

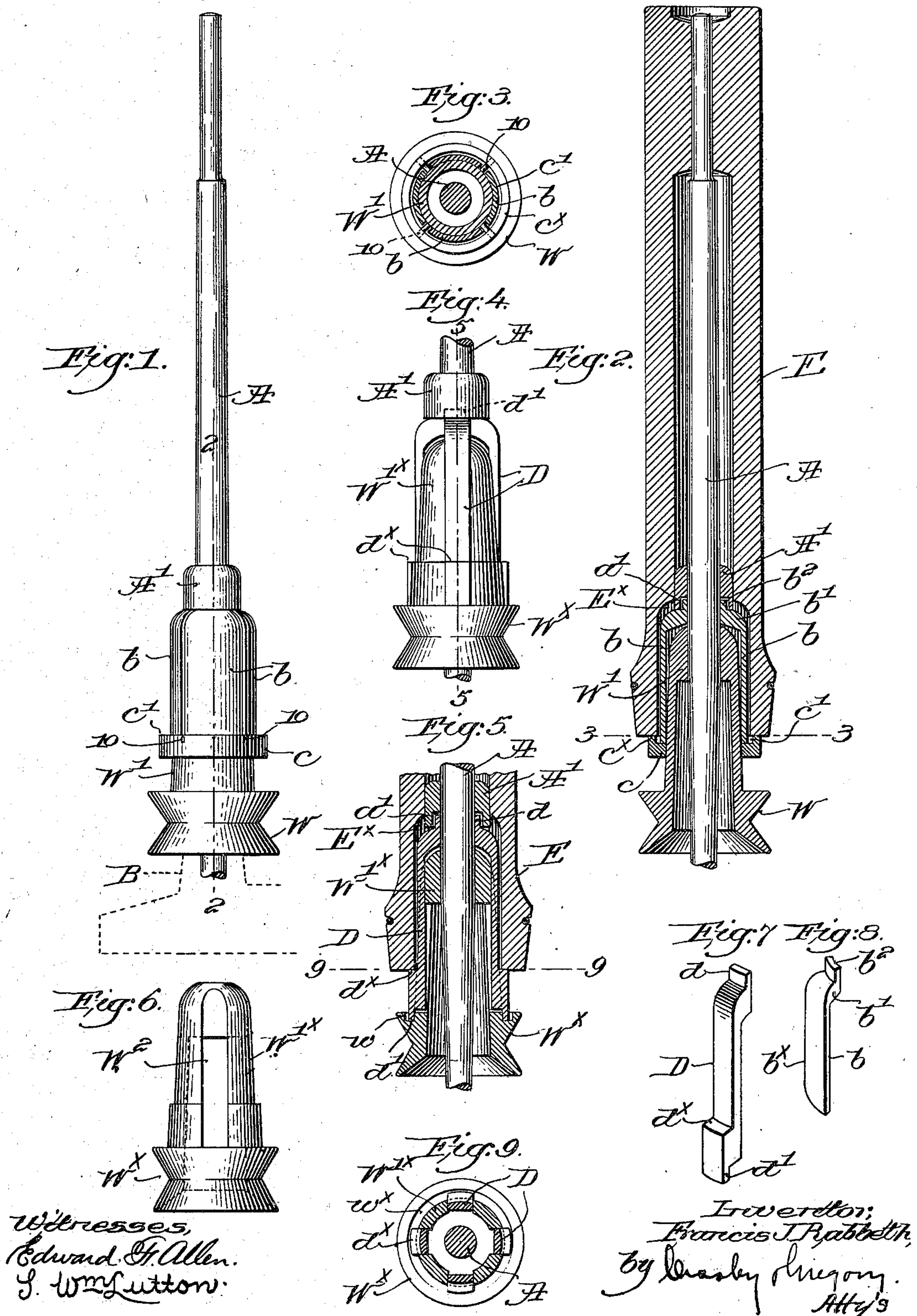
No. 734,747.

PATENTED JULY 28, 1903.

F. J. RABBETH.  
SPINNING SPINDLE.

APPLICATION FILED FEB. 24, 1903.

NO MODEL.





## UNITED STATES PATENT OFFICE.

FRANCIS J. RABBETH, OF REDLANDS, CALIFORNIA.

## SPINNING-SPINDLE.

SPECIFICATION forming part of Letters Patent No. 734,747, dated July 28, 1903.

Application filed February 24, 1903. Serial No. 144,614. (No model.)

