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J. CALDWELL.

COMBINED BOLSTER AND STEP FOR SPINNING SPINDLES.

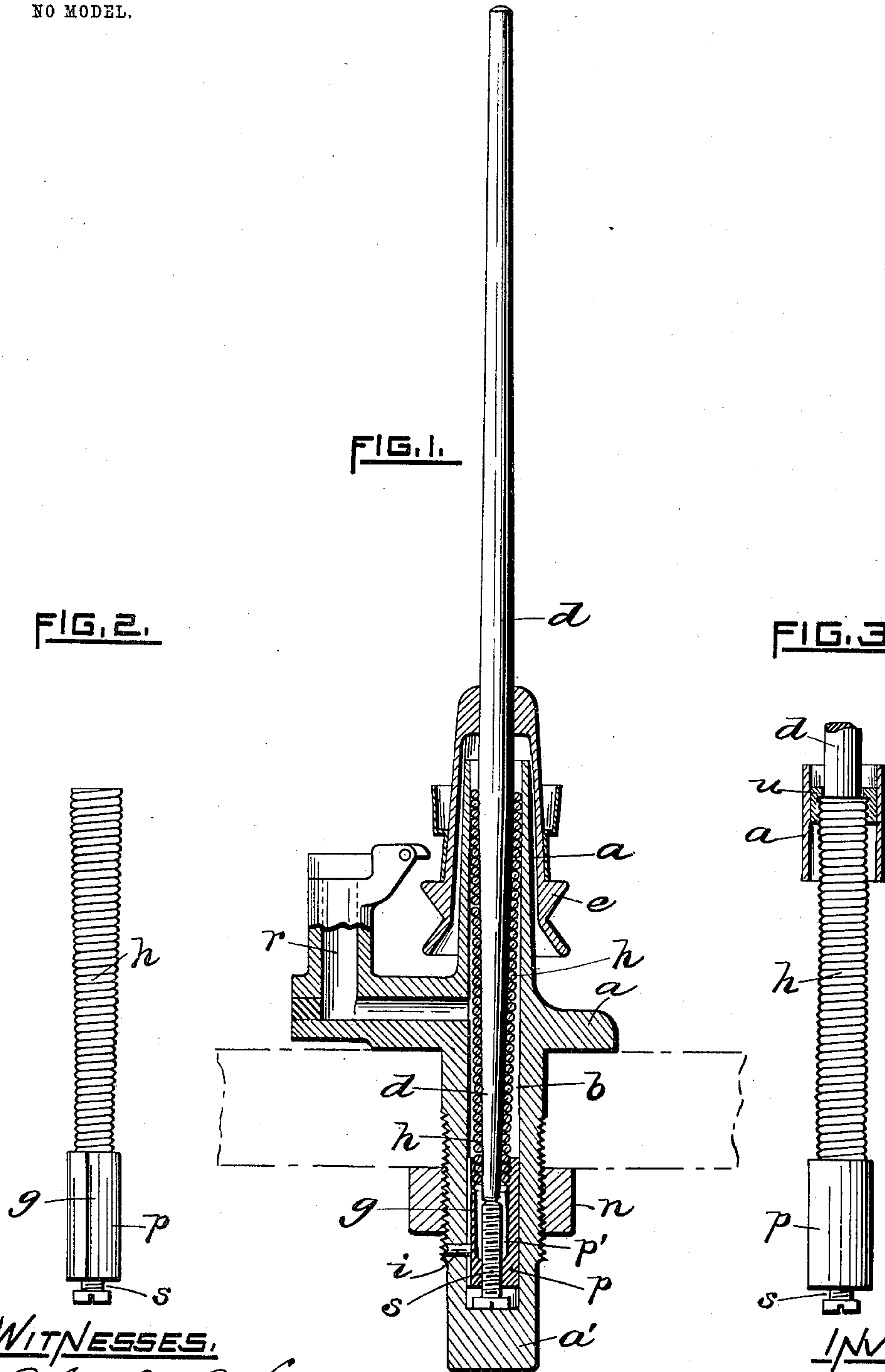
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NO MODEL.

FIG. 1.

FIG. 2.

FIG. 3.



WITNESSES.

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COMBINED BOLSTER AND STEP FOR SPINNING-SPINDLES.

SPECIFICATION forming part of Letters Patent No. 736,491, dated August 18, 1903.

Application filed June 20, 1902. Serial No. 112,443. (No model.)

To all whom it may concern:

Be it known that I, JOHN CALDWELL, a citizen of the United States of America, and a resident of Edgewood, in the town of Cranston, Providence county, and State of Rhode Island, have invented certain new and useful Improvements in a Combined Bolster and Step for Spinning-Spindles, of which the following is a specification.

My invention relates to improvements in spindle-bearings, or rather to a combined bolster and step for spinning-spindles; and it consists, essentially, of a non-revoluble bolster proper, made of helically-wound wire, a step into which the convolutions of the lower end of the bolster are screwed, and an adjusting-screw mounted in the step adapted to support the rapidly-revolving spindle, the whole arranged to be removably secured in a suitable holder or supporting-case, all as will be more fully hereinafter set forth and claimed.

The object I have in view is to provide the usual whirl-driven spindles of spinning-machines with an improved bolster and step so constructed and arranged that when mounted in suitable holders the spindles may be operated with greater efficiency or economy in power, the device also being capable of close or accurate adjustment.

