

(No Model.)

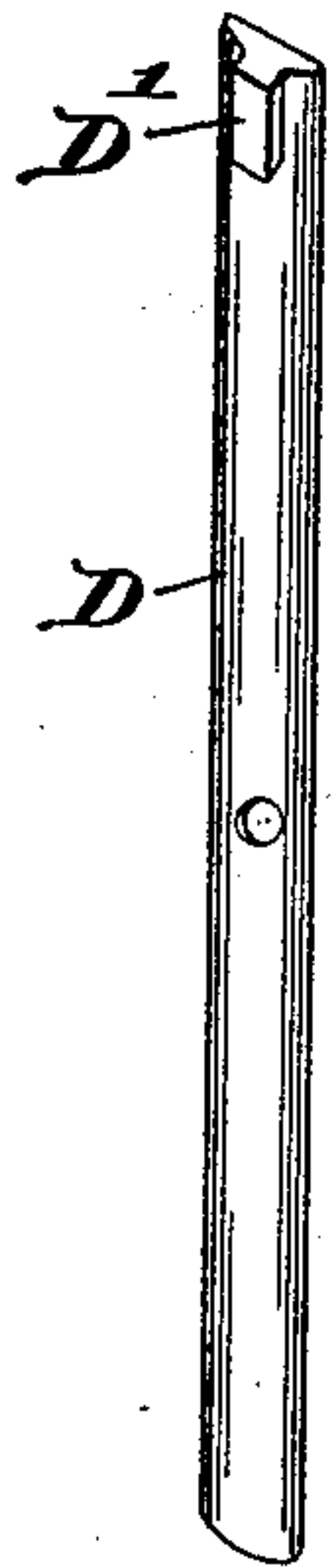
G. O. DRAPER.  
SPINDLE BEARING.

No. 507,356.

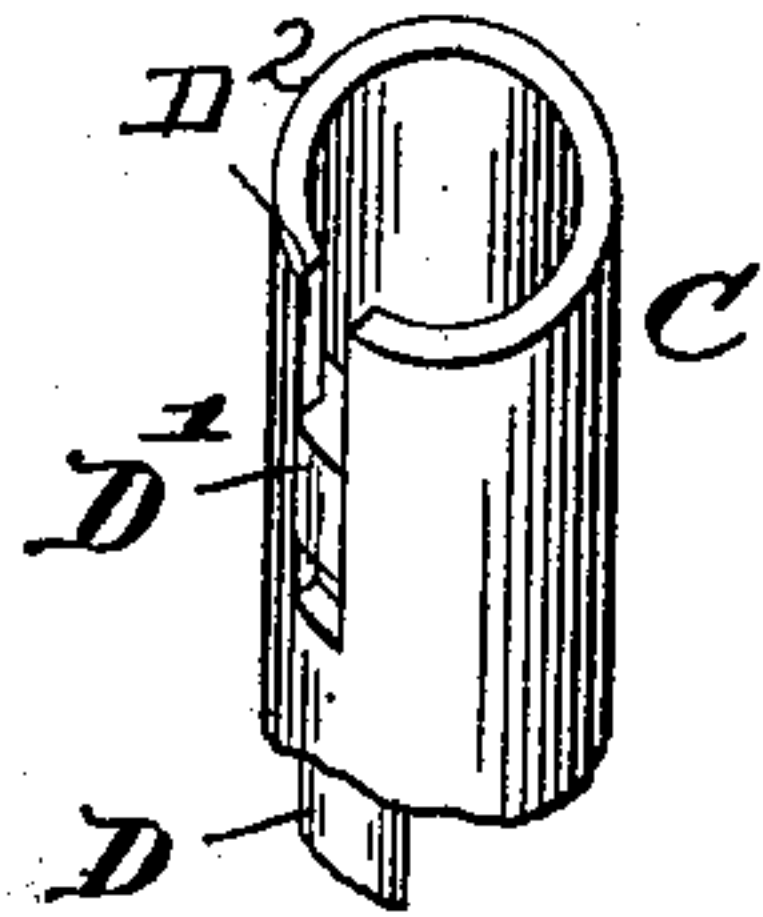
Patented Oct. 24, 1893.

