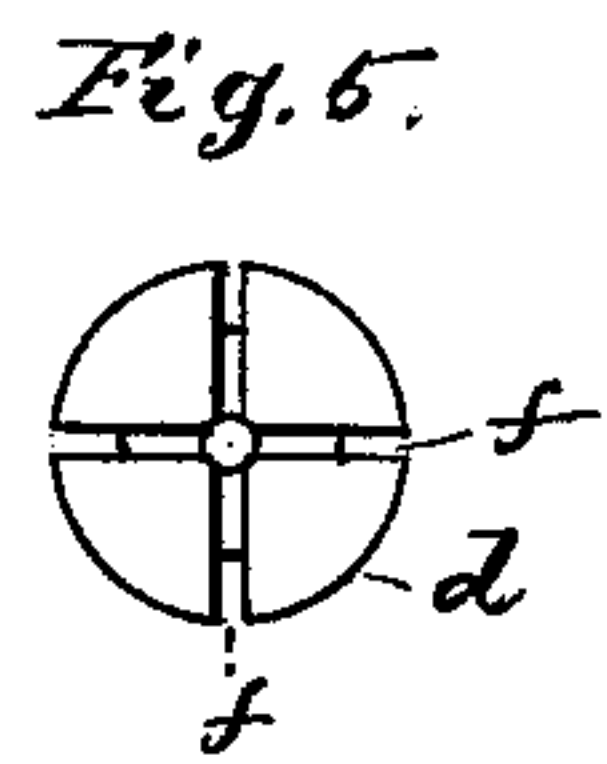
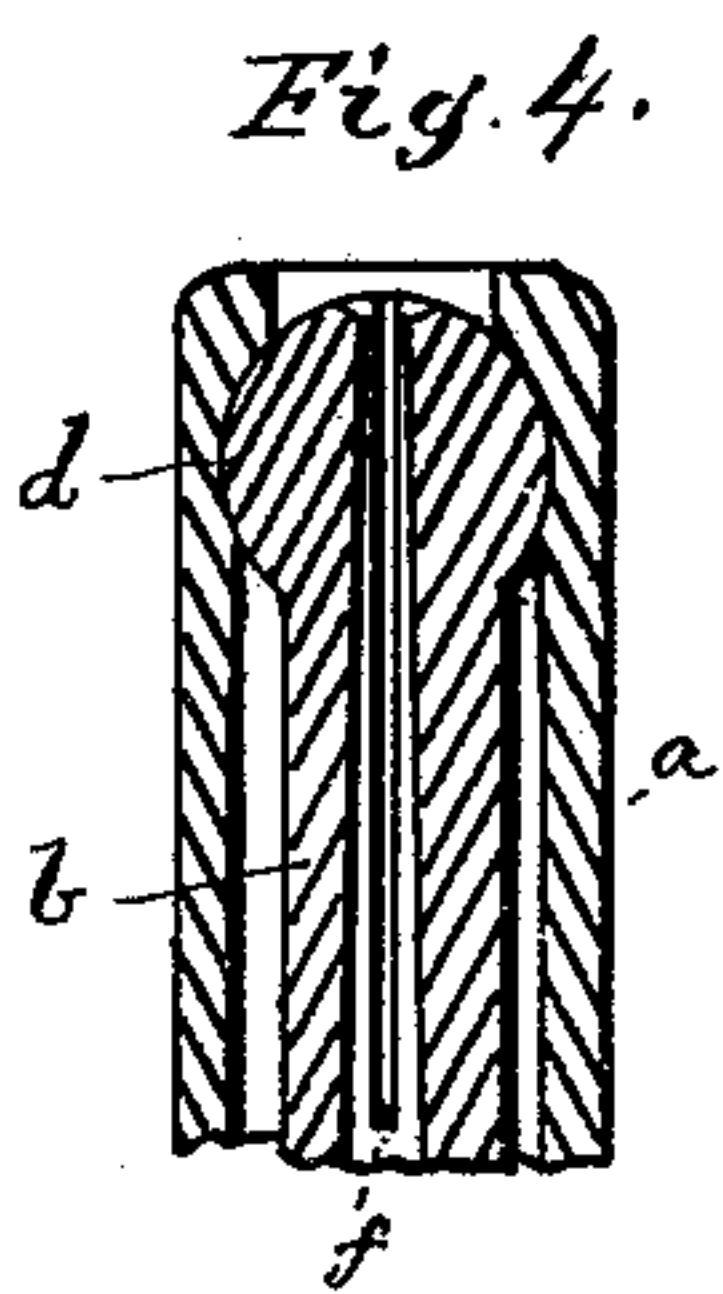
