

Dec. 17, 1935.

A. H. CARNIE

2,024,964

COP HOLDER

Filed March 29, 1934

Fig. 1.

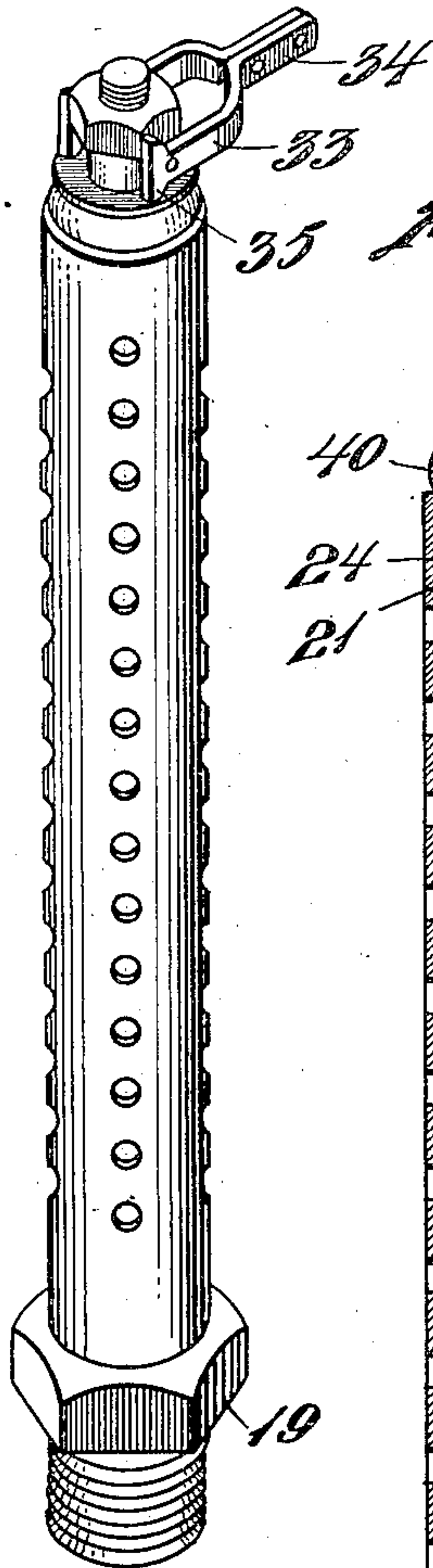


Fig. 2.

