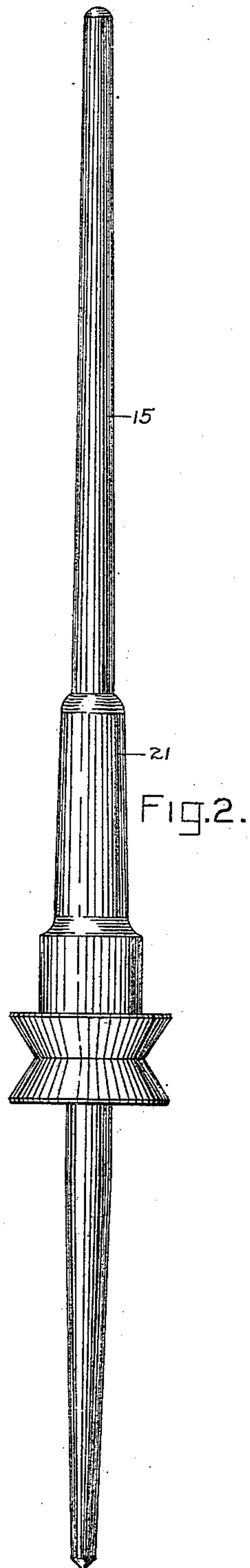
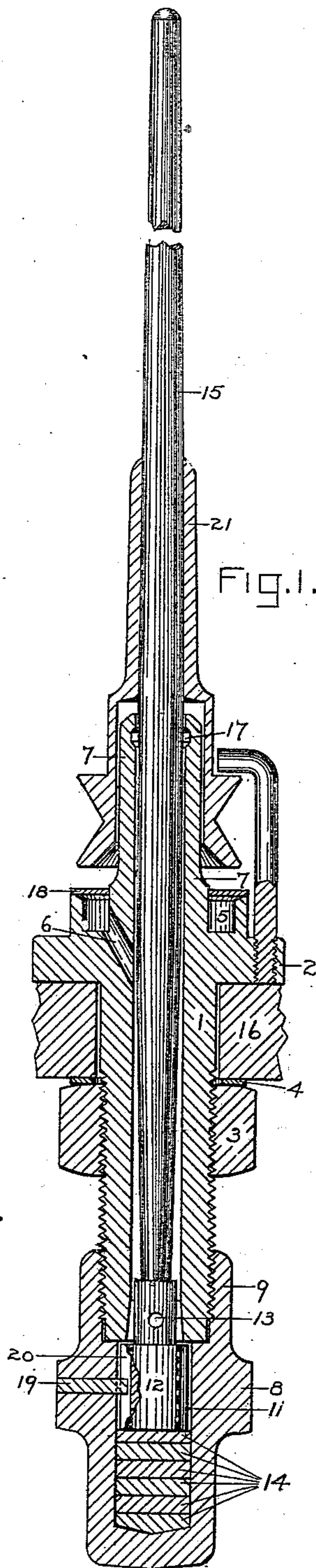
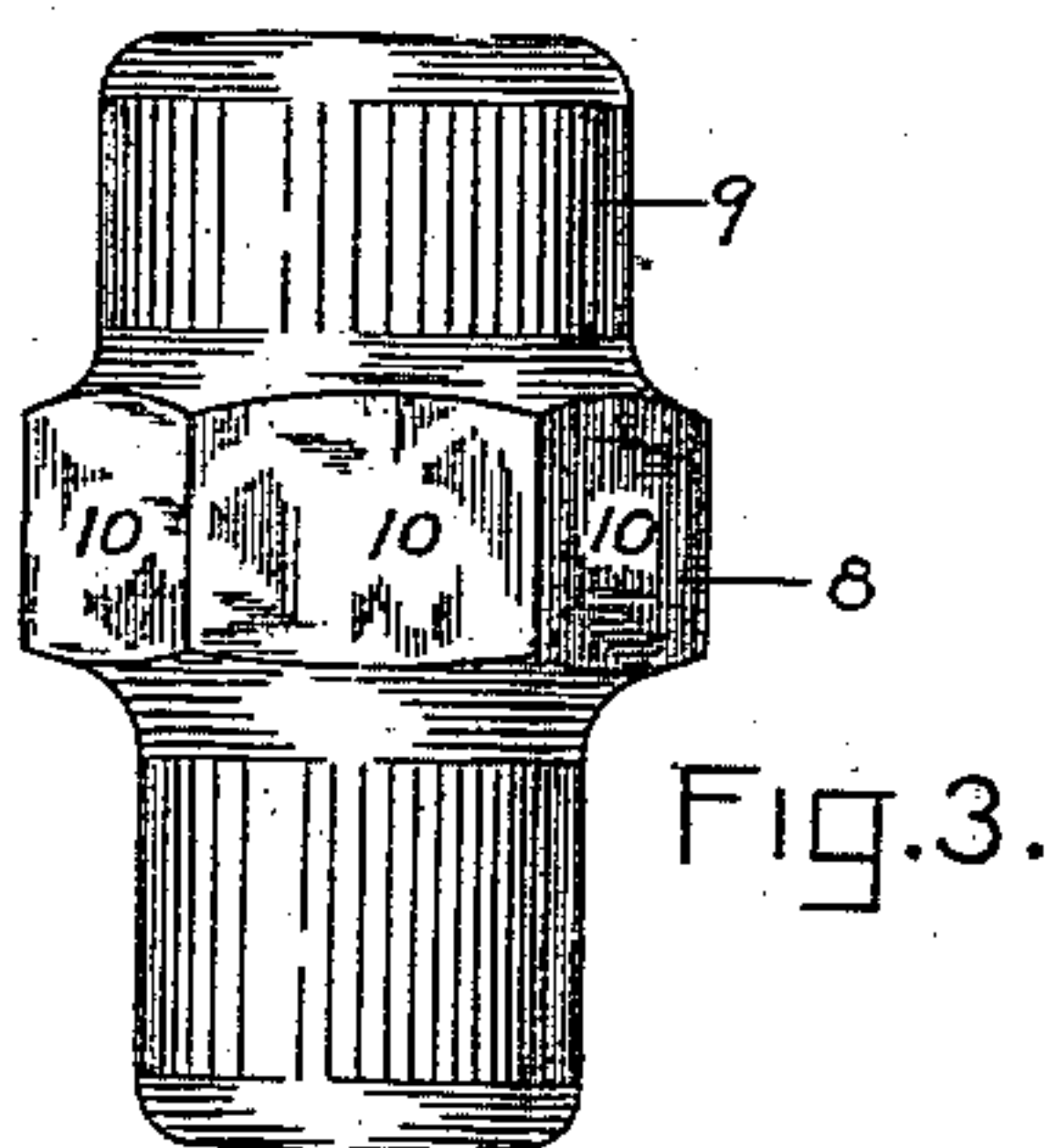
