

No. 646,625.

Patented Apr. 3, 1900.

T. J. MURDOCK.

BOBBIN HOLDER.

(Application filed June 2, 1899.)

(No Model.)

Fig. 1.

Fig. 2.

Fig. 8.

Fig. 9.

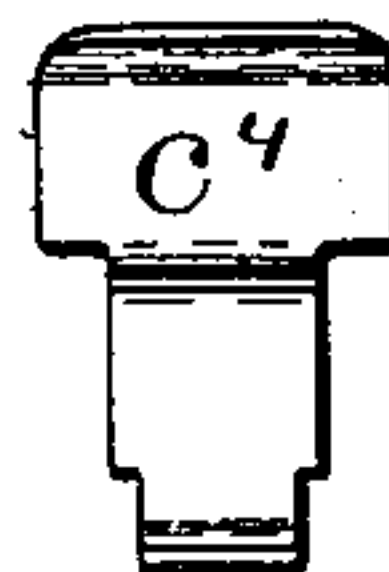
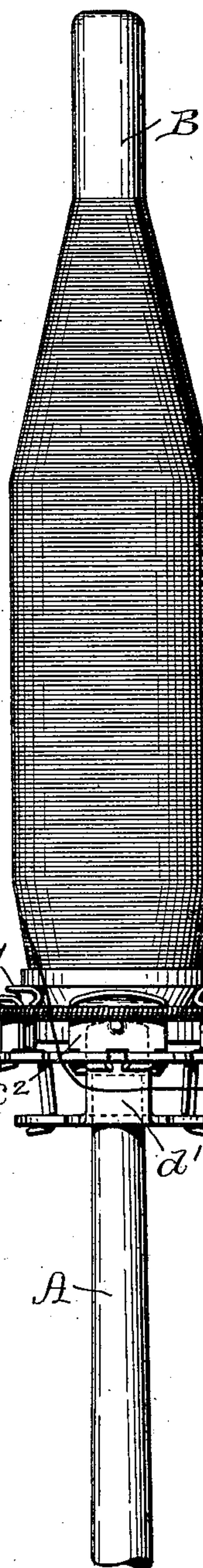
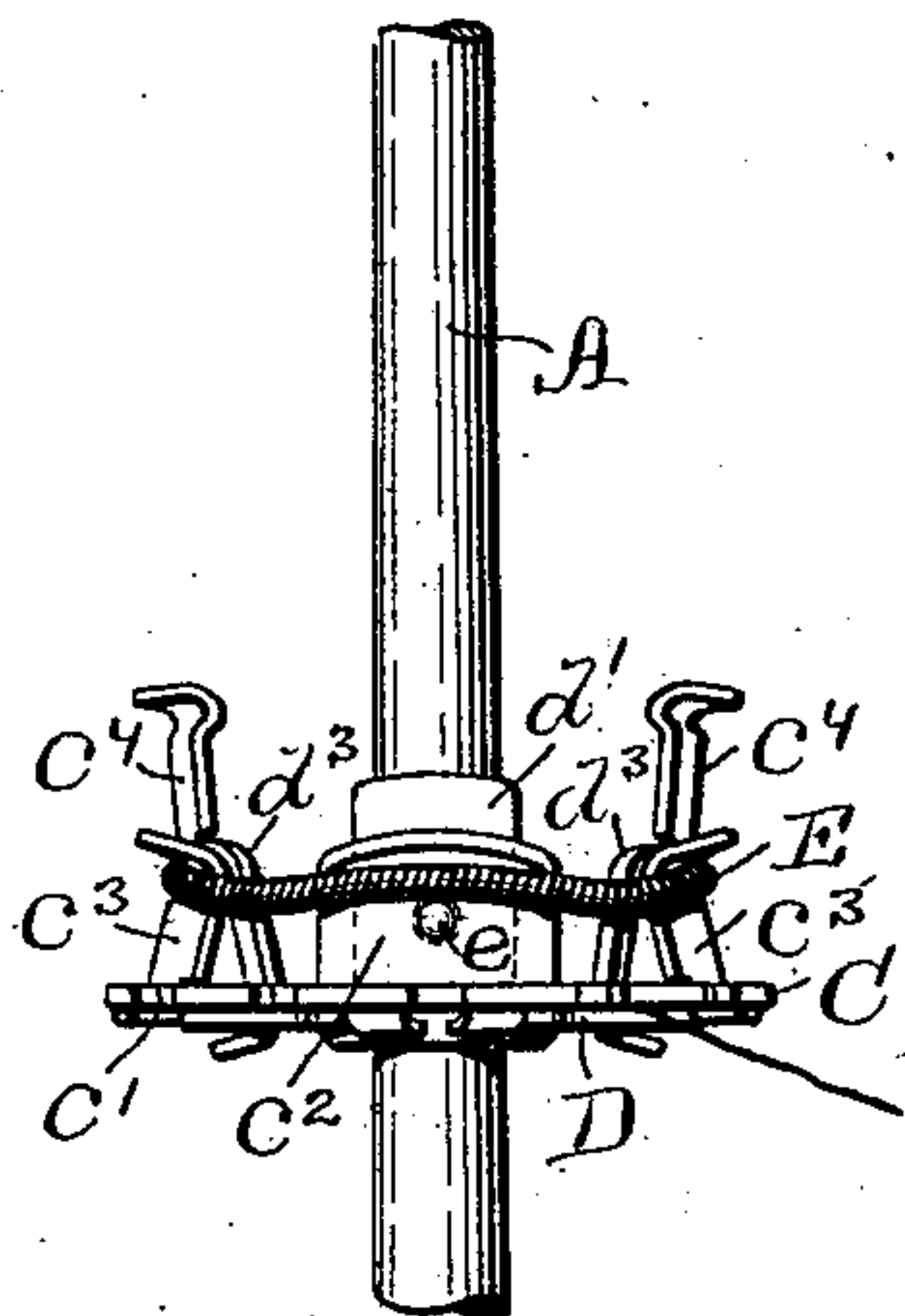


