A. F. GALL.

AUTOMATIC FILM PROTECTING SCREEN FOR KINETOSCOPES.

APPLICATION FILED JUNE 17, 1908.

998,571.

Patented July 18, 1911.

2 SHEETS—SHEET 1.

Fig. 1

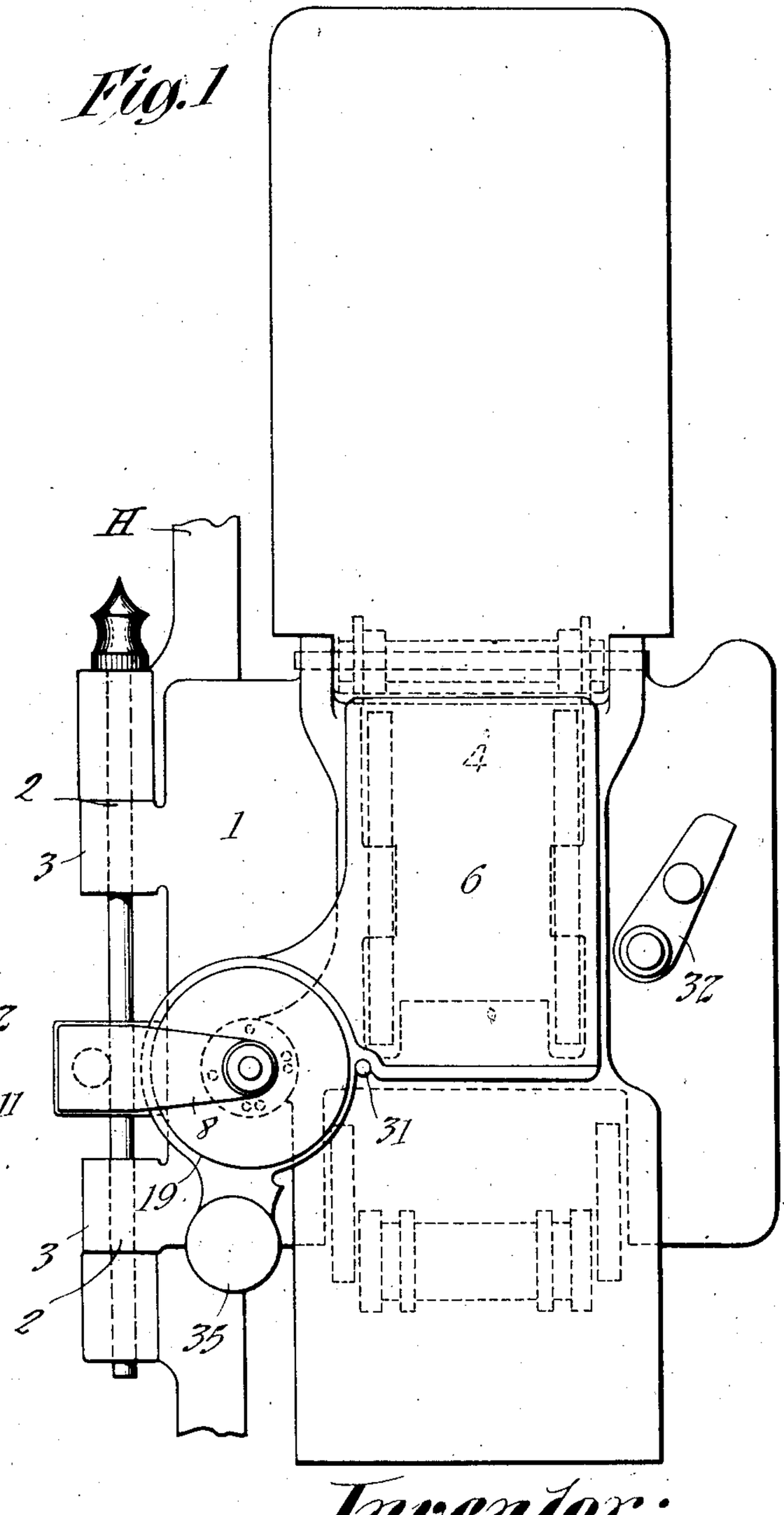

Fig. 2

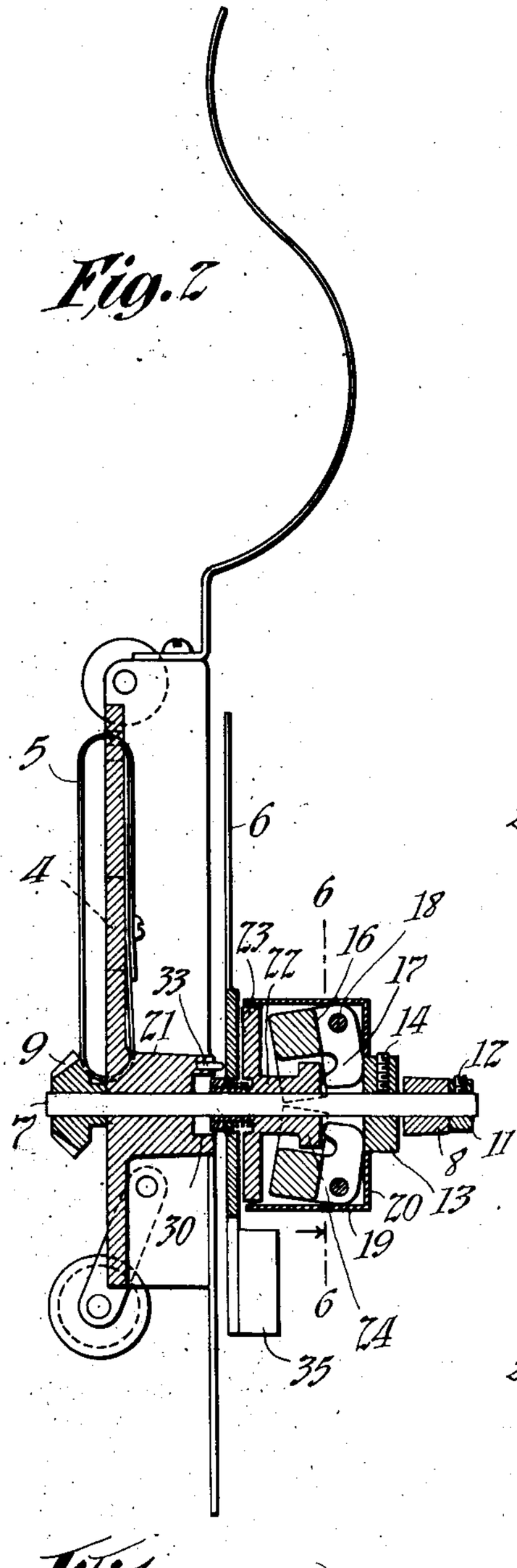

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Fig. 3

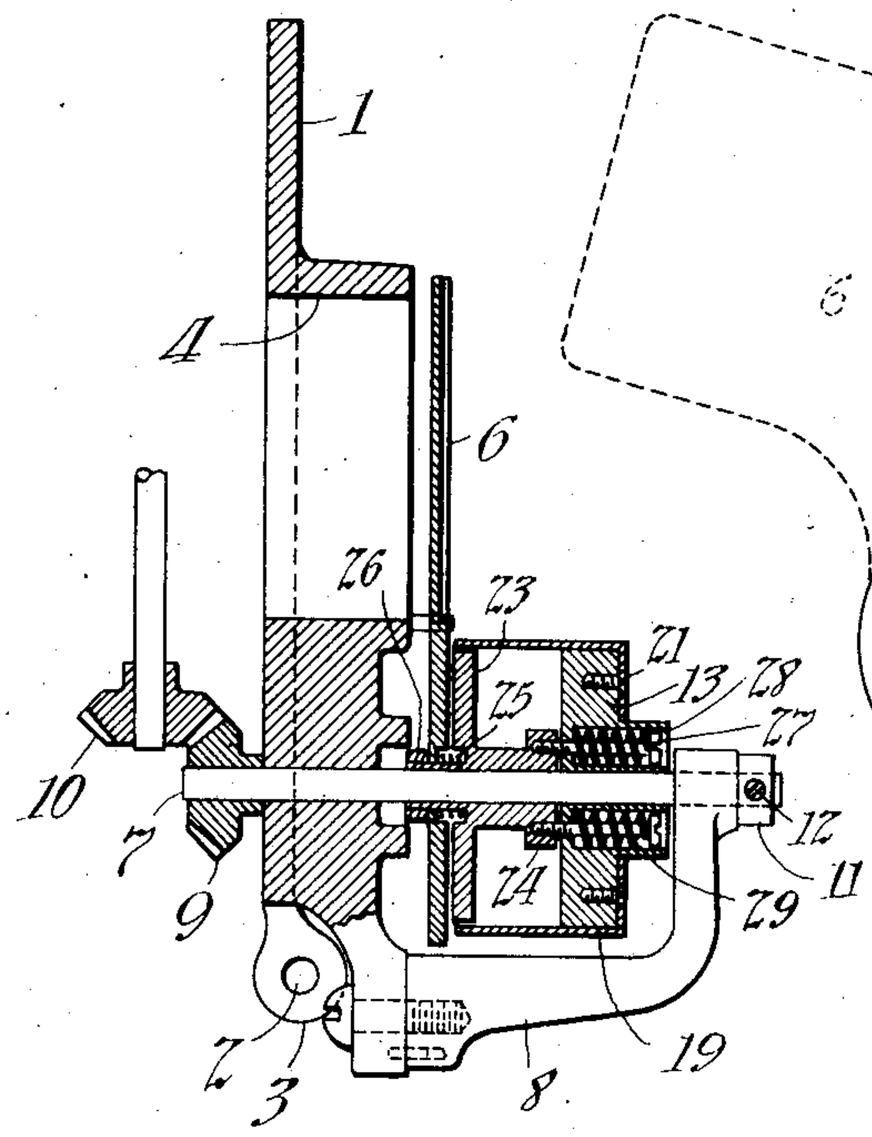


Fig. 4

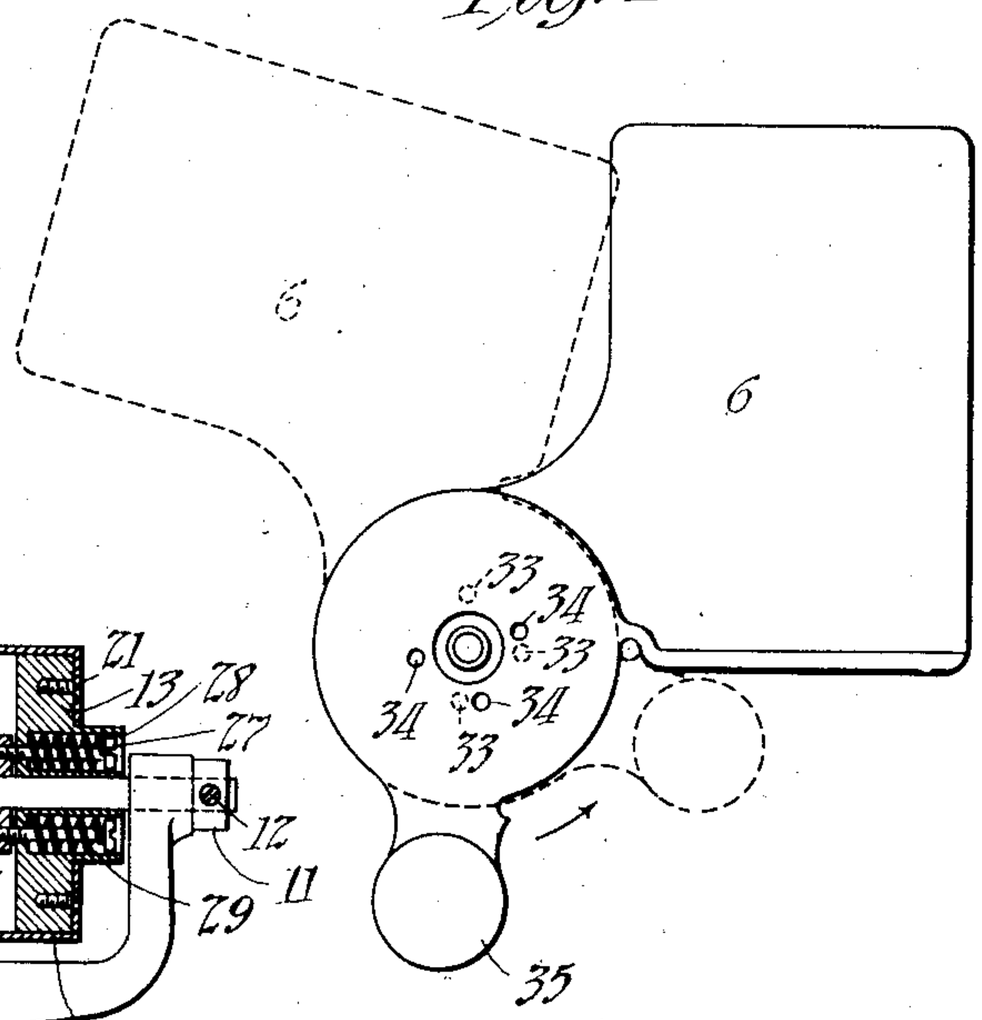


Fig. 5

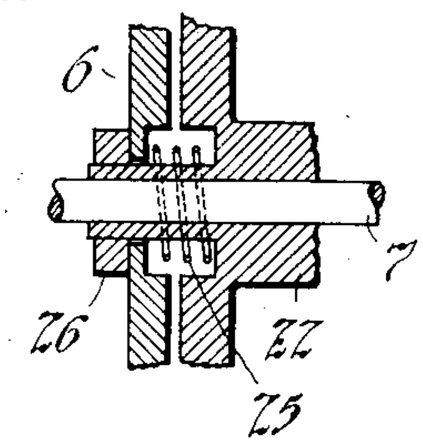
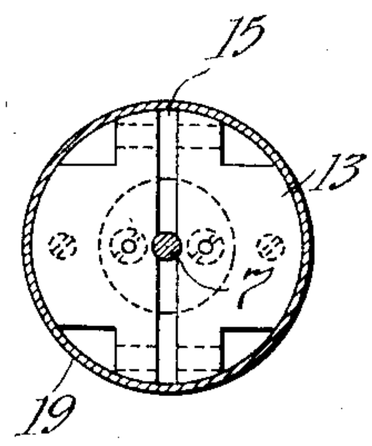


Fig. 6



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UNITED STATES PATENT OFFICE.

ADOLPH F. GALL, OF WEST ORANGE, NEW JERSEY, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THOMAS A. EDISON, INCORPORATED, OF WEST ORANGE, NEW JERSEY, A CORPORATION OF NEW JERSEY.