*Fig:1.*

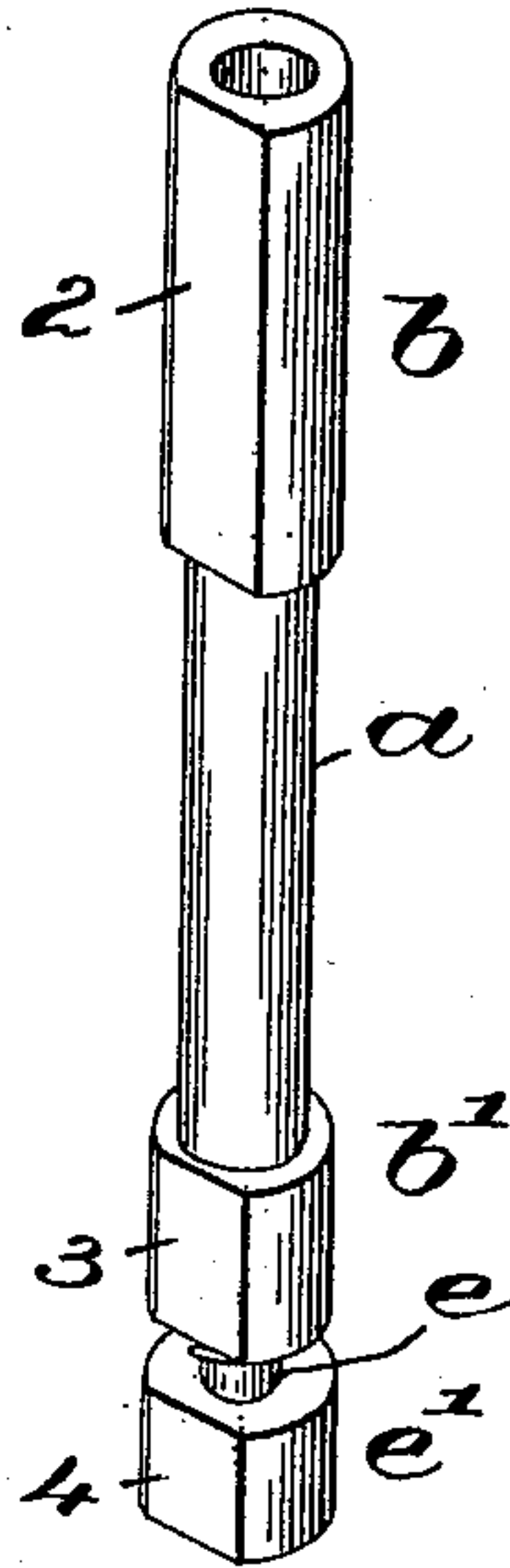
*Fig:2.*



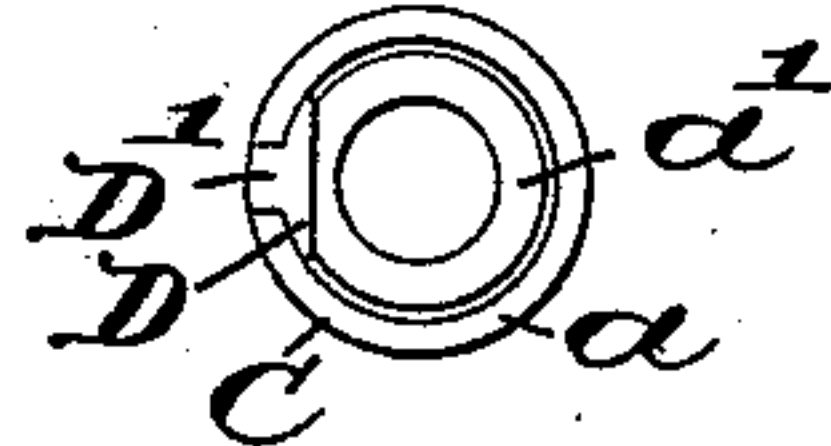
*Fig:3.*



*Fig:5.*



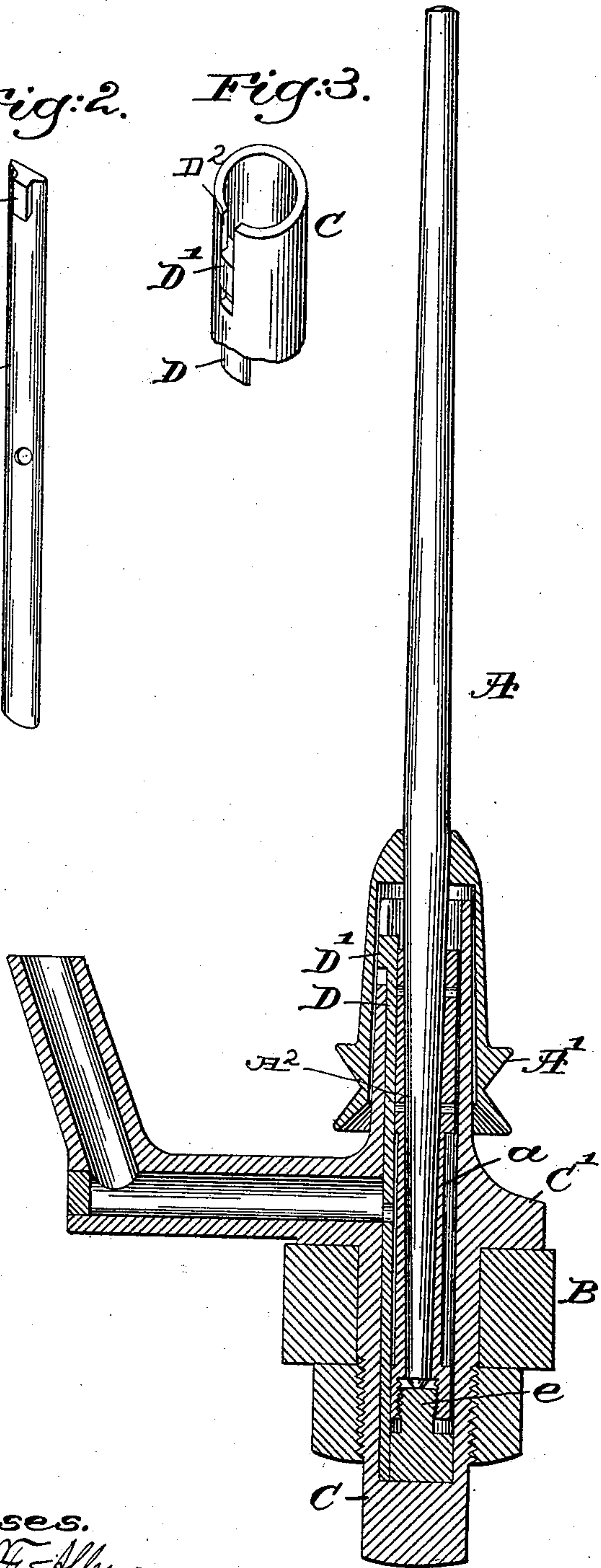
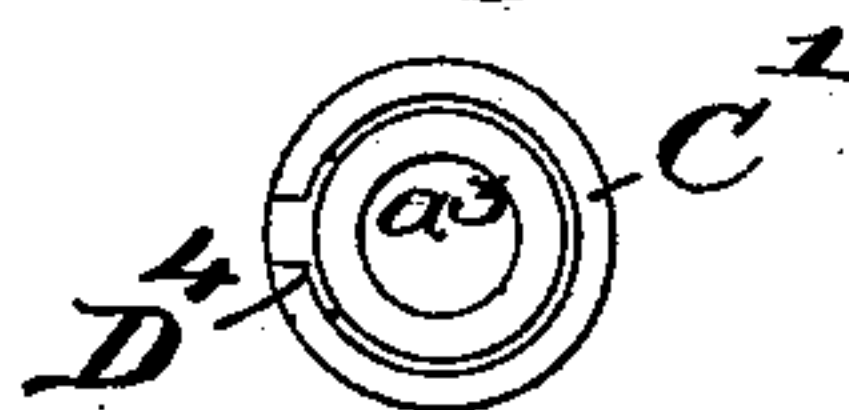
*Fig:4.*



*Fig:6.*



*Fig:7.*



Witnesses.  
Edward F. Allen.  
Louis N. Howell

Inventor:  
George O. Draper:  
by Crosby & Gregory Attys.



# UNITED STATES PATENT OFFICE.

GEORGE O. DRAPER, OF HOPEDALE, MASSACHUSETTS, ASSIGNOR TO GEORGE DRAPER & SONS, OF SAME PLACE.

## SPINDLE-BEARING.

SPECIFICATION forming part of Letters Patent No. 507,356, dated October 24, 1893.

