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BY A. P. C.

P. STORCH

FILM MAGAZINES FOR CINEMATOGRAPH CAMERAS

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Fig. 1

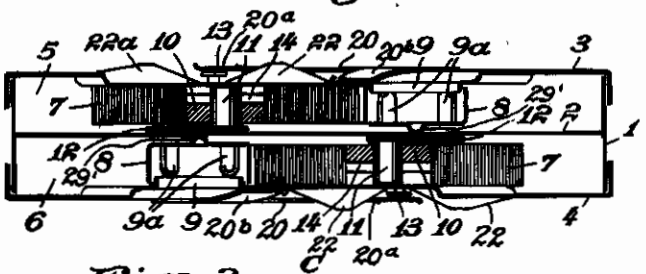

Fig. 2

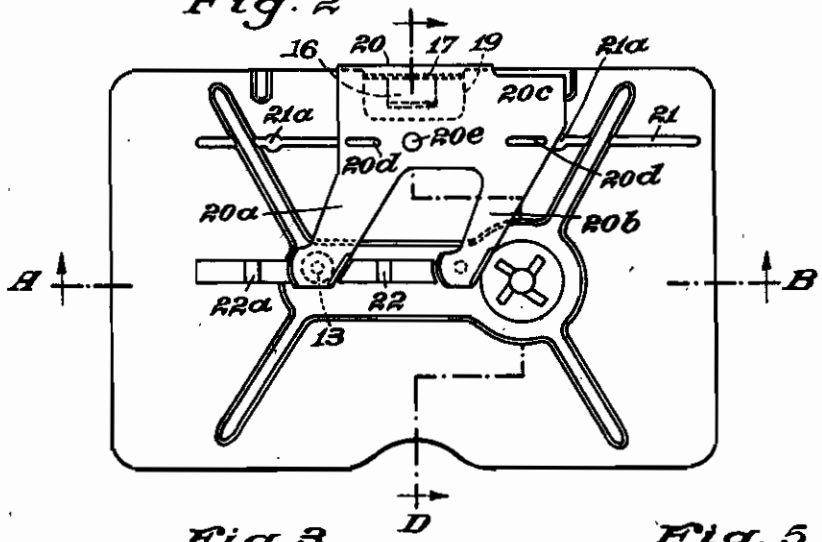

Fig. 3

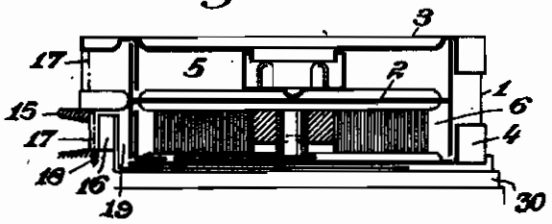

Fig. 5

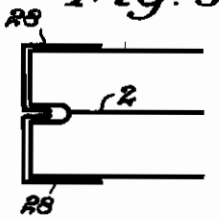

Fig. 4

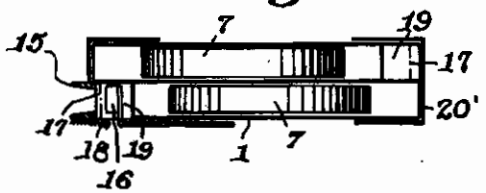

Fig. 6

Inventor
Paul Storch
by Knight Bros
Attorneys

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FILM MAGAZINES FOR CINEMATOGRAPH CAMERAS

Paul Storch, Berlin-Charlottenburg, Germany; vested in the Alien Property Custodian

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My invention relates to improvements in film magazines for cinematograph cameras.

In cinematograph cameras it is well known in the art to employ film magazines which may be brought into engagement with the mechanism of the camera in two positions by turning the same through 180° and in which a film is provided with two rows of correspondingly smaller pictures arranged side by side for the purpose of effecting a saving in photographic film.

According to the invention the known film magazines of the above-mentioned type are so designed as to form two separate film receiving compartments within the magazine, each of which is capable of receiving an individual film, preferably of a particularly narrow size.

