G. W. RYDER.

MAGAZINE FOR PICTURE FILMS.

APPLICATION FILED MAR. 16, 1908.

956,178.

Patented Apr. 26, 1910.

2 SHEETS—SHEET 1.

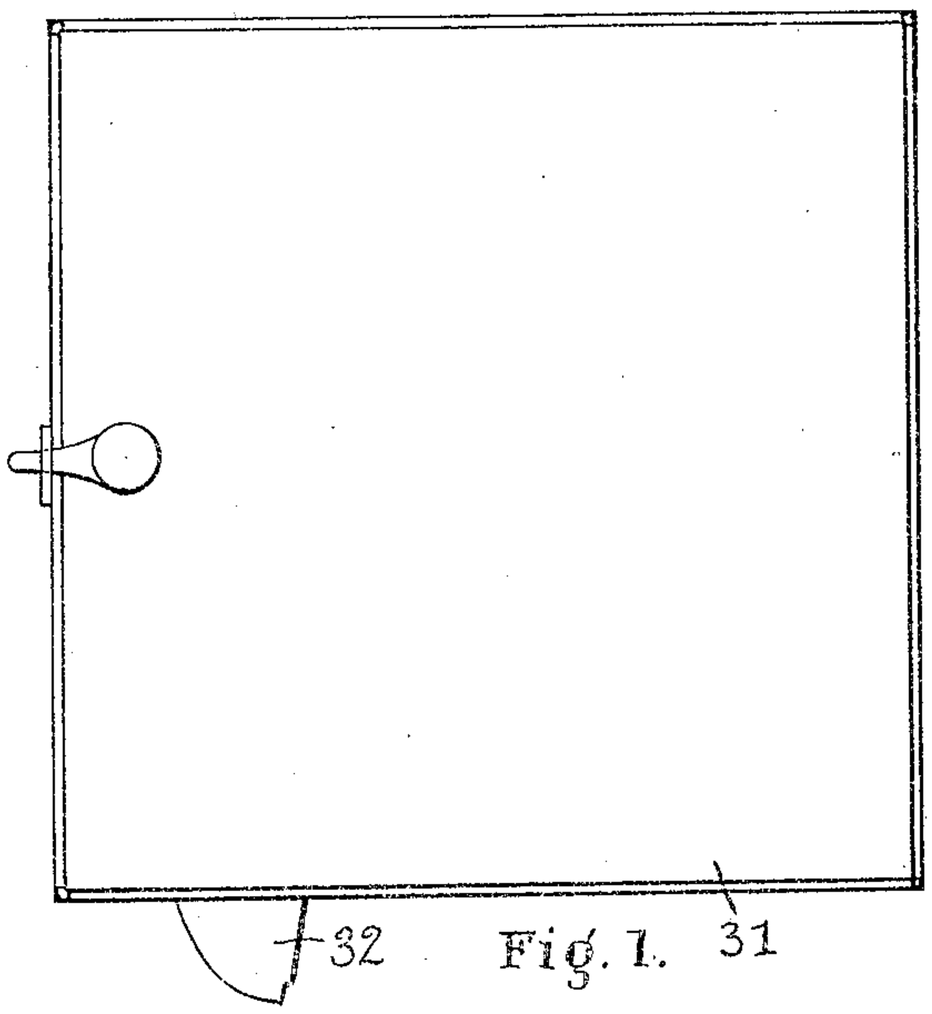

Fig. 1.

