

J. V. CUNNIFF.
SPINNING MACHINE SPINDLE.
APPLICATION FILED JAN. 13, 1910.

970,189.

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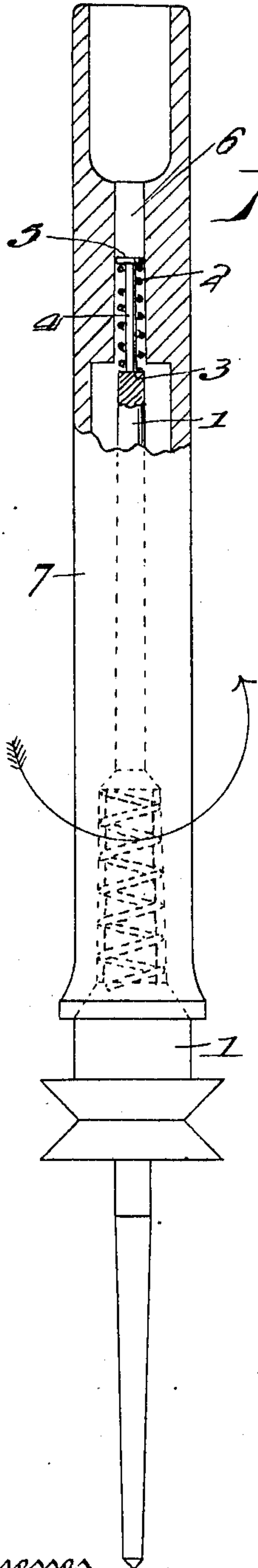


Fig. 1.