*To all whom it may concern:*

Be it known that I, FRANCIS J. RABBETH, a citizen of the United States, residing at Redlands, county of San Bernardino, State of California, have invented an Improvement in Spinning-Spindles, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention relates to spinning-spindles of the live or rotatable type; and it has for its object the production of novel, simple, and efficient means for retaining the yarn receiver or bobbin in operative position upon the spindle during the operation of laying the yarn upon the bobbin.

A practical and efficient bobbin-retaining device should be simple, durable, and so constructed that the empty bobbin may be readily applied to the spindle and as readily removed therefrom or doffed, while during the operation of laying yarn upon the bobbin the latter should be firmly retained upon the spindle without slip or lifting movement.

In my present invention I have constructed and produced novel bobbin-retaining means which conform to the foregoing requirements in all particulars, the bobbin being instantly and readily brought into or removed from cooperative relation with such means and retained firmly and securely in place thereby so long as the spindle continues to rotate.

To this end the bobbin-retaining means is so constructed and arranged that the centrifugal force due to rotation of the spindle is utilized to cause said means to engage and firmly hold the bobbin in operative position upon the spindle.

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

Figure 1 is a side elevation of a spindle and its attached whirl with one embodiment of my novel bobbin-retaining means applied thereto. Fig. 2 is a longitudinal sectional view thereof on the line 2 2, Fig. 1, a bobbin being shown in operative position on the spindle. Fig. 3 is a transverse section on the line 3 3, Fig. 2, looking down. Fig. 4 is a side elevation of another form of bobbin-retaining means embodying my invention.

Fig. 5 is a longitudinal section thereof on the line 5 5, Fig. 4. Fig. 6 is a side elevation of the whirl and its sleeve shown in Figs. 4 and 5, but with the movable clutching members omitted. Fig. 7 is a perspective view of one of the clutching members. Fig. 8 is a similar view of one of the members shown in Figs. 1, 2, and 3; and Fig. 9 is a transverse section on the line 9 9, Fig. 5, looking down.

The rotatable spindle A of usual or well-known construction is herein shown as having a rigidly-attached whirl W secured to or forming part of the lower end of a sleeve W', secured at its upper end to the spindle in a manner familiar to those skilled in the art, the sleeve in practice extending down outside the top of the bolster-case B. (See dotted lines, Fig. 1.) A boss A' is secured to the spindle near the upper end of the sleeve, and as shown in Figs. 1, 2, and 5 the boss is cut out at its lower end to form an annular raceway a'. An annular collar c, above the whirl, the collar having an upturned peripheral flange c<sup>x</sup>, whereby an annular external raceway c' is presented between the flange and the sleeve.

In the embodiment of my invention which I now prefer the bobbin retaining or clutching means comprises outwardly or radially movable bobbin-engaging members arranged coaxially with the spindle and confined in proper position by the raceways.

Referring to Figs. 1 to 3, a plurality of bobbin-clutching members b are shown, each composed of an elongated body having a transversely-convex contact or engaging face b<sup>x</sup> and bent inward at its upper end, as at b', with an upturned projection b<sup>2</sup>. The said members are loosely arranged about the sleeve W' with their lower ends entering loosely the raceway c', while the upturned projections b<sup>2</sup> enter loosely the raceway a', as clearly shown in Fig. 2, the raceways being broad enough to permit considerable outward or radial movement of the clutching members while serving to retain them in proper position.

From an inspection of Fig. 3 it will be seen that the body portion b of a clutching member is concavo-convex in cross-section, to thereby fit readily around the sleeve.

The yarn receiver or bobbin E, Fig. 2, hav-



ing its bore cored out or enlarged at its lower end at  $E^x$ , as is common, is slipped onto the spindle, the clutching members  $b$  readily entering the enlargement  $E^x$  and presenting a large contact-surface to engage therewith.

When the spindle is rotated at speed, the centrifugal force acts upon the clutching members and moves them outward or radially away from the spindle and into firm engagement with the surrounding wall of the bobbin, and such engagement of the members with the bobbin clutches or holds the latter firmly in place upon the spindle. The outward movement of the clutching members is limited by the outer walls of the raceways. In order to rotate the clutching members bodily with the spindle in a positive manner and also to maintain a proper clearance between the members, I provide pins 10, Figs. 1 and 3, which are driven inward radially from and through the flange  $c^x$ , the inner ends of the pins crossing the raceway between the lower ends of adjacent clutching members. The flange  $c^x$  serves as a vertical support or rest for the lower end of the bobbin, positioning it properly lengthwise of the spindle, and as the clutching members are prevented from lifting by the boss  $A'$  they in turn prevent lifting of the bobbin while yarn is being laid upon it.