Fig. 3.

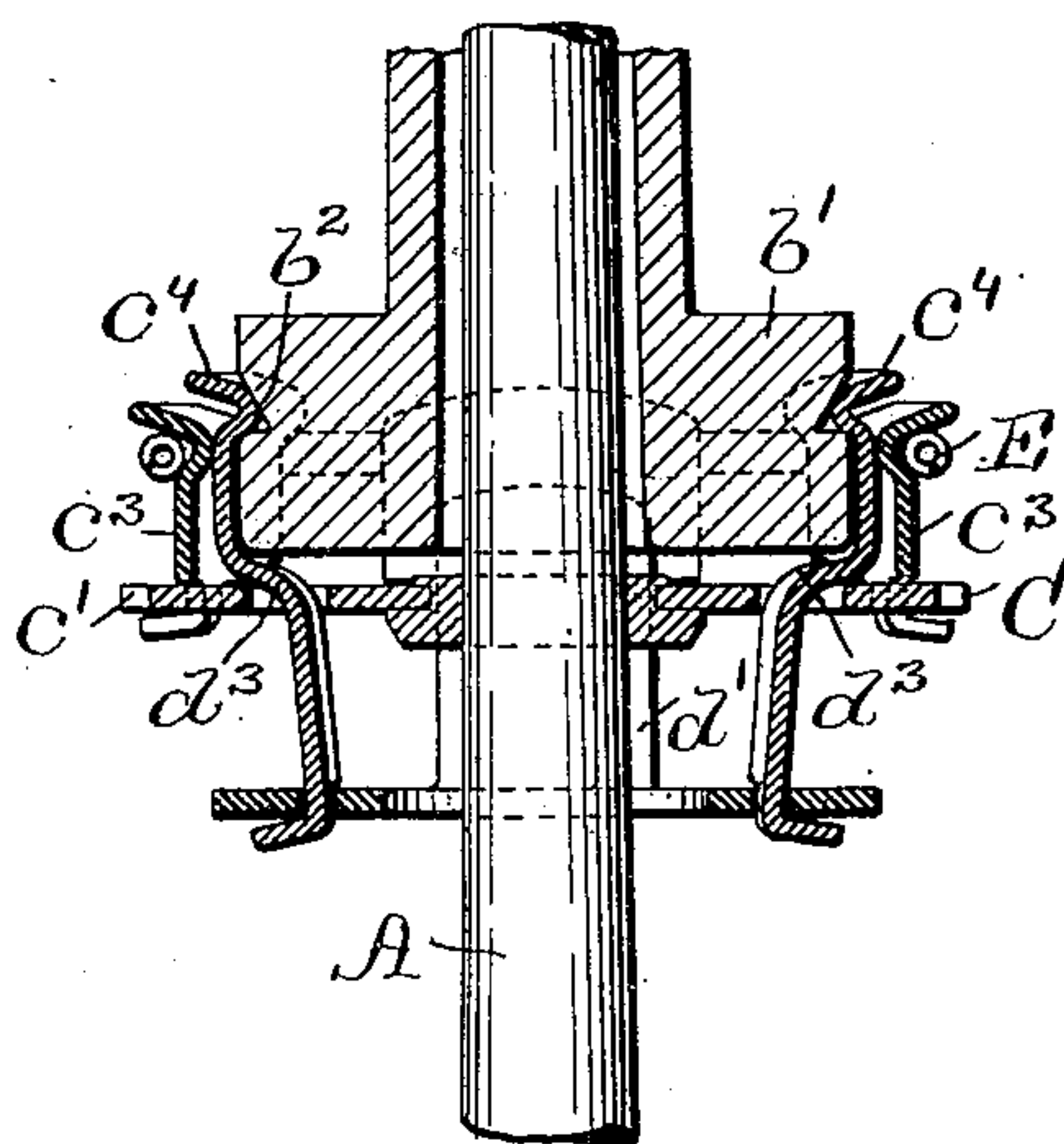


Fig. 4.