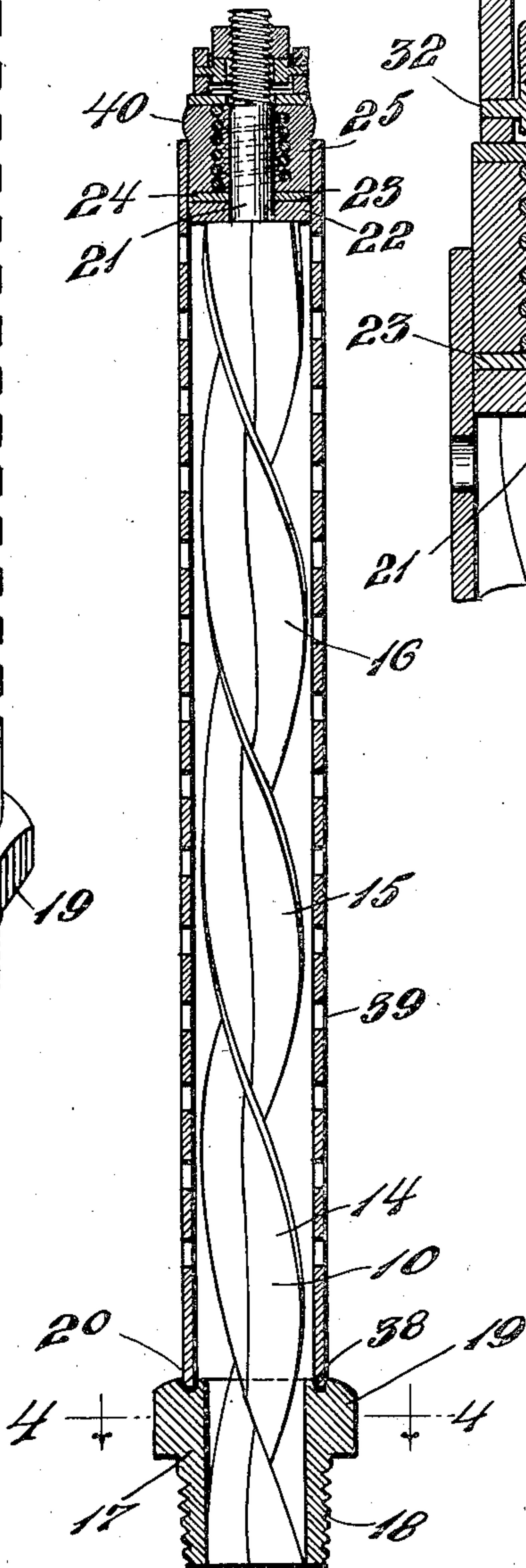


Fig. 3.

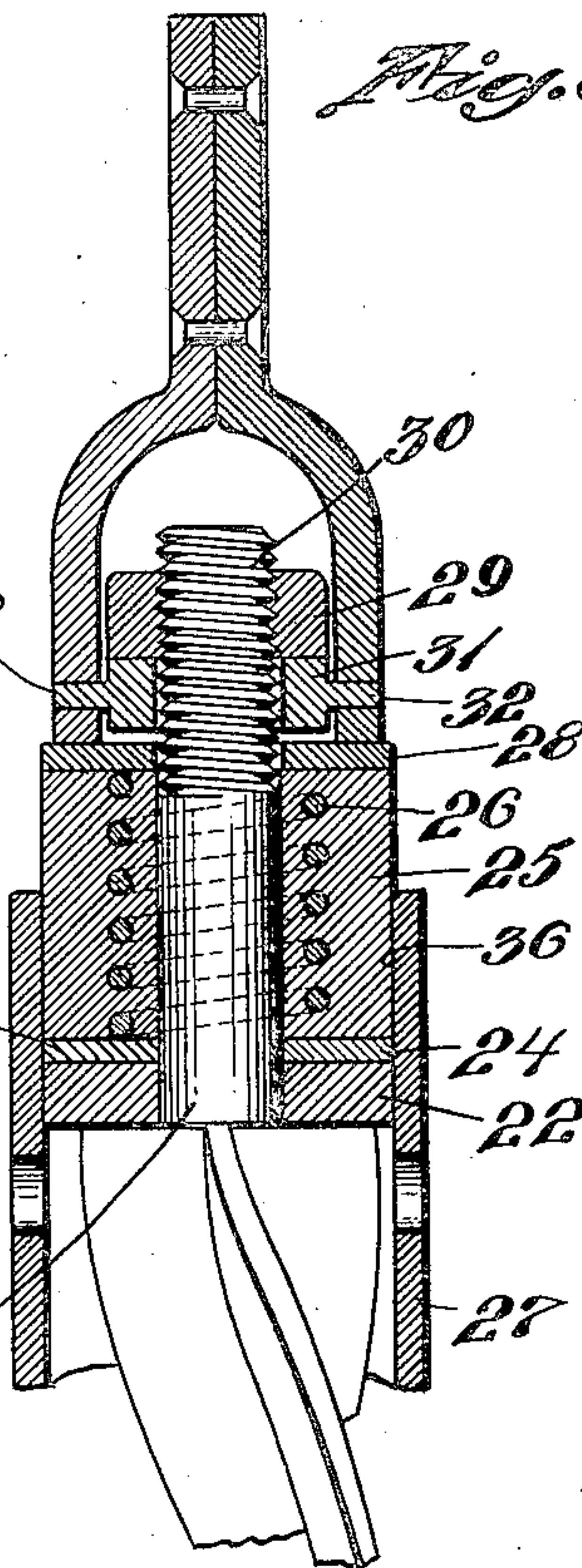
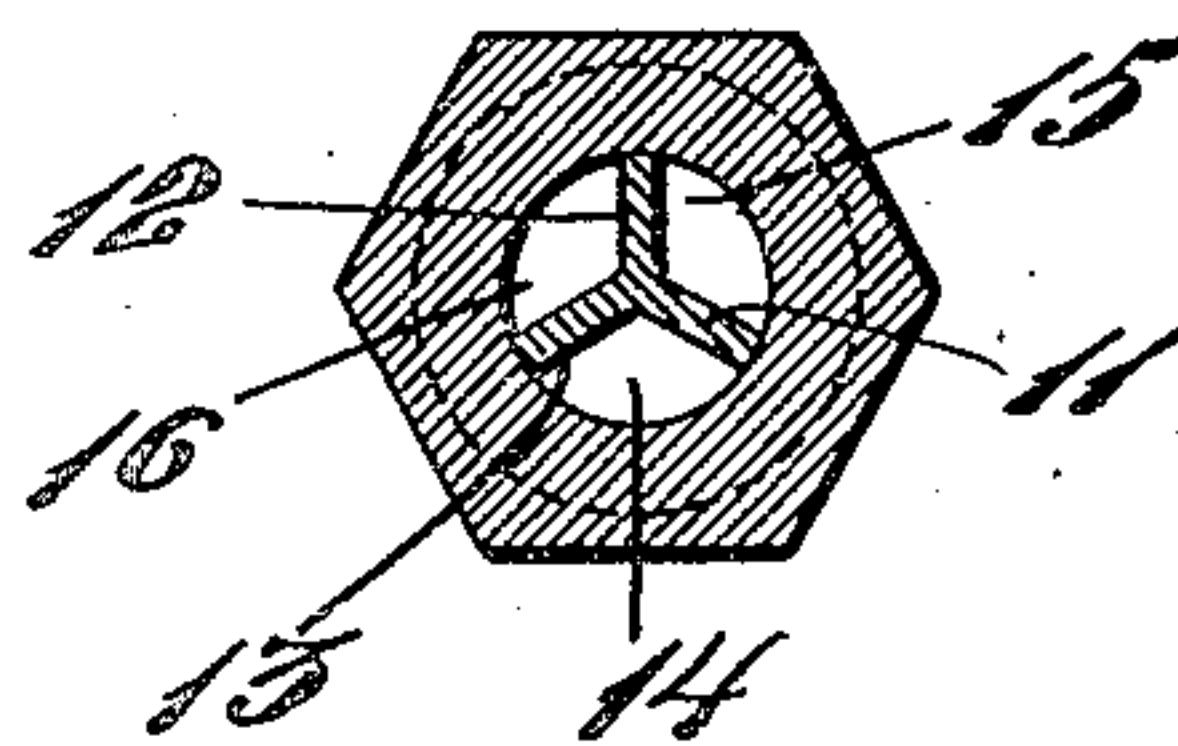


