

(No Model.)

J. H. McMULLAN.  
SUPPORT FOR SPINNING SPINDLES.

No. 420,087.

Patented Jan. 28, 1890.

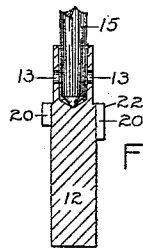


Fig. 4.



Fig. 5.

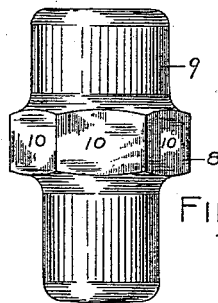


Fig. 3.

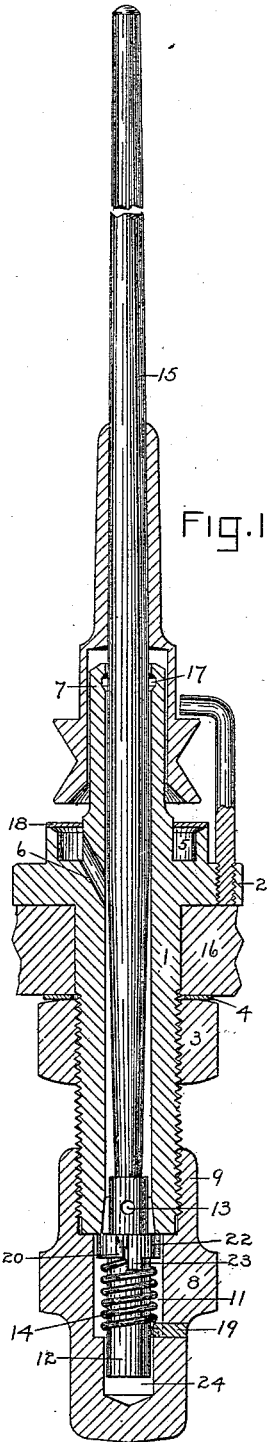


Fig. 1.

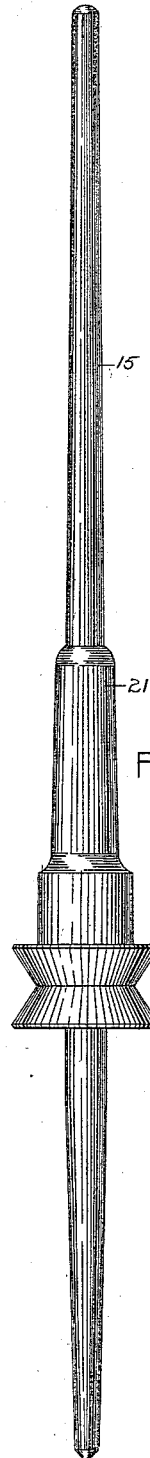


Fig. 2.

WITNESSES:  
Benj. A. Gordale  
William P. McMullan

INVENTOR:  
J. H. McMullan

# 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. 420,087, dated January 28, 1890.

Application filed December 27, 1887. Serial No. 259,129. (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, when rotating, to a certain extent by the effect of a bobbin or a yarn load which is not perfectly balanced; 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. Said step-well is preferably provided with a lower extension 24, smaller in diameter than the main well, and which is used to support and guide the lower end of the step 12, while the upper part of the well supports and guides the collar 22 upon the step 12, although said extension may sometimes be dispensed with and the lower end of the step be supported by the spring 14. 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 other parts of the spinning-frame and the floor from becoming soiled by the discolored oil at such times.

I prefer to make the step 12, as shown in the drawings, with the collar 22 surrounding it and a little below the lower end of the bearing of the spindle in said step, although the construction thereof may in some cases be changed very materially, it being understood that the step is not so made as to form a combined step and bolster bearing. The cavity of the step 12, which supports the spindle, is preferably made of the shape of the spindle and so large that the spindle fits loosely therein, and provided with oil-holes 13, leading from the space surrounding the step to said cavity in the interior thereof. The diameters of the various parts of the step 12, including that of the collar 22, are preferably such that the step may yield laterally in all directions to a slight extent without coming in contact with the sides of the step-well or central hole in the bolster-bearing support 1. The weight of the step, as well as that of the spindle and its load supported by said step, is preferably borne by the open coiled metallic spring 14, one end of which rests upon the bottom or a shoulder in the side of the step-well 11, and the other end of which bears against the collar 22 upon the step 12. This spring 14 is, when made as illustrated, preferably made

longer than the space which it occupies in the completed structure, and is thus in a state of compression when in its place, in consequence of which the collar 22 is pressed with considerable force against the lower end of the bolster-bearing support 1. In order that the sediment which forms within this structure when it is in operation may pass into the step-well 11 without difficulty, conduits 20, or their equivalents, are formed to allow said sediment to pass by the collar 22. These conduits may be made in any convenient way, it being desirable that the step-well 11 and the interior of the lower end of the bolster-bearing support 1 should freely communicate with each other.

