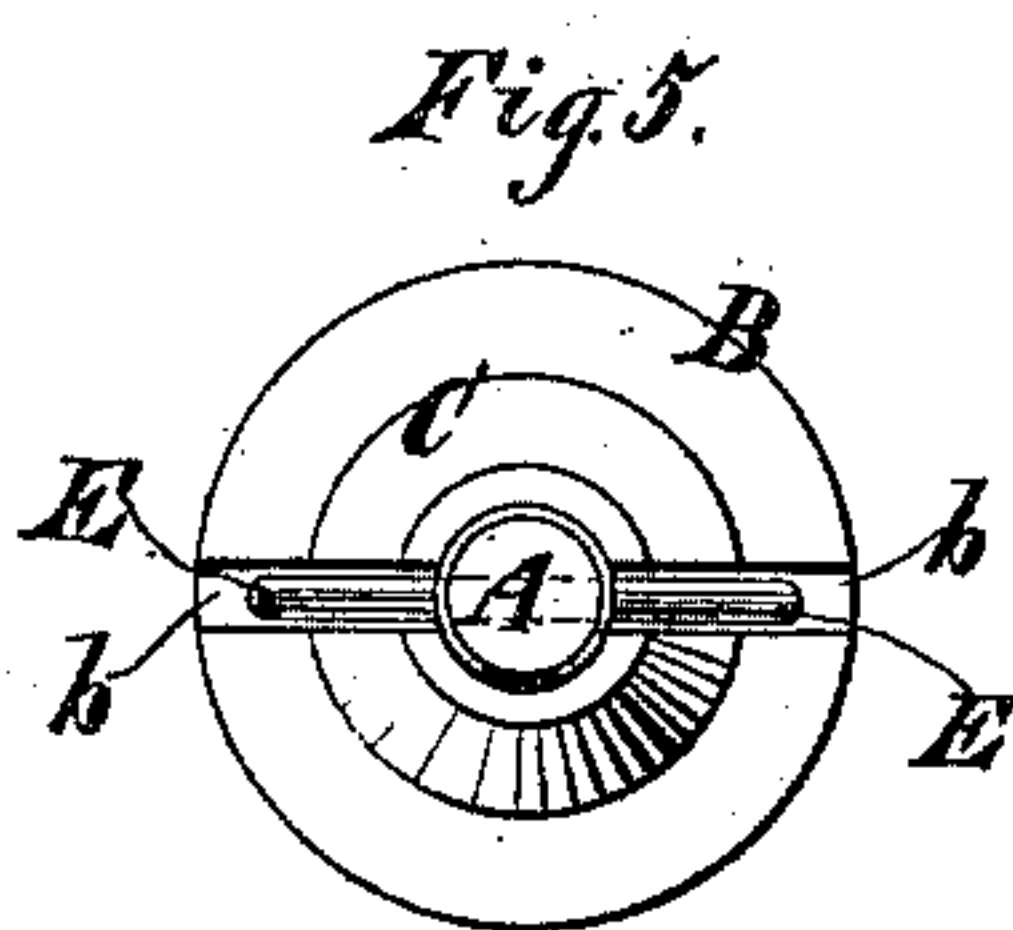
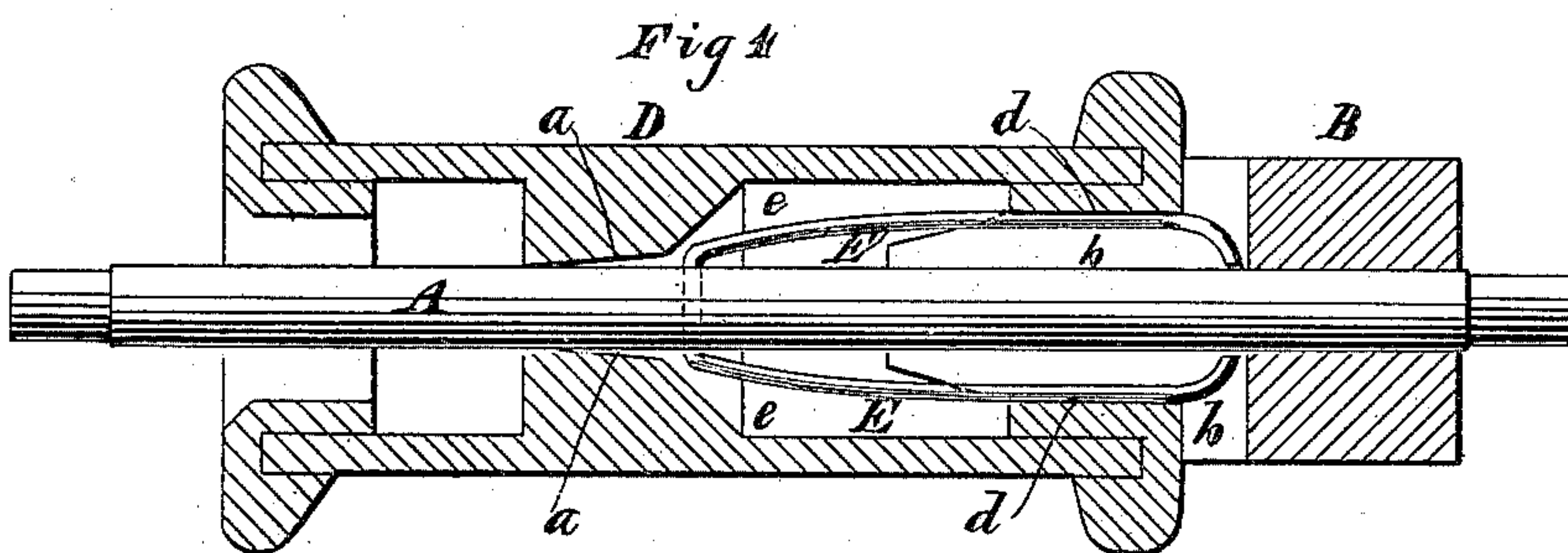