If it is desired as above mentioned to limit the width of the pictures to a portion of the usual film width of, for instance, 16mm so as to effect a saving in photographic film, the latter may be reduced according to the invention to the desired width (for instance 8mm) before exposing the film and the same amount of photographic film is nevertheless available in a single magazine as is the case with a magazine of approximately the same size containing a film to be exposed in two rows. But cutting the film before its exposure in the longitudinal direction into two strips each having a width required for the projection, not only the difficulties which would otherwise be encountered in the reversing development are avoided but also it is possible owing to the particular design of the magazine according to the invention to remove an already exposed film strip therefrom without thereby exposing the other film strip to light.

The film guide parts of the magazine are preferably so designed and arranged and caused to cooperate with the fixed guide surfaces in the camera that an insertion of the magazine in the camera is possible without changing the position of the film with respect to the magazine. Although it is known in the art to make such provisions for magazines having but one film receiving chamber, yet they imply an improvement in the type of magazine according to the invention.

The exposure apertures for both film strips may lie adjacent to each other on the same narrow side of the magazine. In this case, the second position in which the magazine may be brought into engagement with the camera mechanism is attained by rotating the magazine through 180° about an axis extending parallel to the optical axis. However, it is also possible to arrange the exposure apertures for the film strips placed in both magazine compartments in the opposite narrow sides of the magazine, the second position in which the magazine may be brought into engagement with the camera mechanism being attained by rotating the magazine 180° about an axis perpendicular to the optical axis and to the reel axes.

The guard usually employed in film magazines may be used according to the invention for the exposure apertures of the two magazine compartments. Furthermore, it is preferable to provide a shifting of this guard in two directions and to design the guard in such a manner that upon a shifting in either direction always one exposure aperture, whereas in the other direction the other exposure aperture and/or the aperture for a film pressure plate secured to the camera is uncovered.

It is also known to employ a guard with an extension by which a locking device is simultaneously released for the supply film reel upon uncovering an exposure aperture. In magazines according to the invention the common guard for both exposure apertures may be provided with a plurality of such extensions which are so designed that in one end position of the guard always only one of the supply film reels, whereas in the second end position the other supply film reel is released, while in the central position both supply film reels are locked.

In the magazine according to the invention particular means for preventing a loosening of the supply film reel may be furthermore dispensed with owing to the small width of the film and, therefore, to the reduced elasticity inherent in the film (compared to magazines with the same size of picture but for the production of various rows of pictures lying side by side on the same film). In this manner a magazine is obtained which is simpler in construction, more economical and approximately as reliable as the hitherto employed.

If the exposure openings for both films are not arranged on the same narrow side of the magazine, it is preferable to allot a guard to each exposure opening. The same provision may be made if the exposure openings for both film compartments are immediately adjacent to each other. In the film magazine designed according to the invention it is also possible to cause the supply film reel to be driven by friction existing between the two reels. This provision which has given very good results in practice would not be practicable if, as is the case with the known magazines, each of the reels would alternately have to serve as a supply film reel and as a take-up film reel and both reels are, therefore, spaced from each other a certain distance.

In the accompanying drawings are shown some embodiments of my invention in diagrammatic form.

Fig. 1 shows a longitudinal section of a magazine taken on the line A—B of Fig. 2.

Fig. 2 shows a top view thereof.

Fig. 3 is a transverse section of the same magazine taken on the line C—D of Fig. 2.

Fig. 4 shows schematically a second form of the magazine partly in section in which the exposure openings of both film compartments lie on the opposite narrow sides of the magazine.

Fig. 5 shows a particular form of the guard.

Fig. 6 is a section through a modified take-up film reel.

In Figs. 1 to 3, 1 denotes the magazine body having a division wall 2. By this division wall and the covers 3 and 4 two film receiving compartments 5 and 6 are formed. Each of these compartments is adapted to store a supply film reel 7 and is further more equipped with a take-up reel 8. The pot-shaped take-up reel 8 is placed with its open side over a circular aperture 9 arranged in the cover, the edge of the opening 9 projecting into the hollow space of the take-up reel 8 for the purpose of excluding the light. Grooves 9a arranged in the take-up reel 8 serve to couple the driving pin of the camera with the take-up reels.

The take-up reel is preferably provided on its front surface with a dowel by means of which the take-up reel is held in the proper position when placing the cover over the magazine body. The take-up film reel 8' as shown in Fig. 6 may at the same time be secured to the magazine as indicated at 29.

