May 31, 1927. 1,630,842

J. R. GRUBB

ARBOR FOR DRAFTING ROLLS

Filed March 26. 1926 2 Sheets-Sheet 1

Fig. 1.

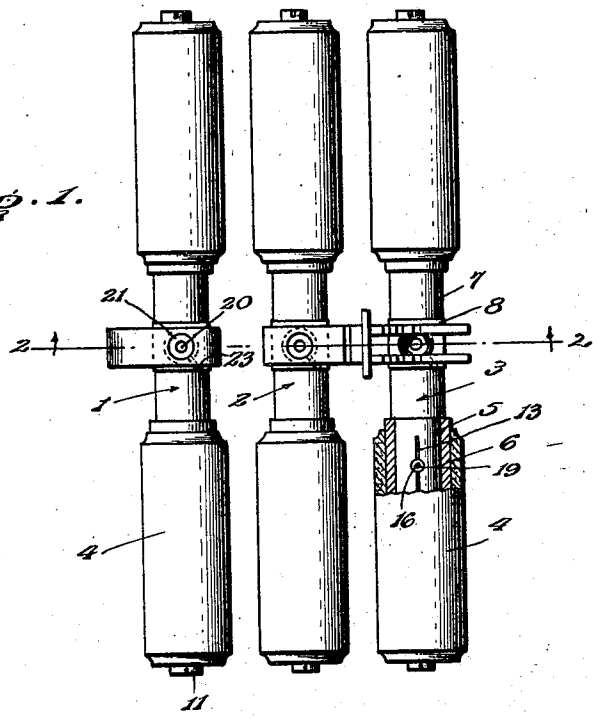
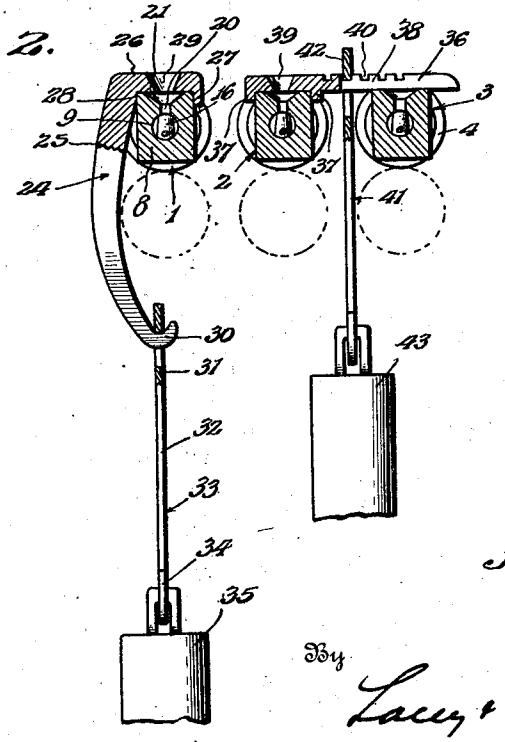


Fig. 2.



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Fig. 3.

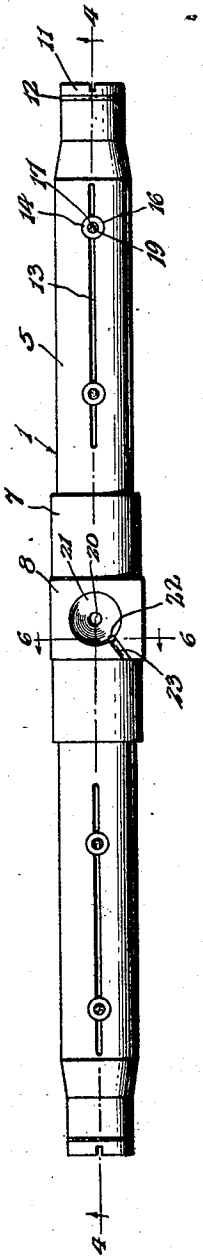


Fig. 4.