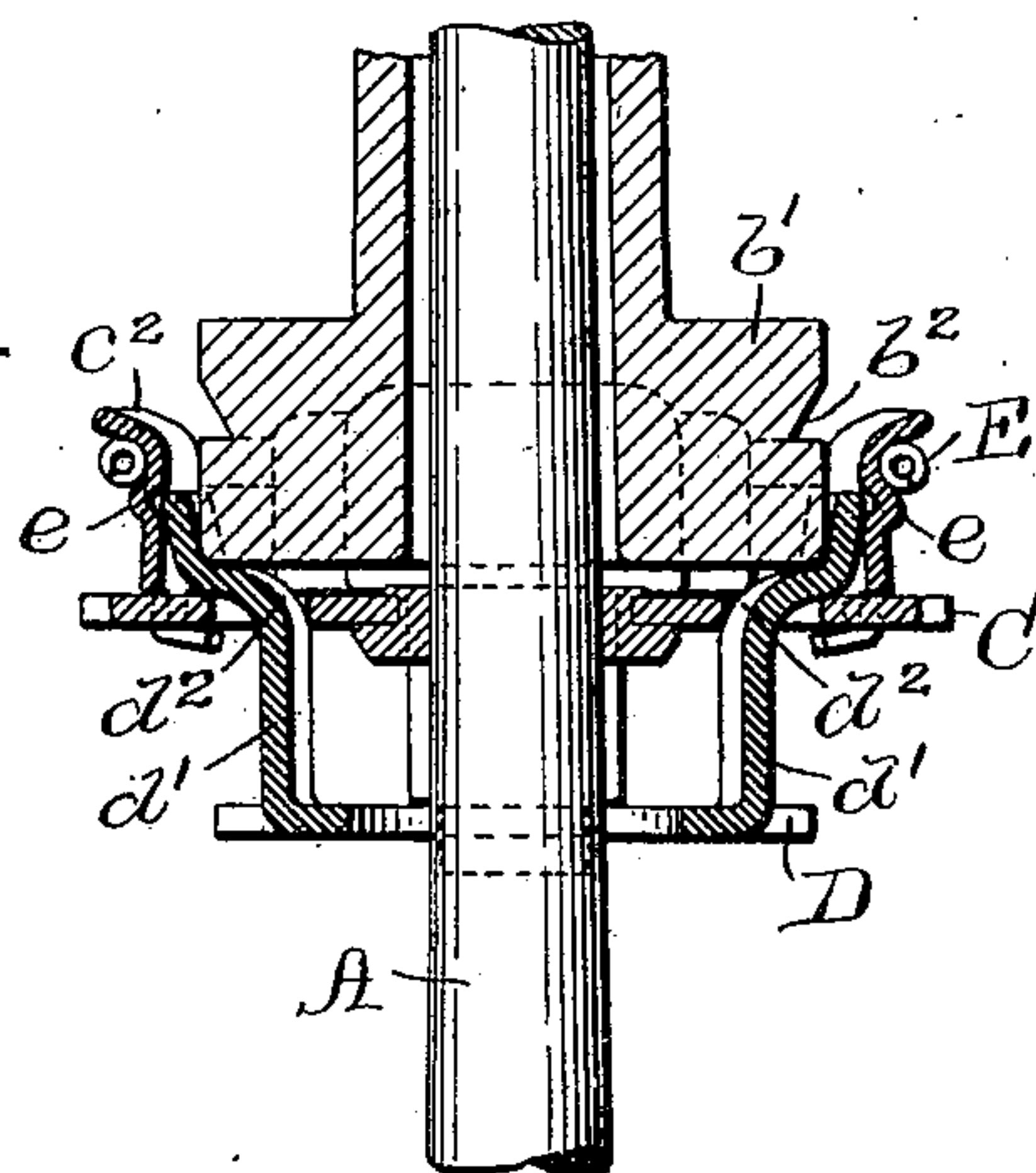


Fig. 5.

