

No. 772,599.

PATENTED OCT. 18, 1904.

J. A. YORK.

BOBBIN CLUTCHING MEANS FOR ROTATABLE SPINDLES.

APPLICATION FILED JULY 27, 1904.

NO MODEL.

Fig. 1.

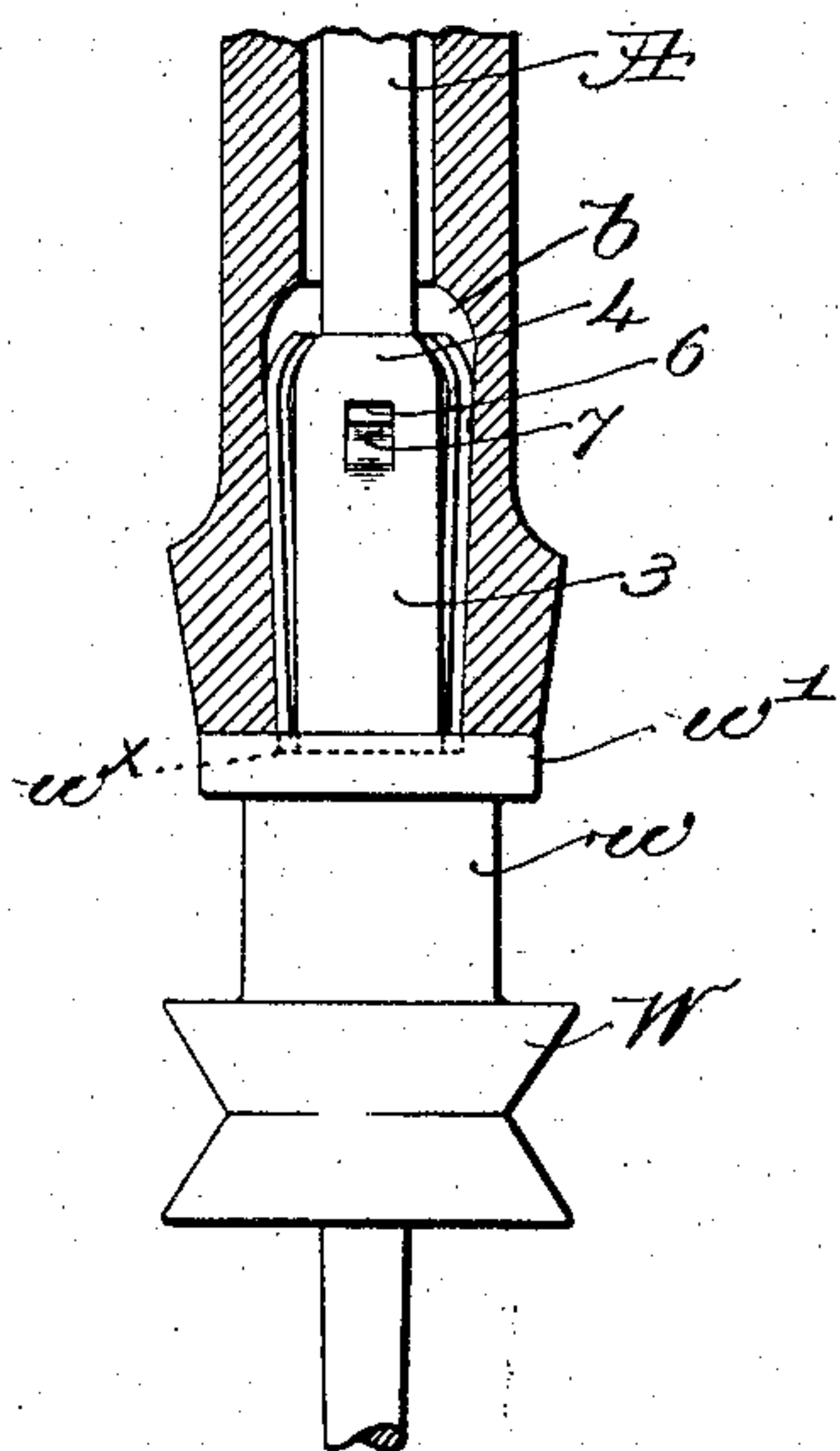


Fig. 2.

