G. E. TAFT.

SPINNING-MACHINE.

No. 190,525. Patented May 8, 1877.

Fig. 7.

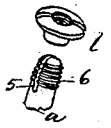

Fig. 1.

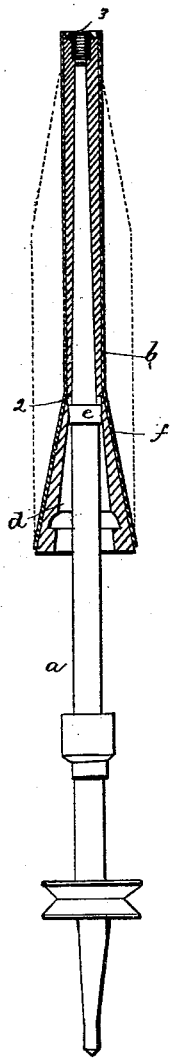

Fig. 5.

Fig. 2.

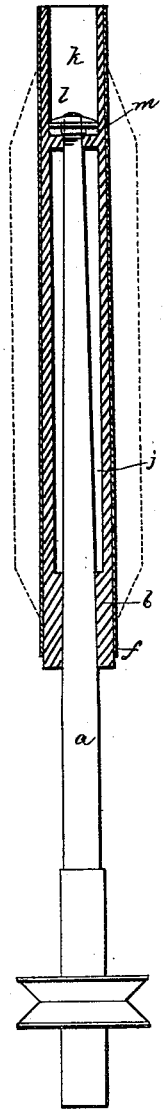

Fig. 6.

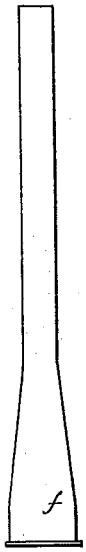

Fig. 4

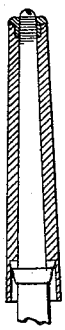

Fig. 3.

Witnesses.

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UNITED STATES PATENT OFFICE.

GUSTAVUS E. TAFT, OF WHITINSVILLE, MASSACHUSETTS.

IMPROVEMENT IN SPINNING-MACHINES.

Specification forming part of Letters Patent No. **190,525**, dated May 8, 1877; application filed February 12, 1877.

To all whom it may concern:

Be it known that I, GUSTAVUS E. TAFT, of Whitinsville, in the county of Worcester and State of Massachusetts, have invented Improvements in Spinning-Machines, of which the following is a specification:

This invention relates to improvements in spinning-machines, and has reference to the combination, with a spindle and a bobbin-holder attached thereto, of a locking device to prevent the removal of the holder from the top of the spindle when the bobbin is lifted or doffed.

This invention is specially applicable to ring-spinning frames and mules.

Figure 1 represents, in elevation, a spindle provided with one form of holder and bobbin in accordance with this invention. Fig. 2 is a modification thereof; Fig. 3, a top view of the holder shown in Fig. 2. Fig. 4 is another modification; Figs. 5 and 6, bobbins of different shapes; Fig. 7, a detail of the upper end of the spindle shown in Fig. 2.

In that class of machines for spinning yarn wherein the bobbins are fitted to tapering spindles, and caused to move therewith by frictional adhesion of the surfaces in contact, the bobbins, when the spindles run at high speed, are lifted toward the end of the spindle more or less by its vibrations, thereby causing the top of the bobbin to wabble or shake. The bobbin may fall or again settle down to its place, only to be again lifted. This lifting and consequent loosening of the fit between the tapering surfaces permits the bobbin to fall behind the spindle and receive fewer rotations, which tends to produce slack-twisted yarn, and the slack portions, being weaker, are liable to break either in spinning or subsequent processes, and, further, the variations of the position of the bobbin upon the spindle causes the latter to wear its bearings unevenly. When these ordinary bobbins are changed from one spindle to another it is very difficult to place all the bobbins in line upon the spindles, and to prevent over-winding the bobbins are commonly made longer than the traverse of the ring-rail. The bobbins cannot, in practice, be placed readily in line, because of waste lodging within the bobbins or upon the spindles, and because of changes in size of bobbin, owing to atmospheric variations.

