

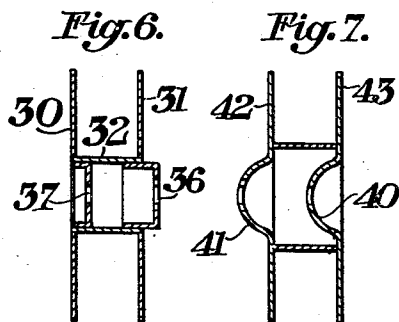
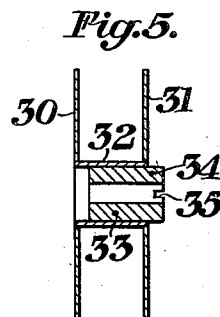
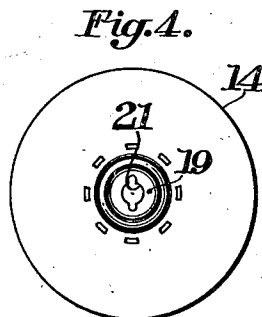
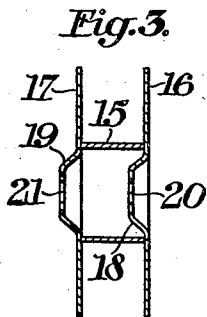
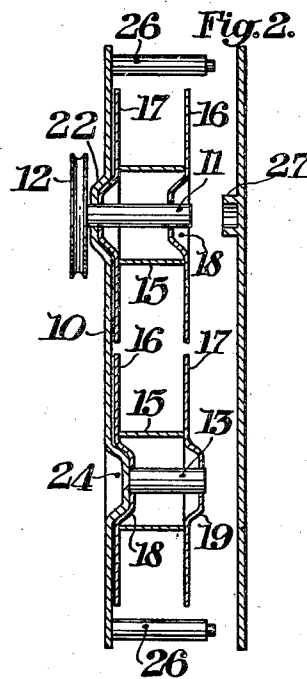
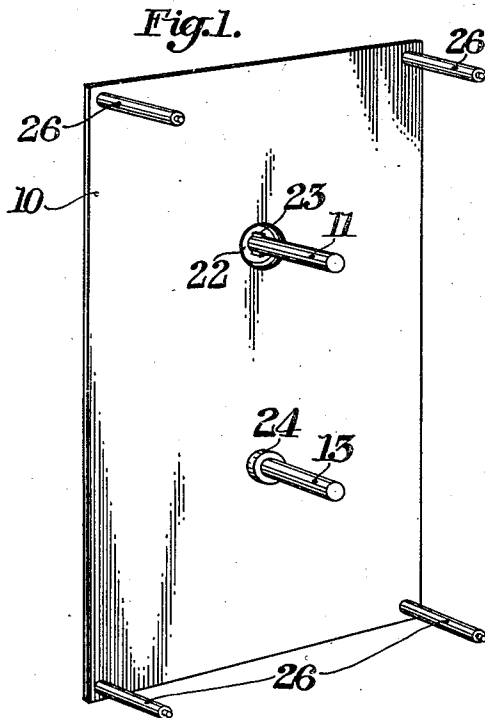
Oct. 4, 1932.

O. WITTEL

1,880,633

FILM SPOOLING APPARATUS AND REELS THEREFOR

Filed Nov. 18, 1931



Inventor:

Otto Wittel,

By *Newton M. Penn*
Rolla H. Carter

Attorneys

UNITED STATES PATENT OFFICE

OTTO WITTEL, OF ROCHESTER, NEW YORK, ASSIGNOR TO EASTMAN KODAK COMPANY,
OF ROCHESTER, NEW YORK, A CORPORATION OF NEW YORK

FILM SPOOLING APPARATUS AND REELS THEREFOR

Application filed November 18, 1931. Serial No. 575,838.

This invention relates to a film spooling system and reels therefor for motion picture apparatus and particularly to an improved form of reels and mounts disclosed and generically claimed in my co-pending application Serial No. 472,678 filed August 2, 1930.

As pointed out in said application, the invention is adapted for use especially with the handling of film where two series of pictures are made on a single width of film by first exposing the other half of the film.