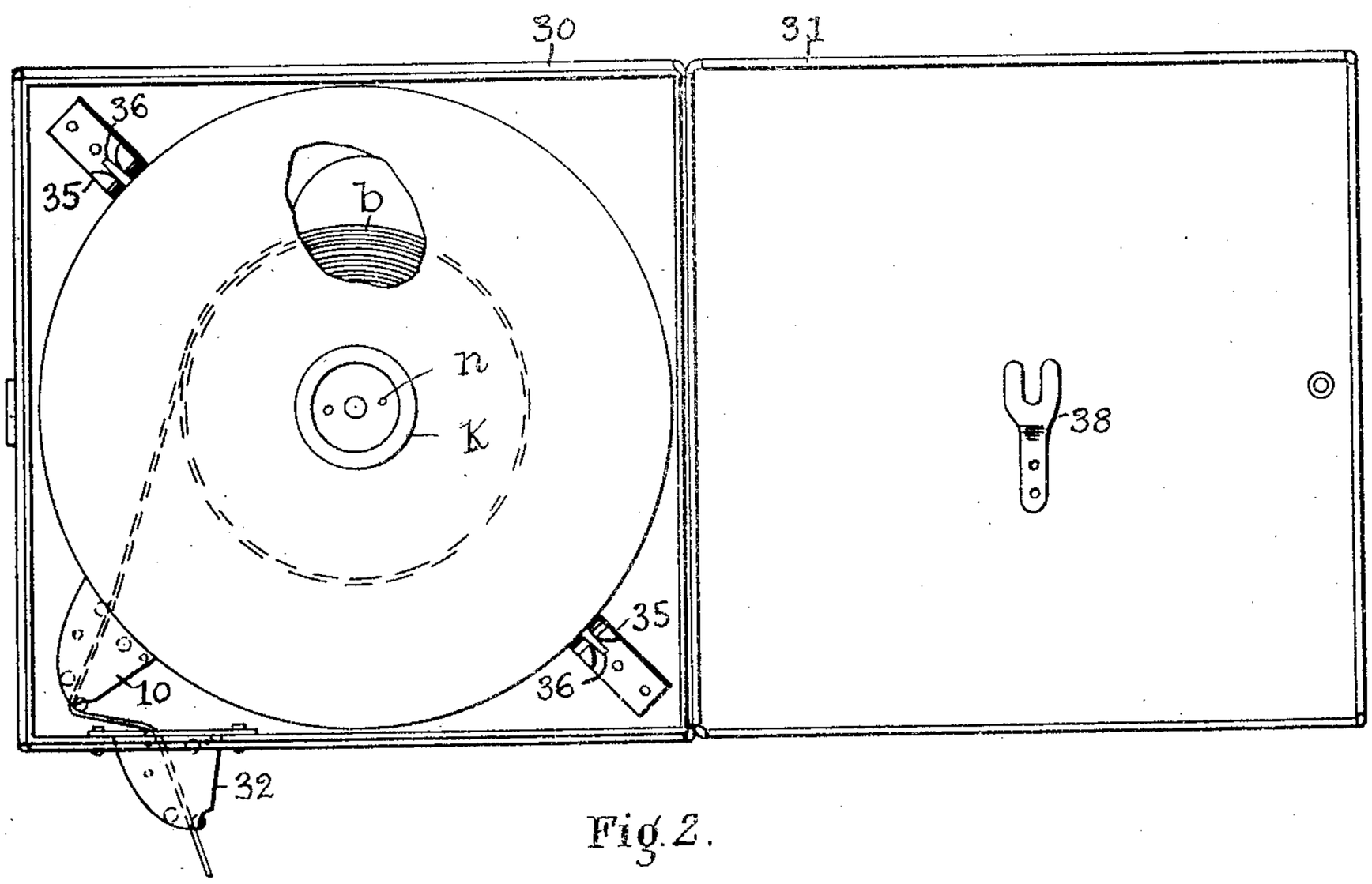

Fig. 2.

Witnesses.
C. N. Garnett
J. Murphy.

Inventor:
George W. Ryder
by Jas. H. Schmehill
Atty.

G. W. RYDER.

MAGAZINE FOR PICTURE FILMS.

APPLICATION FILED MAR. 16, 1908.

