

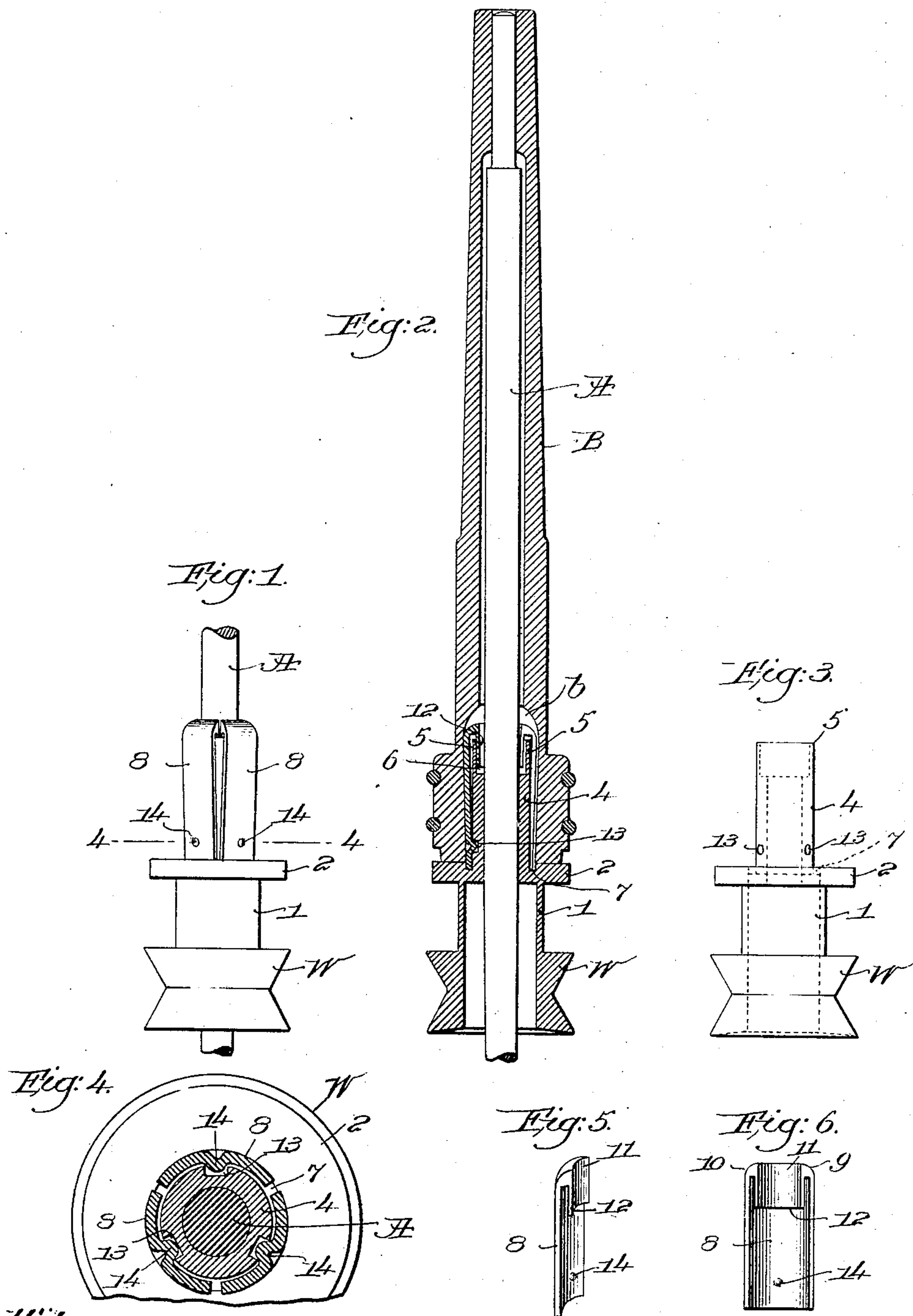
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C. E. METCALF.
BOBBIN CLUTCHING MEANS FOR SPINNING SPINDLES.

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NO MODEL.



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UNITED STATES PATENT OFFICE.

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BOBBIN-CLUTCHING MEANS FOR SPINNING-SPINDLES.

SPECIFICATION forming part of Letters Patent No. 764,745, dated July 12, 1904.

