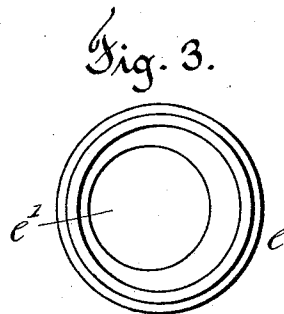
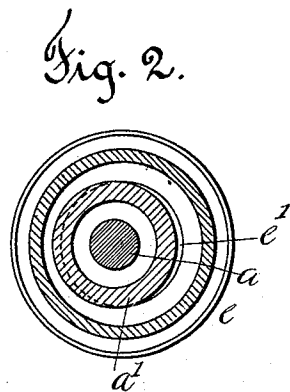
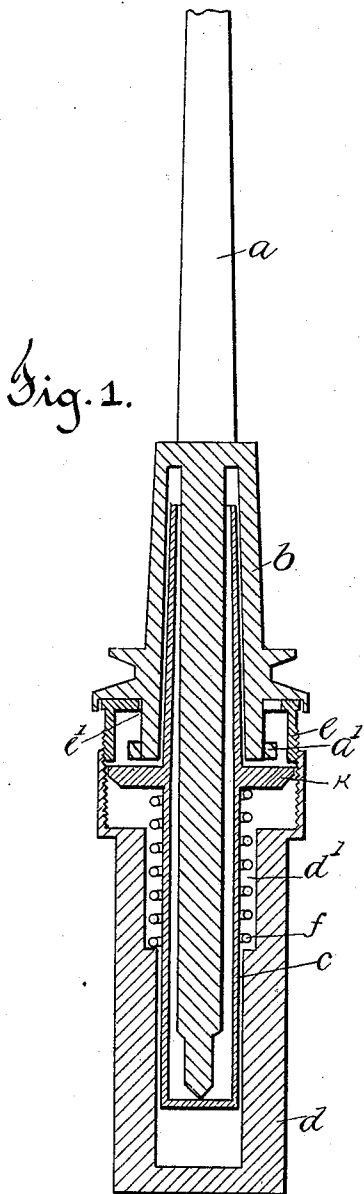


(No Model.)

W. G. MORRISON.
SPINDLE.

No. 486,231.

Patented Nov. 15, 1892.



Witnesses
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UNITED STATES PATENT OFFICE.

WALTER G. MORRISON, OF WILLIMANTIC, CONNECTICUT.

SPINDLE.

SPECIFICATION forming part of Letters Patent No. 486,231, dated November 15, 1892.

Application filed September 30, 1891. Serial No. 407,280. (No model.)

To all whom it may concern:

Be it known that I, WALTER G. MORRISON, of Willimantic, in the county of Windham and State of Connecticut, have invented certain new and useful Improvements in Spindles, of which the following is a full, clear, and exact description, whereby any one skilled in the art can make and use the same.

The object of my invention is to provide a spindle with improved means for removably securing it in operative connection with the tubular bolster and oil-cup; and to this end my invention consists in the details of the several parts making up the device as a whole and in their combination, as more particularly hereinafter described, and pointed out in the claims.

Referring to the drawings, Figure 1 is a view in vertical central section on the spindle and its connected parts. Fig. 2 is a detail view, in section, through the base of the spindle on the plane passing through the locking-collar. Fig. 3 is a detail plan view of the locking-ring.

In the accompanying drawings the letter *a* denotes a spindle; *b*, a sleeve-whirl; *c*, a tubular bolster, within which the spindle is immediately supported; *d*, the oil-cup, and *e* the locking-ring that serves as a cover to the cup and as a means of regulating the tension of the bolster-supporting spring. The upper part *d'* of the oil-cup has preferably a larger diameter than the lower part, a shoulder between the two serving a useful purpose in the attachment of the spindle as a whole to the rail of the spinning-frame. Within the oil-cup the spring *f* is located with one end thrusting against the shoulder within the cup and the other end thrusting upward against a projecting collar *k* on the tubular bolster. The locking-ring *e* is threaded as a means of securing it in place in a threaded socket in the upper end of the oil-cup, the lower edge of the ring pressing upon the upper surface of the collar *k* and forcing it down upon the spring *f*. The ring may be used as a means of adjusting the tension of this spring.

The upper surface of the locking-ring *e* has an eccentric opening *e'*, the diameter of which is slightly greater than the diameter of the locking-collar *a'*, that projects from the outer surface at the lower end of the sleeve that

forms a part of the spindle. This collar *a'* will pass freely through the eccentric opening in the locking-ring, provided the latter is not secured in the oil-cup, the eccentric arrangement of the opening in the ring compelling the lateral movement of the ring in order to fit the parts together. The parts are assembled with the locking-ring unscrewed from the socket in the oil-cup until the collar on the sleeve has been slipped through the opening in the locking-ring, when the latter is then screwed to place. The result of this construction is that at all times some portion of this locking-collar *a'* underlies the top of the locking-ring in such manner as to prevent the vertical lifting of the spindle out of its support in the tubular bearing. It is, in fact, impossible to remove the spindle without unscrewing the ring from the seat in the oil-cup. This method of constructing the interengaging parts provides a simple and very efficient means of preventing the accidental removal of the spindle from its supporting bearings while the spindle is in use in the frame. The lower part of the grooved pulley on the sleeve-whirl is provided with a downturned flange, the whole forming an overhanging cover that closes the upper part of the cup and hangs sufficiently below the edge of the cover within it to prevent any spattering of oil with which the cup is filled for the purpose of lubricating the bearings. The oil passes from the cup into the tubular bearing through an opening that may be made through the wall of the tubular bolster, near the step, upward along the spindle to the top of the tubular bearing, where it passes outward and downward through openings that may be made in the collar and back again into the well, being kept in constant circulation by the rotary movement of the spindle and by the capillary attraction of the thin film of oil between the bearing of the spindle and the inner walls of the tubular bolster.

I claim as my invention—

1. In combination with the oil-cup *d*, a tubular bolster *c*, provided with the projecting collar *k*, located within the cup, the spring *f*, located within the cup and underlying the collar on the bolster, the locking-ring removably secured to the top of the oil-cup and having an eccentric opening, and the spindle *a*,

having a locking-collar *a'*, a portion of which underlies the locking-rim, all substantially as described.

2. In combination with an oil-cup, a locking-collar having a vertical adjustment detachably secured to said cup and having an eccentric opening therethrough, the spindle having a projecting locking-ring underlying in part an edge of the opening in the collar, a tubular bolster supported on a spring within the oil-cup and provided with a collar projecting into the path of movement of the lower edge of the locking-collar, and the supporting-spring underlying said flange, all substantially as described.

3. In combination with an oil-cup, a lock-

ing-collar detachably secured to said cup and having an eccentric opening therethrough, the spindle having a projecting locking-ring underlying in part an edge of the opening and with a downturned flange surrounding said ring the tubular bolster supported within the oil-cup and having a collar, the edges of which are adapted to engage the locking-collar, and the spring having one end resting upon a projecting part of the cup and with its upper end engaging the under surface of the collar on the bolster, all substantially as described.

WALTER G. MORRISON.

Witnesses:

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