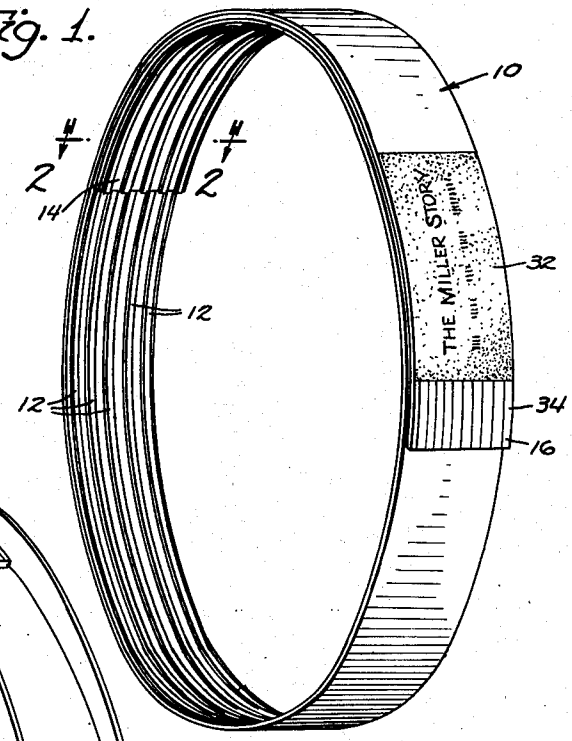
April 7, 1953 E. S. MILLER 2,633,983

MOTION-PICTURE FILM REEL BAND

Filed Nov. 20, 1947

Fig. 1.



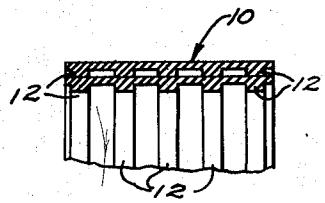


Fig. 2.

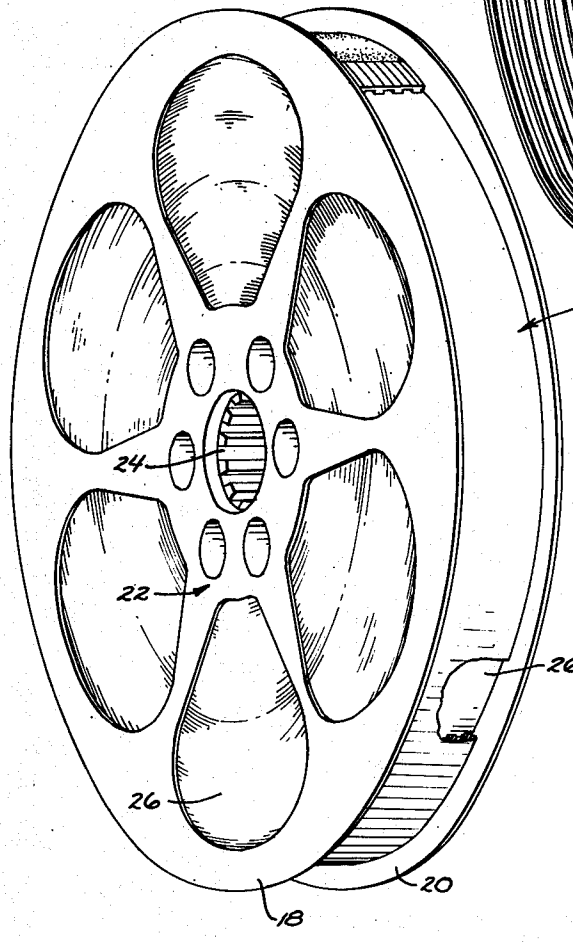


Fig. 3.

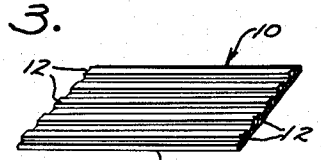


Fig. 4.

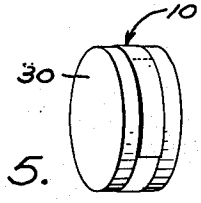


Fig. 5.