AUTOMATIC FILM-PROTECTING SCREEN FOR KINETOSCOPES.

998,571. Specification of Letters Patent. Patented July 18, 1911.

Application filed June 17, 1908. Serial No. 438,896.

To all whom it may concern:

Be it known that I, ADOLPH F. GALL, a citizen of the United States, residing at No. 212 Valley road, in the town of West Orange, county of Essex, and State of New Jersey, have invented certain new and useful Improvements in Automatic Film-Protecting Screens for Kinetoscopes, of which the following is a description.

My invention relates to kinetoscopes and particularly to devices for automatically actuating the protecting screen for the inflammable moving picture film which, in the present state of the art, is composed principally of celluloid and, when stationary or moving at a slow rate of speed and subjected to the high heat of the projecting lamp, is liable to become ignited and destroyed. Numerous devices have been constructed for this purpose, many of which have been operated by frictional contact with a moving part connected with the actuating mechanism of the projecting machine. Such devices, so far as I am aware, not only rely on friction to move the screen away from over the projecting aperture, when the projecting machine is being operated at a fairly high rate of speed, but rely also upon a continuation of such friction to maintain the screen removed from the projection aperture during the operation of the machine. In a device constructed in accordance with my invention, while friction is relied upon to move the screen away from its position covering the projection aperture, after the screen has been moved to such adjusted position it is maintained therein by other means than friction so that the wear of the parts consequent upon the continued friction usually relied upon, is dispensed with and the clatter and shaking of the screen when maintained in adjusted position by means of friction is wholly obviated. Much less energy is required to operate a projecting machine equipped with a screen so constructed and controlled as the friction practically ceases as soon as the screen has been moved from over the projection aperture and the loss of energy from frictionally maintaining the screen in the open position, as is the usual practice, is prevented.

