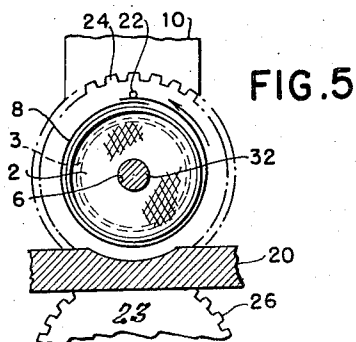
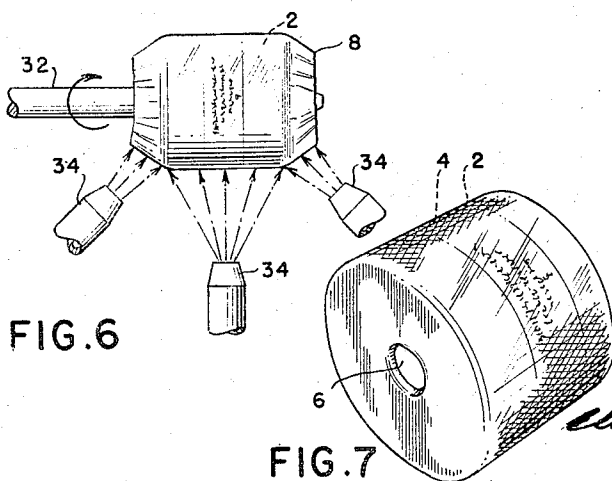
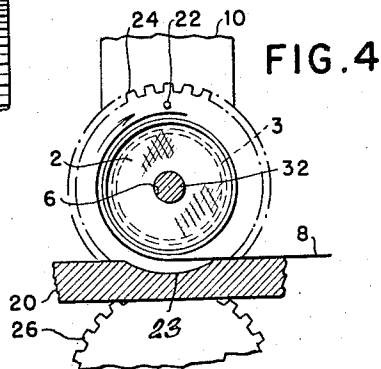
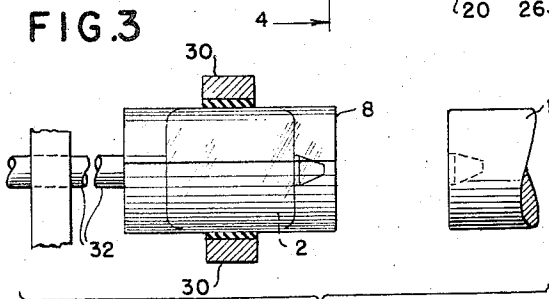
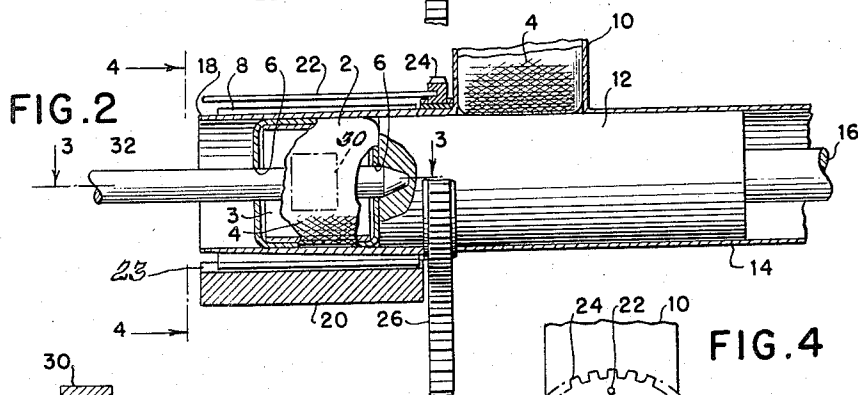
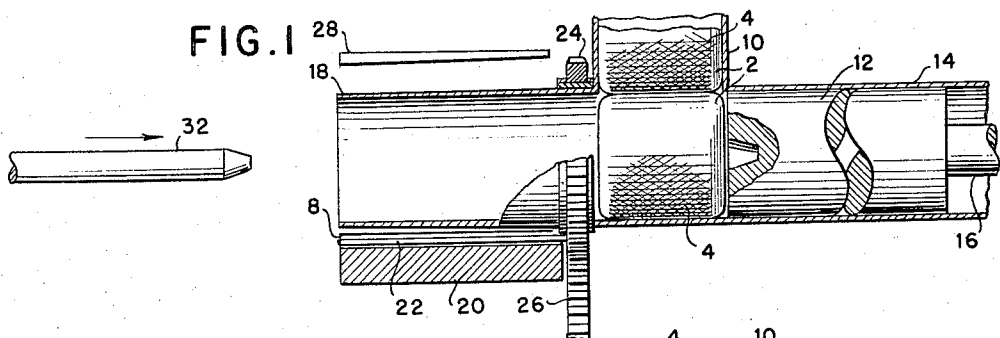


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METHOD OF AND MACHINE FOR WRAPPING
ARTICLES, AND WRAPPED ARTICLES
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METHOD OF AND MACHINE FOR WRAPPING ARTICLES, AND WRAPPED ARTICLES

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7 Claims. (Cl. 53—30)

The present invention relates to a method of and machine for wrapping articles, and has special reference to the wrapping of balled thread with "Pliofilm" or similar material, and further relates to a wrapped article that may be produced by my improved method and machine.

