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2,392,492

REEL STRUCTURE

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FIG. 1.

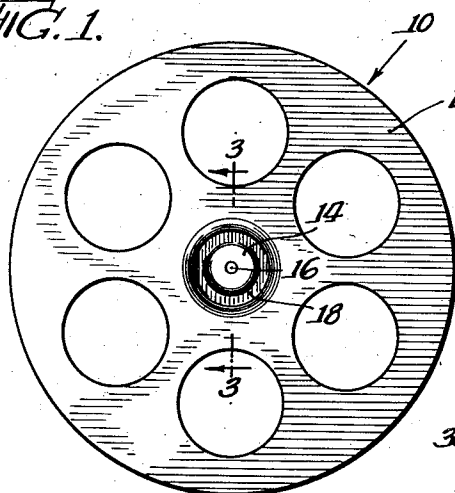


FIG. 2.

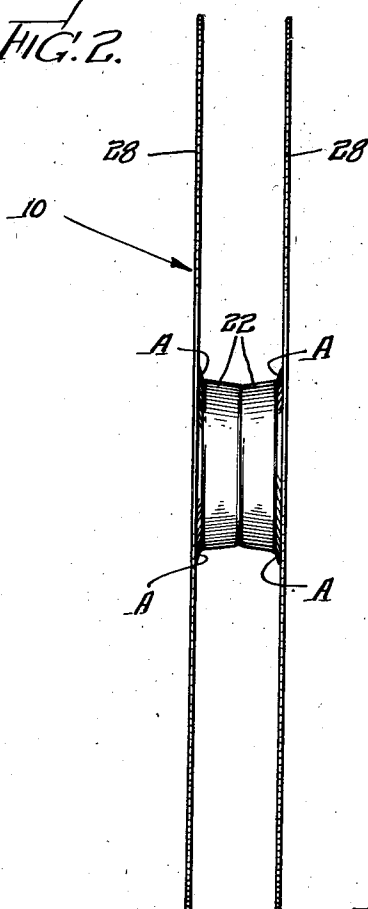
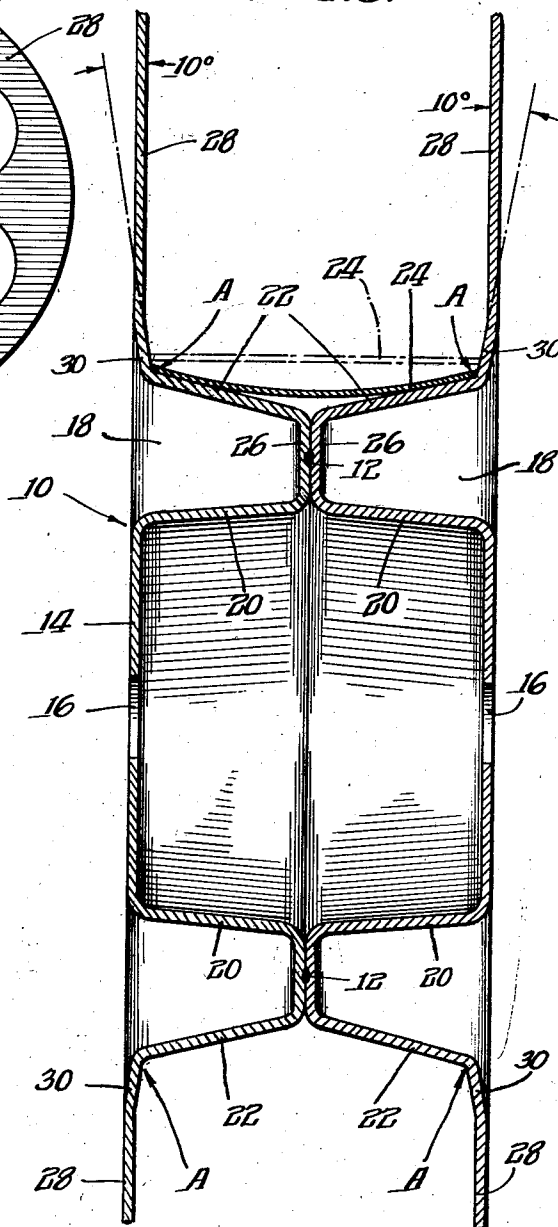


FIG. 3.



