Dec. 26, 1922. 1,440,173

H. G. PONTING ET AL.
FILM HOLDER.
FILED AUG. 24, 1921.

2 SHEETS-SHEET 1

Fig. 1.

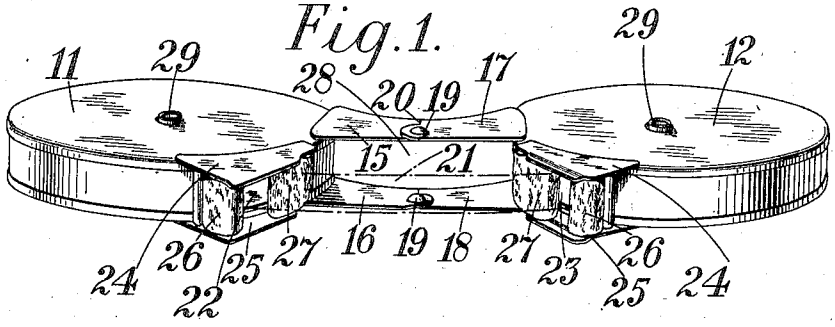
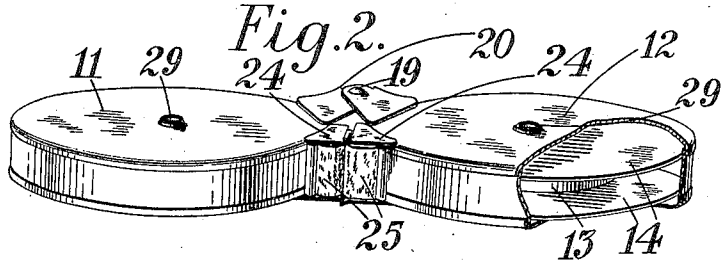


Fig. 2.



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2 SHEETS-SHEET 2

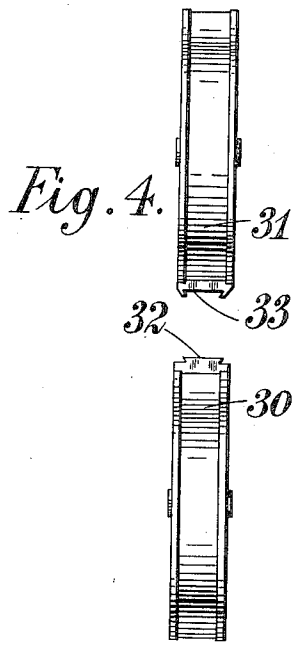

Fig. 4.

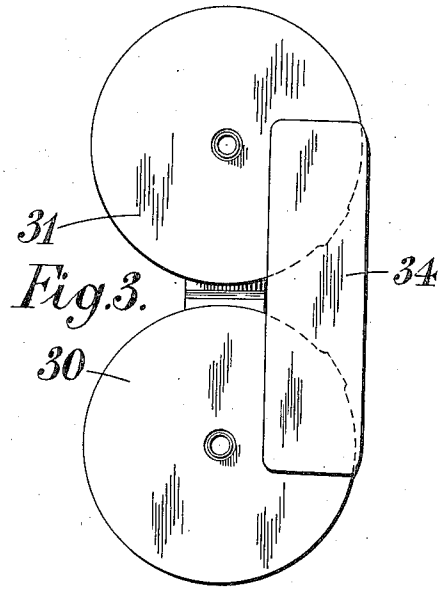

Fig. 3.

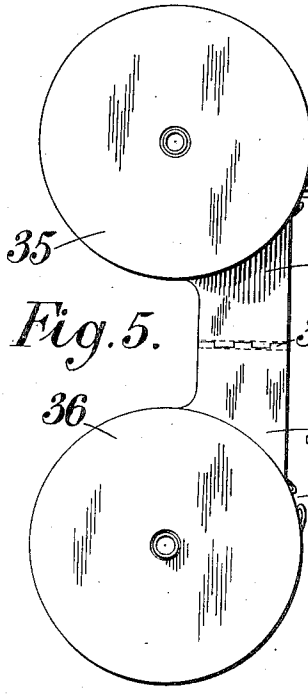

Fig. 5.

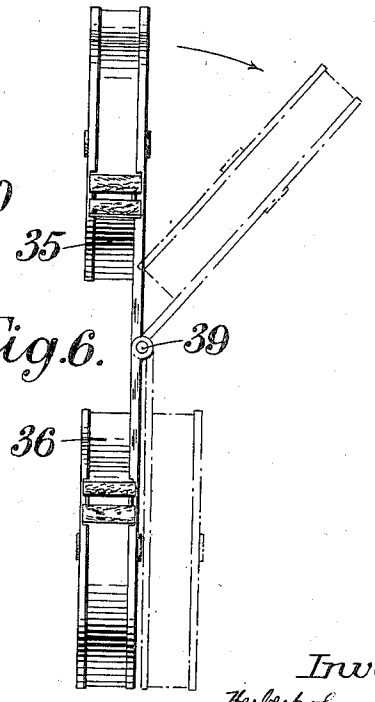

Fig. 6.

