(No Model.)

C. G. BUTTRICK.

SPINDLE BOLSTER AND STEP.

No. 490,337. Patented Jan. 24, 1893.

Fig. 1.

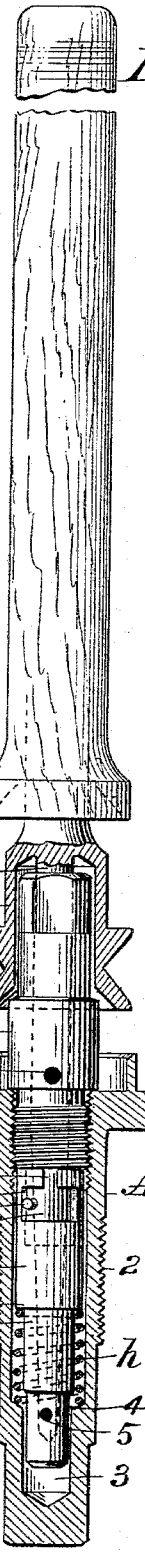


Fig. 3.

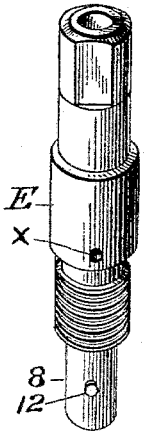


Fig. 4.

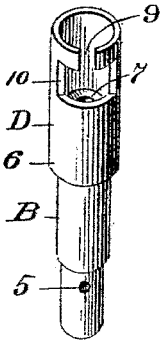
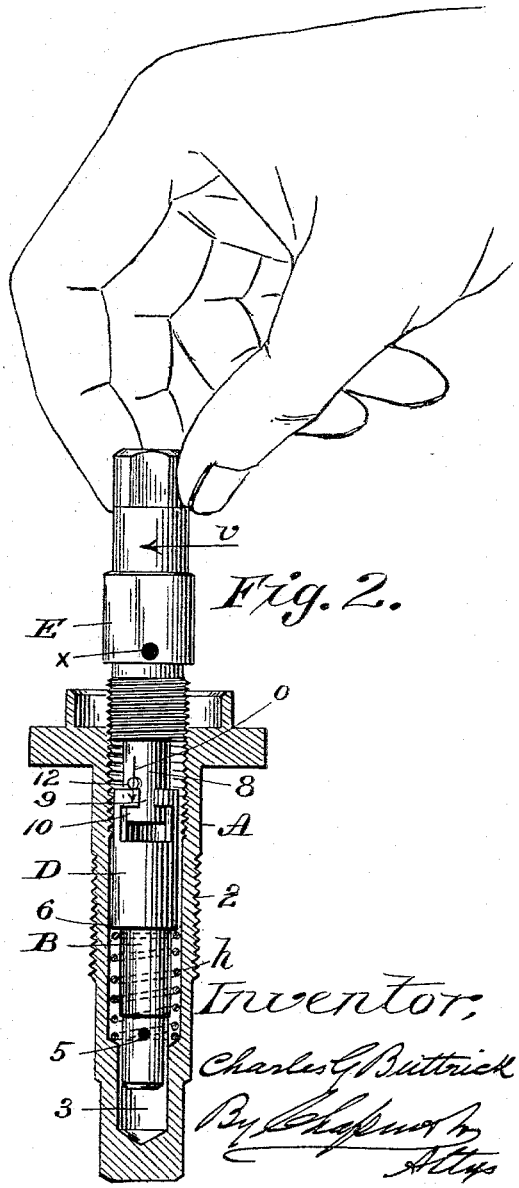


Fig. 2.



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SPINDLE BOLSTER AND STEP.

SPECIFICATION forming part of Letters Patent No. 490,337, dated January 24, 1893.

Application filed May 19, 1892. Serial No. 433,546. (No model.)

To all whom it may concern:

Be it known that I, CHARLES G. BUTTRICK, a citizen of the United States, residing at Holyoke, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Spindle Bolsters and Steps, of which the following is a specification.

This invention relates to bolsters and steps for the spindles of spinning machines and co-operating devices, the object being to improve the construction of the same, and the invention consists in the peculiar construction and arrangement of said parts and devices, all as hereinafter fully set forth, and more particularly pointed out in the claims.

In the drawings forming part of the specification, Figure 1 is a longitudinal sectional view of a bolster and spindle-step case, having applied thereto a bolster and a step embodying my improvements, which are shown in side elevation, this figure showing also the whirl-portion of a spindle, in section and applied to the upper end of the bolster, a bobbin on said spindle, a spring on said step, and the lower end of the spindle in dotted lines, within said bolster and step. This figure illustrates the position of the bolster and the spindle-step when occupying operative positions in the case. Fig. 2 shows, likewise, said spindle-case in longitudinal section, the bolster and the step in side elevation, the latter being shown within said case, and the bolster is there shown as being screwed into the case. A spring is shown in this figure, on the lower end of the spindle-step. Figs. 3 and 4 are perspective views of the bolster and the spindle-step separate from their case.

In the drawings A indicates the bolster and spindle-step case which is provided on its outside with a screw-thread, 2, to receive a nut (not shown in the drawings) whereby the case is firmly secured to the rail of a spinning-frame in a well known manner, and said case is chambered, as is usually practiced, to receive in its lower end the spindle step and its upper end is internally screw-threaded to arrange for receiving the screw-threaded lower end of the spindle-bolster. The lower end 3, of a chamber within the said case, A, is bored to a suitable diameter to receive the lower end of the spindle-step, as shown, and above this lower end, 3, of said chamber the latter is made of an enlarged diameter, whereby is formed a concentric shoulder, 4, around the inner wall of said chamber and from said shoulder to the upper end of the case, A, the chamber therein is of substantially uniform diameter.