Fig. 4.



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UNITED STATES PATENT OFFICE

2,024,964

COP HOLDER

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Application March 29, 1934, Serial No. 717,976

2 Claims. (Cl. 8—19)

This invention relates to the mounting of a cop of yarn for treating it with a liquid solution; and has for one of its objects the provision of means by which this cop may be easily and quickly secured in position and sealed against escape of the liquid being used for treatment. Another object of the invention is the provision of a seal which will be a unitary part of the spindle and need not be removed to withdraw the cap from the spindle.

Another object of the invention is the provision of a securing means which may be adjusted to vary the tension for the pressure applied on the sealing and securing means.

Another object of the invention is the provision of sealing means of such a character that it will be impervious to caustics or acids and will be non-absorptive of moisture and also of such construction as to resist wear.

A further object of the invention is the provision of a construction which will be inexpensive to manufacture and yet highly efficient in its operation.

With these and other objects in view, the invention consists of certain novel features of construction, as will be more fully described, and particularly pointed out in the appended claims.

In the accompanying drawing:

Fig. 1 is a perspective view of a spindle with a tubular core about which yarn is positioned with the yarn omitted and showing my improved sealing and clamping means in locking position;

Fig. 2 is a sectional view through the structure shown in Figure 1;

Fig. 3 is an enlarged sectional view of the upper end of the structure showing the sealing means in released position;

Fig. 4 is a sectional view on line 4—4 of Figure 2.

In dyeing, bleaching or otherwise treating yarn, it is usual to mount upon a spindle a package having a core of generally tubular formation with perforations along its surface; to then close the top of this core by a separate plug and through pressure force the treating liquid outwardly through the perforations in the core and through the yarn wound thereon or alternately expel and suck in the treating liquid through these perforations in order that it may act upon the yarn on the core to treat it as desired; and in order to simplify the securing and sealing of the upper end of this core on the spindle, I have provided on the spindle a compressible and at the same time a laterally expandible member to extend into the end of the core tube and by its ex-

pansion lock the tube in position and at the same time seal it to prevent the escape of liquid through the end of the tube; and the following is a more detailed description of the present embodiment of this invention, illustrating the preferred means by which these advantageous results may be accomplished:

With reference to the drawing, I have illustrated a spindle 10, consisting of three vanes 11, 12 and 13 twisted to provide the grooves 14, 15 and 16 between them in a helical path along its length.

