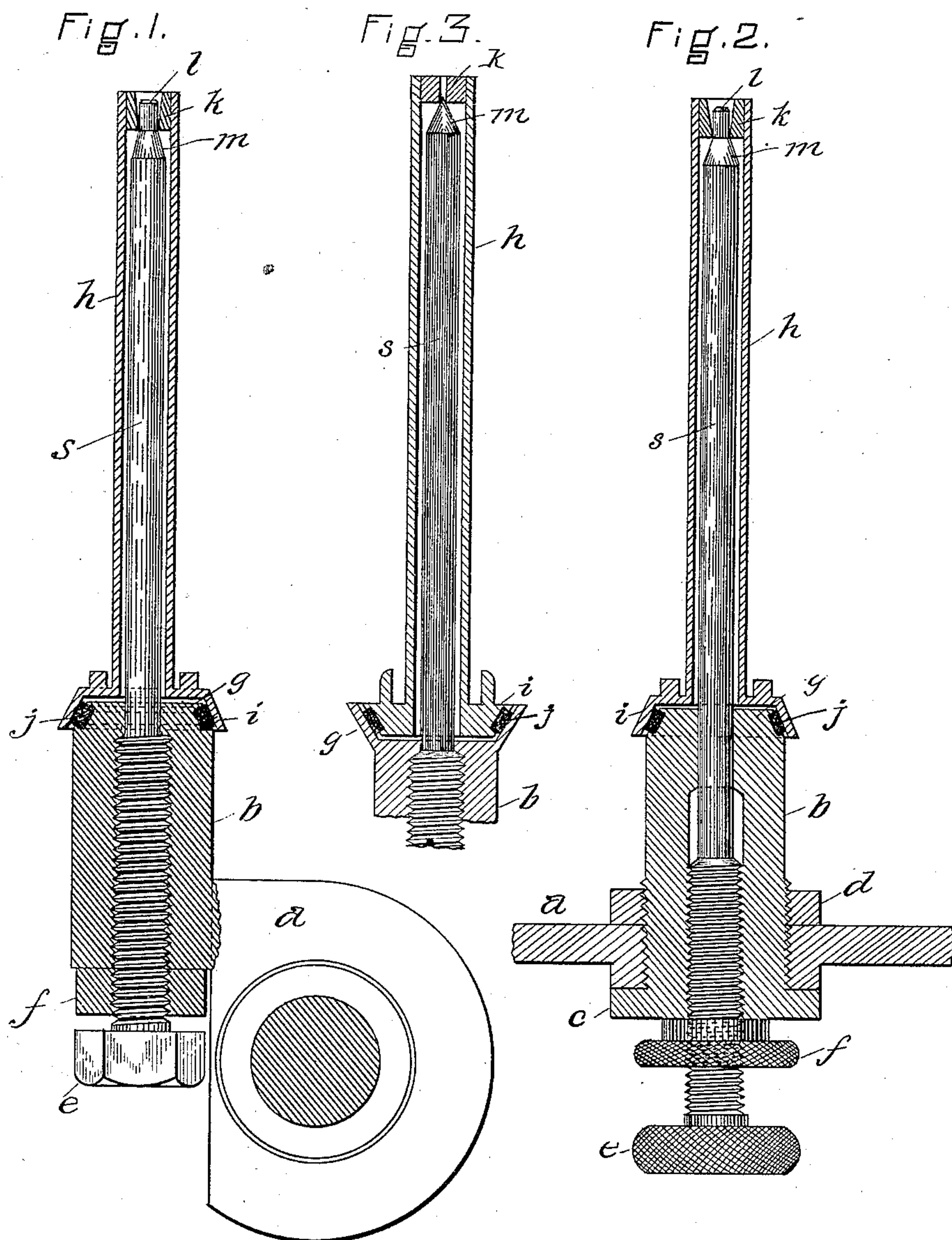


(No Model.)

