(No Model.)

W. WARDMAN.

SPINDLE FOR CAP SPINNING AND TWISTING MACHINES.

No. 328,733. Patented Oct. 20, 1885.

Fig: 2.

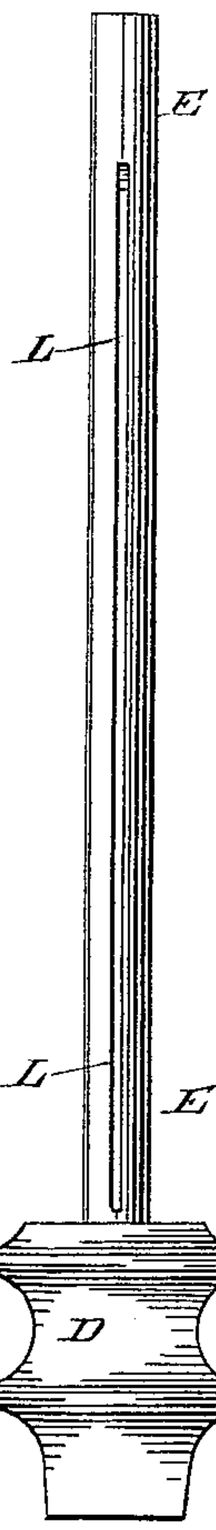


Fig: 6

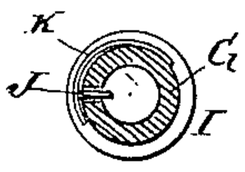


Fig: 1.

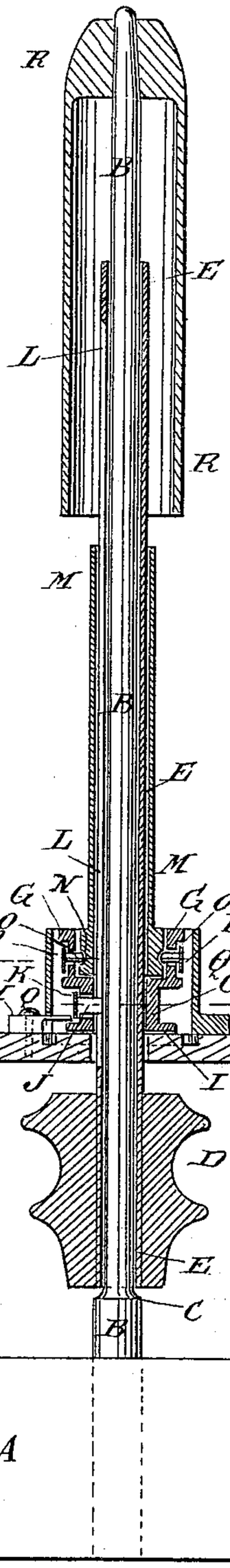


Fig: 3.

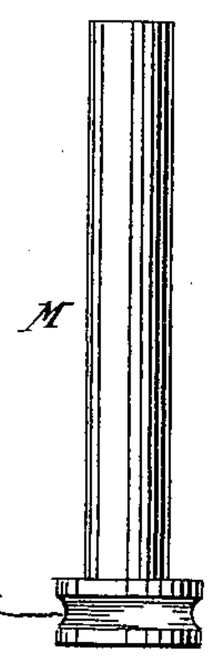


Fig: 4.

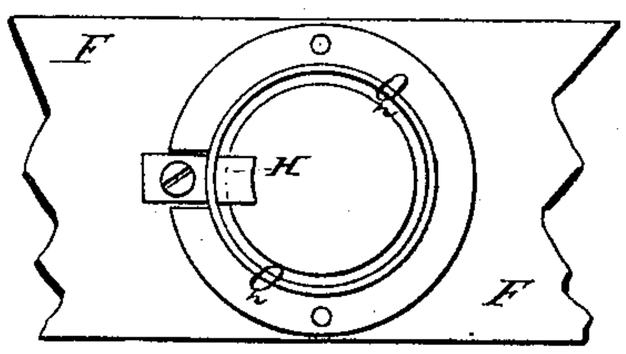
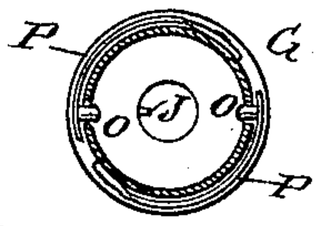


Fig: 5.