956,178. **Patented Apr. 26, 1910.**

2 SHEETS—SHEET 2.

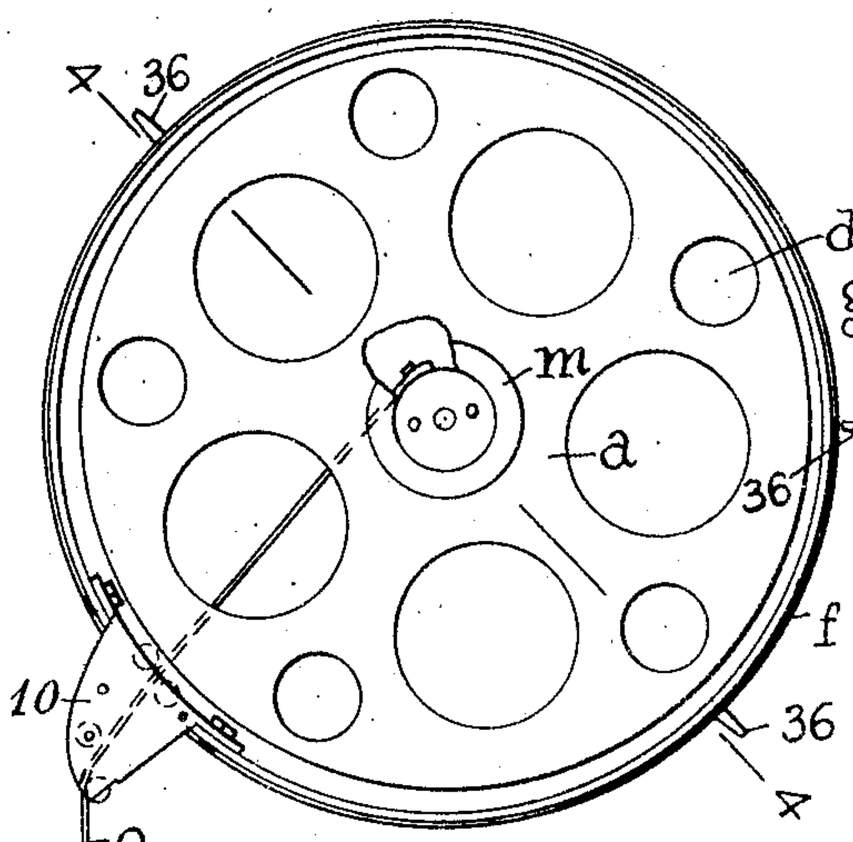

Fig. 3.

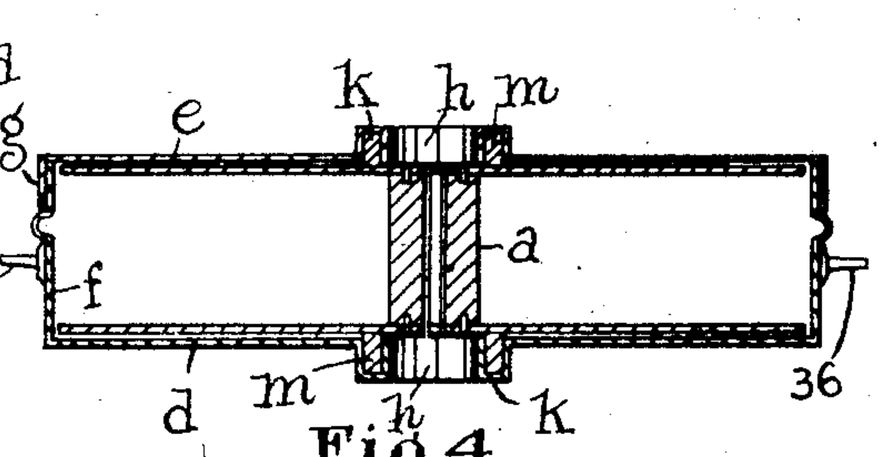

Fig. 4.

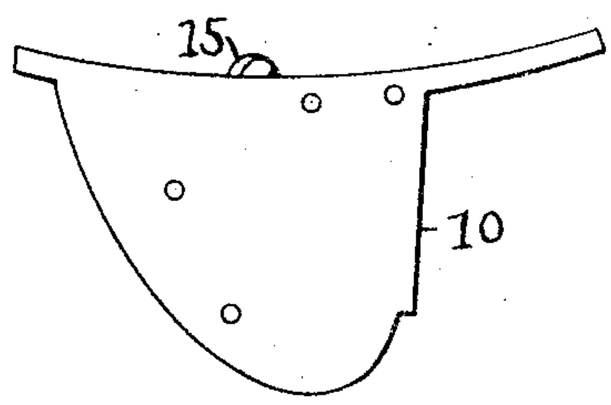

Fig. 5.