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UNITED STATES PATENT OFFICE.

HERBERT GEORGE PONTING AND GEORGE WILLIAM FORD, OF LONDON, ENGLAND; SAID FORD ASSIGNOR TO SAID PONTING.

FILM HOLDER.

Application filed August 24, 1921. Serial No. 494,772.

To all whom it may concern:

Be it known that we, HERBERT GEORGE PONTING and GEORGE WILLIAM FORD, both subjects of the King of England, residing, respectively, at Oxford Circus, London, England, and Kensington, London, England, have invented certain new and useful Improvements in Film Holders, of which the following is a specification.

The present invention relates broadly to film holders, and more particularly to holders for films of the type adapted to have a series of images, negative or positive, produced thereon either independently or in continuous succession, or of the type having a series of formed images thereon adapted to be projected intermittently, as for stereoptican purposes, or in continuous succession as in kinematography.

According to this invention a spool case or holder of the type described is constructed in two parts, each of which is adapted to receive a roller, characterized by the two parts being movable relatively one to the other, and having interconnecting means so arranged that when the holder is removed from the camera or machine for storage purposes, the two parts thereof can be closer together than when in use so as to reduce the length of the film exposed between them. Preferably the film is completely enclosed so as to afford the maximum protection to the film when not in use against dust and damage.

The relative movement between the two portions of the holder may be obtained either by hinging the two parts together, or by securing them in any convenient manner to an interconnecting member which may be removed so that they can be secured together.

In the accompanying drawings—

Figure 1 is a perspective view showing one construction of holder opened out ready for insertion into the machine or camera;

Figure 2 is a similar view showing the same container closed;

Figures 3 and 4 are front and side views respectively of a modified construction of holder, and

Figures 5 and 6 are front and side views of another modified construction.

Like reference characters indicate like parts throughout the drawings.

Referring first to the construction illustrated in Figures 1 and 2, the complete case or holder is constituted by two flat cylindrical or substantially cylindrical boxes 11, 12, each having a roller 13 centrally mounted on it. The roller is provided with side flanges 14 and constitutes the spool whereon the film is wound in the usual manner. Each of the boxes 11, 12 is provided with lugs or plates extending from a flat side of the box substantially in the plane of that side, as shown at 15, 16 for the box 11, and 17, 18 for the box 12. The corresponding plates on the two boxes are hinged together by rivets or other suitable connections 19, so that the two boxes can be swung towards or away from one another, the relative movement taking place about the pivotal axis of the hinge 19. This axis is parallel with the axes of the rollers 13, and preferably is equidistant from the edges of each of the boxes.

The dimensions and positioning of the flat plates aforesaid, and of their pivotal connections, is such that the two boxes or containers 11, 12 when swung apart as shown in Figure 1 occupy the correct relative positions which they must occupy when in use, and the plates are conveniently provided with inter-engaging shoulders 20 which provide a definite adjustment of the complete holder when opened out.

Each of the boxes 11, 12 is closed on its periphery except for a small opening through which the film enters or leaves it. The film is indicated in chain lines at 21 in Figure 1, and the respective openings in the boxes at 22, 23. These openings are so positioned relatively to the axis of the pivotal connection 19 that when the two containers are closed together the openings come opposite one another, as shown in Figure 2, whereby the length of film exposed between the boxes is reduced. Around each of the openings 22, 23 there are provided walls 24, 25, 26 and 27, which are so disposed that when the two containers 11, 12 are swung together these walls come into contact with one another and provide a complete enclosure for the film 21. As shown in Figure 2 the walls 24, 25 overlap one another and frictionally retain the two containers in their closed position.

It will be seen that with this construction of spool case, the holder, by providing a complete enclosure for the film during storage, protects it from any damage or dust, and, what is particularly important, when

used with kinematographic films constitutes a fire-proof container for the film so that the risk of fire is eliminated.

The construction illustrated in Figures 1 and 2 could be modified if so desired, by omitting the plates 15, 17 or 16, 18, and by relying on one hinge connection 19. It is preferred to use the construction illustrated, as it obviously is of greater strength. Other arrangements or constructions could be used for pivotally connecting together the two containers 11, 12 so long as the space 28 between them when opened out is left clear for the passage of a beam of light to the film 21.

The rollers 13 are each provided with a hollow hub 29 extending outwards through the flat sides of the container, and this hub is used to effect a driving connection with the roller when inserted in the machine. The operating mechanism of the machine is provided with two upstanding pins upon which these hubs 29 are threaded to obtain the driving engagement. The pins may be tapered and the hubs may be provided with an inwardly directed shoulder, or any other suitable construction may be used to effect the necessary frictional driving connection between the pins and the hubs.

In the construction of this spool-case, the two cylindrical containers are first made up with one flat side in place, and the other flat side is constructed separately. After the spools have been inserted, the separate flat side is placed on each container and permanently secured thereto, as by soldering, or any other convenient manner.