Manifestly when the spindle is at rest the clutching members will cease to exert any holding power upon the bobbin, and the latter can be doffed instantly.

Should the spindle be rotating, a bobbin can be applied thereto by simply pushing it down over the clutching members, as they will yield or move inward as the enlargement  $E^x$  passes down over the curved upper ends of the members. By holding the bobbin firmly in the hand the frictional force exerted by the clutching members can easily be overcome when the spindle is rotating if it is necessary to piece up a broken yarn.

It will be observed that no force is necessary to crowd or jam the bobbin down upon the retaining means, thereby obviating a very common danger of splitting the bobbin.

In the modified form of my invention (shown in Figs. 4 to 7 and Fig. 9) the sleeve  $W^x$  of the whirl  $W^x$  has a series of longitudinal slots  $W^2$  to loosely receive the clutch members  $D$ , one of the latter being shown separately in Fig. 7 and having an upturned projection  $d$  at its upper end to enter the upper raceway  $a'$ . The clutch members  $D$  are also provided with external substantially horizontal shoulders  $d^x$  to sustain the lower end of the bobbin, as shown in Fig. 5, and the lower end of each member terminates in a depending foot or projection  $d'$ . Such projections  $d'$  enter loosely an annular groove or raceway  $w^x$ , formed in the top of the whirl  $W^x$ , so that the upper and lower ends of the clutching members are confined by upper and lower raceways carried by the spindle, while said members  $D$  can move outward or radially a

limited distance, as before, under the influence of centrifugal force to engage and hold the bobbin in operative position upon the spindle. In this form of my invention the portions of the whirl-sleeve between the slots  $W^2$  serve to separate the clutching members laterally and also effect the positive bodily rotation of said members with the spindle.

My invention is not restricted to the precise construction and arrangement herein shown and described, for so far as I am aware I am the first to provide a sleeve-whirl spindle with bobbin-clutching means capable of being moved outwardly or away from the longitudinal axis of the spindle by or through the action of centrifugal force to operatively engage and retain the bobbin in position and cause it to be rotated with the spindle.

With either form of my invention herein shown it will be manifest that the bobbin-clutching means move outward throughout their length, and thus the engagement between the clutching means and the interior of the bobbin is of ample character and very firm and effective, and any longitudinal movement of the bobbin is prevented during rotation of the spindle.

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

1. The combination with a spinning-spindle, of a sleeve secured at its upper end thereto and extending down outside the top of the bolster-case, to support the whirl, and independent bodily movable clutching members engaging the bobbin outside said sleeve to rotate the bobbin with said sleeve and spindle.

2. The combination with a spinning-spindle, of a sleeve secured at its upper end thereto to support the whirl, and centrifugally-acting bobbin-clutching means applied loosely to the body of the sleeve, the clutching means being free to move bodily outwardly to engage and rotate a bobbin with the spindle and whirl.

3. The combination with a spinning-spindle, of bobbin-clutching members having both their upper and lower extremities held loosely so as to be capable of a limited outward movement.

4. The combination with a spinning-spindle provided with external, motion-limiting raceways, of bobbin-clutching members having both their upper and lower ends loosely held within said raceways.

5. A spindle having a boss and a sleeve-whirl having a body, and a clutching member provided with a projection to engage said boss loosely.

6. A spinning-spindle having in combination a whirl, a whirl-sleeve, and clutching members held loosely at both ends on the outside of said whirl-sleeve.

7. A spinning-spindle having a rigidly-attached whirl, a plurality of radially-movable and elongated bobbin-clutching members coaxial with the spindle and bodily rotatable



therewith, and means rotatable with the spindle to hold loosely the upper and lower ends of said members while permitting limited radial movement thereof throughout their entire extent.

8. A spinning-spindle having a rigidly-attached whirl, and provided with a lower external raceway adjacent the whirl and an upper external raceway, and a plurality of radially-movable bobbin-clutching members coaxial with the spindle and having their upper and lower ends loosely inserted in the raceways, to position and retain said members in place while permitting limited radial movement thereof.

9. A spinning-spindle having a boss, a whirl attached to the spindle and having an annular raceway in its top, and a clutching

member provided with a projection to engage the boss loosely and having its lower end extended loosely into the raceway.

10. The combination with a spinning-spindle having an attached depending sleeve provided at its lower end with a whirl, of radially-movable bobbin-clutching members arranged about the sleeve coaxially with the spindle, and means on the bobbin-clutching members and located above the whirl to vertically support the lower end of the bobbin.

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

FRANCIS J. RABBETH.

Witnesses:

WALTER M. CAMPBELL,  
EZRA CROSSMAN.