Sept. 19, 1944. J. M. GOLDBERG 2,358,504

FILM REEL

Filed March 9, 1944 2 Sheets-Sheet 1

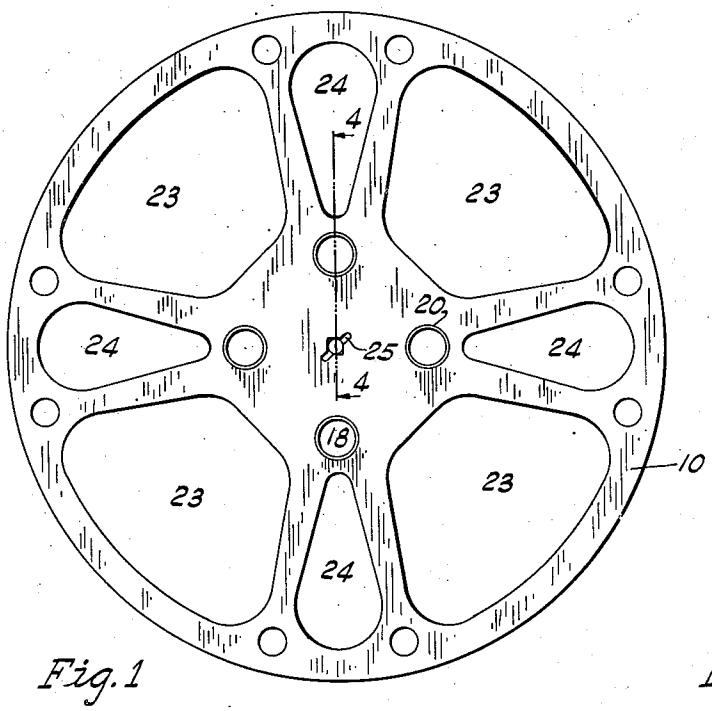


Fig. 1

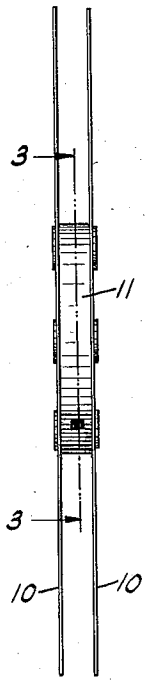


Fig. 2

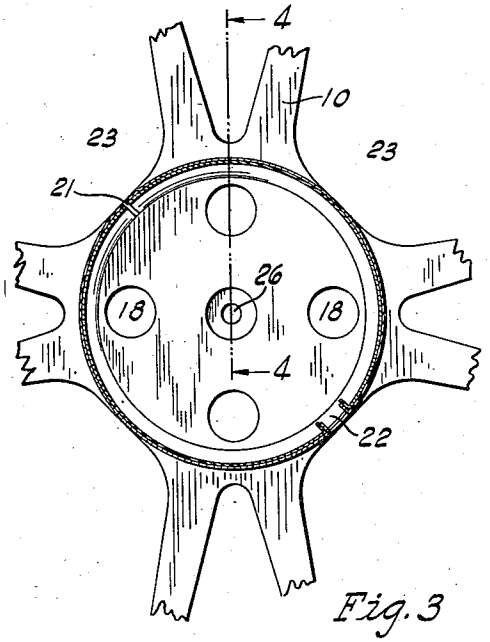


Fig. 3

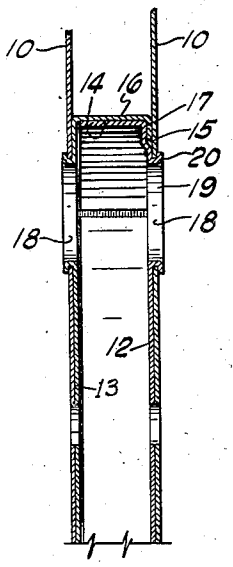


Fig. 4

INVENTOR.
JACOB M. GOLDBERG

BY

Martin E. Anderson
ATTORNEY.