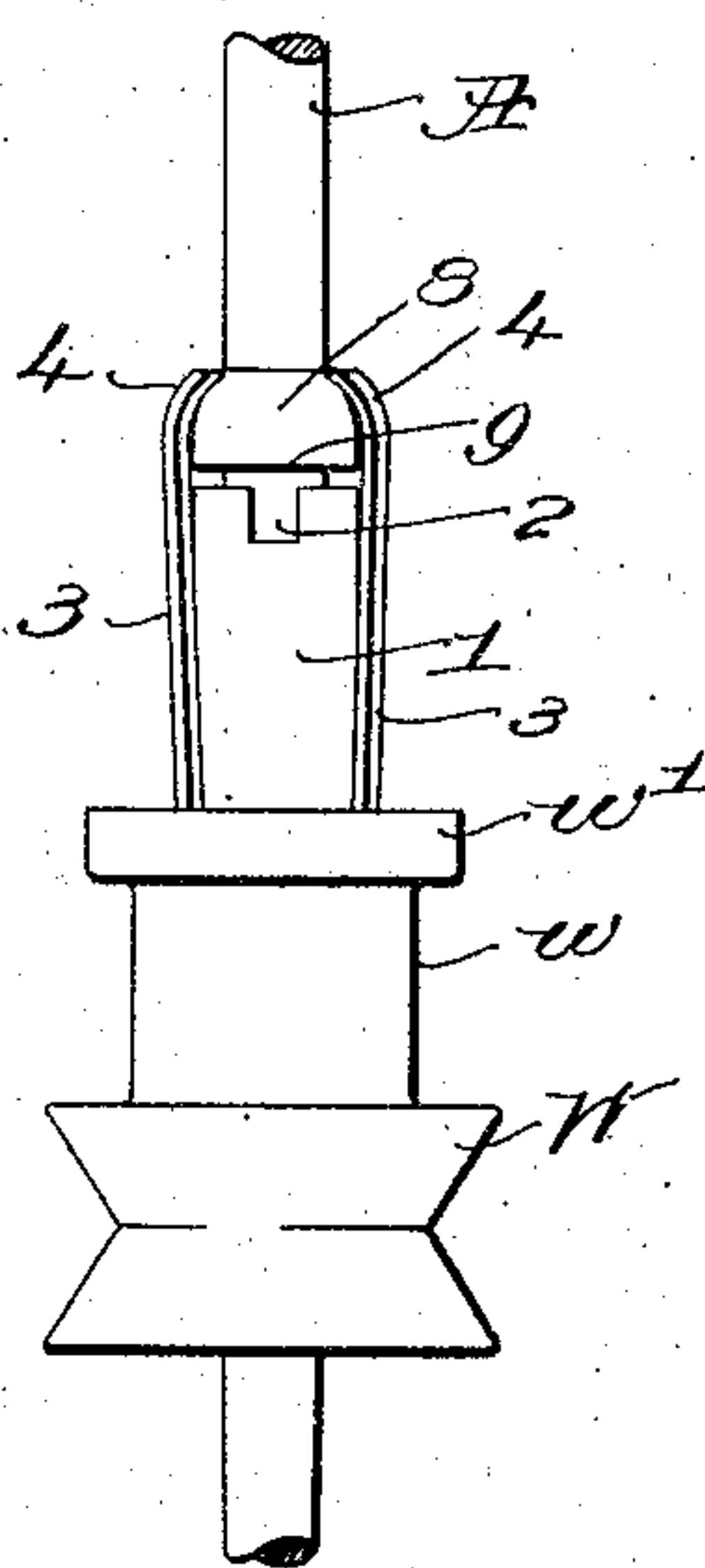


Fig. 3.