Application filed May 29, 1893. Serial No. 475,823. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE O. DRAPER, of Hopedale, county of Worcester, State of Massachusetts, have invented an Improvement in Spindle-Bearings, of which the following description, in connection with the accompanying drawings, is a specification, like letters and figures on the drawings representing like parts.

In high speed spindles of the sleeve whirl type it is customary to provide a limited amount of looseness to thus do away with the shocks and jars which would otherwise occur due to gyration and unequal loading. In practice, however, the extent of looseness can be but slight, for if excessive, the strain of the band which rotates the spindle, it being always exerted in the same direction, will pull the spindle out of its proper central position with relation to the spinning ring.

Looseness is very desirable in most spindle bearings, and I have devised means whereby the bearing may have a great amount of looseness and yet the spindle be maintained central with relation to the ring.

In another application, Serial No. 473,974, filed on the 12th day of May, 1893, I have shown a bolster or lateral bearing so constructed as to enable the advantages above alluded to to be gained, but herein, instead of making the pintle receiving chamber or bore of the bolster or lateral bearing eccentric to the periphery of said bolster, I have provided the supporting case or outside support with an aligning face against which the bolster or lateral bearing is pulled strongly by the band during the rotation of the spindle, the bolster or lateral bearing when drawn against it insuring central position for the spindle and preventing the spindle from being pulled aside and held there out of center with relation to the ring. In the embodiment of my said invention, as herein represented, this aligning surface has been shown as a separate piece adapted to be secured to the supporting case, or it may be an integral part of it. The strain of the band on the spindle acts through the bolster or lateral bearing to keep it pressed firmly against the aligning surface of the supporting case, the

elasticity of the band, however, permitting such slight movement of the bolster away from said aligning surface as may be necessary under unequal loading.

While looseness in the direction above stated is most desirable when the spindle is unequally loaded, yet too much looseness so as to let the bolster oscillate is not as desirable, and hence, to prevent this I have slabbed off the bolster at its periphery for part of its length, to thus constitute a flat surface to be kept seated by the band pull against the flat face of the aligning surface, the step being of that class which is connected by a coarse loose thread with the bolster so as to not only permit the bolster to vibrate independently of the step, but so also as to enable the bolster to be adjusted vertically to provide for the proper looseness or fit between the tapered interior of the bolster, and the tapered pintle of the spindle, has also been slabbed off, such slabbed off bolster and step co-operating with the flat aligning surface thereby preventing their rotation in the supporting case with the spindle.

That part of my invention comprehending an independent detachable aligning surface to co-operate with the supporting case is of considerable advantage even when used with ordinary bolsters circular in cross section, but in such case the face of the aligning surface may be concaved, if desired, to fit the bolster. When the flattened bolster or step is used it is evident that such surfaces will act in connection with similar surfaces on or attached to the supporting tube so as to prevent the bearing tube or step from turning, thereby dispensing with the usual locking pins.

Figure 1, in vertical section shows a spindle bearing embodying one form of my invention; Fig. 2 a detail showing the aligning face of the supporting-case detached; Fig. 3, a detail showing the upper end of the supporting-case; Fig. 4, a top view of the supporting-case with the aligning face in position and supporting the bolster; Fig. 5 a detail showing the bolster and step detached; Figs. 6 and 7 views similar to Fig. 4, but showing modifications of my invention.



In the drawings, A, is a spindle provided with a sleeve whirl A' and having a tapered pintle A<sup>2</sup>; and B is a rail having a hole to receive the shank C of the supporting case C'. I provide the supporting-case inside its bore with an aligning face D, shown in Fig. 1 as an independent piece, it having preferably a projection D' to enter a slot D<sup>2</sup> in said case to thus hold it, but removably, in place, the outer side of the aligning face being shown as convexed to fit the concaved inner side of the bore of the case, the inner side of the said aligning face being in Figs. 1 to 6 substantially flat. Instead, however, of this aligning face being detachable as in Fig. 1, it may be made integral with the case, see Fig. 7, so as to provide it with an aligning face. This aligning face of whatever form, is located within the bore of the supporting case or outside support for the bolster or lateral bearing a, and portions b, b' of said bolster of greater or less length are drawn by the usual spindle driving band against said aligning face, this insuring proper central position for the spindle with relation to the usual spinning ring, yet viewing Figs. 4, 6, and 7, it will be obvious that the bolsters or lateral bearings a', a<sup>2</sup>, a<sup>3</sup> are prevented from being drawn by the band strain farther than to the aligning faces, yet these bolster bearings are free to move against the pull of the band, which, it will be remembered, has some elasticity, to thus take up shocks or strains due to gyration or unequal loading of the spindle.