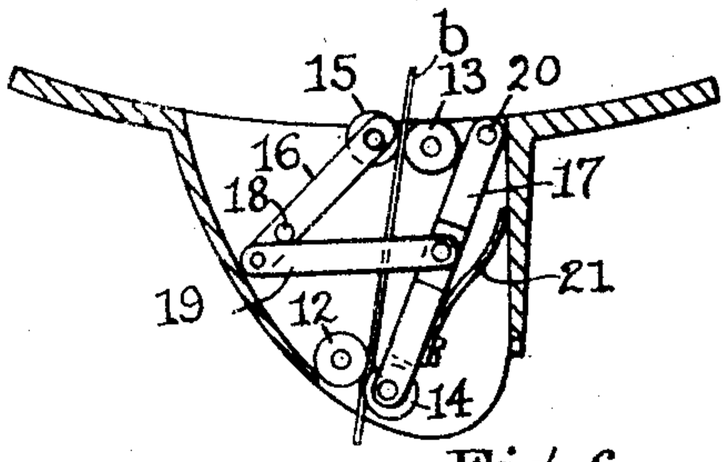

Fig. 6.

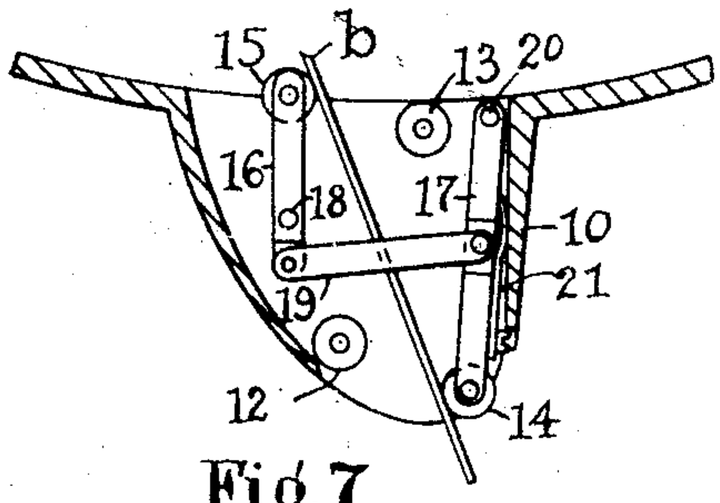

Fig. 7.

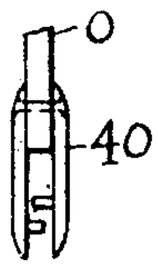

Fig. 9.

