(No Model.)

C. G. BUTTRICK & T. B. FLANDERS.

SPINDLE BOLSTER.

No. 289,971. Patented Dec. 11, 1883.

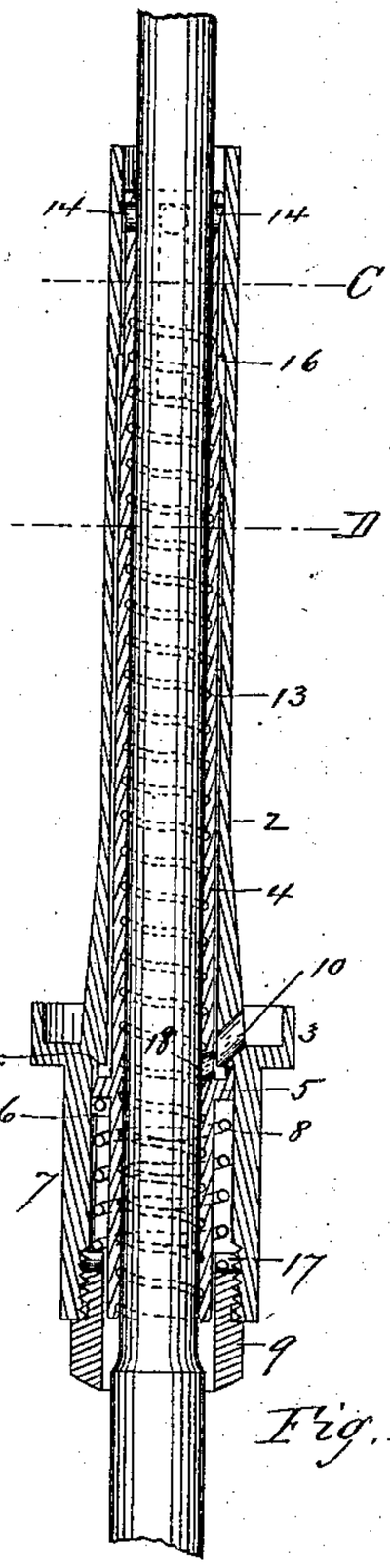

Fig. II

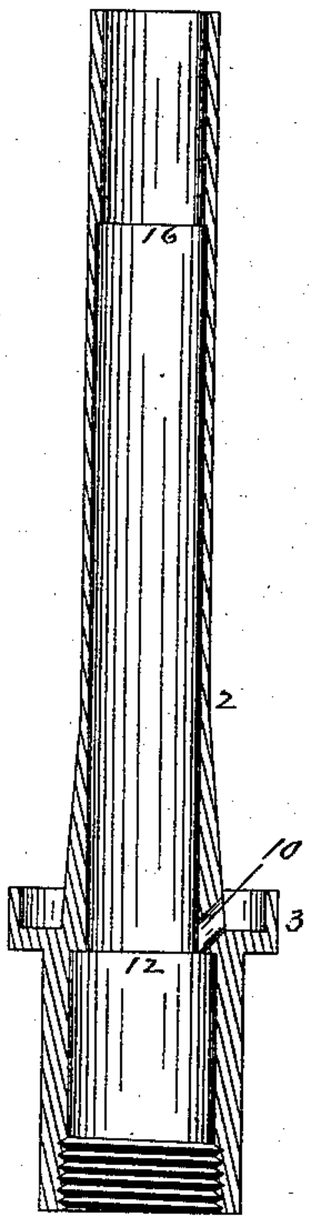

Fig. IV

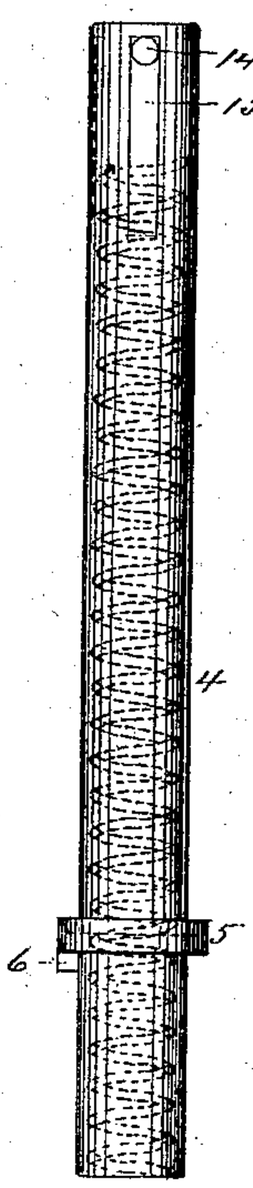

Fig. VI

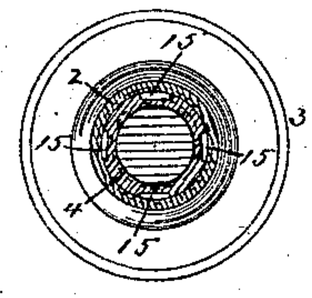

Fig. VII

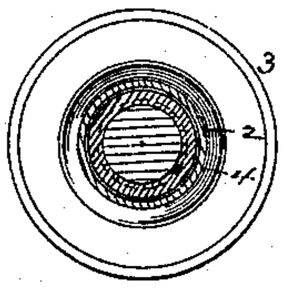

Fig. VIII

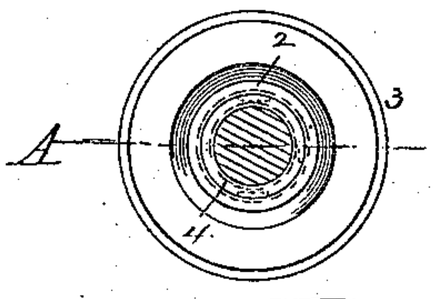

Fig. I

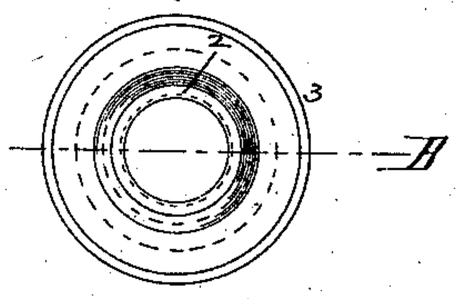

Fig. III

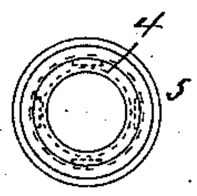

Fig. V

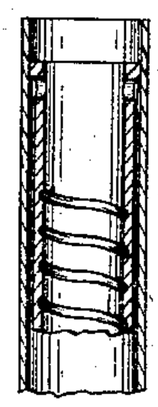

Fig. IX

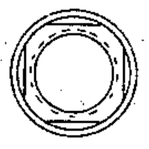

Fig. X

Witnesses.
Chas. H. Wood.
George G. Curtis

Inventors.
Charles G. Buttrick.
Timothy B. Flanders.
By T. A. Curtis.
their Atty.

UNITED STATES PATENT OFFICE.

CHARLES G. BUTTRICK AND TIMOTHY B. FLANDERS, OF HOLYOKE, MASS.

SPINDLE-BOLSTER.

SPECIFICATION forming part of Letters Patent No. 289,971, dated December 11, 1883.

Application filed May 26, 1883. (No model.)

To all whom it may concern:

Be it known that we, CHARLES G. BUTTRICK and TIMOTHY B. FLANDERS, both of Holyoke, in the county of Hampden and State of Massachusetts, have invented a new and useful Improvement in Spindle-Bolsters, of which the following is a specification and description.

The object of our invention is to provide a spindle-bolster within and by which the spindle, when revolving, will be effectually and uniformly lubricated, and the application of the lubricant be maintained so long as the spindle is revolved, and by which the oil or lubricant is prevented from soiling the yarn or thread wound upon the bobbin, and also to give to this bolster a yielding or self-adjusting bearing within its case; and we accomplish this by the mechanism substantially as hereinafter described, and illustrated in the accompanying drawings, in which—