With these and related objects in view, my invention consists in the parts, improvements and combinations hereinafter more fully described and claimed.

In order that my invention may be more clearly understood, reference is hereby made to the accompanying drawings forming a part of this specification, wherein the same reference numerals are applied uniformly to designate the same parts and in which—

Figure 1 is a front, elevational view of the door of a kinetoscope of the Edison type, having attached thereto an automatic film protecting screen and actuating mechanism therefor, constructed in accordance with my invention. Fig. 2 is a vertical cross-sectional view taken at right angles to Fig. 1; Fig. 3 is a horizontal cross-sectional view taken at right angles to Fig. 2. Fig. 4 is a view in front elevation, showing the screen in its normal and adjusted positions, the latter position being indicated in dotted lines. Fig. 5 is an enlarged detail view of certain parts shown in Fig. 3, and Fig. 6 is a vertical, sectional view, taken on line 6—6, Fig. 2, of the shell and bushing which carries the weights of the centrifuge.

Reference numeral 1 indicates a kinetoscope door which is hinged to the frame or body A of the kinetoscope, by means of a rod passing through apertures 2, 2, in lugs 3, 3. The door 1 is provided with the usual projection aperture 4, opposite the corresponding projection aperture in the frame of the kinetoscope, and with springs 5 for tensioning the film and holding it flat against the body of the kinetoscope, as it passes the projection aperture. The automatic film protecting screen is shown at 6. A rod or shaft 7 is journaled at one of its ends in the door 1, and at its opposite end in the bracket 8, secured to the door. The shaft 7 has on its inner end a means for imparting rotation thereto which, in the construction shown, is a bevel-gear 9 meshing with a similar gear 10, which is actuated from the film moving mechanism of the kinetoscope, as will be understood. When the door 1 is opened, by turning on its hinge, the gears 9 and 10 will be disengaged from one another, and these gears will automatically be thrown into mesh when the door is closed. The gear 9 and collar 11, secured as by means of a screw 12 to the opposite end of the shaft 7 maintain this shaft in posi-

tion and prevent any longitudinal motion thereof. A bushing 13 is secured to the shaft 7 between the door and bracket 8, as by means of a screw 14, and is provided with slots 15. Weights 16, provided with arms 17, and having the form of bell-crank levers, are pivoted within the slots 15 at 18. The shell 19, having an inturned flange 20, is fitted over the bushing 13, and secured thereto by any convenient means, as for example, by screws 21. The sleeve 22, carrying a disk 23, is slidably mounted upon the shaft 7, the disk 23 serving to close the otherwise open end of the shell 19. The end of the sleeve 22 next the arms 17 of the weights 16, is enlarged, as shown at 24, so that the arms 17 will, at all times, have a bearing against the end thereof. On the end of the sleeve 22, which projects without the shell 19, the screen 6 is rotatably mounted, a light spring 25 being interposed between the disk 23, which operates as a friction disk, and the screen 6, recesses being provided within the said disk and screen for receiving this spring 25. A collar 26 serves to keep the screen 6 in its position upon the sleeve 22.

Any convenient means may be provided to cause the sleeve 22 to rotate with the bushing 13, and at the same time, be longitudinally movable upon the shaft 7. The means which I prefer to use and have illustrated for this purpose, comprises screws 27, seated in recesses 28, in the bushing 13, passing loosely through openings at the bottom of said recesses, and screwed within the enlarged end 24 of the sleeve 22. Springs 29 are interposed between the heads of the screws 27 and the bottoms of the recesses 28. When the sleeve 22 is moved toward the door 1, the collar 26 fits within the recess 30 within the door. A stop-pin 31 is secured to the rear face of the door and serves to limit the movement of the screen 6, in each direction, as will be apparent from Figs. 1 and 4.

32 represents the latch for securing the door in its closed position upon the frame of the kinetoscope.