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REEL STRUCTURE

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2 Claims. (Cl. 242-74)

This invention relates generally to reels for accommodating motion picture film and more particularly to reels equipped with means for facilitating the retention of the leading portion of a film during the initial application thereof to the reel.

When the leading portion or what is commonly referred to as the leader of a motion picture film is initially applied to a reel, the use of means for frictionally holding the film during this initial application greatly facilitates the ease with which the remaining portion of the film will follow. Various forms of film holding devices have been employed. It has, for example, been common practice to insert the leading edge of the film into a slit in the reel hub and it has also been common to employ springs along the inner sides of the reel adjacent the hub for resiliently engaging the opposite edges of the film.

The foregoing and other devices for initially holding the leader of a film on the reel present certain disadvantages which the present invention seeks to avoid. To this end, the present invention contemplates a reel construction which is such that when a motion picture film is placed between the side walls of the reel, the film will become transversely bowed and under these circumstances the inherent resiliency or spring tension of the bowed film will sever to urge the side edges of the film into frictional engagement with side walls of the reel.

More specifically, the invention contemplates a reel construction as set forth above wherein specially formed wall portions are provided to cooperate with the aforesaid bowed film to enhance the gripping action of the side edges of the film.

Still more specifically, the present invention contemplates a reel construction wherein rigid inclined wall portions are provided, the inclination and distance between said wall portions being such as to cause the transverse bowing of the film when forced downwardly therebetween, whereby as an incident to the forces resulting from the inherent springiness of the bowed film, the side edges of the film will effectively grip said inclined wall portions.

The foregoing and other objects and advantages will be more apparent from the following detailed description when considered in connection with the accompanying drawing, wherein:

Fig. 1 is a side elevational view of a reel constructed in accordance with the teachings of the present invention;

Fig. 2 is an edge elevational view of the reel shown in Fig. 1; and

Fig. 3 is an enlarged fragmentary sectional view of the reel taken substantially along the line 3-3 of Fig. 1.

Referring now to the drawing more in detail wherein like numerals have been employed to designate similar parts throughout the various figures, it will be seen that the invention contemplates a motion picture reel designated generally by the numeral 10. By way of illustration and not in any sense by way of limitation, the reel disclosed in the drawing comprises two identical sections welded or otherwise secured together at 12. Each of the welded sections includes a hub portion 14 provided with apertures 16 for accommodating the usual reel supporting spindle (not shown).

Each of the welded sections is formed with annular indentations or depressions 18 which in cross-section, as illustrated in Fig. 3, present U-shaped portions, the lower legs of which form a hub periphery 20 and the upper legs presenting outer peripheral sections 22 for receiving a motion picture film 24. Sections 26 interposed between the portions 20 and 22 may be secured together as by means of the aforesaid welds 12. Extending radially outward in substantially parallel relation and formed integral with the peripheral sections 22 are side members or plates 28. These side members 28 are spaced a sufficient distance to enable the motion picture film to be freely received thereby. In other words, the width of the space between the side members 28 is slightly larger than the width of the motion picture film 24.