J. HOGG & A. H. ROBINSON.
SPINDLE FOR SPINNING MACHINES.

No. 401,703.

Patented Apr. 16, 1889.



WITNESSES:
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UNITED STATES PATENT OFFICE.

JAMES HOGG AND ALFRED HERBERT ROBINSON, OF LAWRENCE,
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SPINDLE FOR SPINNING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 401,703, dated April 16, 1889.

Application filed January 5, 1888. Serial No. 259,836. (No model.)

To all whom it may concern.

Be it known that we, JAMES HOGG and ALFRED HERBERT ROBINSON, of Lawrence, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Spindles for Spinning-Machines, of which the following is a specification.

Our invention has relation to spinning-spindles, and particularly to that class of such devices known as "dead-spindles," consisting of a spindle or skewer not movable, on which the bobbin is revolved.

It is the object of our invention to provide improved means for regulating the drag of the bobbin, in order to govern the degree of tension on the thread while it is being wound on the bobbin.

Our invention consists of the construction and arrangement or combination of parts hereinafter described and claimed.

In carrying out our invention we form a screw-thread on the lower end of the spindle and screw the latter into or through its base or support, so as to render it vertically adjustable therein.

The bobbin-seat or seat for the bobbin-carrying tube we make in the form of a frustum or cone or cup-shaped, or in the form of a frustum of a cone inverted, either of metal or other suitable material, with the sides covered with felt or similar material calculated to effect a drag on the bobbin, or it may be made throughout of felt or the like, which seat for the bobbin or bobbin-carrying tube is secured to the upper end of the spindle-support. The bobbin-base we make of a form corresponding on its interior surface to the exterior surface of the bobbin-seat, so that when the former is allowed to rest on the latter it will fit closely thereover or therein and so be held by the drag or friction between the covering on the side of the seat and the side of the base from being freely revolved thereon.

A plug, composed of some anti-friction metal or metalline, is fixed in the upper end of the metal tube which carries or supports the bobbin, and a hole is formed through said plug.

The upper end or point of the spindle is

constructed to extend into or through the hole in the plug, and is provided with an inclined shoulder or offset below its point, so that the plug in the bobbin-carrying tube will rest on the inclined shoulder aforesaid and the bearing between the spindle and plug will then be made as narrow as possible. With this construction the drag of the bobbin, which is carried by the tube and rotates with it, can readily be regulated by screwing the spindle up or down in its support. For example, the spindle may be turned up so as to lift the bobbin-carrying tube entirely off from its base or seat and make the bearing for said tube dependent entirely upon the contact of the plug in the upper end thereof with the inclined shoulder formed on the upper end of the spindle, so that the bobbin and its carrying-tube may turn on the spindle with the least possible friction; or the spindle may be screwed down so as to let the bobbin and bobbin-carrying tube rest with their entire weight on their seat, and so aggravate the drag or friction to as great an extent as may be found necessary in the use of the invention.

That our invention may be more fully and clearly understood, we will now proceed to describe the same with reference to the accompanying drawings, and to the letters of reference marked thereon, forming a part of this specification, the same letters designating the same parts wherever they occur.

Of the said drawings, Figure 1 represents a longitudinal vertical section of the device mentioned embodying our improvements. Fig. 2 represents a view similar to Fig. 1, showing a slightly modified form of the spindle-support and means for adjusting the spindle vertically. Fig. 3 represents a sectional detail view of the spindle, the bobbin-carrying tube, and support therefor.

In the drawings, *a* designates the lifter plate or rail, of usual or suitable form, to which the spindle-support *b* is properly secured or connected. In Fig. 1 we have shown the spindle-support *b* as forming an integral part of the plate or rail *a*, and in Fig. 2 the support *b* is shown as screwed into the plate or rail, so that a shoulder or offset, *c*, with which said

support is provided at its lower end, rests against the lower face of the plate or rail, and a locking-nut, *d*, is screwed upon the support *b* and turned down on the upper face of the rail, by which means the support *b* is maintained firmly in position. Other suitable means for securing the spindle-support *b* on the rail *a* may be provided.