INVENTOR.
Ellsworth S. Miller
BY
A. S. Wilson.
ATTORNEY.

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MOTION-PICTURE FILM REEL BAND

Ellsworth S. Miller, Detroit, Mich.

Application November 20, 1947, Serial No. 787,149

3 Claims. (Cl. 206—53)

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This invention relates to the motion picture industry, and more particularly to an improved film reel band to maintain the film in wrapped relation on a reel, and to provide a more readily accessible indication as to what film is wound on a particular reel.

It is common practice to wrap a strip of heavy paper about the film on a reel and to secure it in place by a string wrapped about one of a series of rivets positioned in the paper. This practice is not satisfactory because the paper strip wears rapidly and becomes soiled due to the repeated handling required both in the projection booths and in the film exchanges, and frequently the string breaks or the rivets pull out of the paper or the strings of a number of bands become tangled. Also it is difficult to distinguish the identifying information relative to a particular feature embodied on the film of a sequence of reels, and to readily determine the proper sequence of the reels. Attempts have been made to overcome certain of these difficulties by the use of steel or other metal bands to surround the film on a reel, but these attempts have not proved satisfactory because the metal band both injures the film and is dangerous to handle, and such bands are relatively expensive to manufacture.

An object of this invention is therefore to provide a plastic motion picture film reel band that can be economically produced, and which possesses sufficient inherent elasticity to securely hold the film in place on the reel, and which is sufficiently resilient that it will not injure the film.

A further object of the invention resides in the provision of a film reel band of any desired configuration that can be economically formed of plastic material by an extruding process to provide flat strips which can be shipped in the flat form and rolled by the application of heat to provide a band of desired diameter at the point where the film reel bands are to be placed in service.

Another object of the invention is to provide a film reel band formed of plastic material, having longitudinally extending corrugations, that can be extruded as a straight strip and cut to suitable lengths to provide bands of desired diameters to accommodate reels of different sizes.

Yet a further object is to provide a plastic film reel band formed of straight stock that can be heated as by immersing it in hot water to render it pliable to permit it to be wrapped about a suitable form of the desired diameter and which may then be immersed in cold water to induce the band to attain a permanent set.

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Still another object resides in the provision of a film reel band formed of non-corrosive material that will not injure film even when stored in film vaults for relatively long periods of time.

Another object of the invention is to provide a plastic film reel band that can be formed of different colored plastics to indicate different producers or theatrical circuits, and which may have a section at each end roughened as by a sand blasting operation to provide a space for writing the name of the feature picture shown on the film, and wherein a color code marked on the bands by plastic dies may be employed to indicate the sequence of the reels.

A further object of the invention is to provide a relatively springy plastic film reel band having circumferentially extending stiffening corrugations whereby to flex the band it is necessary to stress the outer edge of the band in compression and to stress the inner edge in tension, it being possible to rejuvenate the band if it loses its tension by heating it and wrapping it about a suitable form and thereafter chilling it to induce it to again attain a set to regain its lost tension.

Other objects and advantages of this invention will appear in the following description and appended claims, reference being had to the accompanying drawings forming a part of this specification, wherein like reference characters designate corresponding parts in the several views.

Fig. 1 is a perspective view of a film reel band embodying this invention.

Fig. 2 is a sectional view taken substantially on the line 2—2 of Fig. 1 looking in the direction of the arrows.

Fig. 3 is a perspective view of a reel having film wound thereon, showing my improved film reel band in operative relation thereon.

Fig. 4 is a perspective view illustrating the step of extruding my improved film band as a flat strip.

Fig. 5 is a perspective view illustrating the step of wrapping the flat strip shown in Fig. 4 about a form to provide a band of the desired diameter.

Before explaining in detail the present invention it is to be understood that the invention is not limited in its application to the details of construction and arrangement of parts illustrated in the accompanying drawings, since the invention is capable of other embodiments and of being practiced or carried out in various ways. Also it is to be understood that the phraseology or terminology employed herein is for the purpose of description and not of limitation.