Thread for crocheting, knitting, and embroidering is commonly cross-wound on a tubular core of cardboard, and over the open ends of the core, except for axial openings formed by the thread. The thus wound ball of thread may be about two and one-half inches in diameter, and two and one-half inches in length, and the end openings formed by the thread may be five-eighths of an inch in diameter. It will be understood, however, that the ball may be made of any desired size.

One of the objects of the present invention is to provide a novel and improved method of and machine for wrapping that is particularly adapted for wrapping balled thread of this character.

Another of the objects of the invention is to provide a novel and improved wrapped package of the character indicated.

The several features of the invention, whereby these and other objects may be attained will be readily understood from the following description and accompanying drawings, in which:

Figure 1 is a longitudinal sectional view, with parts broken away, of a portion of my improved machine with a ball of thread delivered thereto in position to be wrapped;

Fig. 2 is a similar view with certain parts in a different position;

Fig. 3 is a longitudinal sectional view, taken substantially on the line 3—3 of Fig. 2, but with a ball of thread shown partially wrapped;

Fig. 4 is a transverse sectional view, taken substantially on the line 4—4 of Fig. 2;

Fig. 5 is a view corresponding to Fig. 4 but with the ball of thread partially wrapped as shown in Fig. 3;

Fig. 6 is a view corresponding to Fig. 3, but illustrating an additional step in the wrapping operation; and

Fig. 7 is a view in perspective of the completely wrapped ball of thread.

The ball 2 of thread to be wrapped may comprise, as customary, a tubular core 3 of cardboard with the thread 4 cross-wound on the core and over the open ends thereof, the thread being wound in such a manner as to provide openings 6 in the ends of wound thread. It will be understood, however, that my improved method and machine may be employed for wrapping various other articles.

The wrapping material may be rubber hydrochloride such as that put out under the trademark Pliofilm, but other material having similar characteristics may be employed.

The Pliofilm is supplied by the manufacturer in a web or strip form of the desired width. The Pliofilm used in my improved thread package may be .001 inch in

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thickness, but the thickness may be varied as desired. Also, as supplied by the manufacturer, it is in stretched condition, the stretching having been done by the manufacturer at a temperature of about 180° F., and the stretch being in a direction longitudinally of the web or strip.

This strip is cut transverse into sheets 8, and this may be done by any suitable means as the strip is fed to the machine.

Each sheet 8 is first wrapped longitudinally about the article with its ends overlapping. Then the overlapping ends are heat-sealed so as to form a cuff with the ends thereof projecting beyond the ends of the article. Then the cuff is subjected to heat in such a manner as to shrink it tightly about the cylindrical surface of the ball, and to cause its ends to shrink over the ends of the ball, and to the openings 6.

With my improved method and machine, such wrapping of the balls of thread is accomplished uniformly, and expeditiously.

The balls of thread to be wrapped, may be fed to the machine in any suitable manner as by means of a chute 10.

The lowermost ball in the chute is positioned adjacent the end of a plunger 12 which is mounted to slide in a tube or cylinder 14. The plunger is reciprocated in any suitable manner through a plunger rod 16 to successively feed the balls from the chute. As each ball is thus fed, the plunger holds back the other balls in the chute.

The end portion 18 of the cylinder 14 has its outer surface tapered slightly as indicated.

Each sheet 8 of wrapping material is positioned on a table 20 beneath the end portion 18 of the cylinder 14, the sheet being positioned with the direction of its stretch transversely of the axis of cylinder 14. Also the sheet when positioned lies over a transverse pin 22.

The pin 22 is carried by a gear 24 which is mounted for turning movement about the cylinder 14, the gear being adapted to be operated through a gear 26. The table 20 has a clearance depression 23 for the pin 22.

When each ball of thread is fed by the plunger 12 from the chute, it is positioned by the plunger about centrally in the end portion 18 of the cylinder 14. When this occurs, the pin 22 is revolved 180° clockwise by its gear 24, from the underside of the cylinder to the upper side thereof (Figs. 4 and 5). This pin as it thus moves, causes one end portion of the wrapper sheet 8 to be applied over a side of the cylinder. Then the pin 22 is revolved about 360° in the opposite direction to apply the remaining portion of the sheet over the other side of the cylinder, and to cause its end to overlap the end of the first portion. Then the pin 22 is returned to its initial position beneath the cylinder and into the clearance depression 23 (Figs. 4 and 5).

At the completion of wrapping each sheet about the cylinder 14, a heating device 28 moves down and engages the overlapping edges of the sheet to heat-seal them, the cylinder 14 serving as an anvil against which the sealing is performed.

Friction clamps 30 then engage opposite sides of the wrapper sleeve or cuff thus formed, and slide it off of the tapering end 18 of the cylinder 14.

In unison with this sliding movement of the wrapper sleeve, the plunger 12 is further advanced to move the ball from the cylinder 14. As the sleeve and ball leave the end of the cylinder, the clamping members 30 clamp them together.

