F. J. RABBETH.

Spindle for Spinning Machine.

No. 210,358. Patented Nov. 26, 1878.

Fig. 1.

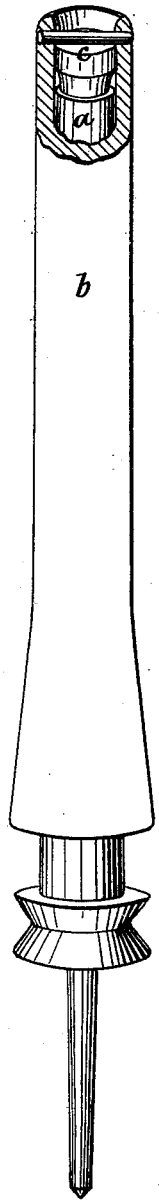


Fig. 2.

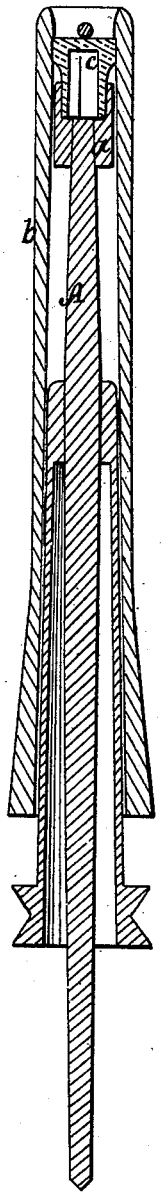


Fig. 3.

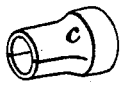
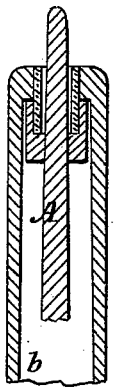


Fig. 4.



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UNITED STATES PATENT OFFICE.

FRANCIS J. RABBETH, OF PROVIDENCE, RHODE ISLAND.

IMPROVEMENT IN SPINDLES FOR SPINNING-MACHINES.

Specification forming part of Letters Patent No. **210,358**, dated November 26, 1878; application filed May 11, 1878.

To all whom it may concern:

Be it known that I, FRANCIS J. RABBETH, of the city and county of Providence, in the State of Rhode Island, have invented certain new and useful Improvements in Spindles for Spinning Machinery; and I do hereby declare that the following specification, taken in connection with the drawings furnished and forming a part thereof, is a clear, true, and complete description of my invention.

My improvements are particularly intended for light spinning, and relate to what are known as "live-spindles," and the object of my invention is in part to secure easy doffing; and there are certain other advantages incident thereto which will be hereinafter recited.

My invention consists in the combination, with a live-spindle and a bobbin, of a cup on the spindle and an expansible plug on the bobbin. These elements are so constructed and arranged that when the spindle is at rest and the bobbin mounted thereon the latter will only be supported on the spindle, and thereby be so far connected therewith that it will revolve when the spindle is in motion, and the centrifugal expansion of the plug within the cup will cause them to operate as a friction-clutch, uniting them and securing a strong rotative connection of the spindle and bobbin.

To more particularly describe my invention, I will refer to the accompanying drawings, in which—

Figure 1 represents my improvements applied to a live-spindle having a sleeve and whirl, and arranged to operate with a high tubular bolster and oil-reservoir. Fig. 2 represents the same in vertical central section. Fig. 3 is a perspective view of the bobbin-plug detached. Fig. 4 represents the top of a bobbin in vertical central section, with a plug of different form.

A denotes the spindle. At its upper end is a cup, *a*, having an outside diameter slightly less than the interior diameter of the bobbin *b* at the corresponding portion thereof. In depth the cup may be varied; but for ordinary light spindles one-quarter of an inch will be sufficient. It should have as little weight as is consistent with the service intended. This cup may be applied in like manner to ordinary plain spindles.

The bobbin is so chambered or bored that it will not be in rotative contact with the spindle or its sleeve. The plug *c* may be varied in form. In Fig. 3 it is shown to be a molded plug, solid at its top and hollow or tubular at its lower end, which occupies the cup *a*. The tubular portion of the plug is slitted longitudinally at one or more points, so as to secure ready expansion. The bore of the bobbin at the top is of such size as to snugly receive the plug, which may be secured in position by a transverse pin through the bobbin, as shown, or in any other equivalent manner. The plug may be provided with a laterally-projecting head, and the bobbin be slightly recessed to receive it, as shown; but this particular construction is not essential.

I prefer that the expansible plug be composed of vulcanized elastic rubber. In Fig. 4 the elastic plug is composed of a short length of rubber tubing of proper size, forced into the bobbin, which is bored of such size at the top as will secure the plug in position. Instead of having the bobbin supported by the plug, as previously described, the bobbin in Fig. 4 is supported by the cup, its upper edge being in contact with an annular shoulder in the bobbin. With the plug constructed as in Fig. 4 the upper end of the spindle may be extended upward through the cup and plug, if desired. The position of the plug within the bobbin, near its top, renders it practically secure against contact with oil. When the spindles are rotated, as in use, the bobbin, by being borne on the spindle, is revolved loosely until the plug is centrifugally expanded, and a proper driving connection of the spindle and bobbin thereby attained.

It will be seen that the bobbins may be doffed with the greatest ease, and that all the bobbins in a frame will occupy the same position with relation to the bolster-rail, instead of being at various heights on the spindles, as is generally the case with bobbins, which are held on the spindles by so-called adhesive bearings, and by having the bobbins at a uniform

height on the spindle it is possible to work with a longer traverse than with adhesive bearings.

I am aware that centrifugally-expansible slitted tubes have heretofore been proposed for driving bobbins on dead-spindles; but I am not aware that prior to my invention a cup and an expansible plug have been combined with a live-spindle and bobbin.

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

The combination, with a live-spindle and a bobbin, of a cup and an expansible plug, substantially as described, whereby the bobbin and spindle are rotatively connected only when the spindle is revolving and the plug expanded by centrifugal force, as set forth.

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