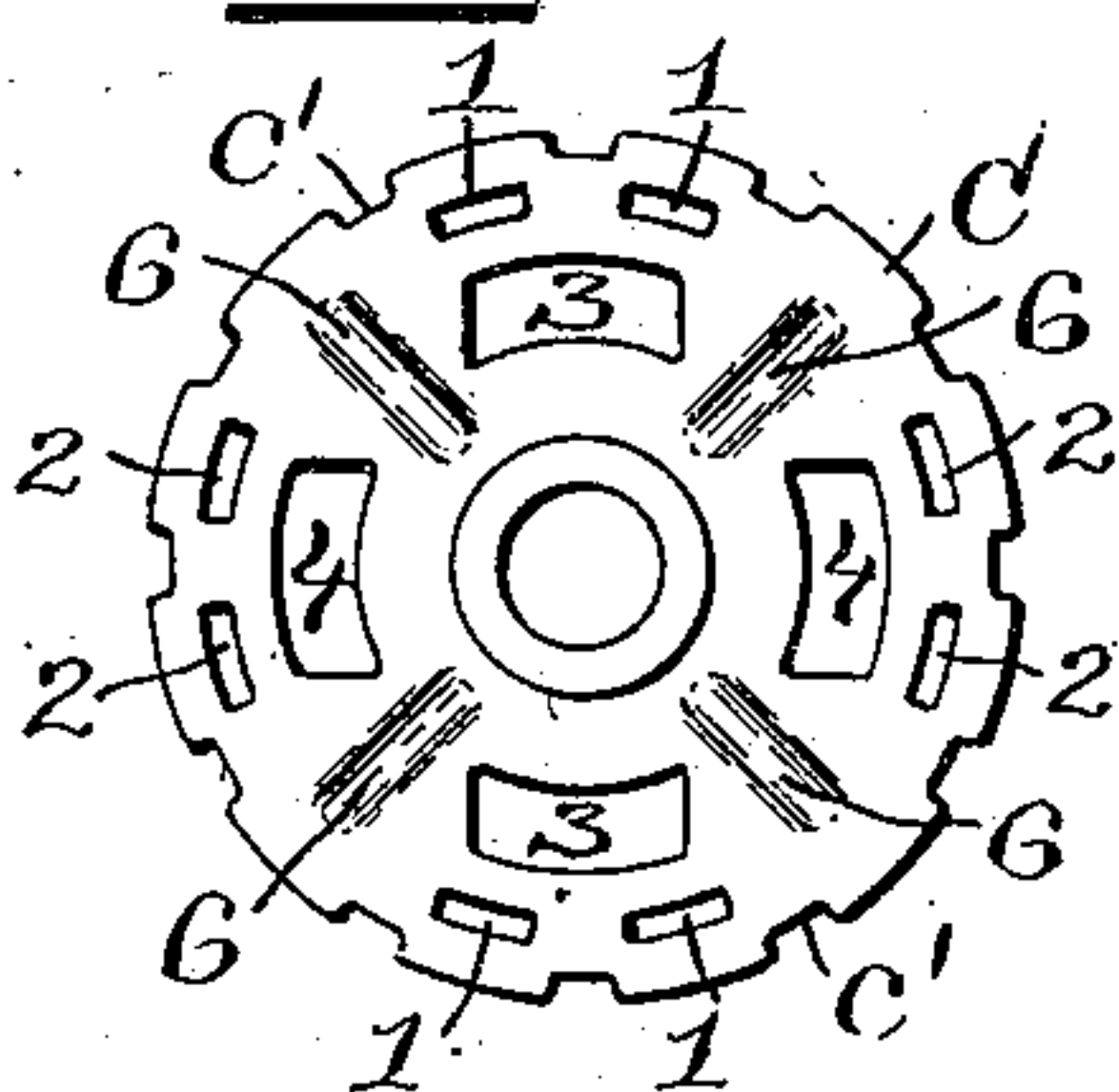


Fig. 6.

