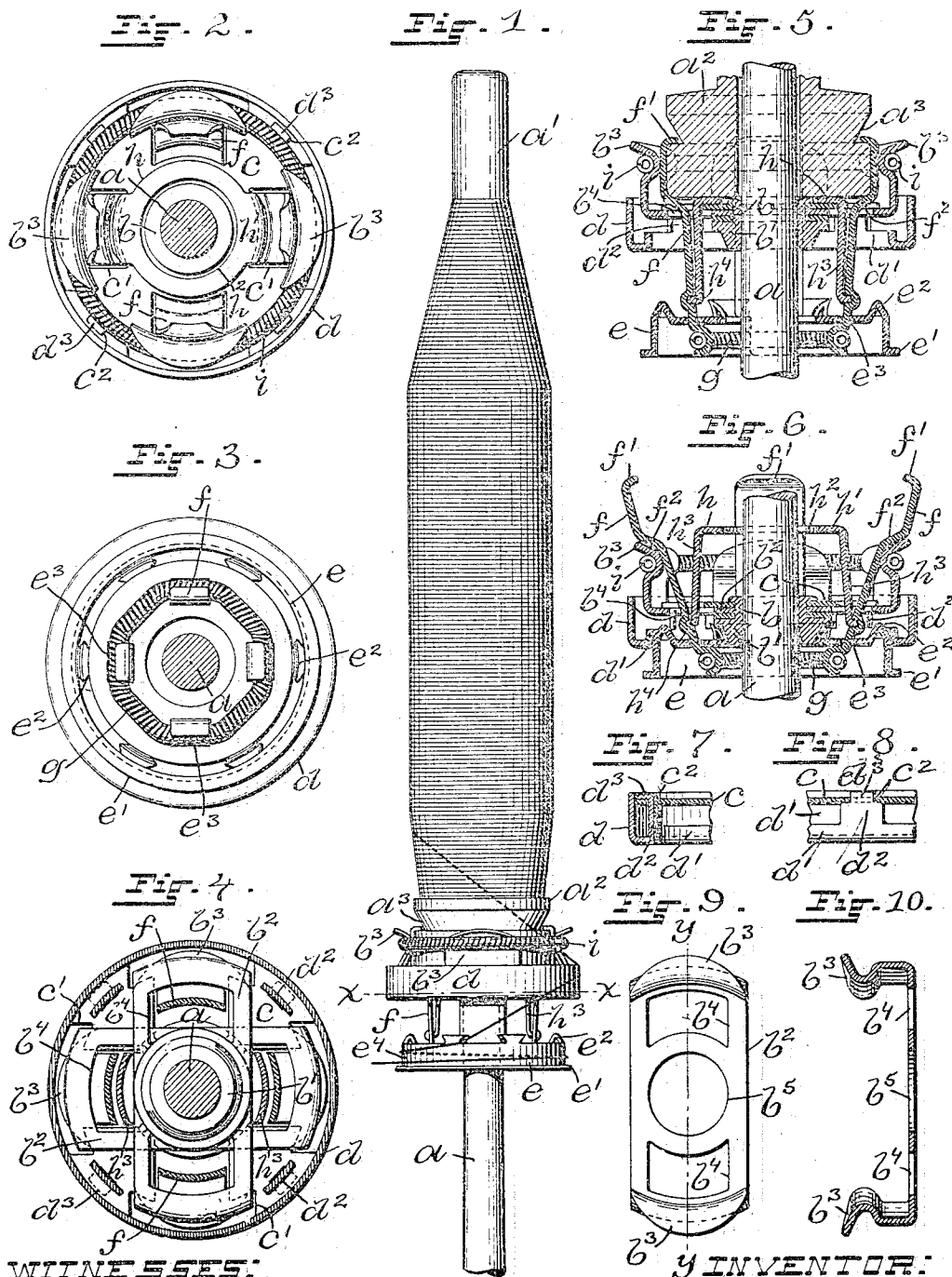


No. 809,624.

PATENTED JAN. 9, 1906.

T. J. MURDOCK.
BOBBIN HOLDER.

APPLICATION FILED DEC. 29, 1902.



WITNESSES:

Ada E. Hagerty.
Chas. H. Luther J.

Y INVENTOR:

Thomas J. Murdock.
Joseph M. Miller & Co.
ATTORNEYS:

UNITED STATES PATENT OFFICE.

