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COP HOLDING SPINDLE FOR SPINNING OR TWISTING YARN

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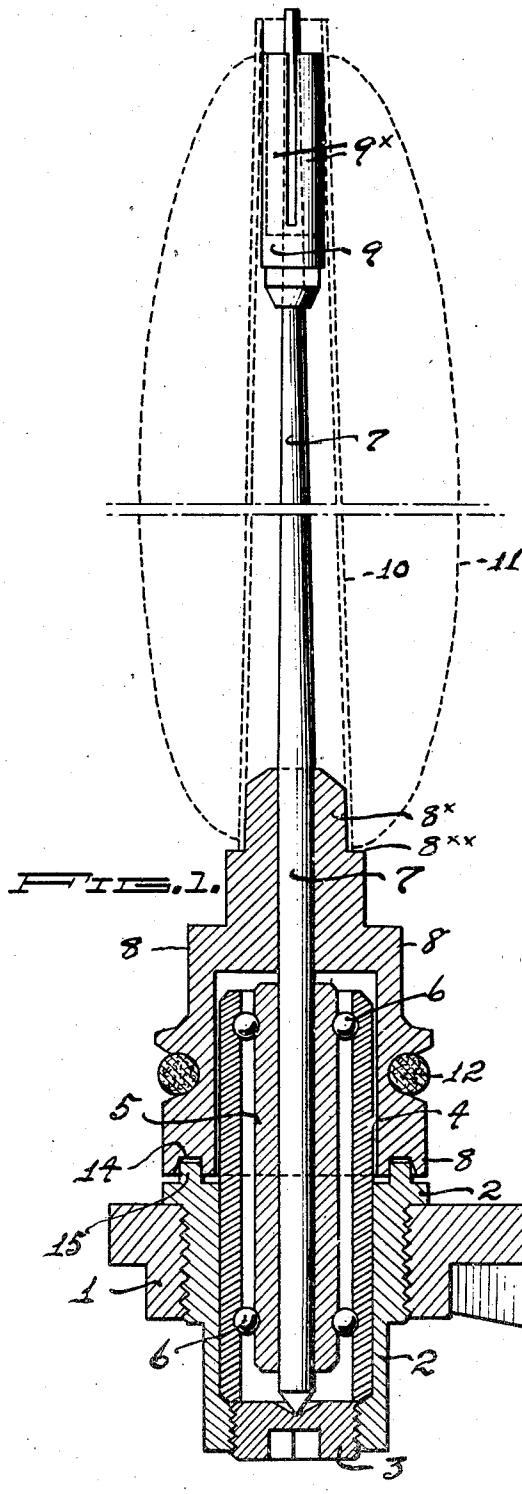


FIG. 1.

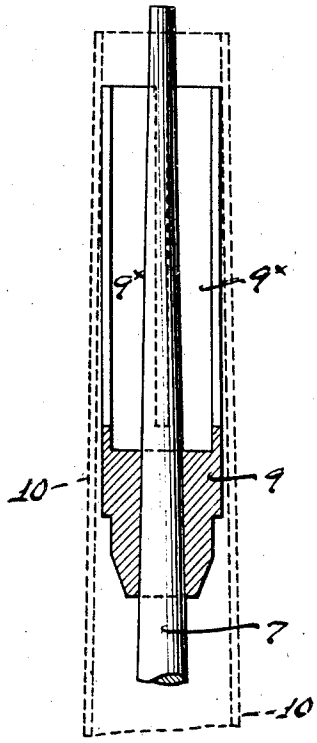


FIG. 2.

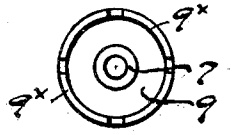


FIG. 3.

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COP HOLDING SPINDLE FOR SPINNING OR TWISTING YARN

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1 Claim. (Cl. 57—130)

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In yarn spinning and twisting it has been customary to take up the yarn upon a cop tube of minor frusto-conical form, and made of fibre or other light material. The tube has been immediately received upon the spaced and bowed spring elements (usually six) of a cop holding spindle. The spindle is, of course, very rapidly rotated and the holding action of the springs upon the cop tube must be substantial to prevent slip and the throwing off of the cop. At the same time the device must be quickly releasable from the cop tube by manual pull upon the cop.