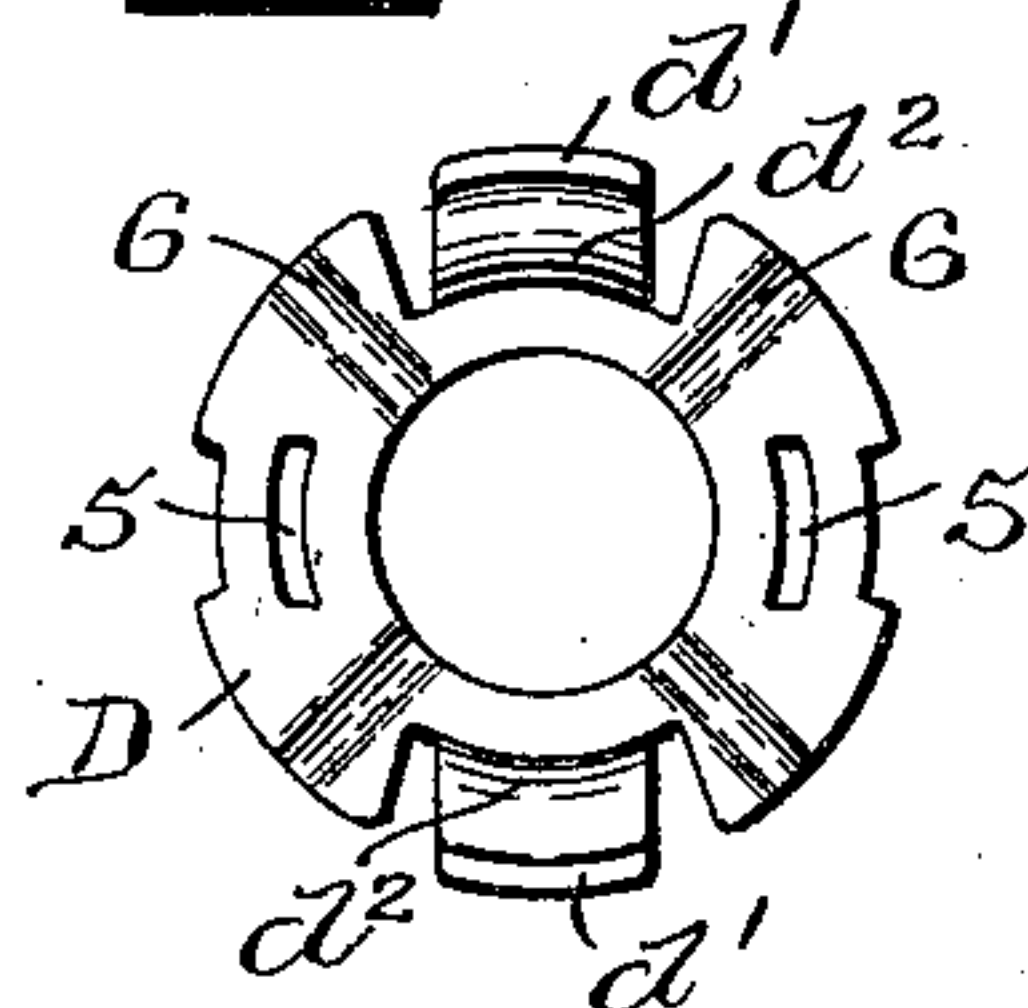
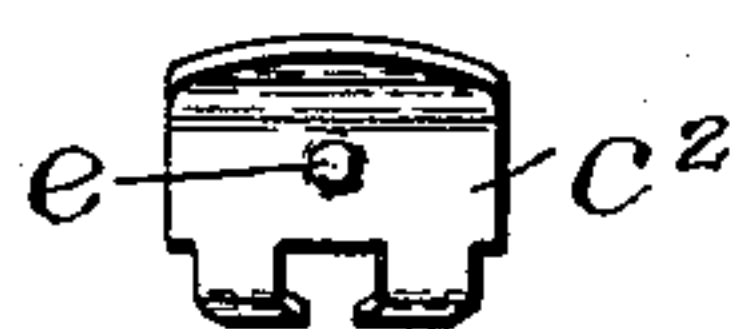