I prefer that the step 12 may yield laterally with equal freedom in all directions, for which reason the lower end of the bolster-bearing support 1 is preferably made a plane surface, or nearly so, as is also the upper surface of the collar 22, for the same reason. I prefer to prevent the step 12 from rotating in the form of spinning device which is illustrated in the drawings, and I accomplish this purpose by causing one end of the spring 14 to engage with the step 12 and the other end thereof to engage with the step-case 8. This engagement of the spring 14 with the step and step-case is accomplished in the structure illustrated in the drawings by the use of the lug 23 upon the step and of a stationary pin 19, inserted in the side of the step-case 8, although an equivalent means of causing said spring to engage with said step and case may in some cases be equivalently substituted therefor.

By the use of the means illustrated for supporting and preventing the rotation of the step 12 the said step is provided with an elastic cushion both longitudinally and circumferentially. When it is desired to have the spindle run in a right-handed direction, as determined when looking down on the top thereof, the spring 14 should as a rule be made a right-handed spiral coil, as shown, while if the spindle was intended to run in the opposite direction said spring should as a rule be made a left-handed spiral coil. The step-case 8 serves to hold the step 12 in such a position that the upper side of the collar 22 rests against a fixed surface in connection with the bolster-bearing support 1. Any other construction of the parts whereby a pressure is brought to bear against the lower end of the spring 14 and whereby the step 12 is held firmly by said spring upwardly against a fixed support may in some cases be equivalently substituted for said step-case.

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 in-

creases 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 a rotating bobbin or a yarn load which is not perfectly balanced. 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 an elastic spring supports the step, 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 spinning device as illustrated is the cheapness of its construction and the ease with which all its parts are reached for the purpose 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. I am especially aware that it may in

some cases be desirable to make the combined bolster-bearing and bolster-bearing support in two or more pieces, and I do not consider it to be a departure from my invention as hereinafter claimed to interpose a washer or other similar bearing-surface between the top of the collar 22 and the bottom of the bolster-bearing support 1 or otherwise in connection with said support, since the action of the various parts of the structure would not be substantially changed thereby.

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

1. A bolster-bearing support provided with a bolster-bearing and adapted to be secured to a spindle-rail, combined with a coiled metallic spring supported by said bolster-bearing support, a step a part of which is surrounded by said spring, which is supported thereby, which engages with one end thereof, and which is free to move laterally to a slight extent in all directions, a stationary locking device engaging with the other end of said spring, whereby said step is prevented from rotating, and a spindle fitting loosely in said bolster-bearing, 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 formed integrally therewith and adapted to be secured to a spindle-rail, combined with a coiled metallic spring supported by said bolster-bearing support, a step free to move laterally in all directions to a slight extent and a part of which is surrounded by said spring, which is supported thereby and which engages with one end thereof, a stationary locking device engaging with the other end of said spring, whereby said step is prevented from rotating, and a spindle fitting loosely in said bolster-bearing, provided with a driving-whirl, and 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 and adapted to be secured to a spindle-rail, combined with a detachable step-case attached to the base of said support, a coiled metallic spring supported in said case, a step free to move laterally to a slight extent in all directions and a part of which is surrounded by said spring, which is support-

ed thereby and which engages with one end thereof, a locking device in connection with said case and engaging with the other end of said spring, whereby said step is prevented from rotating, and a spindle provided with a driving-whirl, supported by said step and bolster-bearing, and fitting loosely in said bolster-bearing, substantially as described, and for the purposes specified.

4. A bolster-bearing support provided with a bolster-bearing formed integrally therewith and adapted to be secured to a spindle-rail, combined with a detachable step-case attached to the base and exterior of said bolster-bearing support and forming, when detached, an oil-cup of considerable size, a coiled metallic spring supported by said step-case, a step free to move laterally in all directions to a slight extent and a part of which is surrounded by said spring, which is supported by said spring and which engages with one end thereof, a locking device in connection with said case and engaging with the other end of said spring, whereby the said step is prevented from rotating, and a spindle provided with a driving-whirl and supported by said step and bolster-bearing, substantially as described, and for the purposes specified.

5. A spinning device consisting of a bolster-bearing support provided with an elevated bolster-bearing formed integrally therewith, a detachable step-case attached to the bottom and exterior of said support and forming, when detached, an oil-cup of considerable size, a coiled metallic spring supported in said case, a step a part of which is surrounded by said spring, which is supported thereby and a part thereof forced upwardly against a fixed support in connection with said bolster-bearing support and which engages with one end of said spring, a locking device in connection with said case and engaging with the other end of said spring, whereby said step is prevented from rotating, and a spindle fitting loosely in said bearing, supported by it and said step, and provided with a sleeve-whirl the plane of whose band-groove crosses said elevated bearing, substantially as described, and for the purposes specified.

JAMES H. McMULLAN.

Witnesses:

CHAS. A. MOODY,  
JAMES E. ETCHELLS.