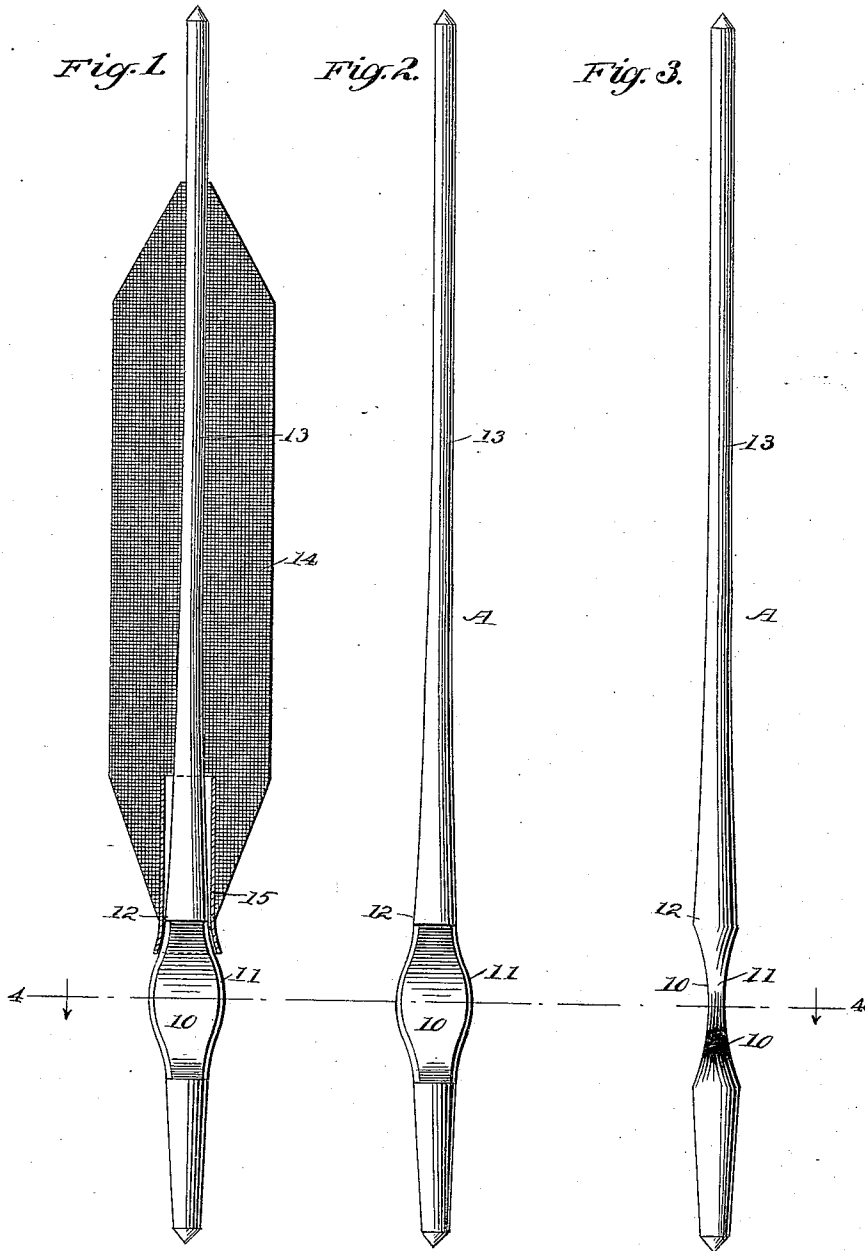


(No Model.)

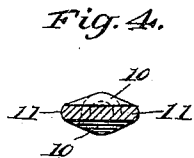
I. WALKER.  
COP SPINDLE FOR REELS.

No. 447,800.

Patented Mar. 10, 1891.



WITNESSES:  
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# UNITED STATES PATENT OFFICE.

ISAAC WALKER, OF PHILADELPHIA, PENNSYLVANIA.