The spindle-step, B, is made substantially of the form shown, that is to say its lower end freely enters the lower end, 3, of the said chamber in the case, A, and has an oil-hole, 5, a short distance above its lower end. Said step is of an enlarged diameter from a short distance above said oil-hole to a shoulder, 6, thereon, and above said shoulder the diameter of said step is slightly less than that of the interior of the case, A, as shown. That portion, D, of the spindle-step, B, which extends from said shoulder, 6, to its upper end, is bored from the latter point inwardly to form a socket to receive the lower end, 8, of the bolster, E, as shown in Figs. 1 and 2, and in the side of said socket is formed a slot, 9, in the line of its axis, and a slot, or opening 10, at right angles to said slot, 9, with which the latter communicates. The said lower end, 8, of the bolster has a slightly projecting pin, 12, fixed in its side. Thus a species of bayonet-joint is formed for interlocking the adjoining ends of said bolster and step, as shown in Fig. 1. The said enlarged portion, D, of the spindle-step may be made integral therewith or be made by fixing a tube to the upper end of the step and forming the slots, 9 and 10, therein, as described.

The step-socket to receive the lower end of the spindle is indicated at 7, in Fig. 4.

In Fig. 1, the whirl-hub, 13, is shown chambered in the usual manner to fit over the upper end of the bolster, E, and a portion of the spindle, 14, is there shown entering said bolster. The normal relative positions of the upper end of said bolster and the upper end of said chamber are shown in said last named figure. Said bolster is provided with the usual oil-hole, *x*.

A coil spring, *h*, of such internal diameter as will cause it to slightly grasp the step, is placed in the case, A, and there rests upon the shoulder, 4. The spindle-step then being placed in the case in the position shown in Fig. 2. Its shoulder, 6, comes to a bearing on the upper end of said spring, and the latter

there holds it temporarily in a somewhat higher position than its operative one, as shown in Fig. 1. The bolster, E, is then placed in the upper end of the case, A, and upon giving it a turn or two to screw it into said case, the pin, 12, is brought against the upper end of the part, D, of the step, B, as in Fig. 2, the spring, *h*, yieldingly supporting the step. Upon continuing to turn the bolster in the case, it moves in the direction of the arrow, *o*, in said last named figure, and crowds the pin, 12, against the upper edge of said part, D, while the bolster turns in the direction of the arrow, *v*. About one turn of the bolster, the latter moving inward and crowding the step, B, downward against the force of the spring *h*, and compressing the latter, brings the pin, 12, opposite the slot, 9, and by the reaction of said spring, the step is then lifted up and an engagement of said pin and slot, 9, is effected. Continuing to screw down the bolster the step is turned by it, first, slightly, during a momentary engagement of said pin with one edge of the slot, 9, then, having emerged from the latter into the opening, 10, the pin, 12, engages with one edge of said opening and the upper end of the step-part, D, and the shoulder at the lower end of the screw-thread on the bolster meet, as shown in Fig. 1, and both the step and bolster are turned until the latter shall be screwed quite down and, with the step, be brought to operative positions as shown in said last named figure. In moving the step downward from the position shown in Fig. 2 to that shown in Fig. 1, the spring, *h*, becomes compressed to such degree that it constitutes a resistance exceeding the normal weight of the spindle and a loaded bobbin, and therefore holds the step in the position shown.

From the foregoing description of the construction and operation of the bolster and step in placing them in the case, A, it will be clearly understood that they become thereby automatically interlocked and so remain while in the case. Said interlocking feature of step and bolster construction constitutes an essential improvement in such devices inasmuch as it provides efficient means for quickly removing both bolster and step from the case, A, for cleaning or repairing the parts. Said removal is effected, as will be obvious, by unscrewing the bolster, and in this operation the pin, 12, is carried to the opposite edge of the opening, 10, to that at which it is shown in Fig. 1, and as the bolster moves upward out of the case, said pin becomes engaged under a part of the upper end of the step at the right of the slot, 9, so that the bolster, the step, and the spring, *h*, are all drawn out together. Said parts may, obviously, be all connected, as described, and placed simultaneously in the case, A, but should they be placed therein one by one, in the order described, they will become automatically connected for removal, as described.

What I claim as my invention, is:—

1. Means for effecting the automatic interlocking of a spindle-bolster and step, consisting of a spring acting to move the step toward the bolster, a step having a socket in its upper end to receive the lower end of the bolster, and interlocking devices, substantially as described, at the meeting ends of said bolster and step, combined with the bolster, and a case, substantially as described, to receive said bolster, step, and spring, substantially as set forth.

2. In combination, a step and bolster case having a shoulder around its inner wall, a coil spring resting by its lower end on said shoulder, a spindle step having a shoulder under which said spring engages, and a socket in its upper end in the side of which is a slot and an opening, substantially as described, a spindle-bolster screwing into said case whose lower end enters said socket, and having thereon a projecting pin for engagement with the borders of said slot and opening whereby the step and bolster are interlocked, substantially as set forth.

3. In combination, a spindle-step having a socket in its upper end in the side of which is a slot and an opening substantially as described, and a spindle bolster whose lower end enters said socket having thereon a projecting pin for engagement with the borders of said slot and opening, substantially as set forth.

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