Referring now more particularly to Figs. 1 and 2 it will be noted that my improved film reel band 10 is cylindrical in shape, and has a plurality of spaced circumferentially extending stiffening corrugations 12 formed on one side thereof, and if desired may have overlapping ends 14 and 16. As illustrated in Fig. 3, the band 10 is adapted to fit between the spaced flanges 18 and 20 of a film reel 22 having a hub 24 about which film 26 is wrapped. The band 10 is preferably of approximately the same width as the distance between the flanges 18 and 20 to permit contact with the film over its entire width to maintain the film smooth and flat on the reel. The corrugations 12 are preferably positioned inwardly, but if desired they may be positioned outwardly to dispose a smooth surface in contact with the film 26 on the reel 22.

The reel 22 may be of any suitable type, but is preferably shown as being of the type disclosed in my Patent Number 2,220,610 issued November 5, 1940.

My improved plastic film band 10 is preferably extruded as a flat strip 28 as illustrated in Fig. 4. The dimensions of the flat strip can of course be varied as necessary to provide a band having the desired width, and number and spacing of corrugations 12, and the thickness of the stock and the depth of corrugations can of course also be varied to provide a band having the desired characteristics by changing the contour of the extruding die outlet. The band may be formed of any plastic material but is preferably formed of one capable of being extruded and possessing the characteristics of becoming pliable when subjected to heat so that a flat strip can be shaped to provide the desired substantially cylindrical band, and attaining a set when thereafter subjected to reduced temperature. Examples of suitable thermoplastic materials are various of the styrenes, methylacrylates such as Plexiglas and Lucite, cellulose acetate butyrates such as tenite, vinyl chlorides such as Koroseal, polystyrenes such as the lustrous, and the ethyl cellulose products.

After the flat strip has been formed it may be cut to suitable lengths to form film reel bands 10 of the desired diameters, and be shipped to the point of use such for example as to a film exchange. The flat strips 28 may be economically packaged and shipped since virtually no waste space is encountered since the corrugations of two strips may be positioned toward each other and intermesh.

When it is desired to form a flat strip 28 into a film reel band 10, the strip may be heated in any convenient manner as by immersing it in hot water to render the plastic material pliable. When a desired degree of pliability has been attained, the strip 28 may be wrapped around a suitable form such for example as a cylinder 30 illustrated in Fig. 5 of a diameter corresponding with the desired diameter of the band. The cylinder 30 with the band 10 in place thereon may then be subjected to decreased temperature in any convenient manner as by immersing in cold water to induce the plastic material to attain a set. The band 10 may then be removed from the cylinder 30 whereupon it is ready for use.

If desired the ends of the band 10 may be formed to a smaller radius than the midsection so that the inner end will more tightly contact film wrapped on the reel 22, and so that the outer end will more tightly contact the midsection of the band. This may be accomplished by contouring a portion of the cylinder 30 so that the inner end of the band may be wrapped thereon to the desired reduced diameter. After the band has been formed with the inner end shaped to the desired reduced diameter the band may be reversed, and the other end of the band again heated as by immersing it in hot water and thereafter wrapping it about the cylinder 30 with the end that was formerly disposed outwardly positioned in the inwardly contoured portion of the cylinder 30. The band may again be subjected to reduced temperature as by submerging it in cold water to again induce it to attain a set whereupon both ends will embody the desired reduced diameter curvature.

It will also be apparent that if desired a flat plate having a spiral groove therein may be employed to receive the strip 28 after it has been heated as discussed above to provide the desired curvature of the band in lieu of the cylinder 30 illustrated in Fig. 5.

It will of course be apparent that the material may be cut into strips 34 of suitable length after coming from the extruding die, and that these strips may be rolled or otherwise processed to form the band at that time, thereby avoiding the necessity of heating the material before it is processed to form the band. With certain types of materials it is unnecessary to reduce the temperature rapidly in order to attain a set because satisfactory results are obtained where the substance cools slowly as by air drying.