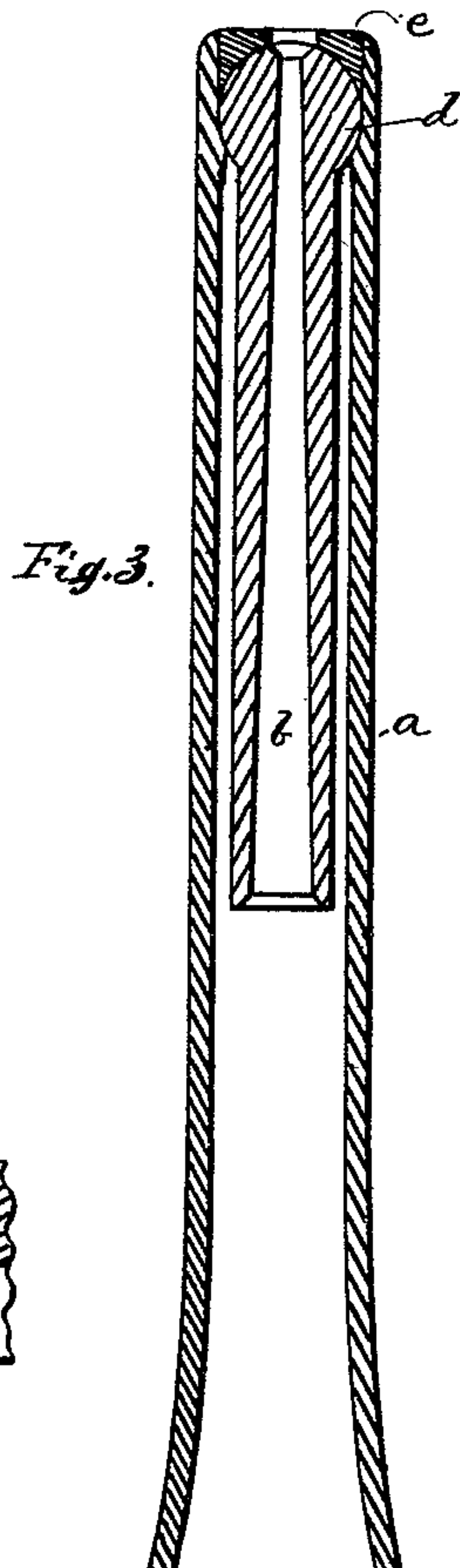
