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E. J. COURTNEY

2,647,556

PROCESS OF APPLYING COVERS TO DRAWING ROLLS

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Fig. 1.

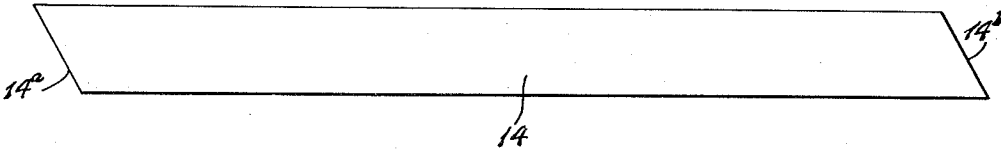


Fig. 2.

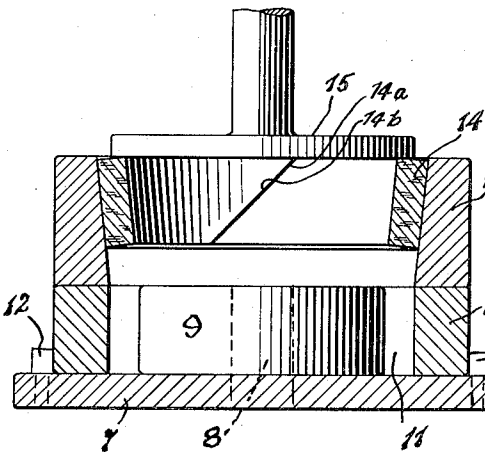


Fig. 3.

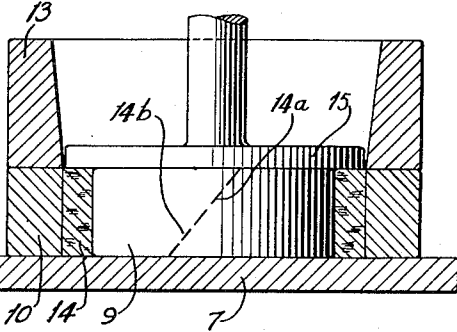


Fig. 4.

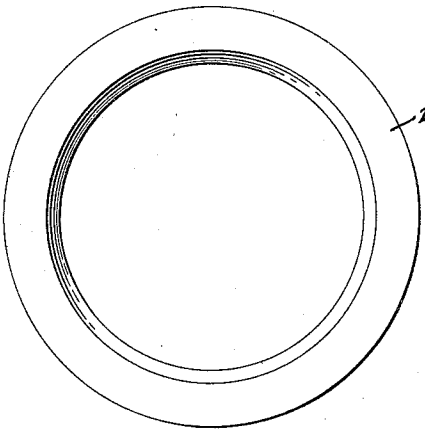
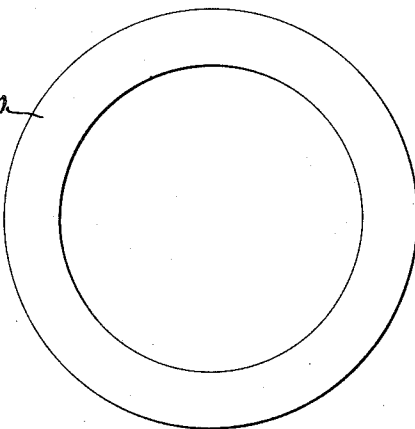


Fig. 5.



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Inventor
Edward J. Courtney
Symon & Halmer
Attorneys

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PROCESS OF APPLYING COVERS TO
DRAWING ROLLS

Edward J. Courtney, Oaklyn, N. J.

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3 Claims. (Cl. 154-41)

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This invention relates to a process for applying covers to rolls, such, for example, as drawing rolls in the drafting of yarn, and it is particularly useful in applying covers of a compressible material such as cork or compositions containing cork.

The nature, objects and advantages of the invention will be best understood from the following.

Heretofore it has been the general custom (a) to form a relatively long tube of the covering material and cut it into rings which are subsequently applied to the roll, or (b) to take a strip of the covering material of appropriate width and apply the strip to the roll by the aid of a machine having arms which engage the ends of the strip and wrap it around the roll, bringing the ends in abutting relationship. In both cases a cement is applied to the covering material to hold it on the roll.

The first procedure is relatively unsatisfactory because of the difficulty, among other things, of securing a firm adherence. There are many rejects and recovering is frequently required before the useful life of the cover is ended. In the second procedure the arms of the machine are provided with pointed projections to engage the strip and, because of the pressure necessarily applied, relatively deep indentations are left in the cover which necessitates relatively extensive machining to remove these imperfections. Furthermore, the strip must be first steamed and the strip must be held in place by the machine for substantially a day, besides which it is frequently necessary to cut away a portion of the strip to secure proper fit.

The primary object of the invention is to overcome the foregoing difficulties and to provide a simple and effective process and apparatus whereby the cover is most effectively secured, with scarcely any rejects and with a great reduction in the time during which the strip must be held in place before removal from the apparatus.

It is a further object of the invention to compress the material of the cover in the application thereof so as to ensure an effective bond between the cover and the roll.

How the foregoing, together with such other objects and advantages as may hereinafter appear, are realized is illustrated in the accompanying drawings, wherein—

Fig. 1 is a plan view of a strip of cork or of a composition containing cork which is to constitute the cover.