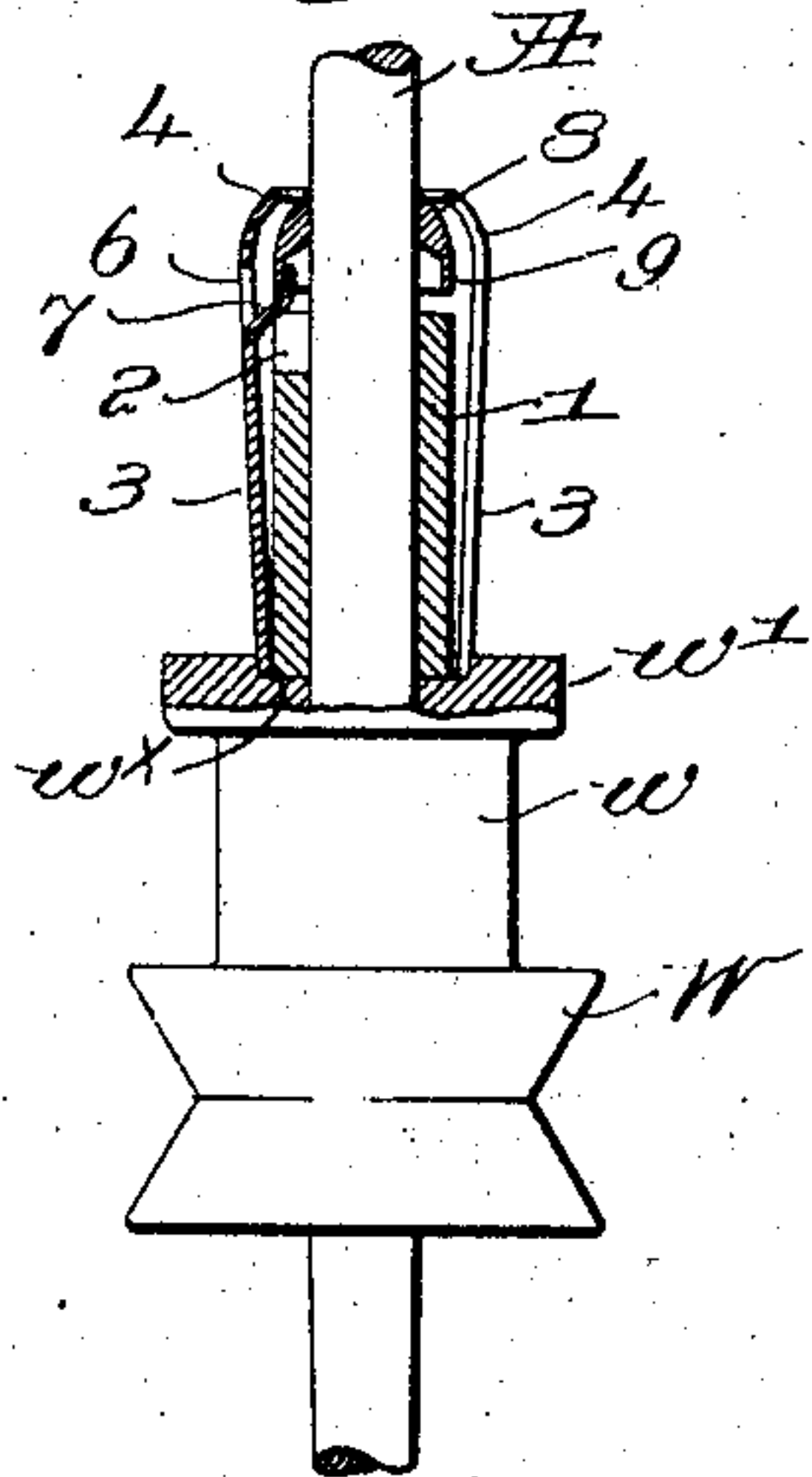


Fig. 4.

