

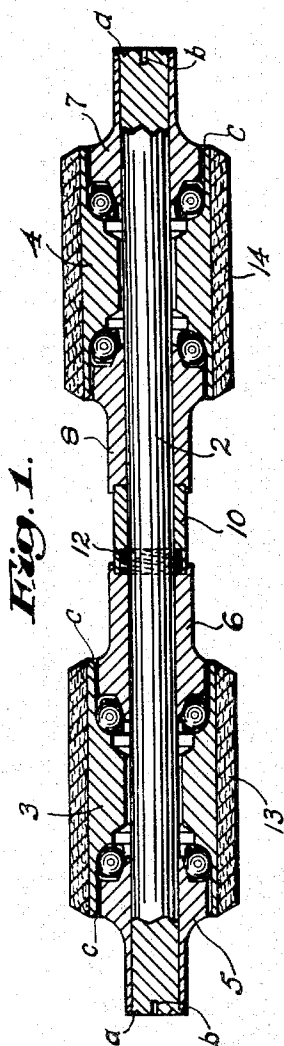
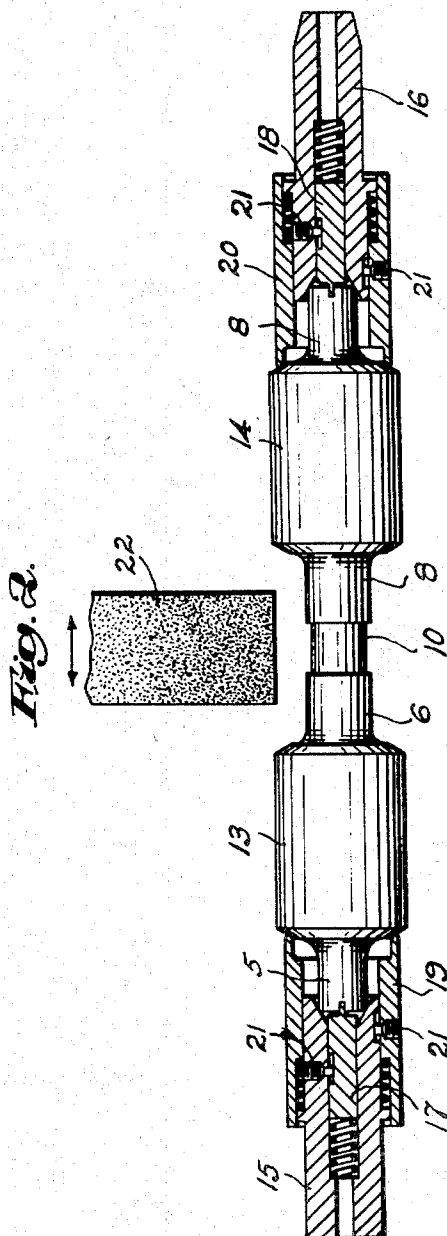
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TOP ROLL FOR TEXTILE DRAFTING MECHANISMS

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TOP ROLL FOR TEXTILE DRAFTING
MECHANISMS

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1 Claim. (Cl. 19—142)

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This invention relates to top rolls for the drawing mechanisms of spinning and roving frames, and is more especially concerned with rolls of the so-called "shell type." In them the bosses, sleeves or shells which carry the roll covers that run on the rovings or slivers are mounted to revolve freely and without interference from the drag exerted by the weighting mechanism.

While the advantages of such rolls have long been recognized, they have never been used very generally, primarily because of their relatively high first cost. In addition, the methods of manufacture of these rolls have naturally produced errors which, while not individually serious, have occasionally accumulated in the assembly and this cumulative error has been sufficient to be objectionable.

The present invention deals with the foregoing considerations, and it aims to devise a drawing roll of the revolving sleeve or shell roll type in which these objectionable features will be eliminated. The invention also involves a novel method of manufacture.

The nature of the invention will be readily understood from the following description when read in connection with the accompanying drawings, and the novel features will be particularly pointed out in the appended claim.

In the drawings,

Fig. 1 is a radial, sectional view of a top roll embodying this invention, the shaft being mainly shown in elevation; and

Fig. 2 is a plan view, partly in section, illustrating one step in the process of manufacture of the roll shown in Fig. 1.

Referring first to Fig. 1, the roll structure there shown comprises a shaft 2 which forms the main supporting element of the roll. Encircling it are two sleeves 3 and 4, each supported on ball bearings individual to itself. The bearing for the sleeve 3 includes oppositely tapered outer and inner cones 5 and 6, respectively, and that for the other sleeve has corresponding cones 7 and 8, but the races integral with the respective sleeves may be made of the orthodox form. Also, the ball retainers used preferably are of a known form designed to cooperate with the adjacent cones to seal the lubricant against any substantial danger of escape from either sleeve.

Mounted between the inner cones 6 and 8 is a collar 10, loose on the shaft 2 and preferably telescoped within the adjacent ends of the two inner cones; and it is also recessed to receive a coiled spring 12 which tends to force the two

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cones 6 and 8 axially away from each other and thus to take up any wear which may develop in any of the bearings. During actual use this collar acts as the bearing member for the saddle or weighting device that applies the necessary load to the entire roll.