My improved bolster and step may be easily and quickly introduced into or removed from the holder, as desired. Its construction is such that it forms a practically perfect lubricating device for the spindle. It is adapted to accommodate itself to varying loads and speeds in that the bolster is slightly resilient and not rigidly fitted to the bore of the holder, and, moreover, the cost is comparatively small as compared with other devices of this class heretofore produced.

I am aware that helically-wound wire bolsters have been devised long prior to my present invention; but a bolster of this type screwed into a step and provided with an adjustable spindle-supporting screw is, I believe, both new and useful.

In the accompanying sheet of drawings, Figure 1 is a vertical central sectional view of my improved bolster and step mounted in a holder or supporting-case and also showing

a spinning-spindle connected therewith as in use. Fig. 2 is a side elevation of the device detached from the holder and spindle; and Fig. 3 is a similar view in partial section, showing a slightly-modified form of the invention.

Again referring to the drawings, *a* indicates any suitable holder or supporting-case bored out longitudinally to form a chamber *b*, adapted to freely receive the bolster and step and having a closed bottom end *a'*. The lower portion is screw-threaded and provided with a nut *n*, by means of which the holder is adapted to be secured to the rail of the spinning-machine as usual. The revoluble spindle *d* is provided with a sleeve-whirl *e*, attached thereto, and also having the upper portion of the holder extending into and inclosed by the lower part of the said member *e*, the same being constructed and adapted for operation in any well-known manner.

My improved bolster *h* is made of suitable wire wound or coiled in a helical form. The exterior diameter of the bolster is slightly less than the bore of the holder, its inner diameter forming a bearing for the corresponding portion of the spindle. I prefer to make the bolster tapering, the degree of inclination being substantially the same as that of the spindle, as clearly shown.

To the lower end of the bolster is secured the cylindrical step *p*, having a central chamber or recess *p'*. The lower end of the step is screw-threaded longitudinally to receive the adjusting-screw *s*. The upper end of the screw is adapted to contact with and support the spindle *d*. The opposite or head end of the screw when in use rests upon the lower end *a'* of the holder, as shown. The upper portion of the inner wall of the step is helically grooved to snugly receive the lower coils of the bolster, the arrangement constituting a screw and nut and being when thus united practically one or integral, as clearly shown in Fig. 2.

In order to prevent the bolster and step from turning axially when in use, the side of the step has a shallow longitudinal groove *g* formed therein in which an end of a pin *i* extends, the latter being rigidly secured to the lower part of the bolster, as shown. This

feature, however, is a well-known expedient employed for a similar purpose in other spindle-bearings.

In my invention the relation of the slightly-resilient bolster to the step is positively maintained, since they are secured together. In view of this the screws may be set or adjusted with great accuracy or precision, thereby insuring that the spindle when properly adjusted will revolve in a practically invariable plane and with a minimum degree of friction.

The holder-chamber forms an oil well or reservoir, which may be filled at the inlet-nozzle *r* as common. I prefer to wind the coils forming the bolster so that the direction of rotation of the rapidly-revolving spindle will tend to circulate the oil downwardly rather than toward the top of the bolster, thus keeping the end of the spindle well lubricated. At the same time, however, the slight resiliency of the bolster permits oil to gradually work between the coils, and thus lubricate all that part of the spindle contained in the bolster.

It is obvious that my improved combined bolster and step is simple in construction and not liable to get out of order or repair and is therefore durable, besides being comparatively inexpensive to produce. It is adapted to be readily introduced into the holder and as readily removed therefrom when required.

In Fig. 3 I have represented a slight modification of the device. In this case the bolster is wound in a straight or cylindrical manner in lieu of a tapering form and is provided with a thin sleeve or collar *u* at the top, the same being interposed between the bolster and adjacent wall of the holder.

I claim as my invention and desire to secure by United States Letters Patent—

1. In a device of the character described, the combination of a bolster and step for spinning-spindles, comprising a bolster forming a non-revoluble bearing for the spinning-spindle, said bolster formed of helically-wound wire, a recessed internally-threaded

step member adapted to retain the lower convolutions of the bolster screwed therein, said bolster non-revolubly mounted in the step member, means to prevent the rotation of said step, and an adjusting-screw for said spindle mounted in the lower end of the said step, substantially as described.

2. The combined spindle-bolster and adjustable step for spinning-spindles, the same comprising a bolster formed of helically-wound wire, said bolster forming a non-revoluble bearing throughout its length for the spindle, the lower end of said bolster and spindle being seated in a recessed step member, said member having internal threads at its upper end to receive the lower coils of the bolster to hold the same against rotation therein, means to prevent the rotation of said step member, and an adjusting-screw mounted in the bottom of said member, adapted to engage the lower end of the spindle within the recess of the step, substantially as described.

3. The combination with a revoluble spinning-spindle and a supporting-case therefor, a tapering bolster forming a bearing for the spindle, said bolster formed of coiled wire, a non-revoluble step mounted in the supporting-case, said step being recessed and having its upper portion internally threaded, said coiled bolster adapted to screw into the step whereby the same is held against rotation therein, an adjusting-screw for the spindle mounted in the bottom of the step member and extending into the recess thereof, and means for preventing the rotation of the step member comprising a groove in the outer face thereof, and a pin to engage said groove mounted in the supporting-case, substantially as described.

Signed at Providence, Rhode Island, this 19th day of June, 1902.

JOHN CALDWELL.

Witnesses:

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