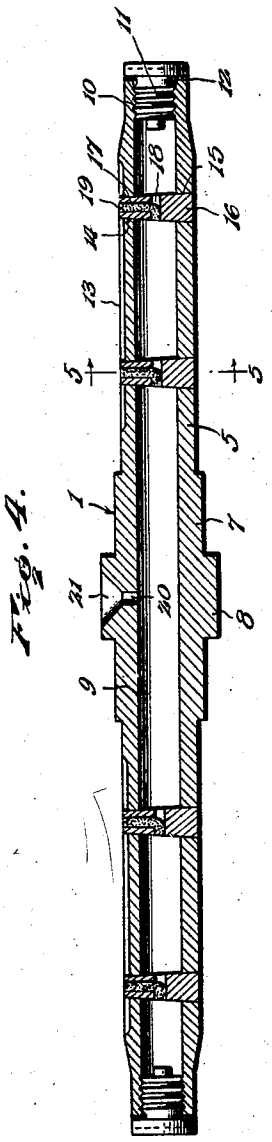


Fig. 7.

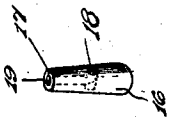


Fig. 6.

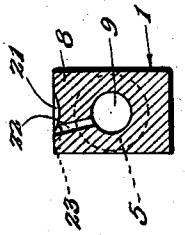
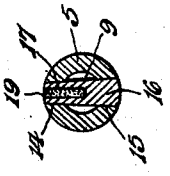


Fig. 5.



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UNITED STATES PATENT OFFICE.

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ARBOR FOR DRAFTING ROLLS.

Application filed March 26, 1926. Serial No. 97,762.

This invention relates to improvements in the construction of arbors for the shell rolls of spinning and roving machines.

Heretofore, difficulty has been experienced where shell rolls have been employed, because of the necessity of stopping the operation of the spinning machine, removing the rolls, and applying oil to the arbors upon which the rolls are mounted. This requires considerable time and frequently results in damage to the material. In other cases, it has been attempted to lubricate the rolls and their arbors by forcing oil between the same by the use of a spring bottom oil can, but this too has been found unsatisfactory inasmuch as the lubricant is not evenly distributed by this method and, as a consequence, the rolls will run unevenly. It has likewise been proposed to employ hollow arbors and supply lubricant from the arbors to their roll bearing portions by oil ducts or wicks, but in all such arrangements so far as I am aware, the shell rolls are not properly lubricated as the distribution of the lubricant is uneven and, furthermore, the lubricant contained within the arbor bores is subject to contamination so that its lubricating qualities are greatly impaired. In view of the foregoing it is, therefore, the primary object of the present invention to provide an arbor for shell rolls of spinning and other textile machines of such construction that lubricant will be supplied and evenly distributed to the surfaces to be lubricated in a manner to prevent the distribution of a surplus amount of the lubricant and insure of free and uniform rotation of the shell rolls, as well as avoiding the waste of lubricant and the contamination of the supply thereof which is retained within the hollow arbor of the present invention.

Another object of the present invention is to provide an arbor for shell rolls of such construction that lubricant may be readily supplied thereto from time to time as occasion may require, without likelihood of overfilling the reserve space for the lubricant and in this connection, the invention contemplates the provision of means whereby the one suplying the lubricant will be apprised of the fact that the arbor is supplied with sufficient lubricant, when this condition exists.

Another object of the invention is to provide means for conducting the lubricant in a gradual and uniform manner from the bore of the arbor to the bearing surfaces thereof in well regulated quantity so that there will be no surplus supply and yet the shell rolls will be lubricated to an extent to provide for their free and uniform rotation, this means being, further, of such a character that the lubricant which is present at the bearing surfaces of the arbor and the inner surfaces of the shell rolls will not be permitted to reach the fresh lubricant which is within the bore of the arbor and contaminate the same.

Another object of the invention is to so construct the arbor that, after a long period of use, it may be thoroughly interiorly cleaned.

A further object of the invention is to so construct the arbor as to adapt it for the ready application thereto of novel weight stirrups and saddles without in any way interfering with the supplying of lubricant to the arbors.

In the accompanying drawings:

Figure 1 is a plan view of a set of the arbors and shell rolls embodying the invention arranged as is customary in roving frames, the view illustrating the front, middle and back upper rolls and the stirrups and saddles assembled therewith.