The screen 6 and door 1 are provided with any convenient form of inner locking means for holding the screen positively open when it is in the position shown in dotted lines, in Fig. 4. The devices which I have illustrated for this purpose, and which I prefer to use, consist of pins 33 secured within the door 1, and coöperating openings 34, in the screen 6, so positioned that when the screen is sufficiently moved away from its position, closing the projection aperture, these pins and holes will be opposite one another, so that the screen will be pushed onto the pins and positively held thereby. The counterweight 35 serves to restore the screen 6 to its normal position covering the projection aperture when the screen is released.

The operation of my improved device is as follows: The door having been opened, the film is threaded into the machine, in the usual way, between the frame of the kinetoscope and the door. The door is then closed, throwing into engagement the bevel-gears 9 and 10, which had been disengaged while the door was open. The kinetoscope being now operated by the usual crank or other means, rotation is imparted from the bevel-gear 10 through the similar gear 9, to shaft 7, the bushing 13 secured to the shaft 7 rotates therewith, and the weights 16 are thrown outward by the action of centrifugal force, the arms 17 operating to move the sleeve 22 toward the door 1, against the action of the springs 29. The disk 23, being rotated with the shaft 7 and bushing 13, and being pushed against the screen 6, which cannot move longitudinally on the shaft because the pins 32 are not yet opposite the openings 33, causes the latter to rotate, by means of its frictional contact therewith, and at the same time, tends to push the screen 6 toward the door 1. The screen 6, having been rotated by the frictional contact of the rotating disk 23 therewith to the position where the pins 33 are opposite the openings 34, is pushed toward the door 1, the pins entering the openings and serving to maintain the screen in its opened position, so long as it remains upon the pins. This bodily movement of the screen 6, and sleeve 22, permits the weight 16 to move outward until they contact with the shell 19, which is moving at the same rate of speed and they remain in contact therewith until the rate of speed at which the projecting machine is operated is decreased. By this means, substantially all the friction between the various parts is eliminated during the time when the screen is open, and it is positively maintained in its opened position without any of the clatter or shaking which results when friction is relied upon for this purpose. When the rate of speed at which the film is moved is lessened, and the centrifugal force, tending to throw the weights 16 outward, is overcome by the action of the springs 29, the sleeve 22 will be withdrawn away from the door and the screen 6 will be pulled off the pins 32, by means of the collar 26, and the counterweight 35 will operate to restore it to its normal position, closing the projection aperture. The spring 25, which is of light material, serves to keep the coacting surfaces of the disk 23 and screen 6 from actual contact with one another, except when they are forcibly pushed together, and does away with any friction between these surfaces when the screen is being held upon the pins 33, all frictional contact at such times being confined to the narrow re-

gion in which the said spring contacts with these surfaces.

Having now described my invention, I claim:

1. In a kinetoscope provided with a projection aperture, a screen normally covering the said aperture, means for moving it from over said aperture, and additional means cooperating directly with said screen for positively holding it in said adjusted position, substantially as set forth.

2. In a kinetoscope provided with a projection aperture, a screen normally covering the said aperture, frictionally operated means for moving said screen from over said aperture, and additional means coöperating directly with said screen for positively holding it in this adjusted position, substantially as set forth.

3. In a kinetoscope, the combination of a frame, a door pivoted thereto and provided with a projection aperture, a screen on said door and normally closing said aperture, means for moving said screen from over said aperture, and additional means for positively holding it in its adjusted position, substantially as set forth.

4. In a kinetoscope, the combination of a frame, a door pivoted thereto, and provided with a projection aperture, a screen on said door and normally covering said aperture, frictionally operated means for moving said screen from over said aperture, and additional means for positively holding it in such adjusted position, substantially as set forth.

5. In a kinetoscope, the combination with a frame, of a door pivoted thereto and provided with a projection aperture, a screen, means situated partly upon said door and partly upon the frame for moving said screen from over said aperture, and additional means for positively holding it in such adjusted position, substantially as set forth.

6. In a kinetoscope, a rotatable screen, fixed holding means therefor, and means for rotating said screen, and for establishing an operative connection between said screen and holding means, substantially as set forth.