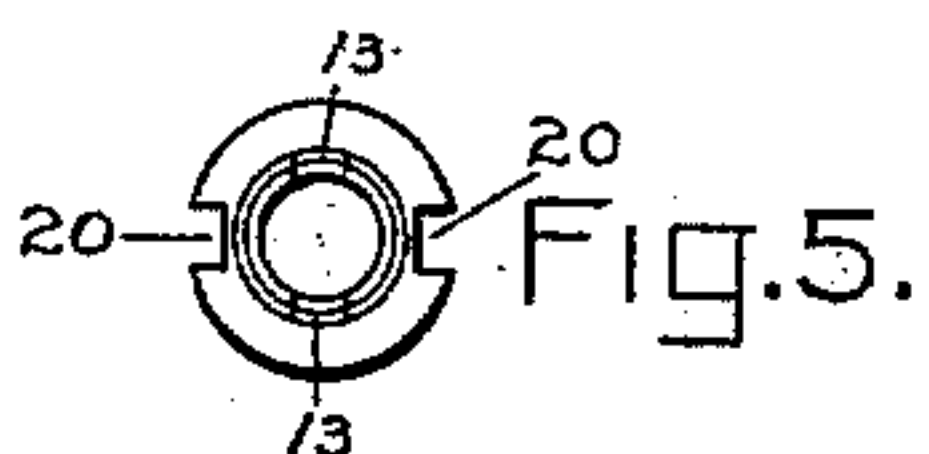
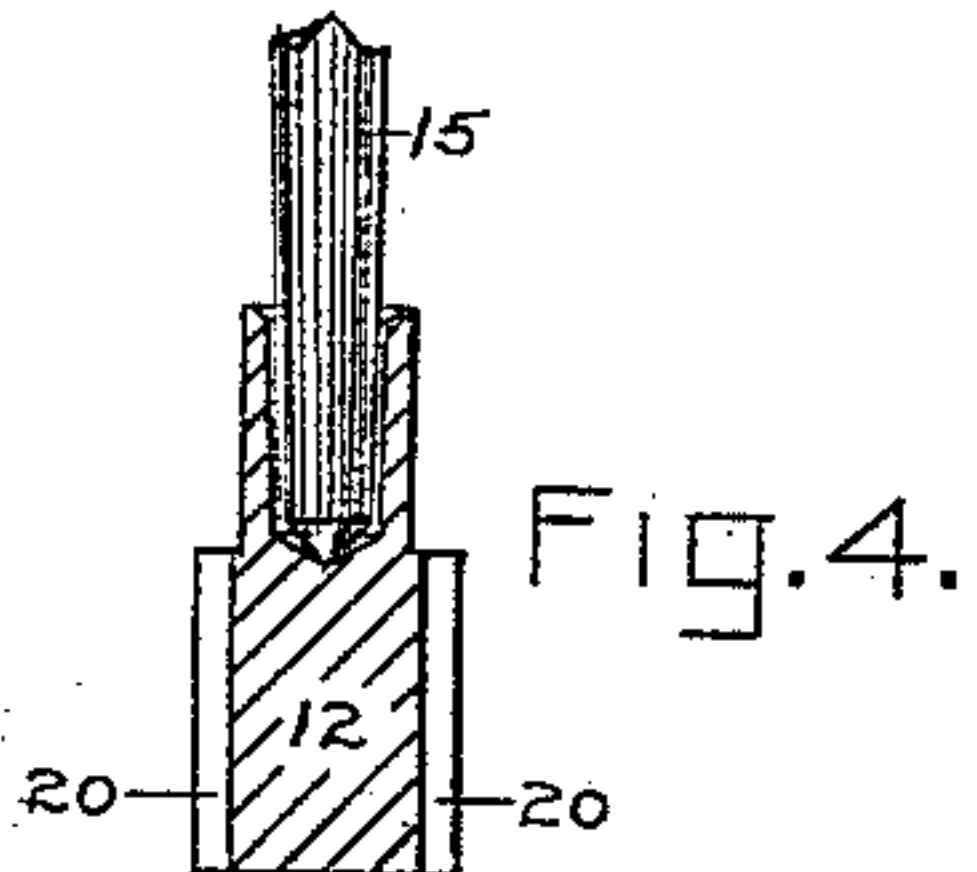