Figure 2 is a vertical sectional view taken substantially on the line 2—2 of Figure 1, looking in the direction indicated by the arrows.

Figure 3 is a top plan view of one of the arbors, the shell rolls being removed therefrom to better illustrate the construction of the arbor.

Figure 4 is a vertical longitudinal sectional view taken substantially on the line 4—4 of Figure 3, looking in the direction indicated by the arrows.

Figure 5 is a vertical diametric sectional view taken substantially on the line 5—5 of Figure 4, looking in the direction indicated by the arrows.

Figure 6 is a similar view on the line 6—6 of Figure 3.

Figure 7 is a perspective view of one of the lubricant conducting elements of the arbor.

In the drawings, the numerals 1, 2 and 3 indicate, respectively, in general, the front,

middle and back roll assemblages and these are of the type embodying an arbor, which is stationary, and shell rolls which are rotatably mounted thereon and which coact with the bottom rolls of the spinning machine in the usual manner, the shell rolls being indicated by the numeral 4 and the bearing portions of the arbors being indicated by the numeral 5, each shell roll having a cylindrical metal core 6 freely rotatably fitting the respective bearing portion 5 of the respective arbor.

The construction of the arbor is best illustrated in Figures 3, 4, 5 and 6 of the drawings, and by reference to these figures it will be observed that the bearing portions 5 of the arbor are cylindrical and that the arbor is provided with an enlarged intermediate portion 7 provided midway between its ends with a rectangular boss indicated by the numeral 8. The arbor is formed throughout its length and axially with a bore 9 of uniform diameter and this bore is threaded at its ends as at 10 so as to accommodate threaded closure plugs 11 which have packing washers 12 associated therewith to provide for fluid-tight closure of the ends of the bore 9, it being understood at this point that the plugs may be removed after the arbor has been in use for a relatively long period of time, so that the bore 9 may be cleaned, although this will be found necessary only at very infrequent periods. The upper sides of the bearing portions 5 are each formed with a relatively narrow and shallow longitudinally extending oil distributing groove indicated by the numeral 13, and this groove or channel extends on a line diametrically intersecting one or more openings 14 which are formed in the upper side of the said bearing portion 5, openings 15 being formed in the lower side of the bearing portion in vertical axial alinement with the openings 14. The openings 14 and 15 are formed by counterboring the bearing portions of the arbor diametrically and the said openings are tapered so as to respectively accommodate the upper and lower ends of plugs 16 which are of hard wood and which are driven into the openings and transect the bore 9 of the arbor as most clearly shown in Figures 4 and 5 of the drawings. These plugs 16 are of hard wood, as stated, and their minor ends are presented at the upper sides of the bearing portions of the arbor and substantially flush therewith, their lower ends being flush with the under sides of the respective bearing portions of the arbor. Each plug is formed with an axial bore 17 opening through the upper or minor end of the plug and terminating short of the major or lower end of the plug, and each plug is formed with a diametric or counterbore 18 communicating with the lower end of the bore 17. Wicks 19 are inserted through the bores 17 of the plugs 16 and drawn therethrough and laterally through one end or the other of the respective bore 18, and the wicks are severed at the upper ends of the respective plugs and at the said ends of the respective bores 18, so as to be flush with the surfaces of the plugs and so that the plugs may be readily driven into place and likewise removed if replacement should be required. At this point it will be evident that the wicks 19 will absorb the oil in the bore 9 of the arbor and conduct the same by capillary attraction to the upper ends of the plugs 17 where a sufficient quantity of the lubricant will be delivered into the grooves or channels 13 to provide for proper lubrication of the shell rolls. It will likewise be evident that the plugs 16 being of wood and, therefore, of an absorbent nature, will likewise take up a portion of the oil and supply the same to the contacting surfaces of the shell rolls and the bearing portions of the arbor. It will be evident at this point that the arrangement for supplying lubricant to the shell rolls is an ideal one for the reason that only sufficient lubricant will be supplied to afford the proper lubrication and at the same time the lubricant which has been delivered by way of the wicks 19 cannot return to the bore 9, which constitutes the lubricant reservoir, to contaminate the lubricant contained therein.