Fig. 7.



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# UNITED STATES PATENT OFFICE.

THOMAS J. MURDOCK, OF WOONSOCKET, RHODE ISLAND.

## BOBBIN-HOLDER.

SPECIFICATION forming part of Letters Patent No. 646,625, dated April 3, 1900.

Application filed June 2, 1899. Serial No. 719,073. (No model.)

*To all whom it may concern:*

Be it known that I, THOMAS J. MURDOCK, of Woonsocket, in the county of Providence and State of Rhode Island, have invented a new and useful Improvement in Bobbin-Holders; and I hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification.

This invention has reference to an improvement in bobbin-holders; and it consists in the peculiar and novel construction of the holder by which the bobbin is more firmly secured and in doffing less waste is made, as will be more fully set forth hereinafter.

In spinning yarn the spindles rotating at high speed are liable to tremble and vibrate. A too slack or too tight driving-band, an imperfect bolster or step, or an unbalanced yarn load on the bobbin will cause vibration and uneasy motion on the spindle and at first a slight upward creeping of the bobbin on the spindle, which accreting causes the bobbin to lift and frequently to throw the bobbin off the spindle. Bobbin-holders constructed to grasp the head of the bobbin usually contain holding-sections, which are held against the peripheral side of the bobbin-head by a spring. When revolving at high speed, the centrifugal force acts to drive these sections outward, relax the tension of the spring, and, loosening the hold on the bobbin-head, permit the bobbin to rise.

One object of this invention is to secure a firmer hold on the bobbin and a downward strain, whereby the bobbin is held firmly against the tendency to rise; and another object of the invention is to facilitate the insertion of the bobbin-head into the holder.