THOMAS J. MURDOCK, OF FRANKLIN, MASSACHUSETTS, ASSIGNOR TO
MURDOCK AND GEB COMPANY, OF FRANKLIN, MASSACHUSETTS.

BOBBIN-HOLDER.

No. 809,624.

Specification of Letters Patent.

Patented Jan. 9, 1906.

Application filed December 29, 1902. Serial No. 136,902.

To all whom it may concern:

Be it known that I, THOMAS J. MURDOCK, a citizen of the United States, residing at Franklin, in the county of Norfolk and State of Massachusetts, have invented a new and useful Improvement in Bobbin-Holders, of which the following is a specification.

This invention has reference to a device for simplifying and facilitating the operation of securing bobbins to the spindles of spinning-mules or spinning-machines.

The object of this invention is to construct an automatic locking bobbin-holder that will lock the bobbin-head in the holder by a downward movement of the bobbin on the spindle and will release it by an upward movement of the bobbin by the operator, leaving the locking-jaws in an open position for the next bobbin, as will be more fully set forth hereinafter, and pointed out in the claims.

Figure 1 is a side view of a spindle provided with my improved automatic locking-holder, showing a full bobbin locked in the holder, the position the thread would assume after being carried down by the faller-arm, and the points for catching and holding the thread when the bobbin is doffed. Fig. 2 is a plan view of the bobbin-holder, with the spindle in section, showing the circular operating-frame surrounding the spindle, the clamping-arms held in their contracted position by the annular spring, and the upper ends of the locking-jaws in their closed position. Fig. 3 is a plan view looking at the under side of the bobbin-holder, showing the endless coiled spring in engagement with the lower ends of the clamping-jaws for holding them in their open position. Fig. 4 is a cross-sectional view taken on line X X of Fig. 1 through the holder looking upward, showing the position of the clamping-arms with the apertures for the locking-jaws, and the means for securing the parts forming the body of the holder together. Fig. 5 is a vertical sectional view of the bobbin-holder and bobbin-head, showing part of the spindle and the bobbin-holder in its closed position, with the locking-jaws locked into the groove in the peripheral surface of the head of the bobbin. Fig. 6 is a sectional view similar to Fig. 5, showing the holder in the open position and the bobbin removed from the holder. Fig. 7 is a cross-sectional detail view, and Fig. 8 is a sectional detail view looking from the inside, showing

the means for securing the plate and frame forming the body of the holder together. Fig. 9 is a plan view of two of the clamping-arms formed in one piece from sheet-metal with apertures for two of the locking-jaws and a central hole for securing it in the body of the holder; and Fig. 10 is a sectional view, taken lengthwise, on line Y Y of Fig. 9 through the clamping-arms.

In the drawings, *a* indicates the spindle, *a'* the bobbin, *a''* the head, and *a'''* a groove in the peripheral surface of the head of the bobbin. The fixed parts of the holder are secured together by the ring *b*, formed like an eyelet with the head *b'* to form a shoulder. The two spring-plates *b'' b'''*, forming the clamping-arms *b'' b'''* with the apertures *b'' b'''* for the locking-jaws to pass through, are placed at right angles to each other on the ring *b* through the central openings *b'' b'''*. The plate *c*, stamped from sheet metal, with the openings *c'* *c'*, the slots *c'' c''*, and a central hole, is now placed on the ring *b* through the central hole and the whole secured together by upsetting the upper end of the ring *b* onto the plate *c*. The fixed frame *d* has the inwardly and upwardly extending flange *d'* with the short arms *d'' d'''* contracted at their upper ends *d'' d'''* to form shoulders and is secured to the plate *c* by the ends *d'' d'''* entering the slots *c'' c''* in the plate *c* and clamped, as shown in Figs. 7 and 8. The movable frame *e*, with the lip *e'* to limit the downward movement of the thread, the thread-catching points *e'' e''* on the upper edge, and the slots *e''' e'''* in the top, carries the locking-jaws *f f*. In the preferred form the lower end of the locking-jaws are shouldered on the top of the frame *e*, where they extend through the slots *e''' e'''* and are then locked over the endless coiled spring *g*, the shoulders and slots *e''' e'''* forming pivots for the locking-jaws in the frame *e*. The upper ends of the locking-jaws are bent inward to form the lips *f' f'* and near the upper ends are shaped to form the bends *f'' f''*, acting as cams on the clamping-arms *b'' b'''*, to close the locking-jaws. The operating-frame *h* is shaped to form the head *h'* with the hole *h''* for the spindle and the downwardly-extending spring-arms *h'' h'''* with the outwardly-bent ends *h'' h'''* entering indentures stamped into the locking-jaws, as shown in Figs. 5 and 6. The downward movement of the bobbin on the spindle brings the head of the bobbin into engagement with the head of the operating-frame *h*,