It is an object of this invention to provide reels and mounts therefor of such construction that a reel can be mounted on one spindle in one position only and on the other spindle in reversed position only.

Other objects and advantages of the invention will appear from the following description when taken in connection with the accompanying drawing in which;

Figure 1 is a view in perspective of the spindles mounted on a suitable support, this being part of a camera;

Figure 2 is an elevation in section of a part of a camera with the reels mounted on the spindles and the cover removed;

Figure 3 is a sectional view of my improved reel in its preferred form;

Figure 4 is a plan view of the reel shown in Figure 3;

Figure 5 is a sectional view of one modification of my improved reel;

Figure 6 is a sectional view showing another form which my improved reel may take; and

Figure 7 is a sectional view showing a modification in structure of the reel shown in Figure 3.

Referring to the drawing, a suitable support 10 which ordinarily will be the base plate frame or partition in the camera has mounted thereon a spindle 11 adapted to be driven through the pulley 12 by any suitable mechanism, not shown, and a stationary spindle 13 adapted to carry a supply reel 14 having an annular hub portion 15 around which a film may be wound and circular flanges 16 and 17 which are attached to the hub 15 in a suitable manner, as is well understood in the art. The flanges 16 and 17 are

provided at their centers with offset portions 18 and 19, respectively. These portions are axially offset from the flanges 16 and 17 in the same direction and are provided with spindle apertures 20 and 21. For ease in manufacture these are identical, but the aperture 20 may be of any shape fitting over the spindles 11 and 13.

The portion of the base plate 10 immediately surrounding the driven spindle 11 is depressed to form a pocket 22 of a size suitable for receiving the protuberance of the reel formed by the offset portion 19. In order that the spindle 11 may have a driving connection with the reel 14, a key 23 or other suitable clutch element is mounted on the spindle 11 and within the pocket 22. The aperture 21 in the protuberance 19 is provided with any suitable shape, such as shown in Figure 4, which will fit and receive the key 23 to form a driving connection with the spindle 11. It is to be noted that the reel 14 can be driven by the spindle 11 only when it is mounted with a protuberance 19 fitting into the pocket 22 of the base plate 10.

The spindle 13 which may be stationary is mounted in a raised portion 24 of the base plate 10. This raised portion 24 is of a size which will enter the depression 18 formed in the flange 16 of the reel 14.

After the reels have been mounted, as shown in Figure 2, they are held in position by a suitable removable cover 25 which is adapted to be mounted in a definite spaced relation to the base plate 10 in any suitable manner as by the shouldered studs 26. Properly positioned on the cover 25 is a cup-shaped boss 27 adapted to fit over the end of the spindle 11 for holding the reel on this spindle in engagement with the clutch element or key 23. It is to be understood that in a camera there would be a suitable casing, not shown, protecting the film from light during use, and that the cover will be suitably secured or locked in closed position.

It is to be noted that with the above arrangement, if the reel 14 is mounted on the spindle 11 with the flange having the depression 18 adjacent the base plate 10, no driving connection will be had with the key 23 and the

protuberance 19 will extend to or beyond the end of the spindle 11 and be in a position to interfere with the boss 27 on the cover 25 and thereby prevent the mounting of the cover on the studs 26. Also, it is to be noted that should the reel 14 be mounted on the stationary spindle 13 with the flange having the protuberance 19 adjacent the base plate 10, then the flange 17 will extend beyond the end of the spindle 13 by a distance about equal to the height of the raised portion 24 which will prevent the placing of the cover 25 in position on the shouldered studs 26.

From the above, it is seen that I have provided a film spooling system and reels therefor in which the reels can be operatively mounted on the respective shafts only in the correct position and in which the camera cover cannot be mounted when a reel is on either of the spindles in other than a single definite position, whereby improper positioning of the reels is prevented.

The preferred form of reel shown in Figures 3 and 4 has the offset portions formed in an integral part of the flanges, but it is obvious that the portion of the reel in which the apertures are formed may be constructed in various ways. In Figure 5 is shown a reel having flanges 30 and 31 mounted on the exterior of the tubular hub 32. A block 33 having a cylindrical aperture 34 is secured in the hub 32 in any suitable manner, as by being pressed into position where it is held frictionally, and, as shown, the length of the block 33 is no greater than the length of the hub 32 but is axially displaced in the hub so that one end of the block extends beyond the end of the hub to form a projection similar to the protuberance 19, as shown in Figure 3. The other end of the block 33 does not extend to the end of the hub 32 which leaves a cup-shaped pocket corresponding to the depression 18, as shown in Figure 3. A keyway or notch 35 is formed in the hub at its protruding end to provide a driving connection with the key 23 of the shaft 11.

