

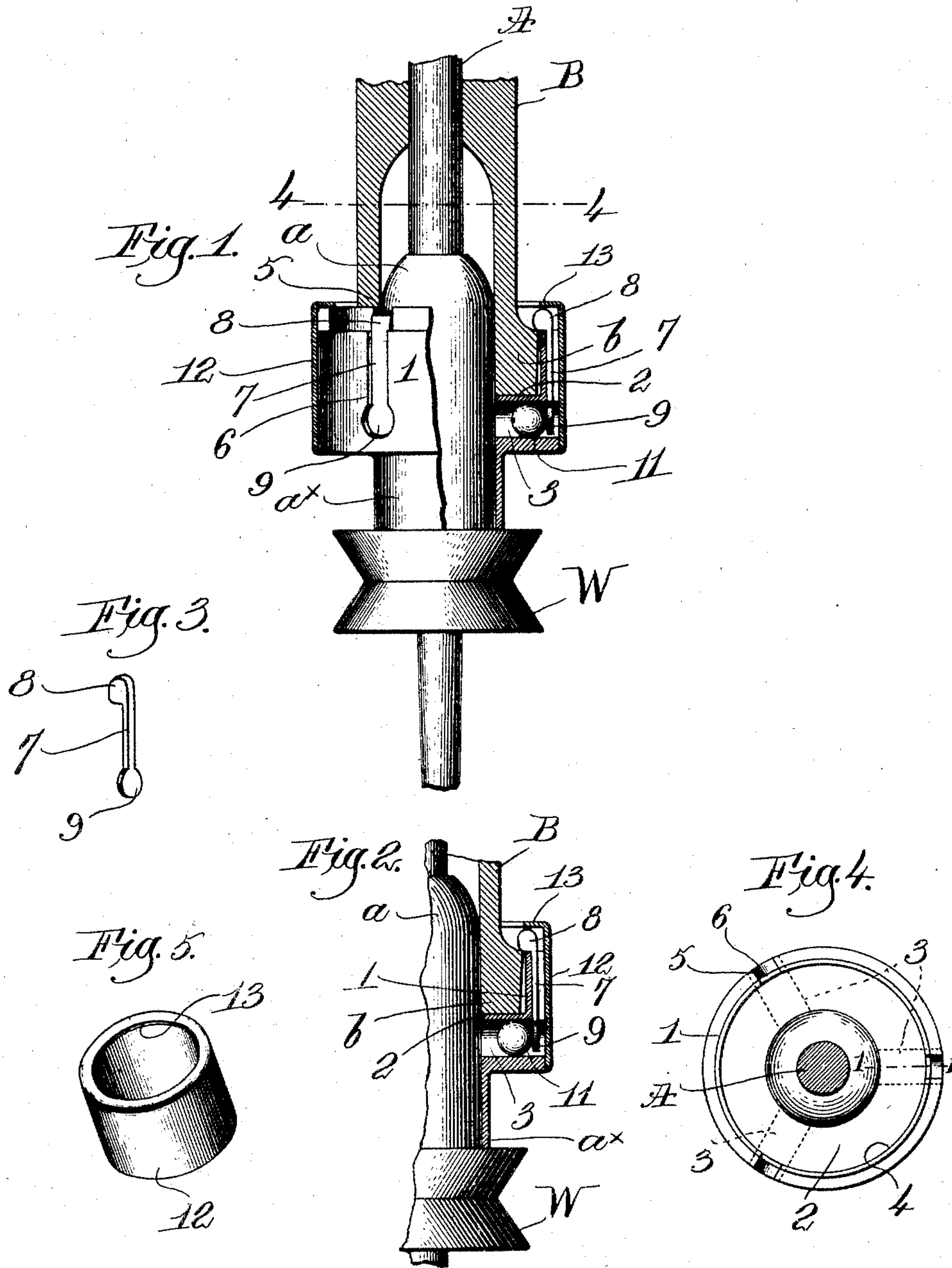
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C. E. METCALF.
BOBBIN CLUTCH FOR ROTATABLE SPINDLES.

APPLICATION FILED SEPT. 26, 1904.

NO MODEL.



Witnesses:
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UNITED STATES PATENT OFFICE.

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BOBBIN-CLUTCH FOR ROTATABLE SPINDLES.

SPECIFICATION forming part of Letters Patent No. 776,141, dated November 29, 1904.

Application filed September 26, 1904. Serial No. 225,910. (No model.)

To all whom it may concern:

Be it known that I, CLARENCE E. METCALF, a citizen of the United States, and a resident of Hopedale, county of Worcester, State of Massachusetts, have invented an Improvement in Bobbin-Clutches 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 a simple, compact, and efficient bobbin-clutch which operates by or through the action of centrifugal force to externally engage and firmly hold the bobbin in operative position upon the spindle.