(No Model.)

J. H. McMULLAN.
SUPPORT FOR SPINNING SPINDLES.

No. 420,085.

Patented Jan. 28, 1890.



WITNESSES:
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UNITED STATES PATENT OFFICE.

JAMES H. McMULLAN, OF PORTLAND, MAINE, ASSIGNOR TO THE SAWYER SPINDLE COMPANY, OF BOSTON, MASSACHUSETTS.

SUPPORT FOR SPINNING-SPINDLES.

SPECIFICATION forming part of Letters Patent No. 420,085, dated January 28, 1890.

Application filed November 14, 1887. Serial No. 255,073. (No model.)

To all whom it may concern:

Be it known that I, JAMES H. McMULLAN, a citizen of the United States, residing at Portland, in the county of Cumberland and State of Maine, have invented certain new and useful Improvements in Supports for Spinning-Spindles, of which the following is a specification.

My invention is an improvement relating more especially to such spinning devices as are secured to a single spindle-supporting rail, and also to that class of spinning devices the rotating parts of which are so supported that they may be deflected to a certain extent by the effect of an unbalanced load; and it consists of the construction and combination of parts, as hereinafter set forth.

My invention is illustrated in the accompanying drawings, in which—

Figure 1 is an elevation, partly in central vertical section, of a single-rail spinning-spindle with the supports therefor. Fig. 2 is an elevation of the spindle with a sleeve-whirl attached thereto. Fig. 3 is an elevation of that form of step-support which I prefer to use. Fig. 4 is a central sectional elevation of a spindle-step with a portion of the spindle that is supported therein, and Fig. 5 is a plan of said step.

Similar reference-numbers refer to similar parts in all of the views.

In the drawings, 1 represents the bolster-bearing support, which is preferably provided with the external collar 2, the nut 3, and the washer 4, said nut engaging with a screw-thread upon the exterior of said support. I prefer to form an oil-chamber 5 in the upper part of the collar 2, as shown, and to form an oil-conduit 6 through the side of the support 1 and communicating with said chamber. Whenever it may be desired to do so, a washer 18 may be placed encircling the elevated part 7 of the bolster-bearing support and covering the top of the oil-chamber 5 in the usual manner.