Figure I is a plan view of a spindle-bolster and case made according to our invention, the spindle being in section. Fig. II is a vertical section of the same at line A, with a spindle within the bolster in elevation. Fig. III is a plan view of the bolster-case. Fig. IV is a vertical section of the same at line B. Fig. V is a plan view of the bolster. Fig. VI is a side elevation of the same. Fig. VII is a transverse section of the bolster, bolster-case, and spindle at line C of Fig. II, in which the spindle is in elevation. Fig. VIII is a transverse section of the same at line D of Fig. II. Fig. IX is a modification of the upper end of the bolster, and Fig. X is a plan view of another form of the same and within its case.

In the drawings, 2 represents the bolster-case, whose lower part, 7, is fixed in the rail of an ordinary spinning-frame, preferably by a set-screw, and above this part is a cup or oil-reservoir, 3, which ordinarily rests upon the rail, and we bore out the lower end of this case of a uniform size up to an internal shoulder, 12, and an internal screw-thread is made in the lower end to receive the threaded end of a nut, 9, provided with a shoulder, 17, on its upper end. Above this internal shoulder, 12, we bore out the case of somewhat smaller diameter, preferably up to a point near its upper end, as at 16, above which we prefer to again reduce the bore in diameter, as shown in Fig. IV, and an oil-hole, 10, is made through the case at or near the bottom of the reservoir 3, as shown clearly in Figs. II and IV.