Still another form of reel, similar in some respects to Figure 5, is shown in Figure 6. In this structure, the hollow hub 32 is provided with protruding and depressed portions in which the apertures 36 and 37 are formed, by mounting apertured ferrules in the hub 32 in any suitable manner, as by being pressed into position where they are held frictionally. It is to be noted that in this structure also the material surrounding the apertures form a protuberance on one side of the reel and a depression on the other side of the reel similar to the structure of the preferred form shown in Figure 3, the depth of the depression and the height of the protuberance not having any necessary dimensional relation.

In Figure 7 is shown a reel similar to the one shown in Figure 3, but for manufacturing

purposes the depression 40 and the protuberance 41 formed integral with the flanges 42 and 43 respectively, are uniformly curved which shape renders the drawing of the offset portions quite simple and permits both the drawing of the offset and the punching of the aperture in the offset in a single operation.

While I have shown the pocket and the raised portion of the base plate as being formed integral with the base plate, it will be obvious that they may be formed in any suitable manner, it being required only that one of the spindles have its base below the plane of the plate and that the other spindle have its base above the plane of the plate.

It is to be understood that my invention is not restricted to the details set forth since they may be modified within the scope of the appended claims without departing from the spirit and scope of my invention.

What I claim as new and desire to secure by Letters Patent of the United States is:

1. A film spooling system for motion picture apparatus, comprising a base plate, a pocket in said plate, a first spindle mounted in the pocket and adapted to receive an apertured reel having a protuberance adapted to enter said pocket, a raised portion in said plate, a second spindle mounted on said raised portion and adapted to receive an apertured reel having a depression adapted to receive said raised portion of the plate, a cover adapted to be removably mounted on said base plate and spaced therefrom by a distance greater than the axial length of said reel plus the height of said raised portion and the depth of said pocket, and a projection on said cover adapted to limit the effective axial length of said first spindle to less than the axial length of said reel plus the depth of said pocket, whereby said cover may not be mounted on the apparatus when said reel is on either of said spindles in other than a single definite position, whereby improper positioning of the reel is prevented.

2. A spooling system for motion picture apparatus comprising a base plate provided with a pocket and a raised portion, two spindles mounted on the plate, one of the spindles being located in the pocket and the other spindle being located on the raised portion of the plate, a double flanged reel having an aperture in each flange for removable mounting on each of said spindles, one of the flanges being provided with a depression adapted to receive said raised portion of the plate and the other of the flanges having a protuberance adapted to enter said pocket, said depression and said protuberance surrounding the said apertures in the respective flanges.

3. A film reel having a hub, a pair of non-plane flanges axially spaced on the hub, each flange having two surfaces and the four surfaces of the non-plane flanges being parallel throughout.

4. A film reel having a hub, a pair of non-plane flanges of uniform thickness axially spaced on the hub, the shape of the non-plane flanges being such that every part of one flange is equally spaced axially from the corresponding part of the other flange.

5. A film reel or the like comprising a hub and axially spaced flanges, each flange having an aperture, the portions of the flanges containing the apertures being axially displaced, in the same direction, relative to the main portions of the flanges.

6. A film reel or the like including a cylindrical hub, a flange mounted on each end of the hub and perpendicular to the axis thereof, the areas of the flanges defined by the circumference of the hub being offset axially and in the same direction from the ends of the hub and being provided with spindle apertures.

7. A reel having a core and two flanges, the reel having a central aperture there-through, one side of the reel being depressed about said aperture and within the core, and the other side of the reel having a protuberance about the aperture.

8. A film reel including two flanges axially spaced on a hollow hub, an apertured block mounted in said hub, the length of said block being no greater than the length of said hub and axially displaced with respect to said hub.

Signed at Rochester, N. Y. this 13 day of October, 1931.

OTTO WITTEL.