All the parts of this roll structure, except the shaft 2, are relatively small and of such a nature that they can be made in a screw machine, so that the cost of manufacture is materially reduced. When these parts have been assembled, as shown, the opposite ends of the shaft are burred or riveted over, as indicated at *a-a*, so that the entire assembly then forms a self-contained and permanently sealed unit.

After the foregoing operations have been completed, it is then necessary to buff the roll covers 13 and 14, and this operation can conveniently be performed in a buffing machine designed for this particular purpose and sold commercially by the Armstrong Cork Company but modified to embody features of this invention. As here shown the machine is equipped with a driven head stock carrying a special shaft, adaptor or fitting 15 and also with a tail stock fitting or adaptor 16 which is free to revolve, and each has a tapered socket to receive and center the opposite ends of a drawing roll. According to the present invention, however, these two adaptors 15 and 16 are equipped with spring-pressed plungers 17 and 18, respectively, each provided with a tongue to enter slots *b-b*, Fig. 1, in the opposite ends of the shaft 2. In addition, these head and tail stock adaptors have spring-pressed sleeves 19 and 20 slidably mounted on them to engage the ends of the revolving sleeves 3 and 4, respectively, of the roll, or else to contact with the covers secured on these sleeves. Also, dog-pointed screws 21 are provided to make the respective plungers 17 and 18 and the sleeves 19 and 20 all revolve with the head and tail stock adaptors with which they are respectively associated.

Thus, when the roll is mounted in the machine and the head stock adaptor 15 is being revolved, that motion is transmitted through the sleeve 19 to the shell 3 and its cover 13 and also through the plunger 17, shaft 2, plunger 18, tail stock adaptor 16 and sleeve 20, to the cover 14 of the outer roll sleeve 4. Consequently, both sleeves 3 and 4, their covers, and the shaft 2, are all revolved in unison. A rapidly revolving grinding or buffing wheel 22 is traversed backward and forward through a distance sufficient to operate on both covers, and the wheel may be fed radially toward them so that both are buffed

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down by the same instrumentality, to the same diameter; and, because they are both revolved about the same axis during this operation, the surfaces so formed on the covers are correctly aligned and are, in effect, sections of one and the same cylindrical surface.

This process, therefore, eliminates many of the opportunities for manufacturing errors in the final product. When the roll must be re-covered, it can be subjected to the same buffing operation and thus restored to its original condition. In the prior art process the two sleeves and their covers have been buffed independently, and that is one of the reasons that the errors created in this step combine at times with errors similarly created in other parts and become cumulative in the final product. This result is substantially eliminated by applicant's method.

In this connection it may also be observed that by using oppositely tapered cones in each bearing, the effect of radial errors of manufacture are reduced because a substantial proportion of any such error is converted into an axially directed component where it is harmless. This action occurs by virtue of the fact that all of the cones are slidable on the shaft, and while the two outer cones are held against movement away from each other, the inner cones 6 and 8 are free to be moved by the spring 12 sufficiently to take up any lost motion due to wear which may be created in the bearings.

Preferably the extreme exposed ends of the sleeves 3 and 4 are inwardly bevelled on an angle of about 10° to 15°, as indicated at c in Fig. 1, to reduce the tendency of lint to accumulate on these end surfaces.

It will be seen from the foregoing that the invention provides a top roll of the shell type which can be manufactured at a considerable reduction in expense as compared with the prior art methods and constructions, while at the same time producing a roll having a degree of accuracy comparing favorably with those produced by the more expensive prior art methods. It should also be observed that this roll is initially supplied with sufficient lubricant to last throughout

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the life of the roll. When it becomes worn to such a degree that it is no longer useful, it is simply replaced by a complete new unit. Thus any labor that otherwise would be involved in re-lubricating the bearings is eliminated.

While I have herein shown and described a preferred embodiment of my invention, it will be evident that the invention may be embodied in somewhat different forms without departing from the spirit or scope thereof.

No claims are here made to the improvement in methods of manufacturing applicant's drawing roll, as above disclosed, or to the machine for buffing the roll, but these features of applicant's invention are included in divisional or continuing applications.

Having thus described my invention, what I desire to claim as new is:

A top roll for drawing mechanisms comprising a shaft, two sleeves encircling said shaft, spaced axially apart, and both supported on antifriction bearings, each of said bearings including two opposed tapered cones, the inner cones of the two bearings being free to slide axially on said shaft, a collar loose on said shaft between said inner cones and adapted for the engagement therewith of a weighting member, and a spring interposed between said inner cones and tending to separate them axially from each other.

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REFERENCES CITED

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

UNITED STATES PATENTS

Number	Name	Date
840,010	Ragsdale	Jan. 1, 1907
1,484,045	Wardwell	Feb. 19, 1924
1,873,752	Fraser	Aug. 23, 1932
1,953,146	Wood	Apr. 3, 1934
2,072,451	Hughes	Mar. 2, 1937
2,150,796	Brouwer et al.	Mar. 14, 1939
2,217,656	Boehme	Oct. 15, 1940
2,352,167	Campbell	June 27, 1944