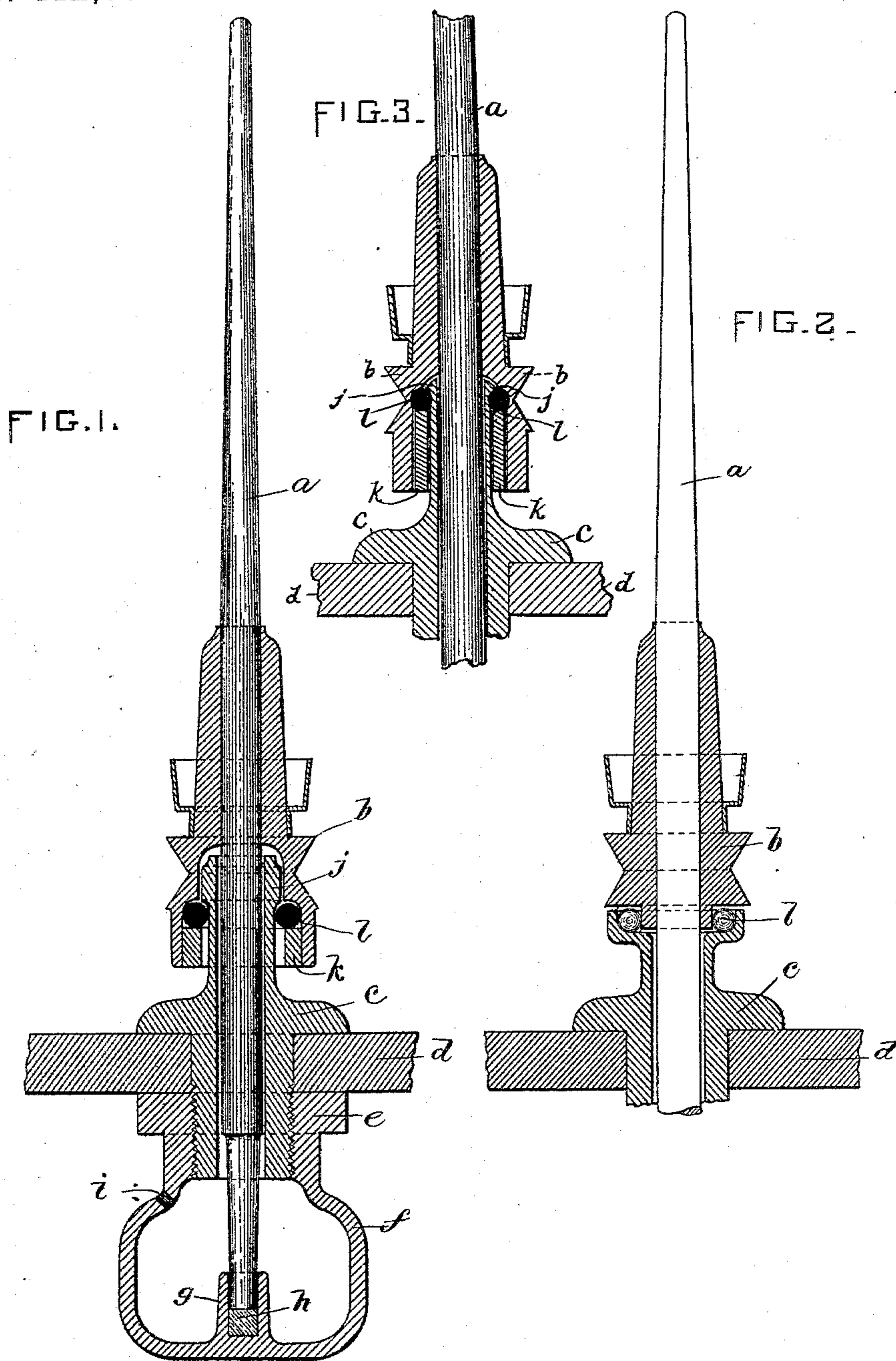


(No Model.)

T. H. LOGAN.
SUPPORT FOR SPINNING SPINDLES.

No. 412,031.

Patented Oct. 1, 1889.



WITNESSES.
H. Brown
A. D. Harrison.

INVENTOR.
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attys.

UNITED STATES PATENT OFFICE.

THOMAS H. LOGAN, OF LOWELL, MASSACHUSETTS, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO HORATIO R. FLETCHER, TRUSTEE, OF SAME PLACE.

SUPPORT FOR SPINNING-SPINDLES.

SPECIFICATION forming part of Letters Patent No. 412,031, dated October 1, 1889.

Application filed June 18, 1888. Serial No. 277,429. (No model.)

