(No Model.)

W. T. CARROLL.

SPINDLE FOR SPINNING MACHINES AND SUPPORT THEREFOR.

No. 256,792. Patented Apr. 18, 1882.

Fig: 1.

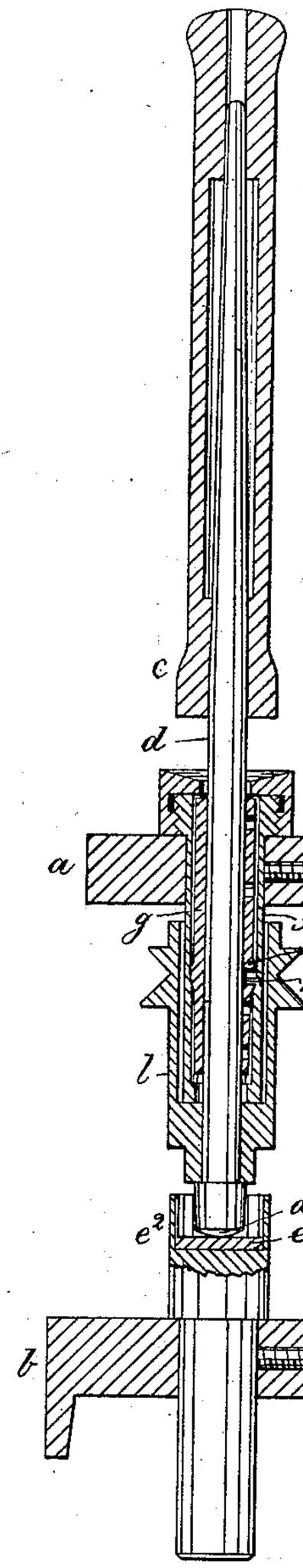
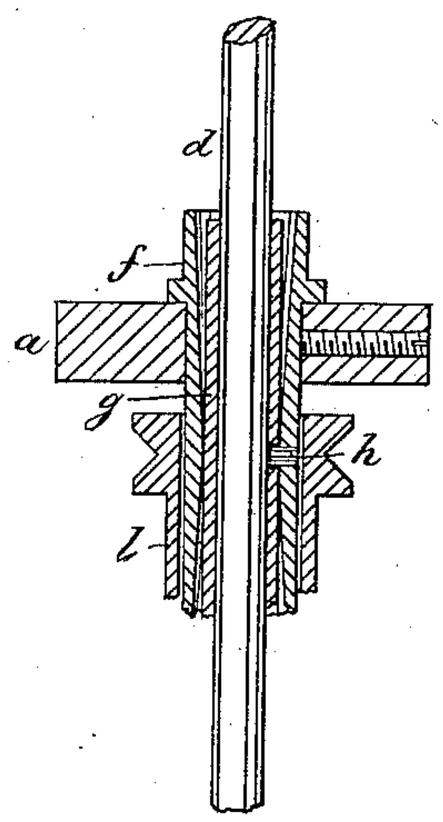


Fig: 2.



Witnesses.
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Inventor.
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UNITED STATES PATENT OFFICE.

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SPINDLE FOR SPINNING-MACHINES AND SUPPORT THEREFOR.

SPECIFICATION forming part of Letters Patent No. 256,792, dated April 18, 1882.

Application filed March 31, 1881. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM T. CARROLL, of Worcester, county of Worcester, State of Massachusetts, have invented an Improvement in Spindles for Spinning-Machines and Supports therefor, of which the following description, in connection with the accompanying drawings, is a specification.

This invention relates to spindles having sleeve-whirls, and more especially designed to be used in ring-spinning machines.

My invention consists essentially in a bolster-rail, a spindle-bolster extended below it having its interior portion supported therein to rock with the spindle, and the step having a horizontal or plane surface over which the lower end of the spindle may travel freely, combined with the spindle and the whirl connected therewith, the spindle with its load being supported and steadied, as herein described, in order that the lower end of the spindle may move freely in a lateral direction to find its true center of rotation.

Figure 1 represents in vertical section a sufficient portion of a ring-spinning frame to illustrate my invention, and Fig. 2 a section of a modified form of bolster.

This invention is intended to be an improvement in that class of spindle represented in United States Patent No. 227,129, to which reference may be had, wherein the spindle is so supported and driven as to enable it, with its load, should it be more or less unbalanced, to readily find its true center of rotation.

In this my invention the sleeve-whirl is shown connected with the spindle very close to the lower end of the latter, whereby the weight of the spindle and its attached revolving parts is brought down as closely as possible to the step or support on which the spindle rests and rotates, thereby enabling the spindle to be run more steadily.

