

L. B. LAURENT & G. F. DONAHOE.  
COP SPINDLE.

APPLICATION FILED MAR. 21, 1907.

948,454.

Patented Feb. 8, 1910.

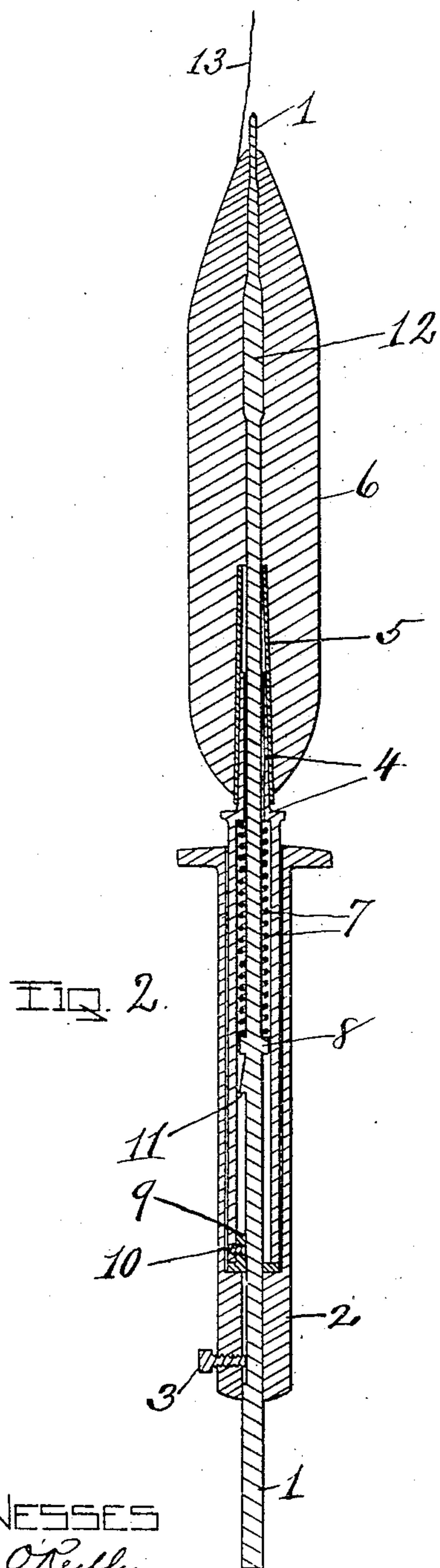


FIG. 2.

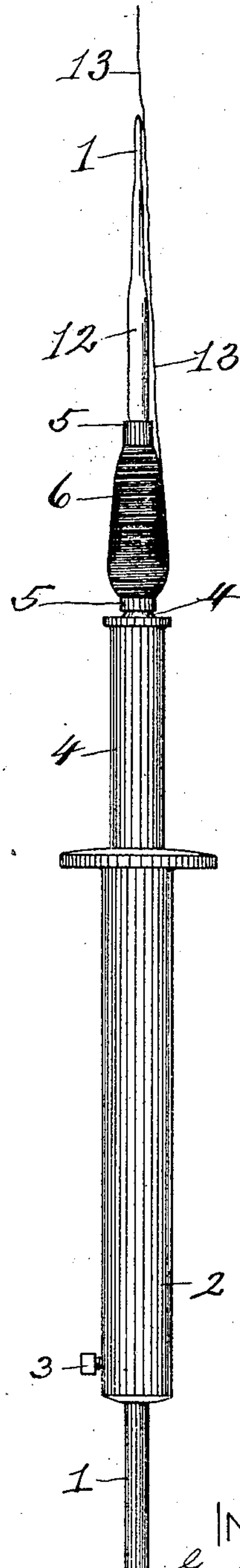


FIG. 1.

WITNESSES  
E. M. O'Reilly  
J. Donsbach

INVENTORS.  
Guy F. Donahoe  
& Lewis B. Laurent,  
By Mosher & Curtis  
Attys.

# UNITED STATES PATENT OFFICE.

LEON B. LAURENT AND GUY F. DONAHOE, OF JOHNSTOWN, NEW YORK.

COP-SPINDLE.

948,454.

Specification of Letters Patent.

Patented Feb. 8, 1910.

Application filed March 21, 1907. Serial No. 363,721.

*To all whom it may concern:*

Be it known that we, LEON B. LAURENT and GUY F. DONAHOE, each a citizen of the United States, residing at Johnstown, county of Fulton, and State of New York, have invented certain new and useful Improvements in Cop-Spindles, of which the following is a specification.

The invention relates to such improvements and consists of the novel construction and combination of parts hereinafter described and subsequently claimed.

Reference may be had to the accompanying drawings, and the reference characters marked thereon, which form a part of this specification. Similar characters refer to similar parts in the several figures therein.

Figure 1 of the drawings is a view in side elevation of our improved cop-spindle. Fig. 2 is a central vertical section of the same.