The interior of the bolster or lateral bearing is tapered to receive the tapered pintle, and the lower end of the bolster is provided as usual at its interior with a coarse screw thread to engage a coarse threaded part of a step e rising from a block e'.

The bolster, Figs. 1 to 6, is slabbed off at 2, 3, and the block e' at 4, to thus take firm seat against the aligning face D.

In case it is desired to adjust the bolster vertically with relation to the step to thus insure a proper fit between the tapering exterior of the pintle of the spindle and the tapered interior of the bolster, the bolster may be removed, when it will be in condition to be rotated more or less so as to turn it on the threaded step.

My invention may be readily applied to an ordinary supporting-case by slotting the upper end of the same, as at D<sup>2</sup>.

In the modification Fig. 7, the aligning face D<sup>4</sup> is shown as slightly concaved to receive in it a circular side of a bolster a<sup>2</sup> of usual shape.

Prior to my invention the interior of supporting-cases have been provided with cylindrical bores, but I may make the bore instead of cylindrical, irregular in shape in cross section, the aligning face entering and occupying a portion of what would otherwise be the bore of the case, said face arresting the lateral movement of the bolster in the direction of the strain of the band to thus better center

the spindle with relation to the usual spinning ring.

This invention is not limited to the exact shape shown for the said aligning face.

It will be noticed that in accordance with my invention the supporting-case is provided with a bolster-receiving extension or tube which enters the sleeve whirl and acts as a support for the bolster in the line of the band pull, and the aligning surface is fixed with relation to the interior of the supporting-case and receives against it the bolster as the band pulling on the whirl rotates the spindle.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. A sleeve whirl spindle, a supporting-case provided with a bolster-receiving portion extended upwardly into the whirl and having a secant aligning or bearing face, combined with a bolster bearing mounted loosely in said case and adapted to be held against the aligning face of the supporting-case by the strain of the band on the spindle, whereby the spindle is enabled to center itself with relation to the usual spinning ring and yet the bolster be left free to yield or move laterally in opposition to the strain of the band, substantially as described.

2. A supporting-case having a tubular extension to enter a sleeve whirl spindle, said extension having an interior bore a portion of which is circular while another portion presents an aligning bearing face or surface out of line with said circular portion, said face being located at a distance from the center of the circle defining the said circular portion or bore less than the radius of the circle defining the said circular portion of the bore, combined with a sleeve whirl spindle and a bolster or lateral bearing loose in said case, to operate, substantially as described.

3. A supporting-case having a tubular extension to enter a sleeve whirl spindle, said extension having an interior bore a portion of which is circular while another portion presents an aligning bearing surface such as described, the face of the aligning surface being located within the circle defining the circular portion of the bore, combined with a sleeve whirl spindle and a bolster or lateral bearing placed loosely in said case and having a flat portion to bear against said aligning face, to operate, substantially as described.

4. A bolster and a supporting-case to contain it, combined with an independent removable aligning face occupying but a portion of the bolster-receiving bore of the supporting-case, substantially as described.

5. A supporting-case having a rigid upright tubular extension provided at its inner wall with an aligning face extended into the circumference of the circle defining the bore for the reception of the bolster, combined with a spindle and with a bolster bearing placed loosely in said case and adapted to be



held against said aligning face by the strain of the band on the spindle to thus center the spindle with relation to the usual spinning ring, and a step for the spindle, substantially as described.

6. A supporting-case having an aligning face extended into the circumference of the circle defining the bore for the reception of the bolster, combined with a spindle and its bolster bearing adapted to be held against said aligning face by the strain of the band on the spindle to thus center the spindle with relation to the usual spinning ring, the said

bolster being free to yield or move laterally in directions opposed to the strain of the band, and a step for the spindle, the block of said step being slabbed or flattened to co-operate with said aligning face, substantially as described.

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

GEORGE O. DRAPER.

Witnesses:

GEO. W. GREGORY,  
M. J. SHERIDAN.