This spindle is fixed in the sleeve 17 threaded as at 18 about its outer surface and provided with a hexagonal upper end 19 for positioning it into the base through which the treating liquid passes. The upper surface of the head of this sleeve is grooved as at 20, providing a machined surface for the reception of the tubular core of the yarn cop as will be more fully described.

The upper end of the spindle is provided with a stud 21 upon which there is mounted a washer 22 or some other means engaging the vanes of the spindle and providing an abutment surface 23 on which I may provide a non-metallic packing material 24. About this stud and above this abutment surface or packing 24 is a sealing member 25 which is composed of some elastically compressible material, such as "Durene", rubber or rubber composition, in which there is imbedded a helical spring 26. This member by the nature of its material is longitudinally compressible by the application of pressure towards the abutment surface and when so compressed will expand laterally and tightly bind against the stud and the inner surface of the tube 27, as will be more fully described.

At the upper end of this member 25, I have mounted a metal washer 28 which loosely encircles the stud 21 and is slidable therealong. A nut 29 is adjustably mounted upon the threads 30 of the stud 21 and beneath this nut I have provided a collar 31 with trunnions 32 extending outwardly. Bifurcated arms 33 are mounted on these trunnions which extend in a bend toward each other to join and form a common handle. While the end and on either side of each of these arms is formed in the shape of a cam 35 to engage the washer 28 so that as the handle 34 is swung from the vertical position, such as shown in Figure 3, toward either side to the horizontal position, such as shown in Figures 1 and 2, the cam 35 will force the compressible member 25 downwardly towards the abutment surface 23 and by reason of the com-

pression caused on this member will cause it to expand and tightly engage both the stud 21 and the inner surface 31 of the tube 27, while at the same time will force the tube 27 downwardly to cause its lower end 38 to tightly engage in the groove 20 and seal it so as to prevent any leakage of the liquid at this point as well as tightly sealing the upper end of the tube so that any liquor entering through the channels 14 and 15 or 16 must pass out through the opening 39 in the tube and through the yarn.

By reason of the collar 31 being loose upon the threaded stud, the handle 34 of the operating member 33 may be disposed in any desired position while being adjusted as to the pressure desired to be applied by reason of the nut 29 being movable along the threads 30. This nut 29 will engage the threads 30 with sufficient friction to maintain it in place after adjustment has been made.

Pressure applied to the member 25 tending to expand it laterally will tend to bulge it slightly above the top of the tube, as illustrated in Figure 2.

I have illustrated the compressible, expandible sealing member 25 as provided with a spring imbedded therein. It will be understood that this spring, while not essential, is desired in that it tends to cause the member to longitudinally expand and more quickly assume its contracted position to permit the cop to be withdrawn, while at the same time providing a more resistant end surface for the member 25 and preventing wearing of the washer into this surface as it otherwise would without the spring so imbedded.

By reason of its arrangement, the cop may be taken from the spindle without removal of the seal and mounted thereon much more quickly and sealed by the seal already in place and to better advantage than in the threaded nut type of cop closure frequently used in a construction

of this character which must be entirely removed.

The foregoing description is directed solely towards the construction illustrated, but I desire it to be understood that I reserve the privilege of resorting to all the mechanical changes to which the device is susceptible, the invention being defined and limited only by the terms of the appended claims.

I claim:

1. In a cop mounting, a spindle, a base at the lower end thereof, a cop having a tubular core to extend loosely over said spindle and engage the base with a liquid tight fit, a longitudinally compressible and laterally expandible member on said spindle and located in the tubular core of the cop end of a diameter less than the internal diameter of said cop when uncompressed and not expanded to permit said cop to be freely passed thereover, and means on said spindle superimposed over said member and also of a diameter to freely pass through said cop for expanding said member into engagement with the upper end of said cop to seal the opening and hold the cop in mounted position.

2. In a cop mounting, a base, a spindle extending upwardly therefrom and having a threaded upper end, a cop having a tubular core to extend loosely over said spindle and engage said base with a liquid tight fit, a longitudinally compressible and laterally expandible member on said spindle and located in the tubular core of the cop and of a diameter less than the internal diameter of said cop when uncompressed and not expanded to permit said cop to be freely passed thereover, and means threaded on the upper end of said spindle superimposed over said member and also of a diameter to freely pass through said cop for expanding said member into engagement with the upper end of said cop to seal the tubular opening and hold the cop in mounted position.

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