The supply film reels 7 are firmly mounted on a core piece 10 which is loosely mounted on a pin 11. In order that the supply film reel may be driven by the take-up film reels, the pin 11 is secured to the free end of an oscillating arm 12. This arrangement permits a pressing of the supply film reel under the action of its weight against the periphery of the take-up film reel so as to be rotated by the friction caused thereby.

A loosening of the supply film reel may also be prevented in a well known manner by depressing a pin 13—displaceable in each magazine cover in the longitudinal direction against the action of the springs—on the core piece 10 with the aid of an extension of a guard to be hereinafter described. In this case, the pin 13 may engage in a groove 14 arranged in the front surface of the core piece in the direction of the diameter.

As will be apparent from Fig. 3 the exposure apertures for both film compartments lie immediately adjacent to each other. In addition to the magazine itself Fig. 3 shows the film gate 15 firmly secured in the camera as well as the pressure plate 16 forming a part of the camera. The two films 8 mm in width and preferably perforated on one edge are designated by the numeral 17. In this arrangement, the position of the film with respect to the lens is exclusively determined by the constructive parts of the camera. The film is laterally guided on the one hand by the lateral projection 18 of the film gate and on the other hand by the central wall of the magazine supporting the film gate 15. This wall may be corrugated in the neighborhood of the film gate in order to obtain the desired thickness or reinforcements may be arranged in the neighborhood of the film gate.

A guard 20 is provided for protecting the films 17 which pass across the exposure openings facing a recess 19 (Fig. 2). This guard has a substantially U-shaped cross-section. It differs from the guard hitherto known in that it is provided with two extensions 20a and 20b on each lateral surface of the magazine as well as with a lateral enlargement 20c which upon the displacement of the guard 20 in one direction wholly or partly covers the recess 19 intended for the reception of the pressure plate and, therefore, prevents a false insertion of the magazine in the camera.

A similar enlargement of the guard may also be provided on the narrow side of the magazine in which the exposure openings are arranged, but it should only lie within the range of a longitudinal half of this narrow side. A guard thus designed uncovers only the exposure opening to be used. The part of the guard 20 lying on the other side of the magazine corresponds exactly to that shown in Fig. 2, i. e., the same view results if the magazine is rotated 180° about the axis C—D.

A sliding off of the guard 20 is prevented by elongated depressions 20d which guide the guard in similar elongated depressions 21 of the magazine covers 3 and 4 respectively. By means of a circular depression 20e which cooperates both in the central position shown and in both end positions with circular enlargements 21a of the depressions 21, a snap action is brought about in all these positions.

In the central position shown each of the supply film reels is locked by means of one of the arms 20a and one of the pins 13. If the guard 20 in Fig. 2 is moved to the left, the arm 20a slides off the locking pin 13, whereas the arm 20b is raised by a wedge-shaped projection 22 and on passing onto the locking pin 13 is brought out of engagement with the projection 22 so that the supply film reel which is not exposed to light is locked even if the film in the other magazine compartment is being used for taking pictures. A second wedge-shaped projection 22a permits when moving back the guard 20 in the central position the arm 20a to pass again onto the locking pin 13.

If, however, the guard 20 in Fig. 2 is moved to the right, the arm 20a is brought out of engagement with the locking pin 13, thus releasing the supply film reel; also the opening 19 for the film pressure plate is completely opened so that the film contained in the upper compartment in Fig. 1 may be exposed.

Fig. 4 shows another form of the magazine in which the exposure openings for both film compartments are arranged on the opposite narrow sides of the magazine. 23 denotes the film gate and 24 the film pressure plate. The portions of film 25 at the exposure openings are indicated by dot and dash lines. The numerals 26 and 27 indicate the supply film reels. A magazine thus designed must be rotated through 180° about a perpendicular axis when being inverted.

In the arrangement shown in Fig. 4 two guards of exactly the same size are preferably employed each of which encloses the entire magazine.

Fig. 5 shows another modified form of the guard adapted to be used for adjacent exposure openings of the two magazine compartments. One of the limbs of each guard 28 engages in a groove-like space arranged between both film compartments. By this arrangement it is possible as is the case with the arrangement shown in Fig. 4 to uncover only the corresponding exposure opening by displacing a guard and to release, if desired, the corresponding supply film reel.

Various modifications of my invention are possible without departing from the spirit of my invention. The magazine may be made of sheet-iron, die casting, pressed material or the like.

PAUL STORCH.