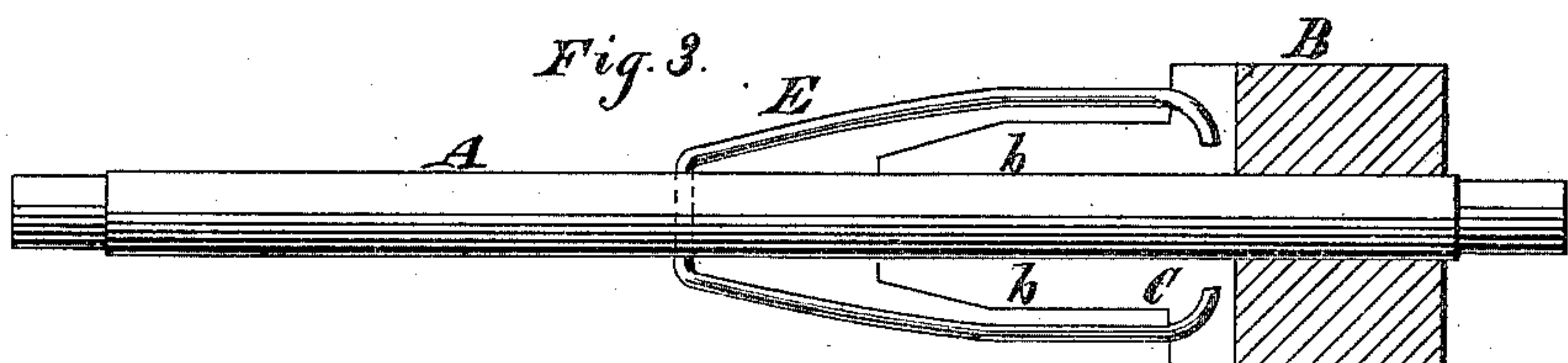