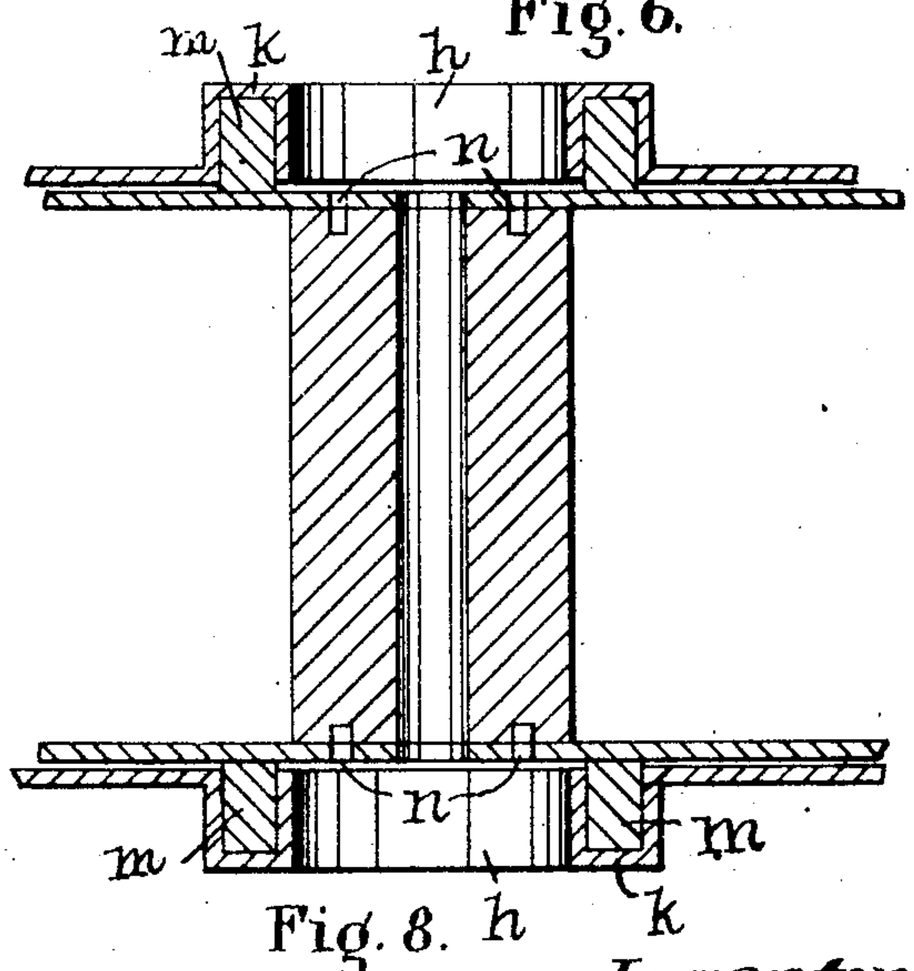

Fig. 8.

Witnesses.
C. A. Gannett
J. Murphy

Inventor:
George W. Ryder
by Jas. H. Churchill
atty.

UNITED STATES PATENT OFFICE.

GEORGE W. RYDER, OF BOSTON, MASSACHUSETTS, ASSIGNOR OF ONE-HALF TO ARTHUR E. BAILEY, OF BOSTON, MASSACHUSETTS.

MAGAZINE FOR PICTURE-FILMS.

956,178 Specification of Letters Patent. Patented Apr. 26, 1910.

Application filed March 16, 1908. Serial No. 421,362.

To all whom it may concern:

Be it known that I, GEORGE W. RYDER, a citizen of the United States, residing in Boston, county of Suffolk, and State of Massachusetts, have invented an Improvement in Magazines for Picture-Films, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention relates to a fire-proof magazine or casing, especially designed and adapted for use in moving picture machines.

The invention has for its object to provide a magazine for the coil of film now commonly used in moving picture machines, so that the danger from fire caused by the ignition of the said film is reduced to a minimum. For this purpose I employ a box or casing within which the film reel is located and construct said box or casing, as will be described, so that it is closed against the inlet of flame to the interior of the box or casing, while leaving the reel upon which the film is wound, accessible from outside of said casing.

Another feature of the invention consists in providing the magazine box or casing with an outlet for the film, which outlet is safeguarded by novel shut-offs or valves, as will be described. As a further protection against fire and explosion, I prefer to inclose the magazine containing the film reel, in an outer magazine or casing, which is also provided with a film outlet, protected by a shut-off or valve, and provide means within the outer magazine or casing for positioning the inner magazine or casing, within the outer magazine, so that the length of the film exposed within the outer magazine may be reduced to a minimum.

These and other features of this invention will be pointed out in the claims at the end of this specification.

Figure 1 is a front elevation of an apparatus embodying this invention. Fig. 2, an elevation of the apparatus shown in Fig. 1, with the door open and with the inner magazine broken away. Fig. 3, a side elevation of the inner magazine with one side removed and showing the film unwound from its reel. Fig. 4, a section on the line 4—4, Fig. 3. Fig. 5, a detail in elevation of the film shut-off shown in Figs. 1 and 3. Figs. 6 and 7, details of the shut-off shown in Fig. 5 with the casing in section. Fig. 8, an enlarged detail in cross section of a portion of the magazine shown in Figs. 3 and 4, and Fig. 9, a detail to be referred to.

Referring to the drawings and more particularly to Fig. 3, *a* represents a reel upon which is designed to be wound a picture film *b*, which may be of any suitable character and such as now commonly used in moving picture machines. The reel *a* is designed to be located in a magazine or casing, which, in accordance with this invention, is rendered fire-proof, yet is so constructed as to permit the said reel to be accessible from outside thereof, for the purpose of turning the reel without exposing the film *b* therein. In the present instance, I have shown one construction of magazine for accomplishing this result, but I do not desire to limit my invention to the particular construction shown.