7. In a kinetoscope, a rotatable screen, fixed holding means therefor, and means operating by friction to rotate said screen and also operating to establish an operative connection between said screen and holding means, substantially as set forth.

8. In a kinetoscope, a frame, a door pivoted thereto, a rotatable screen on said door, holding means for the said screen, and means for rotating said screen and for establishing an operative connection between the screen and the holding means, substantially as set forth.

9. In a kinetoscope, the combination of a frame, a door pivoted thereto, a screen pivotally supported upon said door, holding means for the said screen, and means operating by friction to turn said screen upon its pivot and also operating to connect said screen and holding means, substantially as set forth.

10. In a kinetoscope, the combination with a frame, of a door pivoted thereto, a screen pivotally mounted on said door, holding means for said screen, and means situated partly upon said door and partly upon the frame for frictionally turning said screen upon its pivot and for establishing an operative connection between said screen and holding means, substantially as set forth.

11. In a kinetoscope, the combination with a frame, of a door pivoted thereto and provided with a projection aperture, a screen pivotally mounted upon said door, holding means for said screen, means situated partly upon said door and partly upon the frame for moving said screen from over said projection aperture and for establishing an operative connection between said screen and holding means, said means being so situated as to coöperate only when the door is closed, substantially as set forth.

12. In a kinetoscope, a pivotally mounted and bodily movable screen, holding means therefor, and means for rotating said screen upon its pivot and for moving it bodily to coöperate with said holding means, substantially as set forth.

13. In a kinetoscope, a pivotally mounted and bodily movable screen, holding means therefor, and means operating by friction to rotate such screen and also operating to move said screen bodily to coöperate with said holding means, substantially as set forth.

14. In a kinetoscope, the combination of a frame, a door pivoted thereto, a screen pivotally mounted and bodily movable upon said door, holding means for said screen, and means situated partly upon the door and partly upon the frame for rotating said screen upon its pivot and for bodily moving said screen to coöperate with said holding means, substantially as set forth.

15. In a kinetoscope, the combination of a frame, a door pivoted thereto, a screen pivotally mounted and bodily movable upon said door, holding means for said screen, and means situated partly upon said frame and partly upon said door and controlled by the film moving mechanism for frictionally turning said screen upon its pivot and for bodily moving it to coöperate with the said holding means, substantially as set forth.

16. In a kinetoscope, a frame, a door pivoted thereto, a screen pivotally mounted and bodily movable upon said door, holding means therefor, and means located partly upon said frame and partly upon said door for turning said screen upon its pivot and

for moving said screen to coöperate with said holding means, said last named means being so situated as to coöperate only when the door is closed, and not to interfere with the opening and closing of the door, substantially as set forth.

17. In a kinetoscope, a pivoted screen, a rotatable disk movably mounted in a plane parallel thereto, and a centrifuge for forcing the disk toward the screen while the disk is being rotated, substantially as set forth.

18. In a kinetoscope, a pivoted screen, a rotatable disk movably mounted adjacent thereto, and a centrifuge so mounted as to force the disk into frictional driving contact with the screen while the disk is being rotated, substantially as set forth.

19. In a kinetoscope, a pivoted screen, a rotatable disk movably mounted in a plane parallel thereto, a centrifuge for forcing the disk into contact with the screen while the disk is being rotated, and a spring for withdrawing the said disk from contact with the screen when its speed of rotation is diminished, substantially as set forth.

20. In a kinetoscope, the combination of a frame, a door hinged thereto, a rotatable screen on the door, a rotatable friction disk movably mounted in a plane parallel to the said screen, and a centrifuge for forcing the disk into contact with the screen during the rotation of the disk, substantially as set forth.

21. In a kinetoscope, the combination of the frame, a door hinged thereto, a rotatable screen on the door, a rotatable friction disk movably mounted in a plane parallel to the said screen, a centrifuge for pushing the disk into contact with the screen during the rotation of the disk, and a spring for withdrawing the said disk from contact with the screen when the speed of rotation of the centrifuge is diminished, substantially as set forth.

