

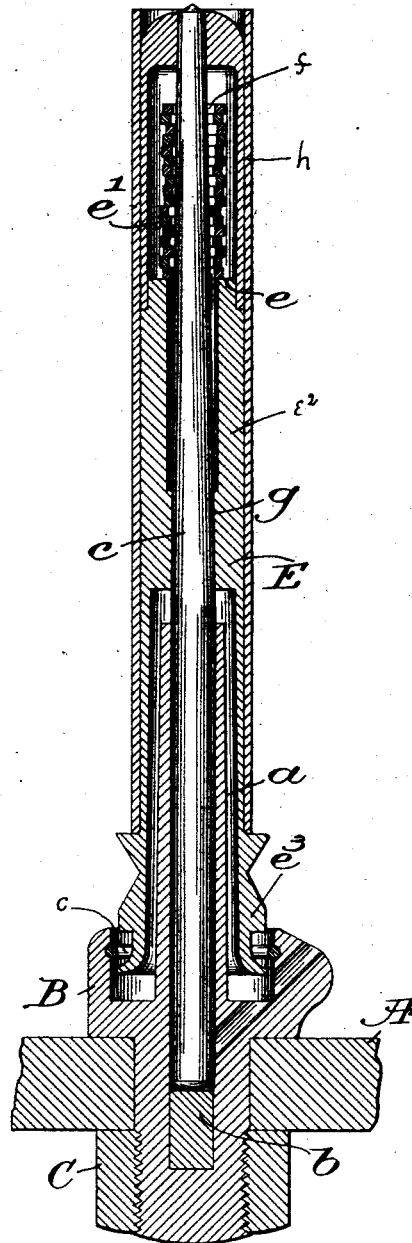
(No Model.)

G. O. DRAPER

## SLEEVE WHIRL AND LOAD EQUALIZER FOR SPINNING SPINDLES.

No. 525,452.

Patented Sept. 4, 1894.



*Witnesses.*

Fred S. Greenleaf.

Thomas J. Drummond.

*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.

## SLEEVE-WHIRL AND LOAD-EQUALIZER FOR SPINNING-SPINDLES.

SPECIFICATION forming part of Letters Patent No. 525,452, dated September 4, 1894.

Application filed February 2, 1894. Serial No. 498,850. (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 Sleeve-Whirls and Load-Equalizers for Spinning-Spindles, of which the following description, in connection with the accompanying drawing, is a specification, like letters on the drawing representing like parts.

10 This invention has for its object an improved construction of parts whereby a thin tube may be utilized as a bobbin, the tube being of paper board, tin or other suitable material, and I have also provided my novel  
15 spindle with means for securing steadiness of rotation at high speed.

The spindles commonly employed in spinning and twisting frames using rings are adapted to carry wooden bobbins bored or  
20 shaped internally to fit the varying diameters of the spindle blade and whirl, such bobbins being expensive and easily destroyed.

To enable me to use a tube such as stated, I have had to devise a novel sleeve whirl  
25 spindle which I shall herein describe.

The drawing shows my improved sleeve whirl spindle in elevation, the sleeve whirl, its bearings, and the tube being in section.

In the drawing, A represents part of a rail;  
30 B, a supporting case confined to the rail by nut C; *a*, the lateral bearing; *b*, the step, and *c* the spindle retainer, all as usual.

Ordinarily the sleeve whirl is fixed to the tapered spindle at a point just above the upper end of the lateral bearing, the lower part  
35 of the bobbin fitting the sleeve of the whirl, the bobbin taking a direct bearing on the blade of the spindle at a point above the said whirl.

40 To enable me to use a cylindrical tube or a tube of uniform diameter, onto which to wind the thread or yarn, I have made the sleeve whirl above its band groove substantially cylindrical and have extended said sleeve whirl  
45 up to and connected it with the upper end of the spindle, and to insure steadiness of motion of the spindle I have provided the sleeve whirl E with a suitable shoulder *e*, on which I have mounted a load equalizer *f*, shown as  
50 loose rings, said load equalizer surrounding

the spindle and being guarded externally by a part *e'* of the sleeve whirl.

My improved sleeve whirl is shown as composed of two parts *e'*, *e''*, the part *e'* seated firmly on the top of the spindle being thinner than the part *e''* having the band receiving  
55 portion *e''*, said parts *e'* and *e''* being fitted snugly together so as to constitute practically one piece.

The whirl is made in two pieces to thus enable the load equalizers to be put in place, the part *e''* to support the load equalizers one or more, and the part *e'* to constitute a sleeve or cover and exclude dust and flyings from  
60 the equalizers. The sleeve whirl also takes  
65 a bearing at *g* on the spindle just above the bearing *a*.

In the rotation of the sleeve whirl and spindle, the load equalizers slide one on the other laterally and thus automatically compensate  
70 for unequal loading of the spindle or whirl.

The tube *h* is made cylindrical in form, or of substantially uniform diameter from end to end, and it fits the sleeve whirl, adhesively, and is driven wholly thereby, said sleeve whirl  
75 sustaining the tube from one to substantially its other end. This tube may be of paper, cloth, tin or other cheap light-weight material.

If the tube should be made to taper slightly,  
80 my invention would not be departed from, but uniform cylindrical shape is preferable, and easier made.

I am aware, prior to my invention, that a sleeve whirl has been made cylindrical for  
85 part of its length, and that the lower end of a bobbin has been fitted to the said sleeve whirl, as in United States Patent No. 127,159, but prior to my invention I am not aware that a sleeve whirl, at a point near the middle of its length, has been fitted to the spindle just above the upper end of the lateral bearing thereof, and that the upper end of said sleeve whirl has been extended up substantially to the top and fitted to the upper  
95 end of the spindle, said sleeve whirl being substantially cylindrical, in order that it may receive and support throughout its length the tube upon which is to be wound the thread or yarn being spun.

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

- 5 1. A spindle, combined with a sleeve whirl fitted thereto at a point between its extremities, the upper end of the whirl being extended to the upper end of and being fitted to the extremity of the spindle blade, substantially as shown and described.
- 10 2. A spindle, a lateral bearing therefor, a sleeve whirl attached to the upper end or extremity of said spindle and surrounding said lateral bearing, combined with an automatically movable load equalizer interposed between said spindle and sleeve whirl above the  
15 said lateral bearing, substantially as described.
- 20 3. A spindle, its lateral bearing, a sleeve whirl attached to the upper end of said spindle, and provided at its interior above said bearing with a shoulder, combined with an automatically movable load equalizer supported by said shoulder and located between said sleeve and spindle and guarded externally by said sleeve whirl, substantially as described.  
25
4. A spindle, and a lateral bearing therefor, combined with a sleeve whirl substan-

tially cylindrical from end to end and connected to said spindle at a point just above  
30 the top of its lateral bearing, the upper end of the sleeve whirl being again fitted to the spindle but at the upper end thereof, the lower end of said whirl surrounding said bearing, the sleeve whirl being thereby shaped to  
35 receive and carry adhesively with it throughout its length a substantially cylindrical tube, the latter taking bearing from end to end on the said sleeve whirl, substantially as described.  
40

5. A spindle, a sleeve-whirl attached thereto and adapted to receive and carry a bobbin, combined with a load equalizer interposed between said spindle and sleeve-whirl, a portion of the whirl being made to act as a guard  
45 between the bobbin and the load equalizer and to protect the latter from dust or waste yarn, substantially as described.

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

GEORGE O. DRAPER.

Witnesses:

FREDERICK L. EMERY,  
JOHN C. EDWARDS.