forcing it downward and carrying with it the locking-jaws $f f$ and the frame e , closing the jaws onto the head of the bobbin against the tension of the endless coiled spring g , the lips $f' f'$ on the locking-jaws entering the groove a^3 in the bobbin-head, locking the bobbin in the holder. As the heads of bobbins are not always of an exact size and to firmly hold the bobbin, I make the clamping-arms $b^3 b^3$ of spring metal and reinforce them with the annular spring i , supported in grooves in the clamping-arms.

The bobbin-holder is secured by driving the ring b onto the spindle, and when assembled the locking-jaws are held in their operative position in the holder by the apertures $b^4 b^4$ in the spring clamping-arm plates $b^2 b^2$ and the openings $c' c'$ in the plate c , secured to the ring b .

In the holder, as shown, I use four locking-jaws and four clamping-arms, the clamping-arms being made in two parts. By this means I get the plate b^2 , with the two clamping-arms $b^3 b^3$, in one piece, as shown in Figs. 9 and 10, with the grain of the metal running lengthwise, with less liability of breaking than if the four clamping-arms were made in one piece, bringing the grain of the metal across two of the arms.

When the bobbin is full, as shown in Fig. 1, the faller-arm carries the thread downward below the bobbin and onto the bobbin-holder, catching on the points e^2 , and as the faller-arm stops opposite to the flange e^4 of the movable frame any excess of yarn will be wound on the flange e^4 . When the bobbins are doffed, leaving the bobbin-holder in the open position, the new bobbins are now placed on the spindles and the faller-arm is lifted, thereby pulling up from off the flange e^4 the excess of yarn wound thereon, the spindles now being given a turn or two to start the winding of the yarn on the bobbins. The bobbins are then forced down on the holder and locked in position by the same and the machine started up. By this means there is very little waste in the doffing of the machine.

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

1. A bobbin-holder having a plurality of pivoted locking-jaws, an endless coiled spring, two spring-plates having clamping-arms formed integral therewith and held in contact with the locking-arms by the endless coiled spring, and means for operating the locking-jaws to firmly secure the bobbin in the holder when in the locked position, substantially as described.

2. A bobbin-holder having a plurality of locking-jaws for locking a bobbin-head in the holder, means for automatically opening or closing the locking-jaws, and two spring-plates having clamping-arms formed integral therewith and held in contact with the locking-jaws in their locked position by an endless coiled spring to firmly secure the bobbin-head in the holder.

3. A bobbin-holder having a plurality of locking-jaws, an operating-frame in connection with the locking-jaws, spring-plates provided with clamping-arms formed integral therewith and in contact with the locking-jaws, an endless coiled spring and bends in the locking-jaws acting as cams on the clamping-arms to assist the coiled spring to force the locking-jaws inward by a downward movement of a bobbin on the operating-frame to lock a bobbin-head in the holder, as described.

4. In combination, a bobbin-holder having a plurality of pivoted locking-jaws, a movable frame carrying the locking-jaws pivoted in the frame, an operating-frame in connection with the locking-jaws, a fixed frame, means for securing the fixed frame to a spindle, spring clamping-arms in the fixed frame in contact with the locking-jaws, bends in the locking-jaws acting as cams on the clamping-arms to force and lock the locking-jaws into a groove in the peripheral surface of the head of a bobbin, when the operating-frame is forced downward by the bobbin-head, and an endless spiral spring in connection with the lower ends of the locking-jaws below the pivots to open the jaws when the bobbin is moved upward, as described.

5. In combination with a bobbin-holder, clamping-arms stamped from sheet metal to form a plate b^2 with two clamping-arms $b^3 b^3$, apertures $b^4 b^4$, and a central opening b^5 for securing the plate b^2 in the holder, as described.

6. A bobbin-holder having a plurality of locking-jaws, a movable frame carrying the locking-jaws, the plate e provided with the thread-catching points e^2 and the lip e' and on which the locking-jaws are pivoted, a fixed frame, spring-plates provided with clamping-arms secured to the fixed frame, and an endless spiral spring in connection with the clamping-jaws, as described.

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

THOMAS J. MURDOCK.

Witnesses:

ADA E. HAGERTY,
J. A. MILLER, Jr.