At the base of the support 1 is secured the step-case 8 in any convenient manner, the construction which I prefer being shown in the drawings. This preferred form of step-case is provided with a sleeve 9, screw-threaded in its interior, and which engages with a screw-

thread upon the surface of the support 1. The step-case of this form is usually provided with flattened surfaces 10, which are adapted to receive a wrench. Below the bottom of the threaded part of the sleeve 9 is the step-well 11, in which the step 12 is supported. The step-case when made in this manner forms an oil-cup of considerable size, which receives the oil set free when the step is removed for examination or for the purpose of being cleansed, and thus prevents the other parts of the spinning-frame and the floor from becoming soiled by the discolored oil at such times. The step-case and step are preferably so made and combined that the axis of the step is always, though slightly variable in position, maintained in substantial alignment with the axis of said step-case by the walls of the step-receiving recess within said case. When the step and the step-case are thus made and combined, as illustrated in the drawings, the removal of the step-case to permit of examining the step and cleansing it and said case and the replacing of said case may be easily performed without danger of the loss of any of the parts or of injury to any of the surroundings by the discolored oil in said case and the bolster-bearing support, to which it is usually attached.

The step 12 is made of such a size with respect to the other parts of the structure and of such a form that it may be moved laterally to a slight extent in all directions, and it is preferably provided with one or more oil-holes 13, leading from the space surrounding the step to the cavity in the interior thereof in which the spindle is supported. Said cavity is preferably made of the shape of the spindle, and also a little larger than said spindle, as shown in Fig. 4, or, in other words, the spindle preferably fits loosely in said step.

I prefer that one or both of the surfaces in contact at the bottom of the step 12—that is, the bottom of said step and the top of the upper of the disks 14—should be plane, to the end that said step may easily yield laterally to a slight extent and with equal freedom in all directions upon the application of a force thereto in a lateral direction. I prefer, also, although this construction is not absolutely necessary, to make the step-well 11 so deep

that several disks 14 may be placed therein below the bottom of the step 12. These disks may be made when used of any suitable material; but I prefer to form one or more of the lower disks in the series of leather or some other elastic material in order to prevent the vibrations induced in the spindle-step 12 by the spindle 15 from being communicated to the bolster-bearing support 1, and thence to the spindle-supporting rail 16. These disks 14 may be entirely dispensed with whenever it is desirable to do so, if the bottom of the step-well 11 is properly shaped.

In this special form of spindle I prefer to positively prevent the step 12 from rotating with the spindle when it is utilized for certain purposes, and I prefer to do this by making one or more slots 20 in the sides of the step 12, and inserting one or more locking-pins 19 through the side of the step-case 8, the ends of said pins engaging with said slots. An equivalent lock for preventing the step 12 from rotating may sometimes be substituted for the one illustrated.

The lower part of the spindle 15 is preferably made of a small diameter and terminating in a sharp point, although any other suitable construction of these parts may be adopted at the will of the maker of the device to meet any unusual requirements. When the lower end of the spindle is made of a small diameter, as shown, the spindle increases in diameter as the bolster-bearing is approached from its lower end. The bolster-bearing is preferably cylindrical. The spindle is preferably provided with a sleeve-whirl, the plane of whose band-groove crosses said bearing in its bolster.

The fit of the spindle 15 in its bolster-bearing should be a rather loose one, in order that the blade or upper unsupported end of the spindle may be able to yield slightly to the force exerted thereon by an unbalanced load. The central hole in the bolster-bearing support 1 is shown as a cylindrical one for the greater part of its extent, and slightly larger than the diameter of the spindle, although I do not in all cases desire to limit myself to this exact construction. I prefer to form near the upper part of the bolster-bearing an oil-retaining groove 17, to prevent oil in considerable quantities from passing over the top of the bolster 1 when the spindle is being used.

I have found that a spindle of the kind described runs very well indeed at the usual speeds at which such spindles are operated, and that it is perfectly practicable to remove the step-case for the purpose of cleansing it and removing the sediment which is intentionally allowed to settle therein below the lower end of the spindle, even when the spindle is in operation and spinning yarn.

I prefer to make the fit of the lower end of the bolster-bearing support 1 with the shoulder of the step-case with which it is usually in contact so perfect that the joint between them may easily be made impervious to oil

by screwing up the step-case tightly, although a soft metallic or other suitable washer may sometimes be advantageously inserted at this joint as an equivalent for such perfect fit.