Various centrifugally-acting bobbin-clutching devices have been constructed to engage internally and retain a bobbin in operative position upon a spinning or other rotatable spindle and in United States Patent No. 741,638 clutching means to engage the bobbin externally.

I have herein simplified the construction of a bobbin-clutch of the latter type, strengthened various parts thereof, and cheapened the cost thereof, and the various novel features of my invention will be fully described in the following specification, and particularly pointed out in the claims appended thereto.

Figure 1 is a side elevation and partial section on the line 1 1, Fig. 4, of a rotatable spindle having one embodiment of my invention applied thereto, a portion of a bobbin being shown in section in connection therewith. Fig. 2 is a much enlarged sectional detail on the line 1 1, Fig. 4, to more clearly illustrate the construction. Fig. 3 is an enlarged perspective view of one of the clutch members. Fig. 4 is a transverse section on the line 4 4, Fig. 1, looking down, the clutch members and the retaining member therefor being omitted; and Fig. 5 is a perspective view of the retaining member detached.

Referring to Fig. 1, the spindle A is shown as having an attached sleeve *a*, provided with a whirl W, a construction common in sleeve-whirl spinning-spindles and which is a convenient form to illustrate in connection with

my present invention. Above the whirl the sleeve *a* has secured to it the hub *a*^x of an annular upturned or tubular carrier 1, having a relatively thick bottom 2, provided with a series of radial sockets 3, easily formed by drilling inward from the periphery of the carrier. The carrier-wall is reduced in thickness at its upper end, as at 4, and this reduced portion is provided with apertures or notches 5 equal in number to the sockets 3 and vertically above them. Herein three sockets and notches are shown (see Fig. 4) symmetrically arranged at equal distances apart. The exterior of the carrier 1 has a series of elongated axial grooves or seats 6 formed therein and registering at their upper and lower ends with the notches 5 and sockets 3, respectively, as best shown in Figs. 1 and 2. Bobbin-clutching members are loosely mounted in the seats and, referring to Fig. 3, each clutching member is shown as comprising a flat elongated body 7, an enlarged and inturned head 8, and a flat nearly-circular foot 9.

The body of the clutching member loosely fits in the seat 6, while its head projects into the notch 5 at the upper end thereof, the flattened under edge 10 of the head resting on the bottom of the notch, so that the clutching member is suspended outside of the carrier and is fulcrumed on the bottom of the notch.

The foot 9 closes the mouth of the socket 3, within which is located a centrifugally-acting controller, shown as a metal ball 11, while the head 8 projects within the carrier.

The body of the clutching member is of less thickness than the depth of the seat 6, (see Fig. 2,) so that some rocking movement may take place, and when the foot of the clutching member is swung outward its head moves farther into the carrier. In order to retain said members in operative position, a retainer, shown as a tubular metallic shell 12, (see Fig. 5,) is forced onto the exterior of the carrier with a driving fit, the upper end of the retainer being bent to present an inturned annular flange 13, which overhangs the heads and rests upon the reduced part 4 of the carrier. This is shown clearly in Fig. 2 and also on a smaller scale in Fig. 1, wherein the re-

tainer is shown in section at each side of the carrier.

Rotation of the spindle acts through the operation of centrifugal force to move the
5 controllers 11 outward against the feet 9 of the clutching members, rocking the latter and moving the heads 8 in toward the center of the spindle (see dotted lines, Fig. 2) into operative position, the depth of the seat 6 per-
10 mitting such rocking or swinging of the clutching members. Now when a bobbin B is applied to the spindle A, its head slipping down over the sleeve *a*, as shown in Figs. 1 and 2, the enlarged bobbin-head *b* presses the clutch-
15 ing-heads 8 outward until it passes below them and rests on the bottom 2 of the carrier 1. Thereupon the heads 8 immediately return to operative position, engaging the exterior of and holding in position the bobbin-head and
20 rotating the same with the spindle. The sleeve *a* serves to center the bobbin, and the latter is vertically sustained by the bottom 2 of the carrier, said bottom thus serving as a bobbin-rest.

25 Manifestly there is nothing exposed to catch loose ends of yarn. The structure is simple and compact, and it is thoroughly efficient.

I have shown a well-known form of bobbin in position in Fig. 1; but the particular form
30 of bobbin is of no importance so long as the head thereof is provided with a part over which the heads of the clutching members can extend and coöperate.

Various changes and modifications may be
35 made by those skilled in the art without departing from the spirit and scope of my invention, one practical embodiment whereof is shown and described herein.