Figures 3 and 4 illustrate a modified construction in which the two cylindrical boxes or containers 30, 31 are not hinged together but are provided with male and female dovetail slides respectively, as indicated at 32, 33. When the two boxes 30, 31 are to be stored, the dovetail slides are engaged with one another as shown in Figure 3, and a cover-plate 34 is secured on them to provide a fire-proof covering for the small length of film which remains exposed. When this case is to be inserted in the projector, the two parts 30, 31 are separated from one another, and they may then be secured to an intermediate spacing piece provided with corresponding male and female slides so as to ensure the correct relative positioning of the two boxes. This spacing-piece may be a separate loose member, or it may be incorporated in the kinematograph machine or camera.

In Figures 5 and 6 there is illustrated yet another embodiment of this invention. In this case the two containers 35, 36 are hinged together by the extension plates 37, 38 respectively secured on them, but the axis of hinging, 39, lies substantially in the plane of one of the flat sides of the containers, so that one container can be swung over to be superposed on the other, as indicated in chain lines in Figure 6. The openings 40, 41 by which the film enters the containers are so disposed that when the complete holder is thus folded, the openings lie side-by-side. This would result in imparting a twist to the film in closing the two parts 35, 36 together, and to obviate this one end or both ends of a film may be provided with a piece of fabric, such as tape, whereby it is secured to the roller or rollers within the containers, and this fabric takes up any of such twist as may occur.

If it is desired, any convenient form of spring control may be provided on the hinged constructions of spool case, in such a manner as to tend to move the two parts relatively to one another towards their closed position, or to retain them when thus adjusted. A detent may also be provided to retain them in their opened-out positions, or the resilient control may be so arranged that it is inoperative when the two containers are opened out; this could be effected by providing a spring which is extended when the container is opened out, but which is so disposed that when the container is fully opened out its line of action crosses the pivotal axis of hinging.

It will be appreciated that this invention provides a holder or container for films and the like during use or storage which has the following advantages. When used for storage purposes, the two parts can be closed together so as to occupy the minimum space; when thus closed together, the film is adequately protected against any kind of damage or risk of fire; when the film is to be used the holder is very simply adjusted by opening it out so that it can be placed in operated position, and it is ready for immediate use owing to the engagement of the rollers in it with the driving mechanism provided. Moreover, the whole construction is light and inexpensive, so that it is commercially practicable to use them for the storage of films. It will be understood that if so desired, the holder may be enclosed in a separate casing when the two parts have been closed together, if it is thought necessary to give additional protection against risk of fire, but this invention is independent of such additional containers, and has for its object to provide an improved construction of holder as herein-before described.

What we claim as our invention and desire to secure by Letters Patent is:—

1. In a film holder, the combination of two substantially closed containers, and interconnecting means permitting them to be secured closely together for storage purposes or to be spaced apart to expose a length of film between them.

2. In a film holder, the combination of two

substantially closed containers, means for spacing them apart to permit the passage of a beam of light between them, means for closing them together, and means to provide complete enclosure of the film to be contained in them.

3. In a film holder, the combination of two substantially closed containers, a spool in each container, means accessible from outside the containers for effecting driving engagement with the respective spools, means for spacing said containers apart to expose a length of film between them said means permitting the passage of a beam of light between said containers and through the film, means for moving said containers into close proximity with one another to provide complete enclosure for a film contained within them.

4. In a film holder, the combination of a flat cylindrical container formed with an opening on its periphery, and a second similar container hinged to said first container in such manner that the two containers can be folded together to bring their respective peripheral openings close to one another.

5. In a film holder, the combination of a flat cylindrical container having an opening in its periphery and having a plate extending from each of its flat sides substantially in the plane of that side, a similar container having similar flat plates extending from it, coaxial pivotal connections parallel with the axes of said containers and connecting each flat plate of one container with the corresponding flat plate of the other container, said openings in the peripheries of the containers being so disposed relatively to the said pivotal connections that when the containers are swung towards one another on the pivotal connections the said openings are brought together to provide complete enclosure for a film within said containers.

6. In a film holder, the combination of a flat cylindrical container having an opening in its periphery, walls extending around said opening to shield it, a flat plate extending from each of the flat sides of the container substantially in the plane of that side, a similar container having a similar flat plate extending from it, coaxial pivotal connections connecting each flat plate of one container with the corresponding flat plate of the other container, said peripheral openings being so disposed that when the containers are swung towards one another the said walls surrounding said openings come into contact with one another to provide complete enclosure for a film within the said containers.

7. In a film holder, the combination of two substantially closed containers, interconnecting means permitting them to be secured closely together for storage purposes or to be spaced apart to expose a length of film between them, and resilient means tending normally to close said containers together.

8. In a film holder, a plurality of film-receiving containers adapted to be maintained either in extended relationship to expose a length of film therebetween or in adjacent position to protect said film.

In testimony whereof we have signed our names to this specification.

HERBERT GEORGE PONTING.
GEORGE WILLIAM FORD.