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FILM REEL

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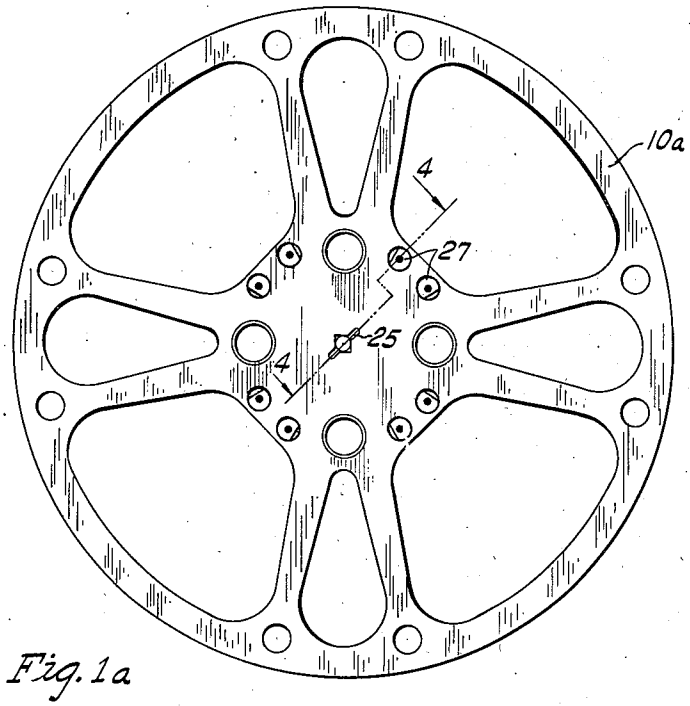


Fig. 1a

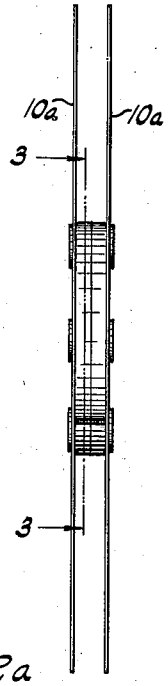


Fig. 2a

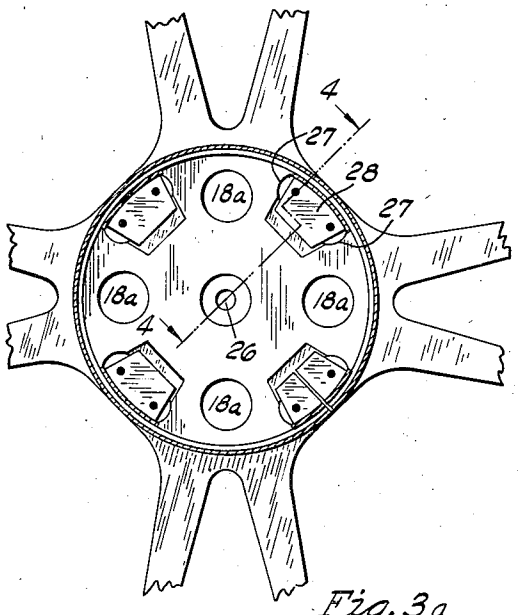


Fig. 3a

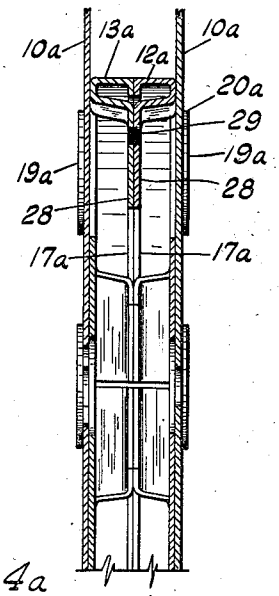


Fig. 4a

INVENTOR.
JACOB M. GOLDBERG

BY Martin E. Anderson
ATTORNEY.

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2,358,504

FILM REEL

Jacob M. Goldberg, Denver, Colo.

Application March 9, 1944, Serial No. 525,744

6 Claims. (Cl. 242—70)

This invention relates to improvements in film reels of the type employed in connection with photographic apparatus, such as cameras and projectors.

It is the object of this invention to produce a reel of a simple and substantial construction that can be manufactured and sold at a comparatively low price and which shall be of rugged and substantial construction.

Another object of this invention is to produce a reel of such construction that it will require a minimum of labor in assembling and for which the various parts can be constructed by dies in such a manner as to simplify the construction and increase the speed at which it can be manufactured.

Having set out the objects of the invention, the reel that forms the subject of this invention will now be described in detail and for this purpose reference will be had to the accompanying drawings in which the invention has been illustrated in its preferred form, and in which:

Figure 1 is a side elevation of a reel embodying my invention;

Figure 2 is an edge elevation thereof;

Figure 3 is a section taken on line 3—3, Figure 2;

Figure 4 is a section taken on line 4—4, Figure 1; and

Figures 1*a*, 2*a*, 3*a* and 4*a* correspond respectively to Figures 1, 2, 3 and 4 and show a modified form of construction.