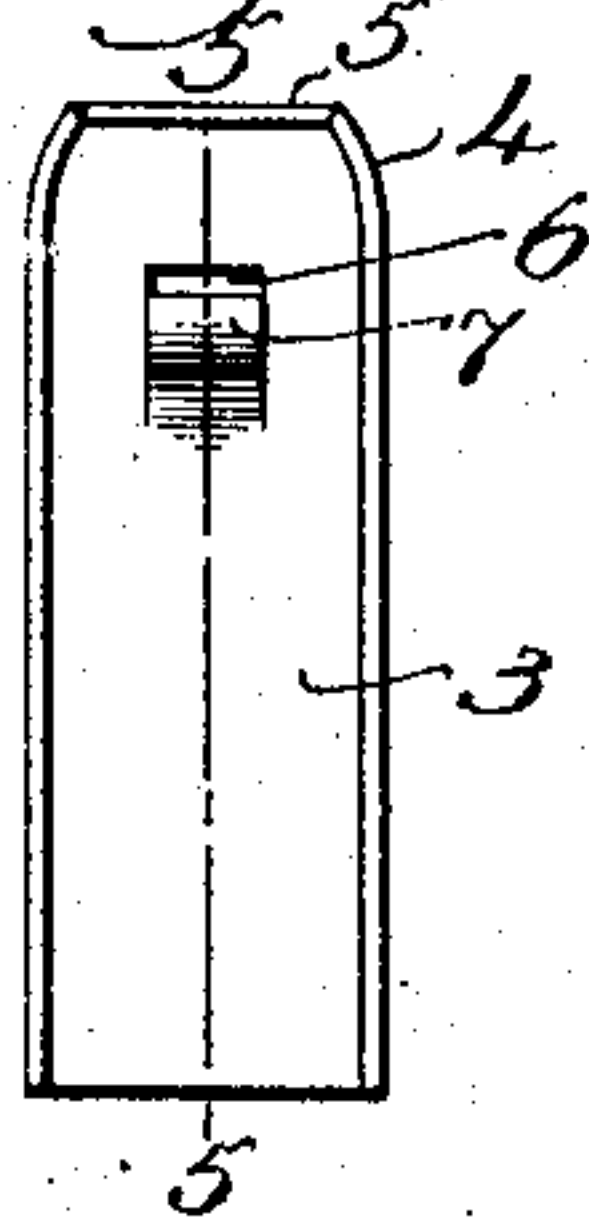


Fig. 5.