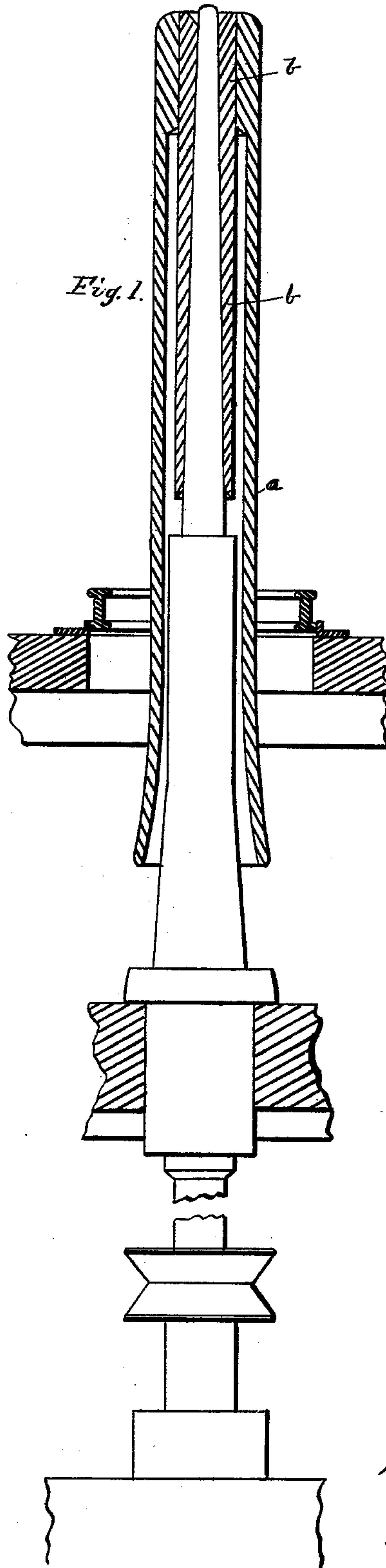
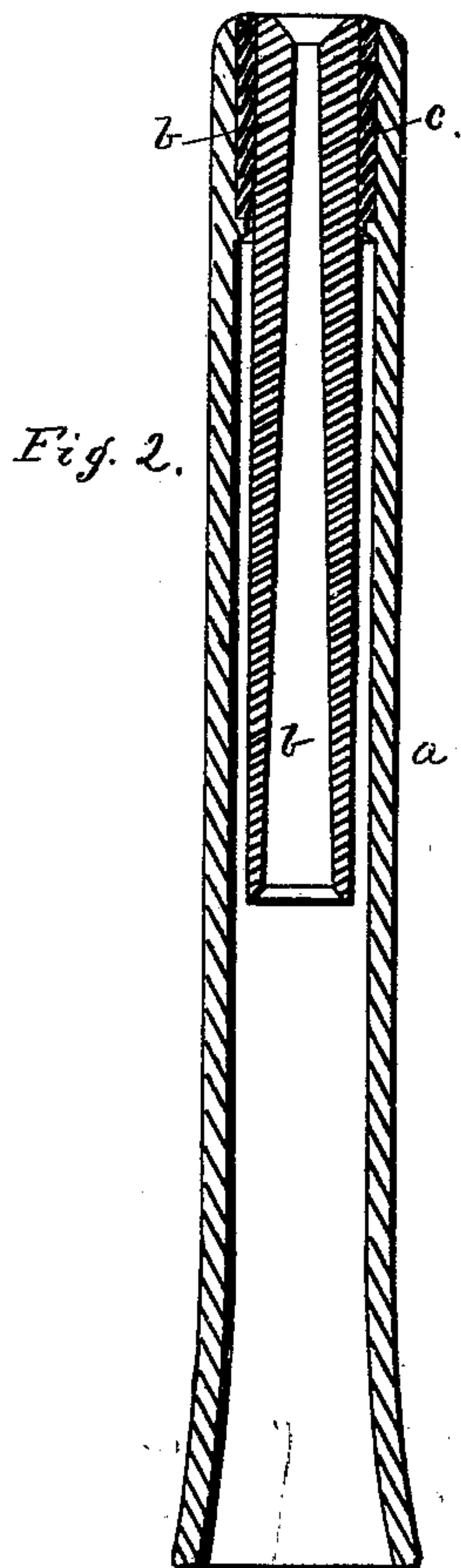


