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2,464,082

METHOD OF CASTING PRINTING ROLLERS

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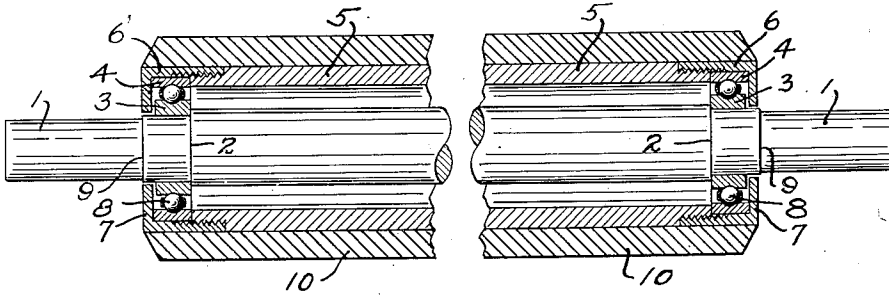


FIG. 1

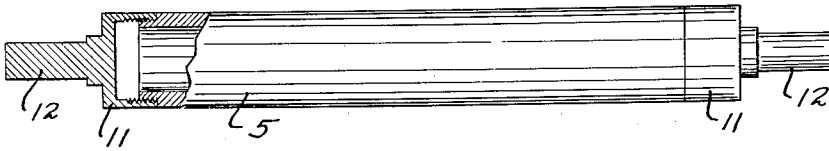


FIG. 2

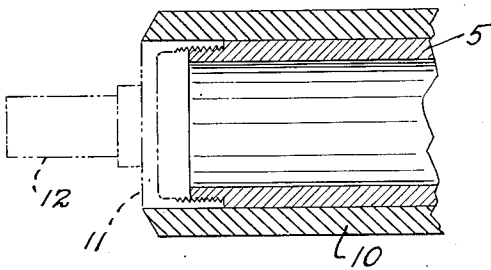


FIG. 3

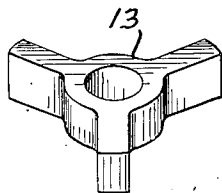


FIG. 4

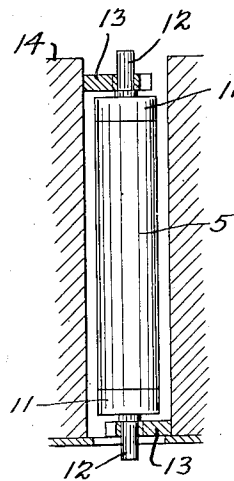


FIG. 5

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UNITED STATES PATENT OFFICE

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METHOD OF CASTING PRINTING ROLLERS

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2 Claims. (Cl. 18—58)

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The present invention relates to an improved method of casting composition or rubber upon roller cores or tube stock of rollers for printing presses or other uses.

While this method is especially applicable to the ball bearing type of printing roller construction disclosed in my prior Patent No. 2,270,436, dated Jan. 20, 1942, I desire it to be understood that it may be employed in the casting of coverings on any tube cores where it is essential to provide a smooth surface concentric to the axis of the core whether the surface is designed for distributing printing ink or otherwise.

To best understand the objectives of this invention, it is desirable to explain that printing rollers are essentially heavy unitary constructions and in the type of my prior patent referred to they are composed of a heavy shaft, a tubular core, roller bearings upon which said core is rotatably mounted and caps for closing the ends of the core about the shaft and retaining the bearings and shaft in place. In casting the compositions upon such units, high temperatures are to be reckoned with, making it necessary to protect the bearings from the hot compositions, and where rubber is used, the excessive heat may even destroy or damage the bearings. For these reasons, the bearings should be removed, particularly when applying a hot composition coating to a rubber or composition surface.

Again, when it becomes necessary to transport a worn roller to the manufacturer for recasting, the shaft and bearings constitute a large factor of weight in the handling of these rollers in the press room and in the shipment of the rollers. The elimination of this weight factor is a desideratum of much importance.

A simple means in the form of an attachment or accessory is therefore provided which may be temporarily attached in place of the usual closure caps for the core after their removal and the removal of the bearings and shaft, so that the cores may be positioned in well-known molding apparatus in association with centering means so as to hold the cores during the casting operation of the composition upon the core surface or the covering surface to be repaired.

For the purpose of carrying out my method, the attachment above referred to is made in the form of a cap provided with a centering pin, one of which caps is connected to each end of the core tube in the position of the usual retaining cap for the roller. In the mold, the composition is applied over both the core body and the tempo-

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rary end caps. Preferably, the composition is then trimmed back far enough to enable the substitute or centering cap to be removed when the roller is received by the user. In this condition the roller is shipped to the user who removes the centering caps, and introduces the supporting shaft, the roller bearings and the retaining caps therefor to complete the renewed roller assembly unit. The centering caps temporarily used for casting are put away until the roller is again sent back to the roller-maker.