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WILLIAM WARDMAN, OF BRISTOL, PENNSYLVANIA.

SPINDLE FOR CAP SPINNING AND TWISTING MACHINES.

SPECIFICATION forming part of Letters Patent No. 328,733, dated October 20, 1885.

Application filed November 18, 1884. Serial No. 148,209. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM WARDMAN, of Bristol, in the county of Bucks and State of Pennsylvania, have invented a new and useful Improvement in Spindles for Cap Spinning and Twisting Machines, of which the following is a full, clear, and exact description.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a central vertical section of my invention in place upon a spindle fixed in a rail shown in side elevation. Fig. 2 is a side elevation of the whirl and slotted tube. Fig. 3 is a side elevation of a bobbin. Fig. 4 is a plan of the bobbin-socket case. Fig. 5 is a sectional plan view of the bobbin-socket, taken through the line *x x*, Fig. 1. Fig. 6 is a sectional plan view of the bobbin-socket, taken through the line *y y*, Fig. 1.

The object of this invention is to provide spindles for cap spinning and twisting machines constructed in such a manner as to increase the quantity and improve the quality of the work done by such machines, and at the same time lessen the expense of running the machines.

The invention consists in the construction and combination of parts hereinafter described and claimed.

A represents the rail to which the base of the dead-spindle B is attached. D is the whirl, which is attached to the lower end of the long tube E, placed upon the spindle B, the said tube and whirl resting on a shoulder, C, on the base of the said spindle.

The tube E and spindle B pass through a hole in the lifter-plate, F, and through the bobbin-socket G, which rests upon the said lifter-plate, and is kept in contact with it by the stop H, attached to the said lifter-plate F, and which overlaps a flange, I, formed around the lower end of the said socket G. The lower part of the socket G fits upon the tube E, and is perforated for the passage of the stop-pin J, attached to or formed upon the free end of a spring, K, the other end of which is soldered, riveted, or otherwise secured to the said socket G. The pin J enters and slides up and down in a long vertical slot, L, formed in the tube E, so that the socket G will be carried around by and with the tube E and whirl D in their revolution, while being free to move up and down upon the said tube. The upper part of the socket G is enlarged to receive the base-flange of the bobbin M, which is placed upon the tube E and rests upon the shoulder of the said socket G. Around the base-flange of the bobbin M is formed an annular groove, N, to receive the rounded inner ends of the pins O, which pass in through perforations in the opposite sides of the enlarged upper part of the socket G, and are attached at their outer ends to the free ends of springs P. The springs P are placed in an annular groove formed around the enlarged upper part of the socket G, and are secured to the said socket by solder, rivets, or other suitable means, so that the bobbin M will be made to move up and down with the socket G.

The socket G is surrounded and protected by a tubular case, Q, the lower end of which is flanged and is secured to the lifter-plate F by screws or rivets, so as to be kept in place.

R is the cap, which is made and carried upon the upper end of the spindle B in the ordinary manner.

With this construction the whirl D and tube E always revolve in the same place, while the socket G and bobbin M are carried up and down by and with the lifter-plate F to lay the yarn upon the bobbin, so that the driving-bands will always have the same tension, and will thus be more durable and will drive the bobbins at a uniform speed, avoiding slack and uneven twist and producing a better quality of yarn. By this construction, also, the bobbin M can be made much longer and can have a longer traverse than when the said bobbin and the tube E and whirl D move up and down together, so that each bobbin will contain more yarn than the bobbins heretofore used, saving much time lost in changing bobbins, and thus increasing the amount of work done by the machine.

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

1. The combination, with the dead-spindle B, the whirl D, and the lifter-plate F, of the long tube E, having longitudinal slot L, and the bobbin-socket G, having spring-pins J K and O P to engage with the slotted tube E and the base of the bobbin, substantially as herein

shown and described, whereby the whirl and long tube can revolve in the same place while the socket and bobbin are moved up and down by the lifter-plate, as set forth.

2. The combination, with the lifter-plate F and the bobbin-socket G, of the case Q, substantially as herein shown and described, whereby the said bobbin-socket is covered and protected, as set forth.

WILLIAM WARDMAN.

Witnesses:
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