W. F. DRAPER.
BOBBINS.

No. 188,784.

Patented March 27, 1877.



Witnesses.
C. C. Perkins.
W. J. Pratt.

Inventor
William F. Draper
per Crosby & Gregory Attys.

UNITED STATES PATENT OFFICE.

WILLIAM F. DRAPER, OF HOPEDALE, MASSACHUSETTS.

IMPROVEMENT IN BOBBINS.

Specification forming part of Letters Patent No. 188,784, dated March 27, 1877; application filed February 12, 1877.

To all whom it may concern:

Be it known that I, WILLIAM F. DRAPER, of Hopedale, county of Worcester, and State of Massachusetts, have invented an Improvement in Bobbins, of which the following is a specification:

This invention relates more especially to ring-spinning frames; and has for its object to improve the construction of the bobbin and its bushing, to reduce the vibration of the bobbin at top.

The invention consists in a bobbin provided at top with a bushing to fit it and the spindle, the bushing extending from the top of the bobbin downward along that part of the spindle above the extended bolster, but without contact with the bobbin. This construction enables the bottom of the bushing to move under the vibrations of the spindle without correspondingly moving the bobbin itself.

In the manufacture of bobbins provided with tapering bearings at top and intermediate positions, it is difficult to make the bore exactly true. Want of truth in a bobbin bearing upon the spindle at two points will cause the spindle to vibrate and jar, making the bobbin liable to rise "from fit" with the spindle, permitting the spindle to move faster than the bobbin, which causes slack twisted and weak spots in the yarn.

If such a bobbin remains in place, the spindle bent by it bears unevenly against the bolster, wears it, and increases the power required to drive it.

With a single short bushing at the upper end of the bobbin bearing only at the top of the spindle, it is difficult to hold the bobbin upon the spindle and make the bottom of the bobbin run true.

With this improved downwardly-extended bushing out of contact with the bobbin at its lower end, any want of truth in the bore or bushing adapts itself to the spindle without affecting the outside of the bobbin.

Figure 1 represents my improved bobbin and bushing in place in a ring-spinning frame, provided with an extended bolster; Fig. 2, a modification; Fig. 3, a second modification,

and Figs. 4 and 5 modifications of the top of the bushing shown in Fig. 3.

The bobbin *a* is chambered from its lower end to nearly its top, at which point is inserted the bushing *b*, it and the bobbin fitting together.

From the top of the bobbin the bushing extends down along the spindle to nearly the top of the bolster, but does not at or near its lower end touch the bobbin.

This thin, light, flexible bushing of wood or other suitable material conforms itself to the spindle, which is expected to be true, without moving the outer surface of the bobbin at bottom or top out of correct position with the spindle.

Vibrations of the spindle imparted to the bushing below its point of contact with the bobbin will be responded to by the bushing, not the bobbin.

A piece of india-rubber or elastic packing, *c*, between the bushing and interior of the bobbin, will yet further assist in reducing any tendency of the top of the bobbin to wobble by reason of vibrations of the top of the spindle.

Instead of making the bushing as shown in Fig. 1, it may be made with a ball-like upper end, as at *d*, Fig. 3, a washer or plug, *e*, holding it in place.

This bushing, instead of springing, is permitted to turn or rock in the bobbin-top.

Instead of this globular end (shown in Fig. 3) and the plug, such end may be provided with slots *f*, as at Figs. 4 and 5, permitting the ball-like end to collapse when driven into the bobbin, when it again expands to fit a concavity within the upper end of the bobbin shaped to fit the ball.

If the bobbin and spindle should both be true, even then the parts will not be evenly balanced, because of difference in weight and density of the materials, and, when loaded with yarn, the bobbins are thrown still more out of balance, for the yarn is liable to be unevenly distributed thereon.

Lack of balance is as objectionable as the want of truth before referred to, and, when the spindle runs at high speed, affects the

quality of the yarn and increases the power required to drive the spindle, and increases its tendency to wear.

This lack of balance is also compensated for by the bushing described.

I claim—

1. The combination, with the chambered bobbin, of a bushing fitted to the top of the bobbin, and adapted to extend downward along the spindle toward the bolster and center of the bobbin, without contact of the lower end or portion of the bushing with it, to permit the lower end of the bushing to move laterally within the bobbin-chamber and to-

ward the bobbin, substantially as and for the purpose described.

2. A chambered bobbin and bushing to fit the spindle, in combination with an elastic packing interposed between the bobbin and bushing, for the purposes described.

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

WM. F. DRAPER.

Witnesses:

G. W. GREGORY,
W. J. PRATT.