The boss 8 is formed in its top with an oil passage 20 which is upwardly flared as at 21, and through which lubricant may be introduced into the bore 9 of the arbor, and in order to provide for free entrance of the lubricant, an air vent 22 is likewise formed in the boss substantially at the rim of the flared upper portion of the opening 21 and extends downwardly and communicates with the bore 9, the said air vent being, of course, offset with respect to the opening 20 so that air may readily escape from the bore 9 as the lubricant is introduced through the said opening. In order that, when the bore 9 has been substantially filled, this fact will be indicated, a channel 23 is formed diagonally in the upper face of the boss 8 and communicates at its inner end with the upper end of the vent 22 and at its outer end extends to one side face of the said boss, so that when any oil appears within this groove or channel, the one lubricating the arbor will be apprised of the fact that the bore 9 is completely filled with lubricant.

The numeral 24 indicates in general a stirrup comprising a shank portion 25 having a right angularly extending head 26 at its upper end provided with a depending lip 27 and an abutment shoulder 28, the said head and shoulder being spaced apart a distance equal to the front to rear dimensions of the boss 8 and the stirrup being engaged with the boss in the manner clearly shown

in Figure 2 of the drawings, so as to be held against displacement. The head 26 of the stirrup is provided with a preferably tapered opening 29 which occupies a position above the flared upper end of the opening 20 in the arbor for the front shell rolls indicated by the numeral 1. The lower end of the shank 25 of the stirrup is provided with a hook 30, and a square or rectangular eye 31 at the upper end of the shank 32 of a weight hook 33 is engaged with the said hook 30 and the bill 34 of the said weight hook supports a weight 35. The numeral 36 indicates a saddle which is provided with depending spaced lugs 37 which engage the front and rear faces of the boss 8 of the arbor for the middle rolls 2, as clearly shown in Figure 2, and this saddle has a bifurcated portion 38 which extends above, and the members of which rest upon, the upper side of the boss 8 of the arbor for the back rolls 3, the saddle being held against displacement with relation to the arbor for the middle rolls through the engagement of the lugs 37 with the said boss 8 of the arbor and being provided with an opening 39 through which lubricant may be introduced, this opening being positioned directly above the flared upper end of the oil opening 20 in the said boss. Inasmuch as the saddle is bifurcated, its spaced portions will extend at opposite sides of the flared upper end of the oil opening in the boss of the arbor for the back rolls and, therefore, due to the arrangement of the stirrup and saddle, oil may be supplied to all of the arbors without any difficulty. The saddle 36 is provided in its upper side with a plurality of transverse notches 40 and a hook 41 corresponding to the hook 33 has its square eye 42 fitted over the said saddle with the upper wall of the eye or slot adapted for engagement in the notches 40 interchangeably, depending upon the spacing of the rolls 2 and 3. The bill of the hook 41 supports a weight 43 corresponding to the weight 35.

Having thus described the invention, what I claim is:

1. An arbor of the class described having a lubricant containing bore therein, the arbor having an opening therein in communication with the bore and extending diametrically with respect to the arbor, and means for supplying a lubricant from the bore to the bearing surface of the arbor comprising a plug fitted in the said opening with its intermediate portion extending across the bore and having its end flush with the surface of the bore, the plug having a bore extending longitudinally thereof and a bore intersecting the first mentioned bore and communicating with the bore of the arbor, and a wick element extending within the said bores of the plug whereby to have one end presented at the outer end of the plug and the other end presented at the surface of the intermediate portion of the plug and within the bore of the arbor.

2. An arbor of the class described having a lubricant containing bore therein and diametric counterbores, plugs fitted in the counterbores and each having a bore extending inwardly from one of its ends and a bore extending diametrically of the plug and communicating with the first mentioned bore, and a wick arranged within the bores of each plug for conducting lubricant from the bore of the arbor to the surface of the said arbor.

3. An arbor of the class described having a lubricant containing bore therein, the arbor having a bearing portion formed with an opening and with a longitudinally extending lubricant channel transecting the opening, a plug fitted in the opening, and a wick extending within the plug and having one end presented at the outer end of the plug substantially within the said channel, and its other end presented within the bore of the arbor.

In testimony whereof I affix my signature.

JAMES R. GRUBB. [L. S.]