The reel consists of two sides which have been designated by reference numerals 10. These sides are identical in size and shape and have therefore been designated by the same reference numeral. The sides are spaced by a hub which has been designated in its entirety by reference numeral 11 and which consists of two shallow cylindrical cup-like members, one of which has been designated by reference numeral 12, and the other by reference numeral 13. Cup 12, which is the smaller in diameter, is provided with a cylindrical flange 14 that is integral with the bottom of the cup. The bottom of the cup is provided along its peripheral edge with a rabbet 15 as shown more particularly in Figure 4. The cylindrical wall or flange of cup 13 has been designated by reference numeral 16. The inside diameter of the cylindrical wall 16 is slightly larger than the outside diameter of wall 14 so that the two cups can be assembled by a telescopic movement. After the cups have been assembled, the edge of wall 16 is turned inwardly and positioned in the rabbet 15 as shown at 17. We now have an assembly comprising the two shallow cylindrical cups which are assembled so as to form a drum-like member which serves as a spacer for sides 10. Each of the two cups has its bottom provided with openings 18 that are bounded by cylindrical flanges 19. In the drawings there are four openings 18, spaced ninety degrees apart. The bottoms are also provided with central openings as shown in Figure 3. The sides are provided with openings corresponding in size and position to the outwardly extending flanges 19 which project through the openings in the sides, after which the outer edges of the flanges are turned outwardly as indicated at 20 in Figure 4. This construction clamps the sides rigidly against the ends of the drum-like hub and forms a spool for the reception of film. The distance between the inner surfaces of sides 10 correspond to the width of the film and can be made to accommodate any desired width. The cylindrical wall of the hub is provided with a transverse cut 21, shown most clearly in Figure 3, into which the end of the film is inserted in starting the winding operation. For the purpose of assuring that the two cup-like members comprising the hub will not rotate relative to each other, tongues 22 are pressed inwardly as shown in Figure 3. These tongues provide a positive interlock and assures that the two side members will always retain their position at all times, regardless of any force that might be exterted tending to rotatably displace them. In the embodiment illustrated, the sides are provided with four large openings 23 and four smaller openings 24, of a pleasing outline. It is to be understood, of course, that any other suitable design can be employed. The openings 18 serve for the reception of the operator's fingers in applying and removing the reel from a spindle. One side is provided with a square opening having diagonal projections 25 and the other a circular opening 26, all as is quite common in the construction of reels employed with moving picture apparatus.

Particular attention is directed to the hub construction which is of such design that the parts comprising the same can be made by dies with little, or no, manual labor. After the cups have been drawn, the edge 17 is turned inwardly by a suitable apparatus and if the parts are made carefully, there is enough frictional resistance to prevent relative rotary movement. However, to assure that no relative rotary movement can take place, the tongues 22 have been provided.

The transverse cut 21 is positioned so as to be readily accessible through one of the openings 23,

which is of sufficient size to permit the operator to conveniently insert the film into the opening. After the hub has been assembled with the cylindrical flanges extending outwardly, the sides 10 are quickly and easily put into position and secured to the hub by means of certain tools that form an abutment for the inner surface of the material surrounding the openings 18 and which have means for flaring the flanges outwardly and crimping them against the sides into the position shown in Figure 4.

In Figures 1*a*, 2*a*, 3*a* and 4*a*, a slightly modified form of construction has been shown. In this modification the sides have been designated by reference characters 10*a* because they differ in some slight particular from the sides employed in the modification already described. The hub in the modified construction is formed from two parts which have been designated by reference numerals 12*a* and 13*a*. The two parts of the hub are drawn from sheet metal by suitable dies, but instead of one telescoping over the other, they are provided with inwardly extending flanges 17*a*. The openings 18*a* are bounded by outwardly extending cylindrical walls 19*a* that extend through correspondingly positioned openings in the sides and are flanged outwardly so as to securely clamp the sides in position. The outwardly turned ends of the flanges have been designated by reference numeral 20*a*.

The sides 10*a* are attached to the hub members before the latter are interconnected with each other and this simplifies to some extent the operation of crimping the flanges 19*a*. After the sides and the two parts of the hub have been interconnected, they are assembled in concentric position by means of a suitable tool, and flanges 17*a* are spot-welded so as to rigidly and securely interconnect the two parts.