The magazine or casing herein shown, is circular in form, and consists of side plates *d*, *e*, and a rim *f* of aluminum, tin, iron, or other metal, one of the said sides being removable to form a cover. In the present instance the side *e* is removable and is provided with a circular flange *g*, which fits snugly over the rim *f* as represented in Fig. 4. Preferably both sides *d*, *e* are provided with central openings *h*, through which access may be had to the reel for the purpose of turning the same within the magazine, and provision is made for cutting off communication through said openings from the outside of the magazine to the interior thereof. To this end the sides *d*, *e* of the magazine as herein shown, are provided with outwardly extended socket portions *k*, which form the walls of the openings *h* and which also form bearings for the reel, which latter is provided on its opposite sides as herein shown, with annular lugs or hubs *m* forming journals for the reel, which extend into annular sockets or recesses on the inner sides of the projections *k* on the sides *d*, *e* of the magazine.

By reference to Fig. 8, it will be seen, that the annular journals *m* practically form partitions or fire walls between the openings *h* and the interior of the magazine, which serve to prevent flame from outside of the

magazine reaching the interior thereof through the openings *h*, through which latter access may be had to the reel *a*, so as to rotate the same, either to wind the film onto the reel or to unwind it therefrom. The reel may be turned by means of a suitable tool, not shown, but which is adapted to enter one or more holes *n* in said reel. The reel *a* is preferably provided with a metal strip or lead *o*, (see Fig. 3), which is secured at one end to the hub of the reel and is made of sufficient length to extend through an outlet in the rim *f* of the magazine, so that the picture film *b* may be secured to the free end of said lead or metal strip *o* outside of the magazine, thereby avoiding the necessity of removing the side or cover *e* for the magazine.

The outlet opening in the rim of the magazine has coöperating with it a nozzle or mouth piece 10, shown separately in Figs. 5 to 7 inclusive, and provided with preferably a double shut-off or valve, which may be made as shown and consists of rollers 12, 13, having fixed bearings in the nozzle or mouthpiece near the opposite ends of the same, and coöperating rollers 14, 15, mounted in movable supports, herein shown as levers 16, 17. The lever 16 is pivoted intermediate its ends as at 18 and is connected by a link 19 with the lever 17, which is pivoted at its end as at 20, so that both levers move together in one direction to bring the rollers 14, 15, into engagement with the rollers 12, 13, under the influence of a spring 21 (see Fig. 6) and in the opposite direction to move the rollers 14, 15, away from the rollers 12, 13, under the influence of the film *b*. The two sets of coöperating rollers and their supporting levers constitute two valves or shut-offs for the passage for the film into and out of the magazine, the levers being in the form of plates, which are of a width equal to that of the nozzle or mouth piece.

Normally the rollers 14, 15 and their levers are held in their open position shown in Fig. 7, by the tension on the film *b*, which is opposed by the spring 21, so that in case the film should become ignited beyond the outer valve 14, the spring 21 would act to simultaneously close both the outer and inner valves, as represented in Fig. 6. If by any chance, the fire caused by the ignition of the film beyond the outer valve, should get by the latter, it would be arrested by the inner valve. The spring pressure on the valves also serves to relieve the tension on the film in case the unwinding reel should stop, thereby avoiding liability of the film being broken. Furthermore the film is supported by roller bearings, which avoids the danger of scratching or otherwise injuring the film in its passage out of the magazine. In Fig. 6, the valves are in their closed position, and in Fig. 7, they are shown in the extreme open position, and in practice, they assume positions between these two extremes according to the tension on the film, and it will be seen that with a mild tension, which is desired, the valves would occupy an intermediate position, and if the tension on the film should be suddenly increased, it will be relieved by the yielding of the spring 21, permitting the valves 14, 15 to open wider.