In preparing yarn for use in the manufacture of textiles, the spun yarn is wound into a compact body, called a cop, within one end of which is a tapered tube, called a cop-tube, formed of paper or the like, said cop-tube extending only part-way of the length of the cop.

During the operation of winding the yarn upon bobbins or spools, the yarn is taken from the cop while the cop is supported upon a spindle, which projects up through the body of the cop, and is provided near its lower end with a tapered portion adapted to form a seat for the cop-tube.

As the body of the cop is gradually reduced, by withdrawal of the yarn therefrom, more and more of the upper end of the cop-spindle is exposed, and, as the yarn is drawn from the cop in a line approximately corresponding with the axis of the spindle, the yarn tends to wind around the spindle more and more as the size of the cop is reduced, so that by the time the cop has been reduced to a comparatively small body of yarn left on the cop-tube, the friction caused by the engagement of the yarn-thread, 13, with the exposed portion of the spindle is frequently sufficient to break the yarn, making it necessary to either frequently tie the broken portions of yarn together, or to waste whatever body of yarn is left on the cop-tube.

The principal object of the invention is to permit the removal of the last part of the yarn from the cop, with as little friction upon the spindle as the first part.

Other objects of the invention will appear in connection with the following description.

Referring to the drawings wherein the invention is shown in preferred form, 1, represents a spindle, the lower end of which is fixedly mounted in the barrel, 2, by means of a set screw, 3, by loosening which set screw, the vertical position of the spindle can be adjusted as desired.

Movably mounted upon the spindle, 1, is a sleeve, 4, having a tapered upper end adapted to receive and fit within the tapered cop-tube, 5, of the cop 6. The sleeve, 4, is yieldingly supported in raised position upon the spindle by means of a coil-spring, 7, bearing at its lower end upon a shoulder, 8, on the spindle, and at its upper end upon interior shoulders upon the sleeve, 4, as shown in Fig. 2. The lower end of the sleeve, 4, is provided with a stop, 9, secured thereto by a screw, 10, adapted to engage with an offset, 11, on the spindle, to limit the upward movement of the sleeve, 4. The portion of the spindle, 1, which is adapted to project above the sleeve, 4, when the latter is depressed, is formed with a swell or enlargement, 12, adapted to be tightly embraced by the yarn forming the body of the cop, when the cop is forced down upon the spindle in the usual manner, to the position shown in Fig. 2.

The operation of forcing the cop down upon the spindle also serves to seat the cop-tube upon the tapered end of the sleeve, 4, and then to force said sleeve and cop-tube down from the position shown in Fig. 1, to that shown in Fig. 2. The tension of the spring, 7, is so regulated that when the sleeve, 4, has been forced down to the position shown in Fig. 2, by the application of the cop to the spindle, the frictional engagement of the body of yarn forming the cop, with the swell or enlargement, 12, will serve to maintain the parts in the position shown in Fig. 2, until a large part of the yarn has been unwound from the cop. As soon as a sufficient quantity of yarn has been unwound from the cop to permit the friction of the yarn upon the swell, 12, to be overcome by the force of the spring, 7, the sleeve, 4, will be automatically raised from the position shown in Fig. 2, to that shown in Fig. 1, carrying with it the cop-tube, and such portion of the cop-body as has not yet been unwound, and the length of spindle to be engaged by the un-



winding yarn from the remainder of the cop will be reduced by the length of movement of the sleeve 4.

By the use of this invention, it is possible to unwind, without breakage, the entire body of yarn from the cop.

The change in size of the spindle to form the swell, 12, is preferably gradual, so that no angular portions are formed which might retard the withdrawal of the yarn. We are able to form the swell, 12, thus gradually and without angular portions by providing the positive stop, 9, whereby the upward movement of the sleeve, 4, is limited independently of said swell.

The above described device can be substituted for the usual cop-spindle in various kinds of winders.

What we claim as new and desire to secure by Letters Patent is—

1. A cop-spindle comprising in combination a spindle having near its upper end a swell gradually emerging at both top and bottom from said spindle, said swell being adapted to be frictionally engaged by the body of yarn in a cop; a spring-supported sleeve mounted upon said spindle having its

upper end adapted to receive the cop-tube; and a positive stop in fixed relation to said spindle independent of said swell for limiting the upward spring-induced movement of said sleeve.

2. In a device of the class described, and in combination, a spindle having near its upper end a swell gradually emerging at both top and bottom from said spindle, said swell being adapted to be frictionally engaged by the body of yarn in a cop; a stationary support for said spindle; a spring-supported sleeve mounted upon said spindle having a tapered upper end adapted to receive the cop-tube; an offset on the lower end of said spindle; and an adjustable stop secured to said sleeve and adapted to engage said offset to limit the upward movement of said sleeve.

In testimony whereof, we have hereunto set our hands this 14th day of March, 1907.

LEON B. LAURENT.  
GUY F. DONAHOE.

Witnesses:

MIKE JOYCE,  
W. J. SHEPARD.