Particular attention is directed to slightly inclined or outwardly flaring wall portions 30 which extend radially from the outer margin of the peripheral sections 22 and merge with the side members 28. These wall portions 30 are relatively rigid so that when the film 24 is forced downwardly from the dot and dash position shown in Fig. 3 along wall surfaces A, the film will become transversely bowed, as indicated by the solid line disclosure in Fig. 3. Motion picture film is inherently springy and when it is bowed, as illustrated in Fig. 3, the tendency of the film to return to its normal flat condition causes the lateral edges of the film to frictionally bear against the oppositely disposed inclined wall surfaces A. It has been found that if the wall surfaces A are disposed or inclined as illustrated in the drawing, the film will be rendered self-gripping. That is to say, the flare or inclina-

tion of the wall surfaces A is sufficient to cause the transverse bowing of the film as it is pressed downwardly between the side members or plates 28. Furthermore, this inclination or outward flaring of the surfaces A is sufficiently gradual so that the pressure exerted by the lateral edges of the film against its companion wall surface is such that these edges will not slip outwardly along the wall surfaces but will be frictionally retained in place. The inclination of the wall surfaces A must be such that the component of the forces at the point of contact between the edge of the film and the surface A serves to urge the film edges into non-slipping frictional engagement with said surfaces.

In the disclosed embodiment the peripheral sections 22 are inclined slightly outwardly from the central connecting sections 26 and this serves to afford increased depth at the center of the reel. By having the peripheral surface presented by the sections 22 relatively concave in cross-section, the film may be bowed to a greater degree than would be possible if the peripheral surface extended in parallelism with the reel axis. In Fig. 3 the inclination of the abutment surfaces A is disclosed as approximately 10°. This degree of angularity has in certain instances been found to be practical. It has been found that an inclination exceeding 15° is not practical because beyond this point there is a marked tendency for the lateral edges of the film to slip along rather than to frictionally grip the wall surfaces.

It will be apparent from the foregoing description that the present invention contemplates a reel construction which depends for its film gripping effectiveness upon novel wall surfaces of substantial circumferential extent which are designed to cooperate with the inherent springiness of the bowed film in retaining the film in place. This should be clearly distinguished from devices which require the end of the leader on the film to be bent radially inward through an axial slit and from devices which require the film to be pressed against oppositely disposed spring or non-rigid members. The present invention contemplates a form of reel which is extremely simple in construction yet most efficient in operation. No auxiliary parts or stampings are required and the reel may be made by practicing conventional and extremely economical methods of manufacture. In initially applying the leader of the film to the reel, the user's finger is employed to press the film against a segmentary portion of the rigid wall surfaces A. This simple operation is suffi-

cient to bring about the above described self-gripping of the lateral edges of the bowed film against said rigid wall surfaces. No subsequent spinning of the reel to take up one or more turns of the film upon the peripheral surface presented by the sections 22 is necessary. In other words, the initial gripping of the lateral edges of a relatively small portion of the film against the inclined rigid wall surfaces is sufficient to condition the reel for subsequent take-up or winding of the film.

The invention is hereby claimed as follows:

1. In a reel for motion picture film, the combination of two sheet metal side plates in parallel spaced relation to each other and having narrow inner edge portions of conical form converging towards the axis of the reel, and means connecting said side plates and providing a winding member having a shallow concaved groove thereabout immediately inside of said conical portions, the parts being so shaped and proportioned as to give the film for which the reel is designed a loose fit between the outer portions of the side plates when wound in flattened condition on the reel and to cause the film when bowed transversely and then reeled to have a tendency to straighten out transversely so as to have frictional engagement at its edges with said conical portions of the side plates adjacent to said winding member with the bowing of the film normally limited by the shape of the concaved groove about the winding member.

2. The combination of two side plates pressed from pieces of sheet metal and arranged in parallel spaced relation to each other and having narrow inner edge portions of conical form converging towards the axis of the reel, and offset portions of said pieces of sheet metal in engagement with each other and rigidly connected together so as to provide a winding member having a shallow concaved groove thereabout immediately inside of said conical portions, the parts being so shaped and proportioned as to give the film for which the reel is designed a loose fit between the outer portions of the side plates when wound in flattened condition on the reel and to cause the film when bowed transversely and then reeled to have a tendency to straighten out transversely and thus by its inherent resiliency and stiffness press at its edges into frictional engagement with said conical portions of the side plates adjacent to said winding member.

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