The spindle *s* extends through the support *b*, and has a screw-thread connection therewith which permits of its adjustment vertically with its support, and to facilitate screwing the spindle up and down therein we provide the latter on its lower end with a round thumb-nut or polygonal screw-head, *e*, and turn a check-nut, *f*, on the spindle to be screwed up against the lower face of the spindle-support *b*, as shown in Figs. 1 and 2.

The upper end of the spindle-support *b* is made in the form of a frustum of a cone and constitutes the seat *g* for the bobbin (not shown) or bobbin-supporting tube *h*, the base *i* of which conversely corresponds in form to the form of the seat *g*, the latter having its sides preferably covered with a strip or washer, *j*, of felt or similar material. The construction or form and relationship of the seat *g* and base *i* of the bobbin-supporting tube are such that when the latter is allowed to rest on the former it will fit closely thereover and be held by the drag or friction between the seat and base, so that the bobbin-supporting tube will be retarded in an effort to rotate it.

A plug, *k*, composed of anti-friction metal or metalline, is fixed in the upper end of the bobbin-supporting tube, and a hole or opening, preferably having the form of a frustum of a cone inverted, is made through said plug. (See Figs. 1 and 2.)

The upper end of the spindle *s* is reduced in diameter, as indicated at *l*, and is provided with a downwardly-sloping offset or shoulder, *m*, the reduced part *l* extending through the hole formed in the plug *k*, and the construction and arrangement at this point being such that the bobbin-supporting tube will have a very narrow bearing-surface on the spindle, so that by adjusting the spindle vertically the drag or frictional resistance between the base *i* and seat *g* can be regulated or varied, so as to vary the tension on the thread while being wound on the bobbin; or the spindle can be raised, so as to lift the bobbin supporting and carrying tube *h* entirely off from its seat *g*

and have said tube carried entirely by the plug *k*, bearing on the shoulder *m*.

The bobbin-carrying tube is provided with the usual pins or lugs, *n*, which engage the bobbin, so as to carry it around with the tube.

Instead of constructing the base of the bobbin-supporting tube and seat for said base as described, the seat *g* may be made cup-shaped and the base *i* made in the form of a frustum of a cone inverted, as shown in Fig. 3, and instead of forming the upper end of the spindle and bobbin-supporting tube in the manner shown in Figs. 1 and 2, and hereinbefore particularly described, said parts may be constructed as shown in Fig. 3, in which the upper end of the spindle is made conical in form, forming the inclined shoulder or bearing for the plug *k* in the upper end of the bobbin-carrying-tube, and the point of said conically-shaped end is extended into the hole formed in said plug.

Other changes may be made in the form and arrangement of parts composing our invention without departing from the nature or spirit thereof.

Having thus described our invention, what we claim is—

A lifter plate or rail, a spindle-support, *b*, secured to the plate or rail and provided with an inclined frictional seat for the bobbin-carrying tube, a spindle provided at its upper end with an inclined shoulder or offset and having a screw-threaded connection with and vertically adjustable in said support *b*; a bobbin-carrying tube provided at its upper end with a plug, *k*, of anti-friction metal, and having a hole formed therein, said plug resting on the inclined shoulder or offset of said spindle, the bobbin-carrying tube being also provided with a base, *i*, conforming to the inclined frictional seat on support *b*, and a check-nut, *f*, on the lower end of the spindle, adapted to be screwed up against the lower face of the support *b*, all combined, arranged, and operating substantially as set forth.

In testimony whereof we have signed our names to this specification, in the presence of two subscribing witnesses, this 17th day of December, A. D. 1887.

JAMES HOGG.

ALFRED HERBERT ROBINSON.

Witnesses:

CHARLES U. BELL,

FRANK H. SAUNDERS.