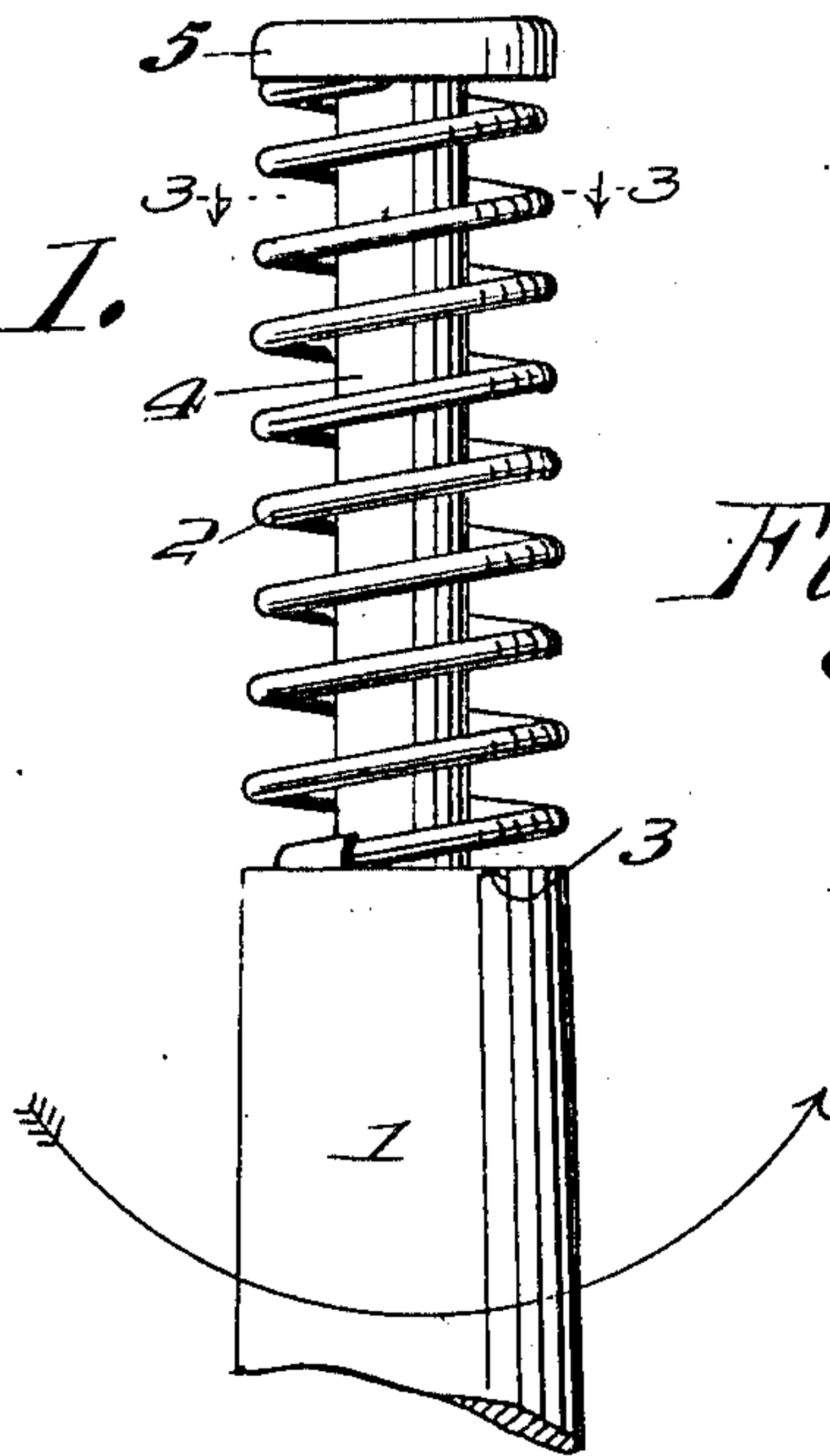


Fig. 2.

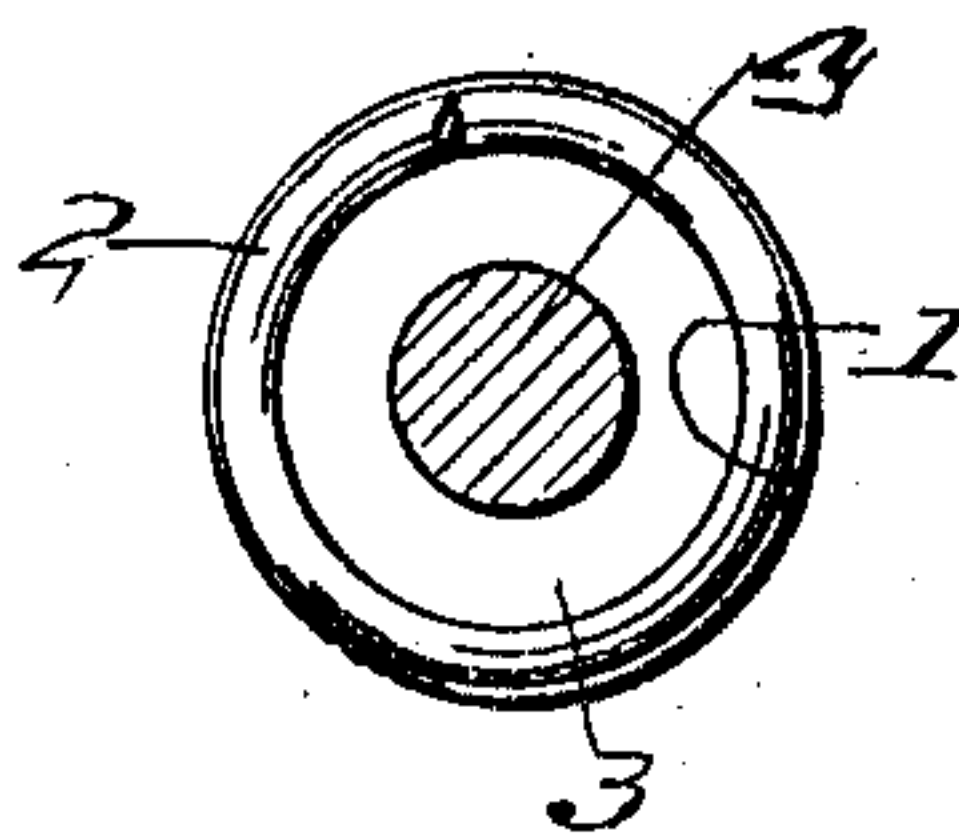


Fig. 3.

Witnesses
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UNITED STATES PATENT OFFICE.

JOHN V. CUNNIFF, OF FALL RIVER, MASSACHUSETTS, ASSIGNOR TO DRAPER COMPANY, OF HOPEDALE, MASSACHUSETTS, A CORPORATION OF MAINE.

SPINNING-MACHINE SPINDLE.

970,189.

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To all whom it may concern:

Be it known that I, JOHN V. CUNNIFF, a citizen of the United States, residing at Fall River, in the county of Bristol and State of Massachusetts, have invented a new and useful Improvement in Spinning-Machine Spindles, of which the following is a specification.