The much-desired and so-called "gyrating" capacity of spindles is possessed by my invention to a considerable degree on account of the looseness of the fit of the spindle in the step and bolster-bearings and of the freedom of the step to move laterally to a slight extent in all directions. When the step is supported by a longitudinally-elastic support, as herein described, the spindle runs with very little jar indeed at the highest desirable speeds. The form of the lower end of the spindle insures that the bolster-bearing is properly lubricated when there is sufficient oil in the interior of the bolster, the oil being carried upward by the action upon it of centrifugal force. Another great advantage of the spindle as illustrated is the cheapness of its construction and the ease with which all its parts are reached for the purposes of examination and cleansing.

I do not desire to limit myself in the use of my invention in all cases to the particular forms of the various parts of the structure which are herein illustrated, since such forms of some of the parts may in some cases be much changed without departing from the invention, and especially I do not desire in all cases to support the step 12 upon the bolster-bearing support by means of the detachable step-case, as illustrated, since I am aware that said step-case may be made an integral part of said bolster-bearing support when it is desirable to do so. I am also aware that in some cases it may be desirable to make the combined bolster-bearing and bolster-bearing support in two or more pieces, in which case it may be done without departing from my invention.

I do not broadly claim the combination, with a spindle, of a case or support having therein a rigid bolster-bearing for the spindle, a loosely-held step, a chambered cup or nut constituting a step-case, attached to the lower end of the case or support, and a locking means to restrain the step from rotating with the spindle.

What I herein claim as new, and desire to secure by Letters Patent, is—

1. The combination of a bolster-bearing support provided with a bolster-bearing formed integrally therewith and adapted to be secured to a spindle-rail, with a step supported by said bolster-bearing support and free to move laterally in all directions with respect thereto, a lock preventing said step from rotating, and a spindle fitting loosely in said bolster-bearing and provided with a driving-whirl and supported by said step and bolster-bearing, substantially as described, and for the purposes specified.

2. A bolster-bearing support provided with a bolster-bearing and adapted to be secured to a spindle-rail, combined with a step sup-

ported by said bolster-bearing support and free to move laterally in all directions with respect thereto, a longitudinally-elastic step-support that is supported by said bolster-bearing support below said step and that supports said step, a lock preventing said step from rotating, and a spindle fitting loosely in said bolster-bearing provided with a driving-whirl supported by said step and bolster-bearing, substantially as described, and for the purposes specified.

3. A bolster-bearing support provided with a bolster-bearing formed integrally therewith and adapted to be secured to a spindle-rail, combined with a step supported by said bolster-bearing support and free to move laterally in all directions with respect thereto, a longitudinally-elastic step-support supported by said bolster-bearing support below said step and supporting said step, a lock preventing said step from rotating, and a spindle fitting loosely in said bolster-bearing and provided with a driving-whirl supported by said step and bolster-bearings, substantially as described, and for the purposes specified.

4. The combination of a step-case adapted to be attached to and detached from the base of a bolster-bearing support of a vertical spindle, and forming when detached an oil-cup of considerable size, with a step loosely fitting in a step-receiving recess within said step-case and with its axis maintained by the walls of said recess in substantial alignment with the axis of said step-case, said step being free to move laterally in all directions within said

step-case, and a lock preventing the rotation of said step, substantially as described, and for the purposes specified.

5. The combination of a step-case adapted to be attached to and detached from the base of a bolster-bearing support of a vertical spindle, and forming when detached an oil-cup of considerable size, with a step loosely fitting in a step-receiving recess within said step-case and with its axis maintained by the walls of said recess in substantial alignment with the axis of said step-case, said step being free to move laterally in all directions within said recess, a longitudinally-elastic step-support supporting the said step, and a lock preventing the rotation of said step, substantially as described, and for the purposes specified.

6. The spinning device which consists of a bolster-bearing support provided with a bolster-bearing formed integrally therewith, a spindle provided with a sleeve-whirl the plane of whose band-groove crosses said bolster-bearing, a detachable step-case attached to the lower end of said bolster-bearing support, a longitudinally-elastic step-support within said step-case, a step resting upon said elastic step-support and free to move laterally in all directions with respect to said case, and a lock preventing the rotation of said step, substantially as described, and for the purposes specified.

JAS. H. McMULLAN.

Witnesses:

BENJ. N. GOODALE,

WILLIAM P. McMULLAN.