

W. T. SMITH.  
 SPINDLE FOR SPINNING AND DOUBLING MACHINES.  
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984,043.

Patented Feb. 14, 1911.

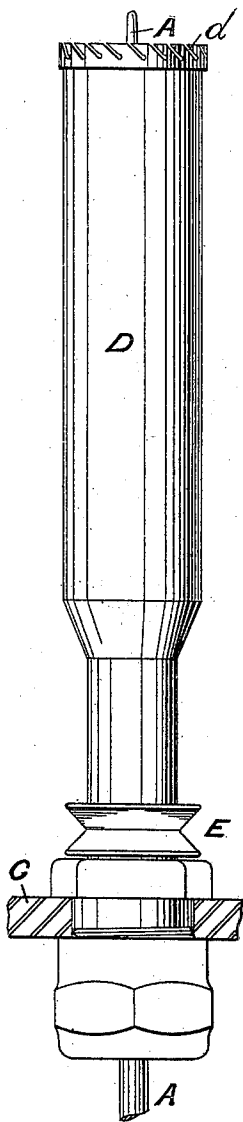


FIG. 1.

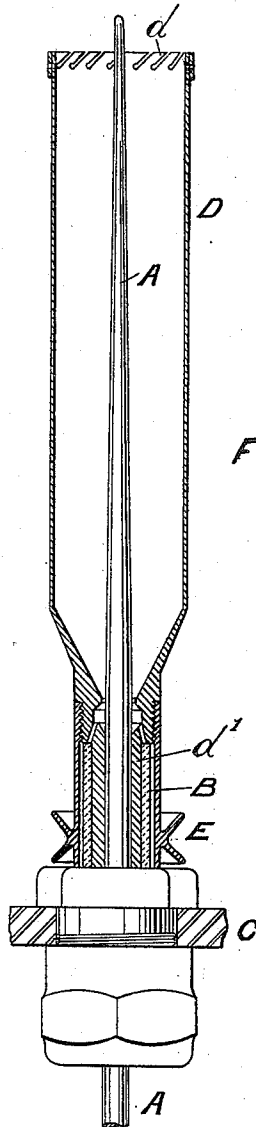


FIG. 2.

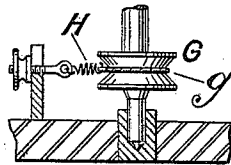


FIG. 3.

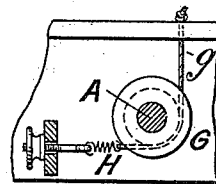


FIG. 4.

WITNESSES.  
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# UNITED STATES PATENT OFFICE.

WILLIAM T. SMITH, OF BOLTON, ENGLAND.

SPINDLE FOR SPINNING AND DOUBLING MACHINES.

984,043.

Specification of Letters Patent. Patented Feb. 14, 1911.

Application filed October 6, 1905. Serial No. 281,682.

To all whom it may concern:

Be it known that I, WILLIAM T. SMITH, British subject, and resident of Bolton, county of Lancaster, England, have invented certain new and useful Improvements in Spindles for Spinning and Doubling Machines, of which the following is a specification.

This invention relates to the spindles of spinning and doubling machines which are constructed with the concentric spindles one a cop spindle upon which the cop or bobbin is wound and the other a flier or guide spindle carrying guides or presser arms to direct the yarn onto the cop or bobbin.

The invention is designed with the object of driving the cop spindle at the desired speed to wind up the cop thereon by direct frictional contact with the interior of flier or guide spindle and consists of the improvements hereinafter described.

The invention will be fully described with reference to the accompanying drawings.

Figure 1. is an elevation of the flier. Fig. 2. is a sectional elevation of same. Fig. 3. is an elevation of foot of cop spindle showing drag motion. Fig. 4. is a plan of cop spindle and drag motion.

The cop spindle A upon which the cop is wound is solid and is supported by a foot-step bearing in the bottom rail, and passes through the socket *d'* of the flier D supported by a bearing or collar B in the top rail C, one or both of which rails lift to form the cop.

The hollow flier D is mounted concentrically on the cop spindle A so as to revolve within the bearing or collar B carried by the top rail C. It is provided with a whirl E by which it is driven by a cord or band at the desired speed. Above the whirl extend the cup or flier with guide eyes *d*.

The flier is constructed with a hollow extension or sleeve *d'* which embraces the cop spindle A. The interior of the sleeve *d'* is in frictional contact with the cop spindle A and the latter is directly driven thereby at any speed not exceeding the speed of the flier. The long sleeve *d'* projects into the interior of the collar B and rotates within it. The whirl E is mounted on an outer sleeve projecting downward and covering the collar B but not in contact with it.

At its lower end the cop spindle A is provided with a wharve or pulley G to which a drag or brake band *g* is applied. The

drag band may be attached at one end to a spring H or supplied with a weight by which the tension can be increased or reduced to regulate the speed at which the cop spindle shall rotate. The drag or brake may be of any convenient form to retard the rotation of the spindle.

The flier is rotated at the desired speed by a band upon the whirl E and the cop spindle A is rotated by the frictional contact of the interior of the sleeve *d'*. The drag or brake *g* is applied to the spindle A to reduce the speed below the speed of the flier so as to wind the yarn upon the bare spindle. When the yarn is being wound onto the large diameter of the cop the pull of the yarn at a greater leverage overcomes some of the resistance of the drag or brake and thereby rotates the spindle at the desired acceleration for winding on the greater diameter.

What I claim as my invention and desire to protect by Letters Patent is:—

1. In a spindle for spinning and doubling the combination with the cop spindle A and the flier of a long sleeve affixed to the flier with the interior of which the cop spindle A is in frictional contact, a fixed collar B to support the flier, a sleeve attached to the flier extending around the fixed collar but out of contact therewith, and a whirl E thereon by which the flier and spindle are rotated, substantially as described.

2. In a spindle for spinning and doubling the combination of the cop spindle A, the flier, a long sleeve affixed to the flier the interior of which is in frictional contact with the cop spindle, a collar B to support the flier, a sleeve attached to the flier extending around the fixed collar and a whirl E thereon by which the flier and spindle are rotated and means by which the speed of the cop spindle is retarded in relation to the flier by which it is driven substantially as described.

3. In a spindle for spinning and doubling the combination of the cop spindle A, the flier, a long sleeve affixed to the flier the interior of which is in frictional contact with the cop spindle, a collar B to support the flier, a sleeve extending over the fixed collar and attached to the flier, and a whirl E thereon, by which the flier and spindle are rotated, a pulley G on the lower end of the cop spindle and a drag cord *g* held with the desired degree of tightness against the pulley substantially as described.

4. In a spindle for spinning and doubling  
the combination of the cop spindle A, the  
flier, a long sleeve affixed to the flier the in-  
terior of which is in frictional contact with  
5 the cop spindle, a collar B to support the  
flier, a sleeve extending over the fixed collar,  
attached to the flier, and a whirl E thereon  
by which the flier and spindle are rotated a  
pulley G on the lower end of the cop spindle  
10 and a drag cord *g* and a spring H with ad-

justing screw by which the desired degree  
of tension is applied to the pulley G sub-  
stantially as described and shown.

In witness whereof I have hereunto signed  
my name in the presence of two subscribing  
witnesses. 15

WILLIAM T. SMITH.

Witnesses:

J. OWDEN O'BRIEN,  
B. TABHAM WOODHEAD.