## COP-SPINDLE FOR REELS.

SPECIFICATION forming part of Letters Patent No. 447,800, dated March 10, 1891.

Application filed April 25, 1890. Serial No. 349,446. (No model.)

*To all whom it may concern:*

Be it known that I, ISAAC WALKER, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and useful Improvement in Cop-Spindles for Reels, of which the following is a full, clear, and exact description.

My invention relates to an improvement in spindles of that class used in a reel for holding the cop while the yarn is being drawn off by the reel to form a skein; and the object of the invention is to provide a means whereby the cop-tube will be held in firm engagement with the spindle until all the yarn has been reeled off, thus effectually preventing the waste which frequently occurs when the ordinary spindle is employed.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures and letters of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of the spindle, illustrating the cop in position thereon, said cop being in vertical section. Figs. 2 and 3 are elevations of different sides of the spindle, the cop being detached therefrom; and Fig. 4 is a transverse section on lines 4 4 of Figs. 1, 2, and 3.

The spindle is round in cross-section, and near its lower end is flattened upon opposite sides, as shown at 10, and the edges 11 of the said flattened surfaces are convex or cylindrical. The flattened surfaces 10 are widest at the center, and the edges 11 at top and bottom extend inward to constitute a portion of the usual taper of the spindle. Above the flattened surfaces 10 the spindle is not tapered in the ordinary manner, but is hollow-ground or concaved, as shown at A, the said concavity being preferably commenced at the point 12 and terminated at the point 13, or vice versa. The cop 14, used in connection with the spindle, is provided with the ordinary tube 15 in its lower end.

In operation, when the cop is introduced upon the spindle, the tube is pressed down over the edges 11 of the flattened surfaces 10,

whereupon the said tube is expanded and made to closely hug the spindle at its lower end only, and the tube will so remain in constant contact with the spindle until all the yarn has been reeled off, and as the cop is prevented from slipping waste of the yarn is avoided.

As the spindle is hollow-ground, the cop may be placed thereon without danger of being pierced or stabbed by the spindle, even when the cop is crooked, as is often the case. With the ordinary straight-taper spindle, soon after the top of the spindle is introduced into the central opening of the cop, if the cop is crooked, the spindle must of necessity stab the cop, as there is but little possible movement of the cop upon the spindle when the former has been carried any great distance down upon the latter; but with the above-described form of the device the spindle is enabled to feel its way through the opening in the cop, as the cop is not guided by the taper of the spindle. In fact, the cop-tube is not likely to touch the spindle until it is well down upon the flat and enlarged portion thereof.

In the usual regular taper spindle, when most of the yarn is unwound and the tube only is depended on to hold the remaining portion of the cop to the spindle, the tube, not having a firm grip upon the spindle, is carried upward by the tension of the unreeling yarn, and said tube is thereby enabled to turn freely upon the spindle. Whenever this occurs, the yarn remaining upon the tube becomes tangled to such an extent that it must be discarded as waste.

When the spindle is flattened at its point of contact with the cop-tube and the said tube forced upon the said flattened portion of the spindle, when the amount of yarn is reduced upon the tube the latter is effectually prevented from turning, and the yarn may be entirely reeled off.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. As an improved article of manufacture, a cop-spindle round in cross-section from the point 12 upward and provided with opposite concavities or flattened portions 10 10 where the body of the spindle joins the shank, the opposite edges of the concaved or flattened

portions being bulged outward or convex, substantially as shown and described.

2. As an improved article of manufacture, a cop-spindle round in cross-section and hollow-ground or concave in its body portion  
5 between the points 12 13, substantially as shown and described.

3. As an improved article of manufacture, a round cop-spindle A, concave or hollow-ground between the points 12 13 and formed  
10

with opposite concavities or flattened portions 10 10 between its shank and the point 12, the opposite edges of the concave or flattened portions being bulged outward or convex, as shown at 11, substantially as set forth.

ISAAC WALKER.

Witnesses:

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