Application filed April 21, 1904. Serial No. 204,207. (No model.)

To all whom it may concern:

Be it known that I, CLARENCE E. METCALF, a citizen of the United States, residing in Hopedale, in the county of Worcester and State of Massachusetts, have invented an Improvement in Bobbin-Clutching Means for Spinning-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 relates to spinning-spindles provided with bobbin-retaining means comprising centrifugally-acting members which firmly engage the bobbin when the spindle is rotating and cause the bobbin to rotate therewith. A spinning-spindle provided with bobbin-clutching means of this character forms the subject-matter of United States Patent No. 734,747, and my present invention has for its object the production of another and novel form of bobbin-clutching means of such type of very simple construction.

Among the novel features to be hereinafter described and claimed are the means for limiting outward movement of the clutching members at their upper ends, the particular construction of the members themselves, and the device for causing bodily rotation of the clutching members with the spindle.

Figure 1 is a side elevation of a rotatable spinning-spindle with my present invention applied thereto. Fig. 2 is a vertical section thereof on the line 2 2, Fig. 4, a bobbin in section being shown in position on the spindle. Fig. 3 is a side elevation of the supporting and motion-limiting means for the clutching members and the attached whirl, the spindle and clutching members being omitted. Fig. 4 is a transverse section on the line 4 4, Fig. 1, looking down and greatly enlarged. Fig. 5 is a perspective view of one of the clutching members, and Fig. 6 is an inner face view thereof.

The rotatable spinning-spindle A, having an attached whirl W, is of well-known construction, the upturned tube or sleeve 1 of the whirl being shown as having a flat circular enlargement or head 2, forming a vertical support or rest for the lower or head end of the

bobbin B during the spinning operation, as shown in Fig. 2. The spindle-blade extends through and is rigidly secured within an opening 3 in the head or rest 2, (see Fig. 2,) and around the spindle the head is provided with a preferably integral upturned and elongated sleeve 4, tightly fitting the spindle through the greater part of the length of the sleeve, as shown. At the upper end the bore of the sleeve is enlarged to leave a rather thin annular lip 5 at the top of the sleeve, with a considerable clearance 6 between it and the adjacent part of the spindle, Fig. 2.

The bobbin-rest 2 has an annular recess 7 formed in its upper face around the base of the upturned sleeve 4 and constituting an external motion-limiting raceway for the lower ends of the bobbin-clutching members. (Shown separately in Figs. 5 and 6.) Each member is made of a piece of thin sheet metal, as steel or brass, and comprises an elongated body 8 concavo-convex or segmental in cross-section to fit loosely around the sleeve 4, three of such members being shown in section, Fig. 4, with their adjacent upright edges slightly separated. At the upper end the body 8 is rounded off or made convex in the direction of the length of the member, as at 9, and thickened to form a head 10, longitudinally concave at 11 on its inner face to fit loosely around the spindle above the lip 5, the head having a depending segmental flange 12 at its lower end, as clearly shown in Figs. 5 and 6. The clutching members are disposed around the sleeve 4, with the flanges 12 overhanging the annular lip 5 and loosely entering the clearance 6, so that the upper ends of the members can move in and out radially a limited distance, the lower ends of said members being inserted in and loosely held by the raceway 7. In order to prevent lifting of said members when a bobbin is doffed and also to laterally position and effect rotation of the same with the spindle, I drill a series of equidistant holes 13 in the sleeve 4 near its lower end, and by means of a prick-punch or similar tool I make a projection or nub 14 in each clutching member when the latter is in place, the projection entering the hole 13 opposite thereto. The

raceway 7 and lip 5 prevent outward movement of the clutching members far enough to withdraw the projections 14 from the holes or depressions 13, so that said members cannot
 5 be withdrawn from operative position or be thrown off when the spindle is running bare. By means of this sliding connection between the sleeve 4 and the clutching members the latter are positively rotated with the spindle,
 10 while their radial movement is not interfered with. The rotation of the spindle causes the clutching members to be thrown outward by the centrifugal force exerted, and preferably the upper ends of said members are permitted
 15 greater outward movement than their lower ends to cause the outer faces of the clutching members to assume an inverted-cone shape to exert their greatest driving and clutching power at or near the upper end of the chamber 6 in the head of the bobbin. This chamber is preferably made with upwardly-flaring walls to better conform to the external shape of the clutching-surface, and by the means described any tendency of the bobbin to rise from
 20 the rest 2 is entirely obviated. When the bobbin is pushed down upon the clutching members, (the spindle rotating,) they yield or move inward until the end of the bobbin is seated on the rest 2, whereupon the centrifugal force
 25 causes the clutching members to firmly engage the walls of the chamber 6, and thereby rotate the bobbin with the spindle. By rounding the upper ends of the members, as at 9, a smooth and easy surface is presented over
 30 which the lower end of the bobbin slides when applied to the spindle.