This invention relates to certain new and useful improvements in spinning machine spindles, and the object of the invention is to provide a spindle in which the higher the velocity of revolution thereof a proportionate friction hold on the bobbin will result.

By the present invention the velocity of rotation of the spindle will proportionately act on means carried by the spindle to increase the frictional hold between the spindle and bobbin, and similarly decrease in the velocity of the spindle travel will result in a lessening of the frictional contact between the bobbin and the means now to be set forth.

Further objects of the invention are to provide a device capable of carrying out the objects of the invention as above set forth by the employment of simple and economical means which will prove of high efficiency in use.

In the drawings, Figure 1 is a side elevation of the spindle showing a bobbin applied thereto, the spindle and bobbin at the top being partly broken away and partly in section, Fig. 2 is a fragmentary enlarged view of the spindle, and Fig. 3 is a cross section taken on the line 3—3 of Fig. 2.

The invention consists in supplying the spindle designated 1 in the drawings with a spiral spring 2 preferably at the top thereof. Preferably the upper or free end of the spindle is reduced in diameter forming a shoulder 3 and a stem 4, the spiral spring 2 surrounding the stem 4 and having its inner or base end suitably secured to the shoulder 3, whereby the lower or base end of the spring is secured against movement. The upper or outer free end of the stem 4 is provided with a cap 5 which overlies the outer or free end of the spring 2 and restricts the movement or action of the coil spring. The upper end of the spring is not fastened to the spindle but to the contrary is loose, while the lower end of the spring is fastened to the spindle in any approved or desired manner. The arrow on Figs. 1 and 2 indi-

cates the direction of rotation of the spindle, and it will be observed that the spring 2 is wound in a direction opposite to the direction of rotation of the spindle, whereby as the spindle revolves at a high velocity the spring will have a tendency to unwind, and as the diameter of the spring is but slightly less than that of the bore 6 formed in the bobbin 7 it will be obvious that the unwinding of the spring resulting in an increase of diameter thereof will cause the coils or convolutions of the spring to frictionally contact with the walls formed by the bore 6 in the bobbin, thereby giving a frictional hold on the bobbin which is in proportion to the velocity of rotation of the spindle. Obviously, the greater the velocity of the spindle, the greater the unwinding tendency of the spring, and as the unwinding of the spring determines the degree or extent of the frictional hold of the spring on the bobbin, it will be observed that the adjustment is one which is automatically determined to a nicety. It will be appreciated that when the spindle is revolving at a high velocity it is desired that the frictional hold with the bobbin shall be increased, and this the present invention supplies in a manner of evident efficiency.

It is evident that the spring may be placed either at the top or at the bottom of the spindle or may be used in both places, as shown in Fig. 1, in which the spring is indicated in broken lines at the base of the spindle, but above the whirl.

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

1. The combination, with a rotatable spindle, and a bobbin removably mounted thereon, of resilient bobbin-engaging means comprising an elongated spring coiled loosely around the spindle near its upper end and oppositely to the direction of rotation of the spindle, said spring having one end free and the other end fixedly connected with the spindle, rotation of the latter causing the coils of the spring to be expanded laterally by or through centrifugal action and brought throughout substantially the length thereof into driving engagement with a bobbin, and means cooperating with the free end of the spring to limit expansion thereof.

2. The combination with a spindle, and a

bobbin removably mounted thereon, of a coil spring having one end free and its other end fixedly secured to the spindle and wound loosely about the spindle oppositely
5 to the direction of rotation thereof, whereby rotation of the spindle at high speed will tend to unwind and laterally expand the coils and cause the peripheral portions thereof to frictionally engage the bobbin
10 and drive it in unison with the spindle, and means to prevent engagement of the free end of the spring with the bobbin.

3. In combination with a spindle and a bobbin received thereon, said spindle having
15 its outer end reduced in diameter to form a shoulder, a coil spring encircling said reduced end and having its inner end seated on the shoulder and secured thereto, a cap

on the outer end of the spindle to restrict the expanding movement of the spring, said 20 bobbin having a bore of a diameter slightly greater than that of the coil spring, the coil spring being wound in a direction opposite to the direction of rotation of the spindle, whereby when the spindle revolves at a 25 high rate of speed the spring will be unwound to frictionally contact with the bore of the bobbin.

In testimony whereof I have signed my name to this specification in the presence of 30 two subscribing witnesses.

JOHN V. CUNNIFF.

Witnesses:

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J. A. MILLER.