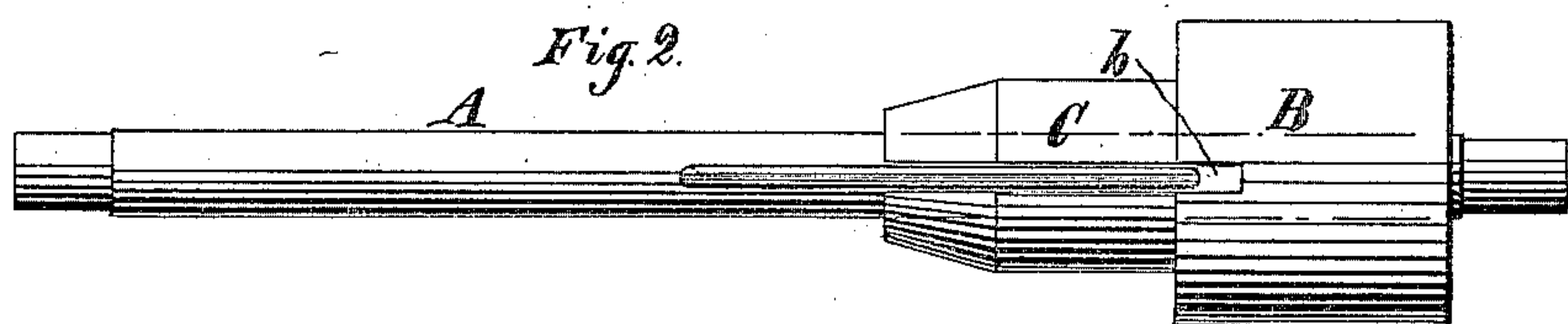
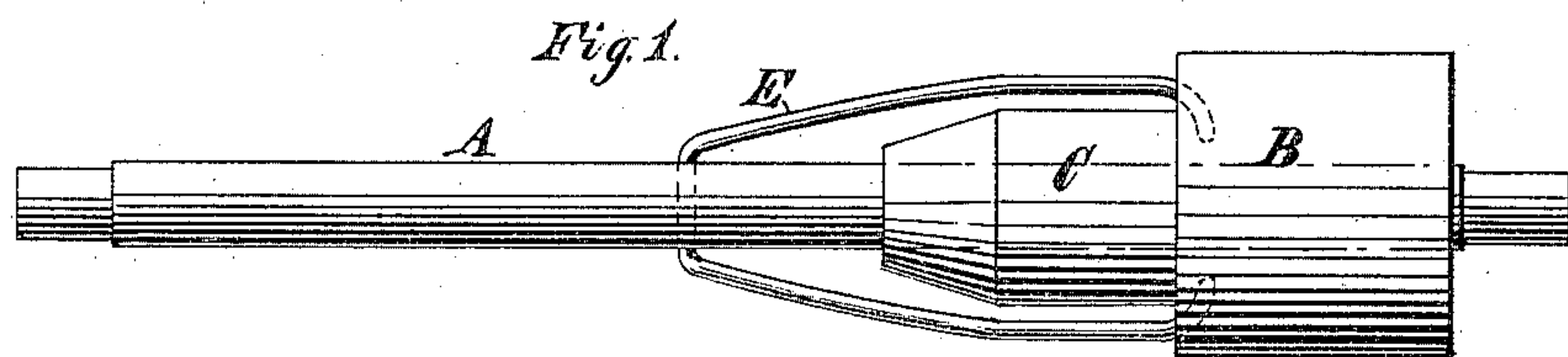