In use one end of the band, as the outer end 16 may be placed between the flanges 18 and 20 of the reel 22 having film 26 thereon, and be rolled into place between the flanges 18 and 20. The band 10 may be used over and over again since it does not lose its tension to an appreciable degree. The cylinder 30 is preferably somewhat smaller than the diameter of the film 26 on which the band is to be used so as to maintain a degree of tension on the film to securely hold it on the reel 22. If the band 10 should lose its tension after repeated usage it may be reprocessed by heating and wrapping about the cylinder 30 or otherwise treated, and chilled to induce a set. This band may be reprocessed any desired number of times. It will be noted that in use the inner surface of the band or corrugations 12 is stressed in tension whereas the outer surface is stressed in compression. The band thus maintains the film tight on the reel.

It will be apparent that differently colored bands can be used by different film exchanges or producers to indicate ownership of the films. A portion 32 of the band is roughened as by a sand blasting operation to provide a surface suitable for receiving identifying information, relative to the film, written thereon as with a pen or pencil. When it is desired to use the band 10 on a different film the notations on the portion 32 may be erased and appropriate identifying information applied relative to the film with which the band 10 is then to be used. The identifying information relative to the film may be applied by water or chemically soluble substances to prevent the identifying information from readily becoming obliterated, but to permit it to be removed by the application of a suitable solvent when desired.

Portions 34 of a plurality of bands, for example the ends may be colored differently to indicate a sequence of film reels to be projected in accordance with a color schedule. For example the first reel of a sequence of reels may have

bands 10 having portions 34 colored red, the second colored green, the third yellow etc. through any desired number of reels required to make up a complete show. Where this expedient is resorted to the projectionist can select the next reel of a sequence of reels received from the film exchange by referring to the color of the portion 34 of the band 10 encircling the film. After a show has completed its run in a particular theatre the projectionist replaces the bands on the reels in accordance with the color schedule before returning it to the film exchange. The film may then be more readily checked and inspected at the exchange because of the ease with which the proper sequence of reels can be located by reference to the color schedule.

It will be apparent that the band 10 need not have overlapping ends 14 and 16 as a strip 28 of appropriate length to nearly encircle the film 26 may be processed to form a band, the normal resiliency of the material maintaining the band tight against the film since to deflect an end of the band outwardly away from the film it is necessary to stress the outer surface in compression and the inner surface in tension. Where this expedient is resorted to both ends 14 and 16 of the band may be formed to a progressively reduced radius by contouring portions of the outer surface of the cylinder 30 illustrated in Fig. 5. It will also be apparent that where the band does not have overlapping ends it is only necessary to color as at 34 at one end of the band because neither end of the band is covered up when the band is used.

While the invention has been described with particular reference to a specific embodiment, the principles involved are susceptible to numerous applications which will readily occur to persons skilled in this art.

I claim:

1. A plastic film reel band adapted to be positioned between the side flanges of a film reel to engage film wrapped on the reel, the band having transversely disposed circumferentially extending sections of varying thicknesses whereby the band tends to assume a substantially predetermined position to engage and retain film on the reel due to the stressing of the outer edge of the band in compression and the stressing of the inner edge of the band in tension.

2. The combination with a motion picture film reel having a hub and spaced side flanges secured to the hub, of a plastic band adapted to be positioned between the side flanges to engage film wrapped on the hub, the band having transversely disposed circumferentially extending sections of varying thicknesses whereby due to the creation of internal stress the band tends to assume a substantially predetermined position to engage and retain film wrapped on the reel.

3. The combination with a plurality of motion picture film reels each having a hub and spaced side flanges secured to the hub, of a corresponding number of plastic bands each adapted to be positioned between the side flanges of one of the film reels to engage film wrapped thereon, each band having a plurality of transversely disposed circumferentially extending sections of varying thicknesses to create internal stresses within the band to induce it to assume a substantially predetermined position to engage and retain film wrapped on the reel, each of the plastic bands having corresponding portions colored differently to indicate a sequence of said plurality of film reels in accordance with a color schedule.

ELLSWORTH S. MILLER.

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