For many years, the bowed-spring cop-tube holder has been accepted as standard equipment in textile mills, and yet it is well known to have several serious disadvantages. For example, lint and yarn ends are picked up by the springs and accumulate to such extent that the effectiveness of the device is impaired. It has been common for operators in pulling off the cops to have their hands cut by the springs; and the clearance of yarn ends and lint from the springs is tedious. Furthermore the bowed springs gradually lose proper centering action for the cop.

It is the special object of the present invention to provide a cop-holding spindle which will overcome the defects above mentioned and which will be simple and effective.

The invention will be described with reference to the accompanying drawings, in which:

Fig. 1 is a sectional elevation, partly broken away, of a cop-holding spindle and its associated holding and drive elements, constructed in accordance with the invention, a cop tube and the wound cop thereon being shown in dotted lines.

Fig. 2 is an enlarged sectional elevation of the clamp end of the spindle.

Fig. 3 is a top plan view of said clamping end of the spindle.

Referring to the drawings, I have shown at 1 the frame of a cop winding machine. The frame, as customary, will have formed thereon a plurality of threaded apertures, one being indicated at 2, to receive stop and pintle holding sleeves such as that shown at 2. In each case the sleeve 2 is internally threaded at its base to receive the pintle disk 3, the latter having a conical bearing recess in its top.

Pressed into the sleeve 2 is a bearing assembly consisting of the outer tubular cage member 4 and the inner blade receiving sleeve 5 with intermediate ball bearings 6. The wall of the longitudinal aperture in sleeve 5 is so proportioned to the blade 7 as to provide a light friction fit for the latter.

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Blade 7 is rotated by the following means. Surrounding and loosely spaced from fixed bearing member 4 is the whirl 8. It is of the inverted cup shape with a shouldered top. It is desired that the whirl be supported by the blade in the action of the latter, so that the whirl utilizes the blade bearing as its own. To such purpose the whirl is frictionally engaged by the blade. Thus the axial blade receiving aperture of the whirl may be slightly tapered and the blade similarly formed. In fact the blade may extend in a taper from its base to its top. From its longitudinal center to its top the blade, in the embodiment illustrated, is markedly tapered to provide a quickly releasable friction fit for the cop-holding ferrule 9.

The ferrule 9 is preferably a spring metal member formed with a solid axially-apertured base and an upper tubular formation which is slotted to provide a plurality of yieldable arms 9x. These arms are preferably four in number and, being formed by longitudinally slotting a tube, the arms are curved transversely to their longitudinal axis which enables their close conformation with the cop tube 10 in their yielding movement in the placement of the tube thereon. The curved arms provide a balanced centering medium for the cop 11 and adequate holding thereof but with quick releasing action when the cop is outwardly pulled.

When the cop tube is applied to the whirl 8 and ferrule 9 it is pressed downwardly until its base area is received upon the reduced annular end 8x of the whirl, the latter having a shoulder or rest 8xx for the cop tube. In the downward movement of the cop tube to final position its upper and inner wall will cause inward movement of the yieldable arms 9x which arms, in their reaction, will lightly and yet securely grip the cop tube.

As customary, the whirl 8 will be grooved to receive its drive belt 12, and the base of the whirl may be formed with a concentric channel at 14 to receive annular guide-rib 15 upwardly projecting from the pintle holding sleeve 2.

When the cop has been wound, upward pull will readily release it from the yieldable arms 9x and a fresh tube may quickly be put in place.

Having described my invention, what I claim and desire to secure by Letters Patent is as follows:

In cop holding spindles for spinning and twisting yarn, the combination, with a whirl adapted to receive and support one end of a cop tube and

supporting and driving means for said whirl, of a tapered blade adapted to be held at one end and rotated by the whirl and a ferrule mounted on the free end portion of the blade and consisting of a solid annular base, concentrically apertured, and a sleeve carried by the base, said sleeve being longitudinally cut at spaced vertical lines and through one end of the sleeve, thereby providing a plurality of yieldable arms projecting therefrom toward the free end of the blade for engagement by the inner wall of a cop tube at the end portion thereof remote from the whirl, each arm being curved in cross section so that in plan view the arms are in ring assembly.

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