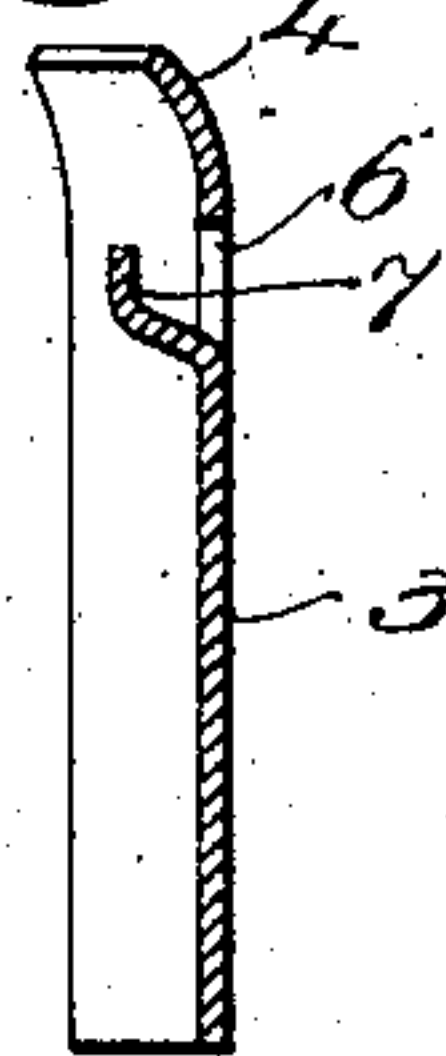
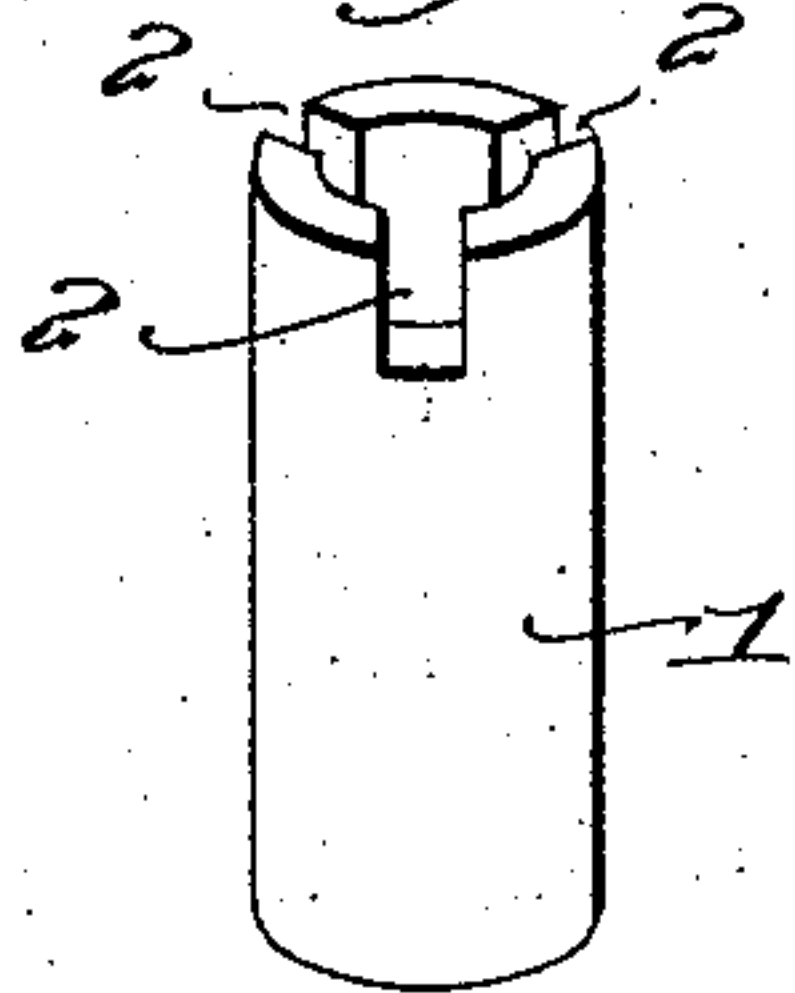


Fig. 6.



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# UNITED STATES PATENT OFFICE.

JOHN A. YORK, OF HOPEDALE, MASSACHUSETTS, ASSIGNOR TO SAWYER SPINDLE COMPANY, A CORPORATION OF MAINE.

## BOBBIN-CLUTCHING MEANS FOR ROTATABLE SPINDLES.

SPECIFICATION forming part of Letters Patent No. 772,599, dated October 18, 1904.

Application filed July 27, 1904. Serial No. 218,320. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN A. YORK, a citizen of the United States, and a resident of Hopedale, county of Worcester, State of Massachusetts, have invented an Improvement in Bobbin-Clutching Means for Rotatable Spindles, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention has for its object the production of novel, simple, and effective means to retain a yarn-receiver or bobbin upon a rotatable spindle by or through the agency of centrifugally-acting clutching members. The greater the spindle speed the more firmly will the said members clutch the yarn-receiver or bobbin and effect its rotation bodily with the spindle. I have so constructed the clutch members that they may be stamped or died out of thin sheet metal, and in the present embodiment of my invention said members are concavo-convex in cross-section and of uniform thickness, with their upper ends or heads curved inward toward the spindle, about which the clutch members are loosely grouped. The curved heads serve to guide the bobbin into place when applied to the spindle, and they inclose and conceal the means which limits outward movement of the said members at their upper ends and which also prevents said members from lifting or axial movement.