By reference to Fig. 7, it will be noticed, that in the closed position of the valves 14, 15, the passage through the nozzle 10 is closed, for the inner end of the lever 17 is designed to make contact with one end wall of the nozzle or mouth piece, and the inner end of the lever 16 is designed to make contact with the opposite end wall, and the sides of said levers are designed to make contact or substantially so with the side walls of said nozzle. The roller 12 is designed to make contact with the end wall with which the lever 16 coöperates, and the roller 13 is designed to engage the lever 17, so that if the film *b* should become ignited outside of the nozzle, the flame would be checked by the rollers 12, 14, and lever 17, and if by any chance, the flame got by the rollers 12, 14, before they make contact with each other, it would be arrested by the lever 16 and rollers 15, 13. To still further reduce the fire and explosion hazards, I prefer to employ an outer casing or magazine 30 having a cover 31 suitably pivoted thereto and within which the film containing magazine is located, said outer magazine having an outlet nozzle or mouth 32 similar to the nozzle or mouth piece 10 of the inner magazine, it being provided with an inner and outer valve (not shown). The outer magazine is provided with means for positioning the inner magazine within it, so as to reduce to a minimum the length of film exposed within the outer magazine. In the present instance, one form of means for this purpose is shown, which consists of two forked uprights 35, secured to the bottom or back of the outer magazine and adapted to receive pins or projections 36 on the inner magazine, said uprights being located, so that the outlet end of the nozzle 10 of the inner magazine will be located substantially close to the inlet end of the nozzle 32 of the outer magazine, as clearly shown in Fig. 2. The cover 31 may have secured to its inner side a spring 38, which is adapted to engage the inner magazine when the cover is closed and retain the latter in its proper position against accidental displacement or movement.

From the above description, it will be seen that the danger of the film within its magazine becoming ignited is reduced to a minimum, for when the magazine is in use in the moving picture machine, it is protected by a substantially fireproof construc-

tion, as the only means of the fire reaching the film within the magazine is safeguarded by the plurality of valves or shut-offs.

When the film is used in a moving picture machine, it is unwound from the reel *a* in a delivering magazine, and wound upon a reel within a receiving magazine. It frequently happens that the winding-up reel of the picture machine as now commonly constructed, fails to work properly, and in such case, the operator is obliged to expose the film in order to get access to the reel, thereby increasing the danger from fire under these conditions. This danger is avoided in the present instance, for if the winding-up reel of the picture machine equipped with the magazine herein shown, should fail to work properly, the operator can turn the reel by hand without exposing the film, owing to the fact that the reel is accessible from outside the magazine. After the film has been wound upon the reel of the receiving magazine, it must be unwound therefrom in order that the pictures may appear in regular order. As now commonly practiced, this is done on a machine called the rewinding machine with the reels and film exposed, and usually from eight hundred to a thousand feet of film is thus exposed. This operation of rewinding as now practiced, is attended by great chances of fire, owing to the exposed condition of the film. This danger is avoided by means of the reel-containing magazine herein shown, for when it is desired to unwind the film from the reel of one such magazine and wind it upon another, it is unnecessary to expose the film within either or both magazines. It will thus be seen, that in the rewinding of the film, the fire hazard is greatly reduced as but a short length of film between the magazines is exposed, and in case this should become ignited, the great length of film within the magazines is safeguarded by the shut-offs or valves. To still further reduce the danger of ignition in rewinding, I prefer to use the strip or lead *o* and secure the end of the film thereto by a suitable connection or fastening device 40, one form of which is shown in Figs. 3 and 9, but which may be of any suitable or desired construction.

Claims.

1. In an apparatus of the character described, in combination, a casing provided in its sides with openings, a reel within said casing accessible through said openings, journal bearings for said reel formed in the opposite sides of said casing within the same and around said openings, and journals on said reel extended into said bearings and forming a fire wall between the openings in the opposite sides of said casing and the interior of the latter, substantially as described.

2. In an apparatus of the character described, in combination, a casing provided with a removable side, and having an outlet in its periphery, one side of said casing having an opening in it, a reel within said casing rotatable therein and accessible through said side opening, a fire wall for said opening movable with said reel, a nozzle or mouth piece coöperating with the outlet opening in the periphery of said casing, and a shut-off or valve to close said nozzle, substantially as described.