The spindle-rail *a*, the step-rail *b*, and the bobbin *c* are all of usual construction. The spindle *d*, which carries and drives the bobbin as usual, has its lower end rounded, as at d^2, to rest upon a steel, glass, or other hard horizontal or level surface, *e*, of the spindle-step e^2, the end d^2 of the said spindle being free to move or wander horizontally over that part or surface of the step on which it rests and rotates as the lower end of the spindle seeks its true center of rotation, so as to run evenly and steadily, notwithstanding the load carried by the spindle is or may be more or less unbalanced. The top of the step e^2 will have a wall or guard about it to form a chamber very considerably larger in diameter than the diameter of the lower end of the spindle, as shown in the drawings.

The spindle-bolster is a compound one, composed of an outer shell, *f*, and an inner or bearing portion, *g*, placed therein, the said inner portion being of such diameter and shape externally as to touch the interior of the shell *f* at but one place—viz., substantially in line with the center of the groove of the whirl—such construction (the interior of the inner portion *g* fitting the spindle closely) enabling the said inner portion to move within the shell *f* under the action of the spindle and in unison with it as the spindle changes its position in finding its true center of rotation, with its load more or less unbalanced. In Fig. 1 this inner portion, *g*, has a ball-like projection, g^2, which touches or fits the interior of the shell; but above and below this projection g^2 the interior diameter of the shell is in excess of the external diameter of the portion *g*, which enables the portion *g* to rock or move universally. In Fig. 2 I have shown a modification in which the interior of the shell *f* is bored on a taper from each end toward its center, growing smaller toward the center, where I have placed a stud, *h*, which supports the inner portion, *g*, of the bolster and permits it to rock, as described, freely, as the spindle is moved to find its true center of rotation.

The sleeve-whirl *l* is substantially such a whirl as that shown in the patent referred to, and it will be driven by a band in the usual manner; but, instead of connecting it with the spindle above the bolster-rail to surround the upwardly-extended bolster-tube connected with the foot-step rail, I have attached the said sleeve-whirl to the spindle very near its lower end, so that the upper end of the sleeve-whirl is made to surround the lower end of the bolster, extended downward below the bolster-rail, as shown in the drawings, the connection of the said sleeve-whirl with the spindle being between the lower end of the bolster and the

step-rail, the weight of the sleeve and whirl being all below the lower end of the bolster.

I do not broadly claim a bolster-bearing so constructed as to rock within its shell, as that, I am aware, is not new.

In the patent referred to an elastic packing is described as being interposed between the portion of the bolster-bearing which runs in contact with the spindle and the rigidly-held shell or tube outside of it; but in the construction herein described the said elastic medium is not needed. The nearer to its point of support that the weight of the rotating spindle can be brought the more easily it can be balanced and made to run truly and steadily; and to secure the most favorable results in spinning I have connected the whirl with the spindle below the bolster-bearing, and very near the lower end of the spindle and the step on which it rests. To do this and have the band pull at the proper point I inverted the sleeved whirl, so as to receive within it and the whirl the lower end of the bolster.

If the spindle had a conical point such as commonly found on spinning-spindles, and such point were fitted into a like shaped or conical recess of a little larger diameter in the step, it is obvious that the principle of operation of such a spindle would be very different from that herein described, even were the spindle-bolster supported in its outer shell or supporting-tube, as shown in the drawings, for the lower conical end of a spindle fitted into a conical socket cannot move laterally to find the true center of rotation for the spindle and its load, because any attempted lateral motion of the foot of the spindle would be met by the inclined side of the step-socket. In that case the inner portion of the bolster of the kind herein shown would move only to avoid cramping or bending the spindle between the said bolster and the step-socket.

The portion *g* of the bolster-bearing may be grooved in any usual manner to enable the bolster to be oiled.

I claim—

1. The bolster-rail and spindle-bolster extended below it, the said bolster having its interior portion supported therein to rock with the spindle, and the step having a horizontal or plane surface over which the lower end of the spindle may travel freely, combined with the spindle and the whirl connected therewith, the spindle with its load being supported and steadied as described in order that the lower end of the spindle may move freely in a lateral direction to find its true center of rotation without cramping the spindle in its bearings, substantially as described.

2. The bolster-rail and spindle-bolster extended below it, the said bolster having its interior portion supported therein to rock with the spindle, and the step having a horizontal or plane surface over which the lower end of the spindle may travel freely, combined with the spindle and the sleeve-whirl connected therewith between the said bolster and step, the spindle with its load being supported and steadied as described in order that the lower end of the spindle may move freely in lateral direction to find its true center of rotation without cramping the spindle in its bearings, substantially as described.

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

WILLIAM T. CARROLL.

Witnesses:

H. W. MASON,

WM. F. DRAPER.