Figure 1 is a side view of my improved bobbin-holder shown in the position when the bobbin has been removed and the thread is held ready to be wound on the next bobbin. Fig. 2 is a side view of the spindle, showing the filled bobbin in the holder and the thread extending between the clamping-plates. Fig. 3 is a sectional view of the bobbin-holder, showing the bobbin-head held down by the lever-jaws connected with the thread-clamping plate. Fig. 4 is a sectional view of the bobbin-holder, showing the lever-jaws connected

with the thread-clamping plate bearing on the bobbin-head. Fig. 5 is a top view of the holder-plate secured to the spindle. Fig. 6 is a top view of the clamping-plate. Fig. 7 is a side view of one of the spring-plates provided with a projection to support the spring. Fig. 8 is a side view of one of the other spring-plates. Fig. 9 is a side view of one of the lever-jaws by which the bobbin is held against rising on the spindle.

Similar marks of reference indicate corresponding parts in all the figures.

In the drawings, A indicates the spindle; B, the bobbin;  $b'$ , the bobbin-head;  $b^2$ , a groove in the peripheral surface of the bobbin-head, and C the holder-plate, secured to the spindle A. The peripheral edge of the holder-plate C is provided with the thread-notches  $c' c'$ , adapted to catch the thread when before doffing the thread is guided down below the holder. The plate C is perforated with the holes 1 1 to receive the arms of the spring-plates  $c^2 c^2$  and with the openings 2 2 to receive the arms of the spring-plates  $c^3 c^3$ . The arms of these spring-plates are bent to hook into the openings 1 and 2 to form pivotal connections with the plate C and also to form stops by which the movement of the spring-plates is limited. The openings 3 3 in the plate C serve for the passage of the clamping-arms  $d' d'$ , formed, preferably, integral with the clamping-plate D. The openings 4 4 serve as guides for the passage of the lever-jaws  $c^4$ , the arms at the lower ends of which are connected to the clamping-plate D by extending through the openings 5 5 in the plate. The arms  $d' d'$  and the lever-jaws may be formed integral with the clamping-plate D and be tempered so as to spring outward when the raising of the clamping-plate D raises them through the openings 3 3 and 4 4 in the holder-plate C. Ridges 6 6 are formed, in the preferred form, in the plate C by dies concave on the upper and convex on the lower side, extending radially, and similar radial ridges are formed on the clamping-plate D to facilitate the holding of the thread in doffing.

The spiral spring E bears on the outer surfaces of the spring-plates  $c^2$  and  $c^3$ , supported on the projections  $e$ . The horizontal sections of the spring-plates  $c^2$  and  $c^3$ , the clamping-



arms  $d'$   $d'$ , and the lever-jaws  $c^4$  form sections of a circle corresponding with their position when holding a bobbin-head of average diameter.

5 On a vertical plane the sections of the spring-plates  $c^2$  and  $c^3$  consist of a beveled inwardly-sloping and outwardly-projecting lip ending in a concave groove for the reception of the spiral spring E on the outside and  
10 forming a convex bead on the inside projecting from the vertical body of the plates, as is shown in Fig. 3.

The arms  $d'$  extend straight upward from the clamping-plate D when in the clamping  
15 position shown in Fig. 4, curve outward through the openings in the plate C, and upward along the peripheral surface of the bobbin-head. The lever-jaws  $c^4$  have on their upper ends the beveled outwardly-projecting  
20 flange and the inwardly-projecting bead of the spring-plates  $c^2$  and  $c^3$ . The jaws then extend downward on the peripheral surface of the bobbin-head, below which they curve inward and downward through the openings in  
25 the plate C and extend in a straight line to the clamping-plate D.

The plate-bends  $d^2$   $d^2$  on the arms  $d'$  and the bends  $d^3$   $d^3$  on the lever-jaws form seats, so that when the holder is in the position  
30 shown in Fig. 1 and the bobbin-head is inserted these and the clamping-plate may be pushed down into the positions shown in Figs. 2, 3, and 4.