3. In an apparatus of the character described, in combination, a casing provided with a removable side and having an outlet in its periphery, one side of said casing having an opening in it, a reel within said casing rotatable therein and accessible through said side opening, a fire wall for said side opening movable with said reel, a nozzle or mouth piece coöperating with the outlet opening in the periphery of said casing, a shut-off or valve for the outer end of the nozzle, and a shut-off or valve for the inner end thereof, substantially as described.

4. In an apparatus of the character described, in combination, a casing provided with an opening in its side, a reel within said casing and rotatable therein, a fire wall for said side opening movable with said reel, an outlet nozzle or mouth piece for said casing, through which a film wound on the reel is extended to outside of said casing, a valve or shut-off for said nozzle, an outer casing provided with a nozzle, a shut-off or valve for the nozzle of the outer casing, and means within the outer casing to secure the inner casing with its nozzle in proximity to the nozzle of the outer casing, substantially as described.

5. In an apparatus of the character described, in combination, a casing comprising circular side plates, a circular rim attached to one of said side plates and provided with an opening in it, and a circular flange attached to the other side plate and engaging said rim, one of said side plates having a substantially central opening and an annular socket of larger diameter than said opening surrounding the latter, substantially as described.

6. In an apparatus of the character described, in combination, a magazine casing provided with an outlet for a picture film, and having an opening in its side, a film reel located in said casing and exposed by and accessible through said side opening, and means surrounding said opening within the casing for preventing the passage of flame through said opening into the interior of said casing, substantially as described.

7. In an apparatus of the character described, in combination, a magazine capable of containing a film reel and provided with an outlet for the film, a nozzle or mouth

piece coöperating with said outlet, and a plurality of shut-offs for said outlet normally held in their open positions by the tension on said film and movable in opposite directions, substantially as described.

8. In an apparatus of the character described, in combination, a magazine capable of containing a film reel and provided with an outlet for the film, a nozzle or mouth piece coöperating with said outlet, levers pivoted within said nozzle, means to connect said levers together, a spring to act on said levers, rollers carried by said levers, and rollers carried by said nozzle and with which coöperate the rollers carried by said levers, substantially as described.

9. In an apparatus of the character described, in combination, a magazine for the film provided with an outlet, a nozzle or mouth piece coöperating with said outlet, a plurality of valves or shut-offs normally held in their open position by the tension on the film, means to connect said valves to operate simultaneously, and means to move said valves into their closed position when the tension on the film is relieved, substantially as described.

10. In an apparatus of the character described, in combination, a magazine for the film provided with an outlet, a nozzle or mouth piece coöperating with said outlet, rollers to engage said film on its passage through said nozzle, levers to support said rollers movable toward and from each other, and means to act on said levers in opposition to the tension on said film.

11. In an apparatus of the character described, in combination, a casing provided with a removable side and having an outlet in its periphery, one side of said casing having an opening in it, a reel within said casing rotatable therein and exposed by and accessible through said side opening, and a fire wall surrounding said opening and movable with said reel, substantially as described.

12. In an apparatus of the character described, in combination, a casing provided with an outlet in its periphery, and with a removable cover having a substantially central opening through which access may be had to the interior of the casing, said cover having on its inner side a circular recess or socket surrounding the said opening and communicating with the interior of the casing, substantially as described.

13. In an apparatus of the character described, in combination, a magazine provided with a film outlet, a reel located in said magazine and rotatable therein, means for exposing the center portion of the reel and rendering it accessible from outside the magazine, and means surrounding the exposed portion of the reel for preventing the admission of fire into the interior of the magazine without interfering with the accessibility of said reel.

14. In an apparatus of the character described, in combination, a casing provided with an opening in its side, a reel within said casing and rotatable therein, a fire wall for said side opening movable with said reel, an outlet nozzle or mouth piece for said casing, through which a film wound on the reel is extended to outside of said casing, a valve or shut-off for said nozzle, an outer casing provided with a film outlet, and means within the outer casing for securing the inner casing with its nozzle in proximity to said outlet, substantially as described.

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

GEORGE W. RYDER.

Witnesses:
JAS. H. CHURCHILL,
J. MURPHY.