The bolster 4 we make, preferably, of uniform diameter throughout its length, with an external annular oil-cup, 5, near its lower end, with a shoulder, 6, just below this cup, as shown in Fig. VI, and we make a spiral groove, 13, along the inside of this bolster, and extending, preferably, from its lower end to a point little below its upper end, as shown in dotted lines in Figs. II and VI, and with this form of case we make any desired number of grooves, 15, in the outside of this bolster, near its upper end, with any desired number of holes, 14, made through the bolster, near its upper end, and communicating with one or more of the said grooves. We insert the bolster 4 into its case from the lower end of the latter until the upper side of the cup 5 impinges against the internal shoulder of the case, and we then insert a spiral or helical spring, 8, within the lower end of the case and around the outside of the bolster, below the cup 5; and then turn the nut 9 into place in the lower end of the case, the upper end of the nut forcing the spring up against the lower side of the cup 5; and when thus in place the spring has a bearing at its upper end against said cup, and at its lower end against the upper end of the nut 9, and the bolster, as thus secured in the case, is free to turn in one direction; but the extreme upper end of the spring impinges, in a lateral or horizontal direction, against the shoulder 6 on the bolster, and the lower end of the spring impinges, in the opposite direction, against the shoulder 17 on the upper end of the nut, and prevents the bolster from revolving in the opposite direction. When thus secured within the case, the upper end of the bolster 4 snugly fits the interior of the case at its extreme upper end, except in the grooves 15, and these grooves extend down to a point below the shoulder 16; but below the said shoulder the bolster does not snugly fit the interior of the case, and there is a little space between the exterior surface of the bolster and the interior surface of the case, nearly the whole length, to permit the lubricating-oil to flow down freely

into the cup 5. When the spindle is to be used, the lubricating-oil is put into the reservoir 3 of the case, and it flows through the hole 10 into the cup 5, and thence through the oil-aperture 18 in the bolster into the interior of the latter, and as the spindle snugly fits the interior of the bolster, but so as to revolve freely therein, the oil is carried up in the spiral groove 13 by the rotary motion of the spindle, and is forced up at the upper end of the bolster, so as to flow out through the orifices 14, whence it runs down the grooves 15, continues down in the space between the bolster and its case and flows into the cup 5, where it collects and again flows through the oil aperture in the bolster and is again carried up the spiral groove, as before. In this manner a constant circulation of the lubricant is maintained, being constantly carried from the cup 5 up the spiral groove by the rotary movement of the spindle, and flowing out through the orifices 14 down and between the bolster and its case into the cup again, and this movement of the lubricant continues so long as the spindle continues to revolve.

Instead of making the holes 14 in the upper end of the bolster, the grooves 15 might be carried up to the extreme end of the bolster, and as the oil is forced up it would flow over into and down said grooves into the space between the bolster and its case, and the circulation be maintained as before; or the bolster might be made of the same diameter throughout, and the upper end squared or made approximately prismatic, with slightly-rounded corners, as shown in Fig. X, so that the oil could flow down the space between each flat side and the interior of the case, and the circulation be maintained as before; but by making the holes 14 we are enabled to make the extreme upper end of the bolster to closely fit the inside of the case with no inequalities in the upper end of the bolster, into which dirt and grit would fall, and yet to cause the oil to pass so close to the upper end of the bolster as to lubricate the latter the entire length of the bearing of the spindle; another modification of this construction being shown in Fig. IX.

We are aware that a bolster has heretofore been made in which a spiral groove was made along its length inside, to cause the oil to flow up; but as there was no separate case for the bolster, the oil would collect and flow down the outside, and as the bobbin, when placed on the spindle, extended down around the bolster, the oil would be liable to get into contact with the thread on the bobbin, especially if the latter were cracked or split, as many of the bobbins often are, and large quantities of thread was thereby spoiled. Our invention entirely obviates this objection, as we provide means to carry the oil down again to the oil-cup, where it is again used, and the outside of the bolster-case is always perfectly free from oil from the spindle or its bearings.

Inasmuch as many of the spindle-bolsters have a firm or solid bearing, it is evident that the bolster may be driven or otherwise secured fast within the bolster-case, instead of being secured by the spring, so as to have a yielding bearing, and yet be operative as to the feature of maintaining a constant circulation of the lubricating-oil entirely inside the bolster-case; but inasmuch as the bearing of the spindle within the bolster is quite long, we deem it especially desirable to have the upper end of the bolster fill the case to have a bearing therein, and combine the feature of the yielding bearing with the mechanism for maintaining the circulation of the oil upon the bearing. Of course, as the spindle revolves during the operation of spinning, the bolster-case, being fixed in the rail, remains stationary, and the bolster is held stationary therewith by the abutting of the ends of the spring against the shoulders 6 and 17; and if it should be desirable to revolve the spindle in the opposite direction for any purpose a spring wound in the opposite direction should be used.

Having described our invention, what we claim as new is—

1. The combination of a bolster spirally grooved inside and provided with an oil-cup near its lower end, and with apertures made through said bolster, communicating with said cup, with a bolster-case provided with an oil-reservoir and an oil-aperture therefrom to the inside of the case, and with an oil-space between the inside of the case and the outside of the bolster, and into which case the bolster is adapted to be secured and held stationary, substantially as described.

2. The combination of a bolster spirally grooved inside and provided with an oil-cup, 5, and a shoulder, 6, with a bolster-case provided with an oil-reservoir and an oil-aperture therefrom to the inside of said case, and with an oil-space between the inside of the case and the outside of said bolster, a nut provided with a shoulder at its upper end, and secured in the lower end of said case, and a helical spring encircling the lower end of said bolster, and extending from said nut to the shoulder or cup of said bolster, substantially as described.

CHARLES G. BUTTRICK.
TIMOTHY B. FLANDERS.

Witnesses:
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CHAS. H. WOOD.