To all whom it may concern:

Be it known that I, THOMAS H. LOGAN, of Lowell, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Supports for Spinning-Spindles, of which the following is a specification.

My invention has relation to spindles for spinning-machines, and has for its object such improvements in the supports for spindles as will overcome much of the friction heretofore encountered in running them, and thereby, as a consequence, greatly reducing the power and expense of driving the same.

To the foregoing ends my invention consists of a construction, as hereinafter described and claimed, whereby the spindle is vertically supported entirely by the step, while the lateral support for the same consists entirely of an anti-friction ball-bearing.

For a full and clear understanding of my invention, reference is to be had to the accompanying drawings, and the letters of reference marked thereon, forming a part of this specification, of which drawings—

Figure 1 is a vertical section of the spindle-support and its adjuncts, illustrating my improvements, the spindle being shown in elevation and in position in its support. Fig. 2 is a sectional detail view showing a modified form of one feature of the invention. Fig. 3 is a detail view similar to Fig. 1, but showing the anti-friction balls arranged on a line with the band-pull.

In the drawings, *a* designates the spindle; *b*, the sleeve-whirl; *c*, the bolster-case, and *d* the spindle-rail, all of usual form and function, excepting as hereinafter mentioned. The bolster-case *c* is secured to the rail *d* by means of a nut *e*, with which is combined an oil reservoir or cup *f*, provided with a step-seat *g*, in which the flat step *h* is secured in any suitable manner.

i designates a hole formed in the side of the oil-reservoir *f*, by means of which the lubricant may be supplied to the foot and step of the spindle.

The nut *e* is constructed so as to be screwed upon the lower end of the bolster-case *c*, there-

by securing the latter device to the rail *d* and supporting its combined oil-reservoir and step-seat in proper position, all as clearly represented in Fig. 1, affording means for the purpose specified, which are very simple and economic of construction.

As shown in Fig. 1, the sleeve-whirl extends down over the upper end of the bolster-case, the latter being provided with a rounded offset *j* at a point just below or as near as desired on the line of the band-pull on the whirl, a ring *k* being forced into the lower end of the sleeve-whirl, so as to leave a space between the upper face of the ring *k*, the offset *j* of the bolster-case *c*, and the inner surface of the whirl *b*, in which space is arranged a circle of anti-friction balls *l*. As the bore of the bolster-case is appreciably larger than the diameter of the spindle, as is the bore of the sleeve-whirl larger than the diameter of the upper end of the bolster-case, substantially the entire lateral support for the spindle is afforded by the circle of anti-friction balls *l*, the spindle being supported vertically wholly by the step *h*. With this construction no lubrication of the lateral bearing of the spindle is required and the friction of the same is reduced to a minimum, there being no appreciable increase of friction by increasing the tension or pull on the spindle-driving band. Substantially the only friction between the spindle and its bearings in the operation of the former will be between the foot of the spindle and the step *h*, and this will be inconsiderable.

It is obvious that many changes may be made in the form and arrangement of parts constituting my invention without departing from the nature or spirit thereof. For example, the parts shown in Fig. 1 may be so constructed as to bring the circle of anti-friction balls *l* on a line with the band-pull, as shown in Fig. 3; or the circle of anti-friction balls *l* may be arranged between the outer surface of the lower portion of the sleeve-whirl and the bolster-case *c*, in which case the upper portion of the bolster-case will be constructed so as to surround the lower portion of the sleeve-whirl, as shown in Fig. 2. In all instances, however, the lateral bearing or sup-

port for the spindle will consist of a circle of anti-friction balls interposed between the spindle or whirl secured to the spindle and the bolster-case or its equivalent. It will be
5 understood, of course, that the anti-friction balls and the parts in contact therewith will be formed of metal hardened to the utmost degree, so as to avoid wear.

What I claim is—

10 1. A spindle and flat step for supporting the same vertically, combined with a bolster-case, a whirl secured to the spindle, and a circle of anti-friction balls constructed and arranged solely to form a lateral bearing or support for the spindle interposed between the
15 whirl and bolster-case, as set forth.

2. A spindle and flat step for supporting the same vertically, combined with a bolster-case, a sleeve-whirl extending over the bolster-case, and a circle of anti-friction balls constructed and arranged solely to form a lateral bearing or support for the spindle interposed between the whirl and bolster-case on a line horizontally with the whirl, as set forth.

In testimony whereof I have signed my name 25 to this specification, in the presence of two subscribing witnesses, this 11th day of June, A. D. 1888.

THOMAS H. LOGAN.

Witnesses:

ARTHUR W. CROSSLEY,
A. D. HARRISON.