The various novel features of my invention will be fully described in the subjoined specification, and particularly pointed out in the following claims.

Figure 1' is a view in side elevation of a rotatable spindle provided with bobbin-clutching means embodying one form of my invention, a yarn-receiver or bobbin being shown in section in position on the spindle. Fig. 2 is a similar view, but with the bobbin omitted and the nearer clutch member removed to show the parts behind it. Fig. 3 is a longitudinal sectional detail on the line 3-3, Fig. 1. Fig. 4 is an enlarged inner face view of one of the clutch members detached. Fig. 5 is a longitudinal section thereof on the line 5-5,

Fig. 4; and Fig. 6 is a perspective view of the separator for the clutch members to be described.

The clutching means, hereinafter to be described, comprehends a series of clutch members of such construction that they may be died out of sheet metal, a cup-like device (which can be similarly produced) to limit radial and axial movement of the clutch members, and means to laterally position said members and insure their rotation bodily with the spindle.

In Figs. 1, 2, and 3 a rotatable spindle A is shown, a spinning-spindle of well-known type being illustrated, the spindle having a whirl W, provided with an upturned sleeve w, having an annular flat enlargement or head w', constituting a bobbin-rest, the same having an annular recess w<sup>x</sup>, concentric with the spindle and forming a motion-limiting raceway in which the lower ends of the clutch members are loosely held. In the present embodiment of my invention a sleeve 1 is forced onto the spindle and down into the recess, (see Fig. 2,) the upper end of the sleeve having a series of symmetrically-disposed notches 2 (see Fig. 6) for a purpose to be described, three of such notches being shown.

The clutch members 3 are made of thin sheet metal stamped or died out to shape, and, as shown in Figs. 4 and 5, said members are concavo-convex in cross-section and of uniform thickness. The upper end of each member is decreased in width and curved upward and inward to form a head 4, the curved upper edge 5 of the head fitting loosely around the spindle when the parts are assembled, while the lower end of the member rests loosely in the raceway w<sup>x</sup> outside the sleeve 1. A slot 6 is made in each head, and the metal struck up from the slot is upturned and offset from the inner concave face of the clutch member to form a lip 7, as clearly shown in Figs. 3, 4, and 5. A motion-limiting and retaining or locking device is secured to the spindle to cooperate with the several lips 7, said device being shown as a cup-shaped member 8, which may be also stamped or died out and having its flange-like periphery 9 depend-



ing and closely approaching the upper notched end of the sleeve 1. (See Figs. 2 and 3.) The lips 7 of the clutch members are passed inside of the flange 9, the lower portions of the lips entering the notches 2, as shown in Figs. 2 and 3, when the parts are assembled, while the lower ends of the members 3 are inserted in the raceway  $w^x$ . Thus the clutch members are grouped loosely around the sleeve 1 and the spindle, and the heads 4 inclose and conceal the retaining device 8, which limits radial movement of the upper ends of said clutch members and also prevents them from undue lifting or axial movement. The curved heads serve as a guide for the yarn-receiver or bobbin B, Fig. 1, when the latter is applied to the spindle, the chamber  $b$  in the bobbin receiving the clutch members. The rotation of the spindle causes the clutch members to be moved outward by centrifugal force into driving engagement with the walls of the bobbin-chamber  $b$ , and these walls may be made slightly flaring in an upward direction, while the radial movement of the clutch members at their upper ends is greater than at their lower ends. By this arrangement a firmer grip is secured at the upper ends of the clutch members, obviating any tendency of the bobbin to lift. The sides of the notches 2 engage the upright side edges of the lips 7 and serve to laterally position the clutch members, while insuring bodily rotation of the same with the spindle.

Various changes in details of construction may be made by those skilled in the art without departing from the spirit and scope of my invention, one practical embodiment of which is herein illustrated and described.