22. In a kinetoscope, the combination of a frame, a door hinged thereto, a pivoted screen on said door, a rotatable bodily movable disk adjacent to said screen, a centrifuge for forcing the said disk into contact with said screen when the disk is rotated, and means situated partly on the frame and partly on the door for actuating the centrifuge, substantially as set forth.

23. In a kinetoscope, a rotatable screen, a disk adjacent thereto, a centrifuge for forcing the disk against the screen when the disk is rotated, and positive holding means for coöperating with the screen when it has been rotated into a given position, substantially as set forth.

24. In a kinetoscope, a frame, a door hinged thereto, a rotatable screen on said door, a rotatable disk adjacent thereto, a centrifuge for forcing the disk into contact with the screen when the disk is rotated, the disk and centrifuge being mounted on the door, substantially as set forth.

25. In a kinetoscope, a frame, a door hinged thereto, a rotatable screen, a rotatable disk adjacent thereto, a centrifuge for forcing the disk into contact with the screen when the disk is rotated, means for withdrawing the disk from contact with the screen when its speed of rotation falls, the screen, disk and centrifuge all being mounted on the door, and means partly on the door and partly on the frame for rotating the centrifuge and disk, substantially as set forth.

26. In a kinetoscope, a rotatable and bodily movable screen, provided with one or more apertures, one or more pins adjacent to the said screen, and adapted to register with the said apertures, when the screen has been rotated through a given angle, and means for rotating said screen and forcing it bodily onto the said pins, when it has been turned through the proper angle, substantially as set forth.

27. In a kinetoscope, the combination of a frame, a door hinged thereto, a screen pivotally mounted and bodily movable on said door and provided with one or more apertures, one or more pins on the said door and adapted to register with the said apertures when the screen has been turned through a given angle, and means actuated by the film moving mechanism for rotating said screen and forcing it onto the said pins when it has been turned through a given angle, substantially as set forth.

28. In a kinetoscope, the combination of a frame, a door hinged thereto, a screen pivotally mounted and bodily movable upon said door and provided with one or more apertures, one or more pins on the said door and adapted to register with the said apertures when the screen has been turned through a given angle, and means located partly on the door and partly on the frame and receiving actuation from the film moving mechanism, for rotating said screen and forcing it onto the said pins when it has been turned through the proper angle, substantially as set forth.

29. In a kinetoscope, a pivotally mounted and bodily movable screen, a centrifuge comprising rotating weights for rotating said screen and imparting bodily movement thereto, positive holding means coöperating with the said screen when the latter has been moved bodily, and means for limiting the outward movement of the weights of the centrifuge, substantially as set forth.

30. In a kinetoscope, the combination of a frame, a door hinged thereto, a screen pivotally mounted and bodily movable on said door, a centrifuge comprising rotating weights for rotating said screen and impart-

ing bodily movement thereto, positive holding means for coöperating with the said screen when the latter has been moved bodily, means for limiting the outward throw of the weights of the centrifuge, and means located partly on the frame and partly on the door for imparting rotation to the centrifuge from the film moving mechanism, substantially as set forth.

31. In a kinetoscope, the combination of a frame, a door hinged thereto and provided with a projection aperture, a shaft journaled in said door, a gear on the inner end of said shaft and a corresponding gear on the frame actuated from the film moving mechanism of the kinetoscope and meshing with the first named gear, when the door is closed and disengaged therefrom when the door is opened, and not interfering with the free opening and closing of the door, a sleeve rotatable with said shaft and movable longitudinally thereof, a centrifuge on the said shaft for imparting endwise movement to the sleeve, a disk secured to said sleeve, a screen pivotally mounted on said sleeve adjacent to the disk and normally covering the projection aperture in the door, said screen being provided with one or more apertures, one or more pins on the door adapted to register with the said apertures in the screen when the latter has been turned through a given angle and opposing bodily movement of the said screen until it has been turned through the proper angle, a spring for retracting the sleeve and drawing the screen off the said pins when the speed of the film moving mechanism has diminished, and a counterweight for returning the screen to its normal position over the projection aperture, substantially as set forth.

This specification signed and witnessed this 15th day of June 1908.

ADOLPH F. GALL.

Witnesses:
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Frank D. Lewis.