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

1. The combination, with a rotatable spindle having an attached upturned, annular carrier, of a plurality of bobbin-clutching members
45 mounted to rotate with and fulcrumed near their upper ends on said carrier, means operating by or through centrifugal force to move the upper ends of said members inward into position to engage and hold the exterior of a
50 bobbin-head, and means to retain said members on the carrier.

2. The combination with a rotatable spindle having an attached annular carrier, notched at its upper edge and provided with a plu-
55 rality of external elongated seats symmetrically and axially arranged below the notches, of a plurality of bobbin-clutching members located in the seats and loosely fulcrumed in the notches at or near their upper ends, means
60 to retain the said members in their seats while permitting them to swing radially on their fulcra, and centrifugally-acting means to move inward the upper ends of the said members to engage and hold the exterior of a bobbin-
65 head.

3. The combination, with a rotatable spindle having an attached upturned, annular carrier, having a plurality of symmetrically-located notches in its upper edge, of a series of bob-
70 bin-clutching members having inturned heads extended through the notches and fulcrumed on the bottoms of the notches, means to retain the said members on the carrier while permit-
75 ting them to rock radially, and centrifugally-controlled means to act upon and move outward the lower ends of the clutching members and thereby move their heads inward into op-
erative position.

4. A rotatable spindle, an apertured carrier connected therewith, a plurality of centrifu-
80 gally-acting bobbin-clutching members fulcrumed on the carrier near their upper ends, each member having a bobbin-engaging head movable inward through the apertures in the carrier, and means to retain the clutching
85 members in position thereon.

5. A rotatable spindle, an annular carrier connected therewith and apertured at its upper end, a plurality of centrifugally-acting
90 bobbin-clutching members each having an enlarged head extended through an aperture in the carrier and thereby pivotally suspended on the exterior of the same, and means to re-
tain said members in position upon the carrier while permitting limited radial swinging
95 movement.

6. A rotatable spindle, an annular carrier connected therewith and apertured at its upper end, longitudinal seats in the exterior of the carrier extending upward to each aper-
100 ture, a plurality of centrifugally-acting bobbin-clutching members mounted in the seats, each member having an enlarged, inturned head extended through an aperture and fulcrumed on the bottom thereof, and a tubular
105 retainer surrounding the carrier and fast thereon, to retain the clutching members in their seats.

7. A rotatable spindle, an annular carrier connected therewith and apertured at its up-
110 per end, a plurality of bobbin-clutching members each having an inturned head extended through an aperture into the interior of the carrier and pivotally suspended thereby on the outside of the carrier, radially-movable,
115 centrifugally-acting devices mounted in the lower part of the carrier to act upon and move outward the lower ends of the clutching members, to thereby cause their heads to engage and hold the exterior of a bobbin-head, and
120 means to retain said members in position on the carrier.

8. A rotatable spindle having an attached, upturned tubular carrier having a plurality of notches in its upper edge and external axially-
125 arranged seats communicating with each notch, and a radial socket in the carrier at the lower end of each seat, a plurality of bobbin-clutching members mounted loosely in the seats and having enlarged inturned heads ex-
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tended through and resting on the bottoms of the notches, centrifugally-controlled balls in the sockets, to engage and press outward the lower ends of said members, and a tubular shell surrounding the carrier and retaining the clutching members in position thereon.

9. The combination with a rotatable spindle, of a sleeve secured thereto and having an attached whirl and an annular, upturned carrier above the whirl, a plurality of centrifugally-acting bobbin-clutching members mounted on the exterior of the carrier, each of said members having an enlarged, inturned head extended within the carrier and by which the member is suspended, and means to retain said members in operative position on the carrier.

10. The combination, with a rotatable spindle having an attached annular carrier, of a plurality of axially and symmetrically arranged bobbin-clutching members pivotally mounted on said carrier, each member having at its upper end a head to engage and hold the exterior of a bobbin-head, and a series of

centrifugally-acting devices to loosely engage and govern the operation of the clutching members.

11. The combination, with a rotatable spindle, of a plurality of bobbin-clutching members mounted to rotate therewith, and movable to engage the exterior of a bobbin and rotate the same with the spindle, and centrifugally-acting controllers to impinge upon and render the clutching members operative.

12. The combination, with a rotatable spindle, of a plurality of bobbin-clutching members mounted to rotate therewith and adapted to engage a bobbin and rotate the same with the spindle, and radially-movable centrifugally-acting controllers to impinge upon and render the clutching members operative.

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

CLARENCE E. METCALF.

Witnesses:

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ERNEST W. WOOD.