The advantages of using this method will be obvious from the foregoing description, taken in conjunction with the accompanying drawing, in which:

Figure 1 is a longitudinal sectional view of a printing roller of the type to which my invention is applicable;

Figure 2 is a side elevation of a roller core, partly broken away, to show more clearly the connection of the temporary closure caps for use in casting the composition and holding the core in a mold, one end of the unit being broken away and shown in section;

Figure 3 is an enlarged sectional view of one end of the unit after casting the composition and showing in dotted lines the centering cap, which is removed preliminary to restoring the shaft, bearings and retaining cap;

Figure 4 is a perspective view of the centering spider; and

Figure 5 is a view showing the method of mounting the core in a mold diagrammatically illustrated.

For the purpose of illustrating the method of my present invention, reference is made to the construction of printing roller, as shown in Figure 1, the subject matter of my prior patent hereinbefore referred to. Such roller comprises the solid shaft 1 provided with the shoulder 2 against which the inner ring 3 of the ball bearing abuts. The outer ring 4 of this bearing mounting abuts against the outer edge of the core cylinder or tube 5. The internally threaded retainer cap 6 is screwed upon correspondingly threaded outer end portions of the core 5 so that the flange 7 of the cap will hold the outer ring 4 of the bearing tightly against the outer edge of the core. The balls 8 are interposed between the rings 3 and 4 and when the outer ring 4 is in tight position with respect to the core 5, the inner ring 3 is in tight position against the shoulder 2 of the shaft 1. The shoulder 9 on the shaft 1 provides an abutment for engagement with the supports for the roller in the press. Once the roller core

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is assembled as described, it is customarily placed in a conventional mold and the composition 10 is cast upon the core completing the roller ready for use. This has been the general procedure with this type of roller.

Assuming for the purpose of exemplification of my new method that such a roller has been used and the surface of the composition has become worn to such an extent that the composition needs replacement, instead of sending this heavy unit complete to the manufacturer, the user will remove the retaining caps 7, the bearings, and the shaft 1, and then apply to the ends of the core 5, the temporary centering caps 11, previously supplied by the manufacturer, by screwing same on in place of the caps 7. The core with such caps may easily be handled in the press room and packed for shipment to the factory. Upon arrival, the manufacturer places a three-armed spider 13 upon the pin extension 12 of each cap and slips the tube assembly in the mold apparatus 14, diagrammatically illustrated in Figure 5. The spiders insure absolute accuracy of centering the core and without any necessity of taking protective measures, the hot composition is now introduced into the mold until the core and cap surfaces are covered. When sufficiently cooled, in the customary manner, the tube unit is removed from the mold. The roller-maker trims the composition back far enough from each end so that the centering caps 11 may be unscrewed when the user receives the unit. Upon removal, these caps 11 are set aside, and the shaft 1, the roller bearings and retaining caps 7 restored to position.

In this manner, handling of the roller is facilitated, excess shipping weight eliminated and casting greatly simplified without likelihood of damage to bearings, thus effecting material saving in expense and labor. I believe that I am the first to accomplish this result, by the use of the temporary centering caps so-called, whether this method is used in the original manufacture of the roller unit or in the practice of repair as above set forth.

It will be understood that the core may be internally threaded instead of externally as shown, such as would be necessary when applying this invention to that form of roller which is disclosed in my prior Patent No. 1,642,068, dated Sept. 13, 1927. In any case the cap extension pin may be made of any length so as to fit in the sockets of the presses. This same method of use of the centering caps may be employed in cast-

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ing compositions upon any printing roller core or tubular body, regardless of whether the roller be of the bearing type or otherwise so long as connection of the temporary cap to the tube is provided for.

While the specific details of construction have been herein shown and described, the invention is not confined thereto as changes and alterations may be made without departing from the spirit thereof as defined by the appended claims.

I claim:

1. The method of casting composition surfaces on tubular cores for printing rollers or the like which comprises the steps of temporarily applying to each end of the core a closure cap having threaded connection with the core at one end and a cylindrical extension at its other end to provide a closed surface for rolling the core on a press roller support, inserting said extension in a mold spider for centering the roller in the mold by the extension, introducing the surface composition in the mold to thereby cover the roller surface and the closure cap threaded connection therewith, thus locking the caps on the roller ends and finally removing the caps and that part of the composition covering the caps for mounting the roller in a printing press.

2. The method of casting printing press rollers of the type described, including a shaft support, bearings, a tubular core and retaining caps for said bearings, which comprises the step of removing the support, bearings and caps from the core, applying to each end of the core a trunnion centering cap to take the place of the retaining caps and to thereby tightly close the ends of the core, concentrically supporting said core in a mold device by said centering caps for casting an outer facing on the core, and casting about said core and caps a composition coating, then removing the centering caps and replacing the shaft, bearings, and retaining caps for remounting in a printing press.

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The following references are of record in the file of this patent:

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