The clutching members can be readily stamped out of sheet-stock and their heads upset to thicken the same, the flange 12 being
 40 formed by a suitable cutter.

It will be seen that there is nothing for a thread to catch upon or become entangled, and if a thread or yarn should be brought into engagement with the clutching members it
 45 would merely wind around the same and could be as easily slid off by the attendant.

While I have herein shown my invention as applied to a rotatable spinning-spindle, it will be manifest that it is equally adapted to
 50 twister or other rotatable spindles of the same general character, the term "spinning-spindle" herein used being employed comprehensively and not as a limitation of my invention to any specific form of rotatable spindle.
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Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination with a spinning-spindle
 60 provided with an external motion-limiting raceway, of bobbin-clutching members having their lower ends loosely held therein, and means cooperating loosely with said members adjacent their inner faces to limit outward
 65 movement of their upper ends.

2. The combination with a spinning-spindle provided with an external motion-limiting raceway, of bobbin-clutching members having their lower ends loosely held therein, and having their upper ends longitudinally convex or rounded, and means cooperating with said members adjacent their inner faces to limit outward movement thereof at their upper ends. 70

3. The combination with a spinning-spindle 75 provided with a lower external motion-limiting raceway, of bobbin-clutching members having their lower ends loosely held therein, an upper raceway on the spindle between it and the upper ends of said members, and interior projections on the latter overhanging said raceway to limit outward movement of the upper ends of said members. 80

4. A rotatable spindle having a rigidly-attached whirl, and an upturned annular lip 85 above it, a plurality of radially-movable bobbin-clutching members arranged coaxially with the spindle above the whirl, depending flanges on the inner faces of said members to loosely overhang said lip, and means to limit 90 outward movement of the lower ends of the clutching members.

5. A rotatable spindle having a rigidly-attached whirl having an elongated, upturned sleeve surrounding the spindle and presenting 95 at its upper end an annular lip, a motion-limiting raceway at the lower end of the sleeve, bobbin-clutching members having their lower ends loosely held within the raceway, means on the inner faces of said members to overhang and loosely engage the annular lip, and independent means to cause said members to rotate bodily with the spindle. 100

6. The combination with a spinning-spindle 105 provided with a bobbin-rest and an upturned annular lip above it, of centrifugally-acting bobbin-clutching members loosely held at their lower ends by said rest and having depending projections on their inner faces near their upper ends, to extend loosely behind the lip and limit outward movement of the said members at their upper ends. 110

7. The combination with a spinning-spindle, of centrifugally-acting bobbin-clutching members carried thereby, an external motion-limiting raceway in which the lower ends of said members are loosely held, each of said members having an interior depending flange at its upper end, and an annular upturned lip rotatable with said spindle, and within which the flanges project, to limit outward movement of said members at their upper ends. 120

8. The combination with a spinning-spindle provided with an external motion-limiting raceway, of bobbin-clutching members having 125 their lower ends loosely held therein, means loosely engaging said members adjacent their inner faces to limit outward movement of their upper ends, and independent radially-sliding connections between said members and the 130

spindle to cause their bodily rotation therewith.

9. The combination with a spinning-spindle provided with an external motion-limiting raceway, of bobbin-clutching members having their lower ends loosely held therein, the upper ends of said members being externally rounded to present a smooth surface for the bobbin to slide over when applied to the spindle, means loosely engaging said members adjacent their inner faces to limit outward movement of their upper ends, and an independent

radially-slidable connection between the spindle and each member to prevent longitudinal movement of the latter and to cause it to rotate bodily with the spindle.

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

CLARENCE E. METCALF.

Witnesses:

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