In this present invention these objections are principally overcome by placing upon the spindle a bobbin-holder, locked thereto so as to remain upon the spindle when the bobbin, shaped to fit the holder, is doffed therefrom.

The spindles *a* may be supported in steps of any usual construction. Above the steps these spindles, carrying bobbin-holders chambered at their lower ends, will be supported by long stationary bolsters extended into such chambers, as in the Sawyer plan, and spindles having holders unchambered will be supported quite near the bottom of the holders by bolsters. The holder *b*, in Fig. 1, has a truncated head, *c*, and a chamber, *d*. Within the chamber, and upon the spindle above the top of the bolster which will support the spindle within such chamber, is a holder carrier, made as a collar, *e*, provided with one or more prongs, 2, or projecting surfaces, to enter or engage the substance of the holder, and cause it to rotate with the spindle. The barrel of the holder in Fig. 1 is shown fitted to the upper portion of the spindle, and at top the spindle is screw-threaded to receive a locking device, made as a tubular nut, 3, by which the holder is prevented from rising upon the spindle as the bobbin *f*, fitted to the outside of the holder, is doffed.

In Fig. 1 the bobbin-holder is driven positively with, and practically forms part of, the spindle. The collar *e* forms a stop by which to gage the lowest position of the holder, and all the holders in a frame may, by reason of such collars, be placed in line. This truncated holder is adapted to receive a bobbin to be wound with yarn, after the manner of the "filling-wind." Instead of the head and barrel being plain or smooth, they may be scored or notched in any usual way.

In Fig. 2 the holder is chambered centrally at *j*, and in its top *k*. The upper end of the spindle is slotted at 5, to receive a cross-pin, *m*, attached to the holder, such pin and slot operating as a holder-carrier, and as the device *e*. (Shown in Fig. 1.) A nut, *l*, fitted to the screw-threaded upper portion of the spindle, prevents the holder rising.

In Fig. 4 the holder is tapered from top to

bottom, chambered, carried positively by lugs on a collar, and held down in position on the spindle by a screw and washer.

Other locking devices than those shown may be used to prevent the holders rising when the bobbins are doffed. Instead of the holder-carrier, one or both sides of the spindle might be flattened, to receive against such flattened portion or portions a stud or studs passed through the holder and intersecting its spindle-passage, as in United States Patent No. 134,535.

These holders, instead of being shaped as shown, may be made to conform, as to their external surfaces, with spinning-bobbins of any usual form, and they may be made of wood, rubber, sheet metal, or any other light and suitable material, but preferably wood.

The bobbins may be made of paper or leather, or both united, or strengthened by cloth, or of fabric stiffened, or of india-rubber, its compounds or substitutes, or of thin metal or wire-gauze, the main object being to make the bobbins light. Preferably these bobbins will be made of paper or leather, in whole or in part. The bobbins are thin shells, made to conform to the shape or outline of the holders to which they are applied, in order to be supplied with yarn-loads, and the bobbins and yarn spun and wound thereon may be easily and quickly doffed by hand without lifting the holders from the spindles.

This invention, as herein described, makes it possible to dispense with most of the wooden bobbins now used in spinning on ring-frames. In their place are employed the lighter and cheaper bobbins of paper, leather, &c., which may be quickly fitted to or removed from the holders without jar.

In the use of fine yarn for filling, it is necessary to steam or heat the yarn before weaving it, to reduce the tendency to twist. Yarn spun on wooden bobbins cannot be steamed without spoiling the bobbins; but yarn spun upon the light bobbins described and illustrated in this present invention may be so steamed without injuring them.

The flexible paper, leather, or fibrous bobbins may be handled, with yarn applied, without fear of being broken.

I claim—

In a ring-spinning machine, the combination, with the spindle and bobbin-holder and bobbin, substantially as described, of a locking device to retain the holder on the spindle when doffing the bobbin, and a holder-carrier to rotate the holder positively with the spindle, all substantially as and for the purposes described.

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

GUSTAVUS E. TAFT.

Witnesses:

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