The operation of my improved holder is perfectly automatic. When the bobbin-holder  
35 is in the position shown in Fig. 1, the thread is wound between the plates C and D and firmly held between the two plates by the convex ridges 6 on the under side of the plate  
40 C entering the concave ridges 6 on the plate D, the end of the thread being held in one of the notches  $c'$ . When now a bobbin is placed in the holder, the lower end bears on the bent portions  $d^2$  of the arms  $d'$  and on the bent  
45 portion of the lever-jaws. Pressure on the bobbin forces these and the plate D down with the head of the bobbin. The projecting convex beads on the upper ends of the lever-jaws  $c^4$  enter the groove  $b^2$  on the bobbin-head and  
50 are held in this position by the engagement of the lower end of the lever-jaw with the clamping-plate D and also by the spiral spring E acting on the spring-plates  $c^2$  and  $c^3$ . The centrifugal force of the rotating holder does  
55 not act to open the lever-jaws  $c^4$ , because they bear on the outer edges of the openings 4 4 in the plate C and cannot move on this point as on a fulcrum, since the lower ends of the lever-jaws are connected with the clamping-plate  
60 D and cannot swing inward. When the bobbin is completed, the faller or other guide, by which the thread is guided onto the bobbin, is depressed below the bobbin and guides the thread T into the position shown  
65 in Fig. 1, so that it is caught by one of the notches  $c'$   $c'$  in the peripheral edge of the plate C and extends between the clamping-plate D

and the plate C. No further winding is required, and the bobbin is ready for removal or doffing.

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

1. In a bobbin-holder, in combination, a spindle, a plate secured to the spindle, segmental plates pivotally supported and circumferentially disposed on the plate secured to the spindle, spring mechanism acting to press the segmental plates inward toward the spindle, a clamping-plate and jaws connected with the clamping-plate; whereby the removal of the bobbin-head raises the clamping-plate and the jaws to release the bobbin-head from the jaws and clamps the thread, as described.

2. In a bobbin-holder, the combination of the following instrumentalities: a spindle, a perforated holder-plate secured to the spindle, a clamping-plate below the holder-plate and loose on the spindle, clamping-arms formed integral with the clamping-plate extending through openings in the holder-plate and segmental spring-plates circumferentially disposed on the holder-plate; whereby when the bobbin-head is removed the clamping-arms are raised above the circumferentially-disposed spring-plates to release the bobbin-head and when a fresh bobbin is inserted are forced down within the spring-plates to secure the bobbin-head, as described.

3. In a bobbin-holder, the combination with a bobbin-head of the following instrumentalities, a holder-plate secured to and rotating with a spindle, openings in the holder-plate, a clamping-plate below the holder-plate, lever-jaws connected with the clamping-plate and extending through openings in the holder-plate and segmental spring-plates extending upward from the holder-plate; whereby when a bobbin has been removed the lever-jaws extend upward and laterally outward from the segmental spring-plates to facilitate the insertion of the bobbin-head and when the bobbin is pressed into the holder the lever-jaws are forced downward through the openings in the holder-plate to clamp the bobbin-head, as described.

4. In a bobbin-holder, the combination with the spindle, a holder-plate secured to the spindle, and perforations in the holder-plate, of the clamping-plate D, a spring for pressing the lever-jaws against the head of the bobbin, and the curved arms  $d'$  formed integral with the clamping-plate and extending through the perforations in the holder-plate; whereby the bobbin-head when inserted between the arms  $d'$  may be secured by pushing the bobbin down with the arms  $d'$  and the clamping-plate and may be released by raising the clamping-plate, as described.

5. In a bobbin-holder, the combination with the spindle A and the perforated holder-plate C secured to the spindle, of the clamping-plate D, the curved arms  $d'$   $d'$  integral with the



clamping-plate, and the lever-jaws  $c^4$   $c^4$  connected at their lower ends with the clamping-plate, the curved portions  $d^3$   $d^3$  on the levers and the clamping-jaws on the upper ends of  
5 the levers; whereby when a bobbin-head is inserted in the holder and pushed down the arms  $d'$  and the levers in their passage through the openings in the clamping-plate are swung toward the bobbin-head to clamp the same,

the clamping-jaws of the levers entering the 10 groove in the bobbin-head to hold the bobbin against rising, as described.

In witness whereof I have hereunto set my hand.

THOMAS J. MURDOCK.

Witnesses:

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