(No Model.)

J. E. TYNAN.  
WINDING SPINDLE.

No. 408,396.

Patented Aug. 6, 1889.



Witnesses:

*John Bicker*  
*Ol. Sundgren*

Inventor:

*Joseph E. Tynan*  
*by attorneys*  
*Robert Griswold*



# UNITED STATES PATENT OFFICE.

JOSEPH E. TYNAN, OF PATERSON, NEW JERSEY.

## WINDING-SPINDLE.

SPECIFICATION forming part of Letters Patent No. 408,396, dated August 6, 1889.

Application filed February 7, 1889. Serial No. 299,027. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH E. TYNAN, of Paterson, in the county of Passaic and State of New Jersey, have invented a new and useful Improvement in Winding-Spindles, of which the following is a specification, reference being had to the accompanying drawings.

My improvement relates more especially to spindles for carrying bobbins onto which silk is wound for the purpose of being afterward spun or twisted. Such bobbins, after having the silk wound upon them, are removed from said spindles and placed upon the spinning-spindles, by the rotation of which the silk is spun or twisted as it is drawn off from the ends of the bobbins. These bobbins have within them a conical bearing which fits to a taper portion of the spinning-spindles. The winding-spindles are provided with friction-rollers by which to drive them and with springs by which to secure the bobbins upon them. These springs as heretofore applied have come into frictional contact with the conical bearing in the bobbins, often so damaging such bearing as to make the bobbin unfit for use by reason of its bearing being untrue.

The object of my invention is to provide for supporting the bobbin upon the winding-spindle in such manner that it may be held concentric with the spindle throughout its whole length, and that it may be secured thereon by the springs without the springs coming in contact with the conical bearing and producing the injury hereinabove referred to.

I will now proceed to describe my invention with reference to the drawings, and afterward point out its novelty in the claim.

Figures 1 and 2 are outside longitudinal views, taken at right angles to each other, of a winding-spindle embodying my invention. Fig. 3 is a longitudinal view of the spindle corresponding with Fig. 1 and having its head and the friction-roller, which forms a part thereof, in section. Fig. 4 is a view corresponding with Fig. 3, and also representing a bobbin in section upon the spindle. Fig. 5 is an end view of the spindle.

Similar letters of reference designate corresponding parts in all the figures.

A is the spindle proper, which is or may be of the usual form.

B and C designate the head, the portion B of which resembles the friction-roller commonly provided on such spindles for the purpose of driving them for winding, and the portion C of which constitutes a cylindrical prolongation of a reduced size, the purpose of this prolongation being to enter and fit easily within one end of the bobbin D, which is bored larger than is common in such bobbins for the purpose of receiving said prolongation. The said head has in it radial slots *b* to receive portions of the spring E, which is employed to secure the bobbin to the spindle.

The spring E, which is of substantially the same form as that commonly used in such spindles, is composed of a piece of wire which is fastened at the center of its length in the spindle, and which is turned back in the form of two horns, which press against the interior of that portion *d* of the bore *e* of the bobbin which fits the prolongation C. The said spring differs only in any material manner from those commonly employed in its being so arranged in the spindle that it will not enter the conical bearing *a*, provided in the bobbin to fit the spinning-spindle. The said spring has free play within the slots *b*.

The conical bearing *a* in the bobbin is like that commonly provided in such bobbins, except that it is or may be shorter, and the spindle fits easily within the small end of it, so as to center the bobbin upon it. By this construction of the spindle and spindle-head and this mode of applying the spring not only is the conical bearing *a* in the bobbin preserved and the bobbin rendered more durable, but the bobbin is more firmly centered upon the spindle throughout its whole length, owing to its fitting the prolongation C of the head, and the springs E have a better hold upon the bobbin by means of their pressing against its interior at a greater distance from the center. The springs are, moreover, sustained against torsion by being received within the slots *b* of the head. It may also be remarked that another reason why the springs thus applied have a better hold is that in bobbins as commonly made the heads are of harder wood than

the bodies, and the bore *e*, with which the spring *E* comes in contact, is in the head, while the conical bearing *a* is in the softer body.

5 Another advantage of my improvement is that it enables the outer end of the bobbin to be enlarged internally to make the bobbin lighter.

10 What I claim as my invention, and desire to secure by Letters Patent, is—

The combination, with a winding-spindle, of a head, a portion of which constitutes a

friction-roller for driving the same and another portion of which is concentric with but of less diameter than the said roller and is 15 longitudinally slotted, and a spring which is secured to the spindle, and a part of which lies within the said slot, substantially as and for the purpose herein set forth.

JOSEPH E. TYNAN.

Witnesses:

FREDK. HAYNES,

ARTHUR H. GAMBLIN.