Fig. 2 is a vertical section through the cover and ring die members employed in attaching the

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cover and illustrates the first step in the process of application.

Fig. 3 is a view similar to Fig. 2 but illustrating the completion of the attachment, and

Figs. 4 and 5 are respectively plan views of the upper and lower die members of Figs. 2 and 3.

Referring now to the drawings, and particularly to Figs. 2 to 5, the reference numeral 7 indicates a base plate or support provided with a center pin or other positioning device 8 after centering the roll 9, which is to be covered. The lower die member 10 is in the form of a ring and rests upon the support 7 and concentrically surrounds the roll 9, leaving an annular space 11 therebetween which is rectangular in cross section, the inner face of the ring being parallel to the outer face of the roll. For ease in centering the ring 10 the support 7 may be provided with a plurality of suitably spaced pins 12 or the like.

The upper ring-like die member 13 when in place, rests upon the lower die member 10. This ring is of greater height than the lower ring 10. Its outside diameter is desirably the same as that of the lower die member for convenience in centering by hand. The inner periphery of the ring 13, however, instead of being normal to the upper and lower faces of the ring, as is the case with the inner periphery of the ring 10, is in this instance given a draft, i. e., it slightly tapers upwardly and outwardly from the bottom face. At the lower face the inner periphery is the same diameter as the internal diameter of the ring 10.

The first step of the process is to bend the strip 14 of Fig. 1 by hand into the form of a ring for insertion into the upper portion of the ring 13. This can be readily done by reason of the fact that the ring 13, being of greater depth than the ring 10, and having its inner periphery tapered, the upper portion of the central opening in ring 13 is larger than the opening of ring 10. At this point attention is drawn to the fact that the strip 14 is desirably longer than the internal periphery or circumference of the ring 10. For the size of roll shown (4½" in diameter) the strip is ¼" longer than the internal periphery or circumference of member 10.

The next step after insertion of the strip 14 in the form of a ring in the upper part of die member 13 is to bring the head 15 of any suitable form of press (not shown) into the position shown in Fig. 2. It will be noted that the diameter of the head 15 is substantially the same as or slightly less than the internal diameter of the die 13 at its bottom.

This next step is to bring the head downwardly,

forcing the strip 14, now in the form of a ring, downwardly through member 13 and into member 10, as shown in Fig. 3. During this operation the ring formed by the strip is brought under inward and annular compression due to the taper of the inner wall of the member 13 so that the ends 14a and 14b are firmly pressed against one another with substantial pressure. There will also be axial compression of the ring formed by the strip tending to flatten the wall of the ring. Because of these pressures and the effect thereof, it will be seen that when the strip is in the position shown in Fig. 5, it will not only be strongly pressed against the outer surface of the roll 9 but the ends 14a and 14b will also be in firm pressure engagement.

It will be understood that before insertion of the strip, the surfaces at the ends 14a and 14b and the face which will constitute the inner periphery of the strip when it is formed into a ring, have had a suitable plastic or other form of quick drying cement applied thereto.

The net result will be a firm adherence of the cover to the roll.

After the parts are in the position of Fig. 3, the head 15 is withdrawn, the ring 13 is lifted off, as is the ring 10, which last mentioned ring will carry with it the roll and the intervening cover. It is only necessary to allow the roll and its cover to remain in the lower ring for a period long enough to permit the cement to set sufficiently, this usually taking only about two hours.

In some instances slight sand-papering of the joint in the cover may be required.

I have described the cement as being applied to the end surfaces of the strip and that surface of the strip which will constitute the inner periphery of the strip when applied to the roll. It will of course be understood that the cement may be applied to the outer periphery of the roll instead of to said last mentioned surface, or that cement may be applied both to strip and to roll.

I claim:

1. The process of covering a roll which comprises bending a strip of cover material into a ring of larger internal diameter than the external diameter of the roll to be covered, the said strip being longer in the external periphery of the roll, and, while confining the strip in ring form, forcing it over the roll while simultaneously placing the ring under compression annularly and axially thereof, applying cement for the contacting surfaces of roll and ring prior to said forcing, and confining the ring on the roll after said forcing until the cement has set.

2. The process of covering a roll which comprises providing a strip of covering material of a length such that when bent into the form of a ring such ring will have an internal diameter substantially greater than the external diameter of the roll to be covered, bending said strip to form said ring, holding said strip in said ring form, and forcing said ring onto said roll while simultaneously compressing said ring annularly to decrease its diameter and make its internal diameter coincide with the external diameter of the roll, applying a cement for contacting surfaces of roll and ring, and holding said ring in its compressed form on said roll until the cement has set.

3. In the art of covering a roll with covering material, a method for use with a roll-covering die having an upper portion generally in the form of a truncated cone and a lower portion cylindrical in shape, which method comprises the steps of: placing the roll in the lower portion of the die and substantially aligning the axes thereof; forming a strip of said material into a ring having an internal diameter substantially greater than the external diameter of the roll and an external diameter substantially greater than the internal diameter of the lower portion of said die; applying a cement for the contacting surfaces of the roll and ring; placing said ring in the upper portion of said die; applying pressure to move the ring from the upper to the lower portion of the die whereby to force the ring onto said roll while simultaneously applying axial and annular compression to the ring; and holding the ring in its compressed form on said roll until the cement has set.

EDWARD J. COURTNEY.

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