Previously, however, to such ejection of the ball and wrapper sleeve, a spindle 32 having a pointed end is inserted tightly through the central openings 6 in the ball, and this spindle is retracted with the ball and sleeve, and

carries them to a position spaced from the end of the cylinder 14 (Figs. 1, 2 and 3). When the ball and its sleeve wrapper reach this position, the clamps 30 are withdrawn from the sleeve and returned to their initial open positions.

The spindle 32 is then rotated, and the ball and its sleeve are rotated therewith through frictional contact. When this occurs, heated air from nozzles 34 is directed against the sleeve wrap, over the cylindrical portion thereof and its projecting ends, so as to cause the wrap to tightly and smoothly embrace the ball, and the projecting ends to be laid firmly over the ends of the ball and shrunk close around the spindle 32 and to the openings 6.

When the wrapping operation is completed the wrapped ball is doffed from the spindle, and the operation is repeated on the next ball fed from the chute 10. After removing the ball from the spindle, I have found that with a suitable width wrapper, upon applying heat to the ends thereof the "Pliofilm" as it shrinks uniformly curls over the walls of the opening 6, and thus effectively covers and protects them (Fig. 7). Such application of heat may be done while the balls roll down a chute (not shown) and are discharged from the machine.

It will be apparent that the transparent wrapper is smoothly applied over the entire surface of the ball, and to or over the edges of the openings 6. Thus the ball is effectively covered and protected by the wrapper, and the thread is clearly visible through it so as to be displayed to the best advantage. Also, the method permits printing the format of the advertising directly on the wrapper previously to supplying them to the machine.

It will also be apparent that the method and machine are capable of wrapping the articles uniformly and expeditiously, that the machine is simple in construction and efficient in operation, and that the method and machine may be employed for wrapping various articles besides balled thread.

It is to be understood that the term "Pliofilm" as used in the claims shall include any other film having similar characteristics.

What I claim is:

1. The method of wrapping a package of balled thread or the like with a sheet of Pliofilm that is shrinkable transversely thereof, which comprises axially inserting the package into a tube, applying the sheet of Pliofilm about the tube with the longitudinal edges of the sheet overlapping, securing said longitudinal edges together, the tubular wrapper thus formed being of greater length than the length of the package and being positioned centrally thereof so that the ends of the wrapper project beyond the ends of the package, removing the package and the wrapper together from said tube, and shrinking the wrapper about the peripheral surface of the package and over the ends of the package.

2. The method of wrapping a package of balled thread or the like with a sheet of shrinkable Pliofilm, which comprises axially inserting the package into a tube, applying the sheet about the tube with the longitudinal edges of the sheet overlapping, heat-sealing said longitudinal edges, the tubular wrapper thus formed being positioned centrally of the ends of the package with the ends of the wrapper projecting beyond the ends of the package, removing the package and the wrapper from

said tube, revolving the package with the wrapper about the axis thereof, and as the package and wrapper revolves applying heat to the wrapper to shrink the wrapper about the peripheral surface of the package and over the ends of the package.

3. A method according to claim 1 which includes the additional step of removing the package and wrapper from said tube by means of a spindle inserted axially through the package, the package being revolved during the shrinking operation by revolving the spindle.

4. The method of wrapping with a sheet of Pliofilm shrinkable transversely thereof, a package of balled thread in which the thread is wound on a tubular core and over the open ends of the core except for axial openings formed by the thread, which comprises wrapping the sheet longitudinally about the peripheral surface of the package with the ends of the sheet overlapping, securing the overlapping edges of the sheet together to form a sleeve with the ends of the sleeve projecting beyond the ends of the package, revolving the package and sleeve about their axes, and while they are being revolved applying heat to the sleeve to shrink it about the peripheral surface and over the ends of the package and inwardly over the edges of said axial openings.

5. In a machine for wrapping a package of the class described with a sheet of Pliofilm, the combination of a cylinder, means for delivering a package to a predetermined position in an end portion of the cylinder, means for applying the sheet about the cylinder with the ends of the sheet overlapping, means for heat-sealing said overlapping ends to form a sleeve, the sleeve being centrally positioned axially with relation to the package with the ends of the sleeve projecting beyond the ends of the package, means for simultaneously removing the package and sleeve from the end of the cylinder, means for revolving the package and sleeve, and means for applying heat to the sleeve to shrink it about the package.

6. A structure according to claim 5 in which the means for removing the package and sleeve from the end of the cylinder and revolving them comprises a spindle which is inserted axially through the package after the package is positioned in the cylinder.

7. The method of wrapping a package of balled thread or the like with a sheet of Pliofilm being shrinkable transversely thereof which comprises wrapping the sheet about the peripheral surface of the package to form a tube with the longitudinal edges of the tube overlapping and the ends of the tube projecting a distance beyond the ends of the package, securing said overlapping edges together and applying heat to the tube thus formed to shrink the tube tightly about the peripheral surface of the package and over the ends thereof, the projecting ends of the tube shrinking about the ends of the package to substantially enclose the same without overlapping of the tube ends.

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