The sleeve 1 and the bobbin-rest  $w'$  may be made integral instead of separate, if so desired, one form being practically as convenient to manufacture as the other form.

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

1. The combination with a rotatable spindle provided with a motion-limiting raceway, of bobbin-clutching members having their lower ends loosely held therein, each member having at its upper end an upturned inner lip and a head extended above and outside the lip, and means fixedly mounted on the spindle to coöperate loosely with the lips of said members within the heads thereof, to limit radial and lifting movement of said members.

2. The combination with a rotatable spindle of centrifugally - acting bobbin - clutching members concavo-convex in cross-section and of uniform thickness grouped around the spindle and having their upper ends curved inward to form a bobbin-guide, means to limit outward movement of the lower ends of said members, and means fixedly mounted on the spindle and coöperating loosely with the mem-

bers within their curved upper ends, to limit radial and lifting movement of said members.

3. The combination with a rotatable spindle of centrifugally - acting bobbin - clutching members concavo-convex in cross-section and of uniform thickness grouped around the spindle and having their upper ends curved inward to form a bobbin-guide, an upturned, integral lip on the inner, concave face of each member near its upper end, a motion-limiting raceway for the lower ends of said members, and means rotatable with the spindle to loosely coöperate with the upturned lips and limit radial and lifting movement of the clutching members at their upper ends, the said means being inclosed within their curved upper ends.

4. The combination with a rotatable spindle provided with an annular motion-limiting raceway, of bobbin-clutching members having their lower ends held loosely therein and grouped around the spindle, said members being concavo-convex in cross-section and having their heads curved inward, an integral upturned lip offset from the concave face of each member below the head, means fixedly mounted on the spindle within the heads to coöperate loosely with the lips and limit radial and lifting movement of the said members, and means to engage the sides of the lips and separate said members and cause their bodily rotation with the spindle.

5. The combination with a rotatable spindle provided with an annular motion-limiting raceway, of bobbin-clutching members having their lower ends held loosely therein and grouped around the spindle, said members being concavo-convex in cross-section and having their heads curved inward, an integral lip struck up from each member on its concave face and upturned below the head, a depending annular collar rotatable with the spindle, overhanging and loosely engaging the lips to prevent lifting of said members and to limit the radial movement of their upper ends, and a sleeve surrounding the spindle below the collar and having its upper end notched to loosely receive the lips, to laterally position the clutching members and insure their positive rotation bodily with the spindle.

6. The combination with a rotatable spindle provided with a bobbin-rest having an annular motion-limiting raceway, of bobbin-clutching members loosely held at their lower ends in said raceway, said members being concavo-convex in cross-section and having their upper ends or heads curved inward, to form a bobbin-guide, means to loosely coöperate with said members within their heads, to limit their radial movement and prevent lifting of said members, and a separator surrounding the spindle and rotatable therewith to engage interiorly said members and cause their bodily rotation with the spindle.

7. The combination with a rotatable spindle



provided with means to support and limit radial movement of the lower ends of a series of centrifugally-acting bobbin-clutching members, of said members having transversely-curved, elongated bodies of uniform cross-section shaped at their upper ends to present an upturned, interior lip and an exterior, inwardly and upwardly curved head, and means fixedly mounted on the spindle to laterally separate and effect positive bodily rotation of said members with the spindle and to loosely cooperate with each member between its lip and head to limit outward movement of such member at its upper end.

8. The combination with a rotatable spindle, provided with a motion-limiting raceway, of bobbin-clutching members having their

lower ends loosely held therein, each member being stamped out of sheet-metal and concavo-convex in cross-section and provided with an integral upturned lip struck up from its concave face near its upper end, and means fixedly mounted on the spindle to loosely cooperate with said lips and limit radial movement of the said members while locking them in operative position.

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

JOHN A. YORK

Witnesses:

GEORGE OTIS DRAPER,  
FRANK E. DODGE, Jr.