a closed position hinged to said main frame, a movable shutter carried by said auxiliary frame and adapted to cut off the projecting light from the film when closed, means for controlling the opening of said shutter, and a friction drive wheel for driving said shutter controlling means and carried by the auxiliary frame in such a position as to engage said fly wheel when the auxiliary frame is in its closed position, substantially as set forth.

2. In a kinetoscope, the combination of a main frame provided with means for imparting a progressive movement to a film including a fly wheel, an auxiliary frame or gate hinged thereto and provided with means for preventing buckling of the film, a movable shutter adapted to cut off the projecting light from the film when closed, and means for operating said shutter comprising a rotary friction member, and means for driving said friction member comprising a friction wheel adapted to engage the fly wheel, substantially as set forth.

3. In a kinetoscope, the combination of a main frame provided with film driving mechanism including a fly wheel, an auxiliary frame hinged to said main frame and provided with a movable shutter, means for controlling said shutter, a friction drive wheel in engagement with said fly wheel and connections therefrom for driving said shutter-controlling means and means for varying the pressure of said drive wheel upon said fly wheel, substantially as set forth.

4. In a kinetoscope, the combination of a main frame provided with film driving mechanism, an auxiliary frame secured thereto, and provided with a movable shutter, controlling means for operating said shutter, a shaft carried by said auxiliary frame, an arm movable on said shaft and carrying at its free end a friction drive wheel adapted to engage said fly wheel,

operative connections from said drive wheel to said controlling means and an adjusting screw threaded in said auxiliary frame and provided with means for engaging said arm to regulate the pressure of the drive wheel upon the fly wheel, substantially as set forth.

5. In a kinetoscope, the combination of a support and film driving mechanism, a shaft carried by said support, a shutter secured to said shaft, an arm loosely mounted on said shaft, a friction drive wheel carried by said arm, and adapted to engage a part of said driving mechanism, and connections from said wheel to said shaft to rock the latter and open said shutter when the said wheel is in operative engagement with the said mechanism, substantially as set forth.

6. In a kinetoscope, the combination of a support and film driving mechanism, a shaft carried by said support, a shutter secured to said shaft, an arm loosely mounted on said shaft, a friction drive wheel carried by said arm, and adapted to engage a part of said driving mechanism, means for adjusting the position of said arm, and connections from said wheel to said shaft to rock the latter and open said shutter when the said wheel is in operative engagement with the said mechanism, substantially as set forth.

7. In a kinetoscope, the combination of a support and film driving mechanism including a rotating member, a movable film protecting shutter secured to said support, means for determining the movement of said shutter, a friction drive wheel in engagement with said rotating member, and operative connections from said wheel to said determining means, and means for varying the pressure of said drive wheel upon said member, substantially as set forth.

8. In a kinetoscope, the combination of a support and film driving mechanism including a rotating member, a movable film protecting shutter secured to said support, means for determining the movement of said shutter, a pivotally supported friction drive wheel in engagement with said rotating member, and operative connections from said wheel to said determining means, the axis of said friction drive wheel occupying such a position with respect to its point of support that the pressure between the drive wheel and rotating member is increased when the latter is rotated, substantially as set forth.

9. In a kinetoscope, the combination of a movable shutter, a horizontal shaft connected thereto, a friction member carried by said shaft and provided with a weight so situated as to partially counterbalance the shutter when the latter is in an open position, and thus tend to maintain the shutter in open position, and means to engage said friction member and rock said shaft when the kineto-

scope is operated at a certain speed, and open said shutter, substantially as set forth.

10. In a kinetoscope, the combination of a movable shutter, an operating shaft connected thereto, a hollow frictional member mounted on said shaft and provided with a weight which acts in one direction when the shutter is at or near a closed position and in the opposite direction when the shutter is in an open position, and means to engage said friction member and rock said shaft when the kinetoscope is operated at a certain speed, and open said shutter, substantially as set forth.

11. In a kinetoscope, the combination of a shutter a shaft connected thereto, a hollow friction member fixed to said shaft, a co-operating friction member within said hollow member and loose upon said shaft, a gear fixed to said second friction member, an arm loose upon said shaft carrying a friction drive roller, means to engage and drive said roller and a gear secured to said drive roller and engaging said first gear for driving said friction member, substantially as set forth.

12. In a kinetoscope, the combination of a main frame provided with film driving mechanism including a fly wheel, an auxiliary frame secured to said main frame and provided with a movable shutter, shutter

controlling mechanism and a pivotally supported friction drive wheel in engagement with said fly wheel and connections therefrom for driving said shutter controlling mechanism, the axis of said friction drive wheel occupying such a position with respect to its point of support that the pressure between the drive wheel and fly wheel is increased when the latter is rotated, substantially as set forth.

13. In a kinetoscope, the combination of a main frame provided with film driving mechanism including a fly wheel, an auxiliary frame secured to said main frame and provided with a movable shutter, mechanism for controlling said shutter, and a pivotally supported friction drive wheel in engagement with said fly wheel for driving said shutter-controlling mechanism, the axis of said drive wheel being situated in advance of the plane formed by the axes of its pivotal support and fly wheel respectively, so that the rotation of the fly wheel causes it to approach the said plane, substantially as set forth.

This specification signed and witnessed this 12th day of July 1906.

EDWARD L. AIKEN.

Witnesses:

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FRANK L. DYER.