For the purpose of admitting the electrodes of the spot-welder, the sides have been provided with openings 27. Either as an alternative means for interconnecting the two parts, or in addition to the spot-welding of flanges 17*a*, tongues 28 may be cut from the bottoms of the hub members and bent inwardly into the position shown in Figure 4. The tongues 18 may then be welded together, as indicated at 29, by means of electrodes projecting through the openings 27. The construction employing the tongues 28 as illustrated in the drawings, simplifies somewhat the operation of welding because these tongues can extend inwardly to such a distance that the electrodes may enter perpendicularly through the openings 27, whereas if the comparatively narrow flanges 17*a* are to be spot-welded, the welding machine must be slightly modified so as to enable the electrodes to engage the flanges without coming into contact with the metal of the reel except at their points.

It will be observed that the two modifications described above are identical with the exception of the manner in which the hub is constructed. In both cases, however, the hub is formed of two shallow cylindrical cup-like members whose bottoms are provided with outwardly extending flanges for clamping them to the sides of the reel. In the embodiment first described, the two cup members are telescopically interconnected and secured against longitudinal movement by means of the interconnecting flange 17, whereas, in the second embodiment, the cup members are of less depth and are attached to each other by means of spot-welds. In both cases the hub is formed by a drum comprising two substantially identical members rigidly secured in concentric position to the sides of the reel. The sides of the reel are provided as in Figure 1 with openings 25 and 26 for the reception of a spindle.

From the above description it will be seen that the reel that forms the subject of this invention is of a simple and substantial construction and of such a design that it can be manufactured almost wholly by means of machinery and requires a minimum of hand work.

Having described the invention what is claimed as new is:

1. A film reel comprising, in combination, two sides, and a spacer hub formed from two round box-like parts assembled with their open ends in opposed relation, the bottoms forming the ends of a drum, means for interconnecting the parts to resist forces tending to effect relative movement, the ends of the drum having each a central opening and a plurality of angularly spaced openings bounded by outwardly extending walls forming thimbles, the sides having openings corresponding in number, size and position to the thimbles and receiving the latter, the ends of the thimbles being turned outwardly to secure the sides to the drum.

2. A film reel comprising, in combination, two sides, and a spacer hub formed from two round box-like parts assembled with their open ends in opposed relation, the bottoms forming the ends of a drum, the side wall of one part being telescopically connected with the side wall of the other, the edge of the outer side wall being turned inwardly forming means for resisting forces tending to move the parts relative to each other, the ends of the drum having each a central opening and a plurality of angularly spaced openings bounded by outwardly extending walls forming thimbles, the sides having openings corresponding in number, size and position to the thimbles and receiving the latter, the end of the thimbles being turned outwardly to secure the sides to the drum.

3. A film reel comprising, in combination, two sides, and a spacer hub formed from two round box-like parts assembled with their open ends in opposed relation, the bottoms forming the ends of a drum, the inside diameter of one part being slightly larger than that of the other to permit the two parts to be assembled by a telescopic movement, the bottom of the one of smaller diameter having a rabbet about its periphery, the wall of the larger part being turned inwardly into the rabbet, forming means for resisting forces tending to move the parts relative to each other, the ends of the drum having each a central opening and a plurality of angularly spaced openings bounded by outwardly extending walls forming thimbles, the sides having openings corresponding in number, size and position to the thimbles and receiving the latter, the ends of the thimbles being turned outwardly to secure the sides to the drum.

4. A film reel in accordance with claim 2 in which the cylindrical walls of the two parts forming the drum are provided with means comprising lugs formed integral with the outer wall for resisting relative rotary movement.

5. A film reel in accordance with claim 3 in which the cylindrical walls of the two parts forming the drum are provided with means comprising lugs formed integral with the outer wall for resisting relative rotary movement.

6. A film reel comprising, in combination, two sides, and a spacer hub formed from two round box-like parts whose side walls have their edges provided with inturned flanges, the two parts being assembled with the flanges in contact with each other, the bottoms of the parts forming the ends of a drum, means for interconnecting the two parts to hold them in assembled relation, in opposition to forces tending to produce relative movement, the ends of the drum having each a central opening and a plurality of angularly spaced openings bounded by walls forming outwardly extending thimbles, the sides having openings corresponding in number, size and position to the thimbles and receiving the latter, the ends of the thimbles being turned outwardly to secure the sides to the drum.

JACOB M. GOLDBERG.