No. 783,664. PATENTED FEB. 28, 1905.

W. E. ALLEN.

BOBBIN CLUTCHING MEANS FOR ROTATABLE SPINDLES.

APPLICATION FILED OCT. 21, 1904.

Fig: 1.

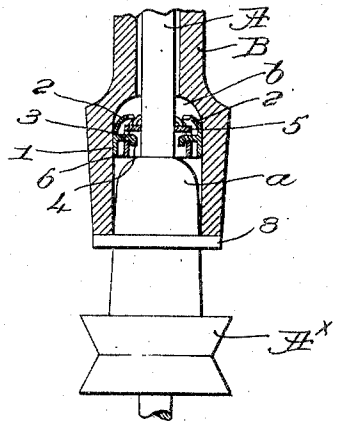


Fig: 2.

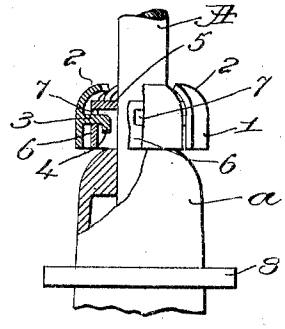


Fig: 3.

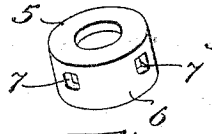


Fig: 4.

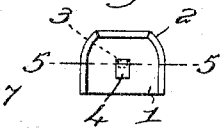


Fig: 5.

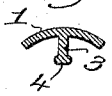


Fig: 6.

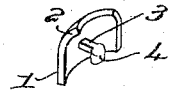


Fig: 7.

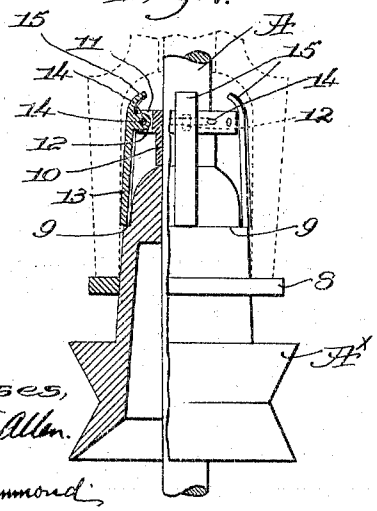
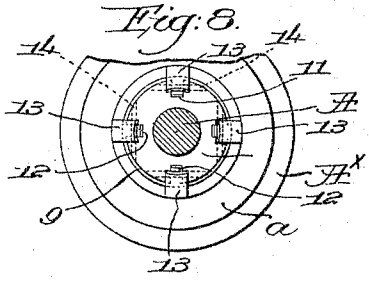


Fig: 8.



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No. 783,664. Patented February 28, 1905.

UNITED STATES PATENT OFFICE.

WILLIAM E. ALLEN, OF SALEM, MASSACHUSETTS, ASSIGNOR TO SAWYER SPINDLE COMPANY, A CORPORATION OF MAINE.

BOBBIN-CLUTCHING MEANS FOR ROTATABLE SPINDLES.

SPECIFICATION forming part of Letters Patent No. 783,664, dated February 28, 1905.

Application filed October 21, 1904. Serial No. 229,374.

To all whom it may concern:

Be it known that I, WILLIAM E. ALLEN, a citizen of the United States, and a resident of Salem, county of Essex, 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 centrifugally-acting bobbin-clutching means for rotatable spinning, twisting, or other spindles whereby the bobbin will be firmly held upon and rotated with the spindle.

My present invention is very simple in construction and can be readily applied to spindles already in use without dismantling or reconstructing the same.

The clutching means in the present embodiment of my invention is applied to the spindle above the sleeve which connects the whirl and spindle, and hence engages the bobbin-chamber at or near the upper portion thereof when the bobbin is in position on the spindle.

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

Figure 1 is a vertical sectional view of a rotatable spindle of the sleeve-whirl type with one embodiment of my invention applied thereto. Fig. 2 is an enlarged view, partly in elevation and section, showing the bobbin-clutching means. Fig. 3 is a perspective view of the motion-limiting and retaining device for the clutch members. Fig. 4 is an inner face view of a clutch member; and Fig. 5 is a transverse section thereof on the line 5 5, Fig. 4. Fig. 6 is a perspective view of the clutch member. Fig. 7 is a half elevation and half vertical section of another form of my invention. Fig. 8 is a top view of the clutch members and the retaining device for the same.

The spindle A, having secured thereto the upper end of a depending sleeve *a*, which sustains the whirl $A^{\times}$, is of a well-known construction and technically termed "sleeve-whirl." Spinning-spindles of this type are in widely-extended use.

My present invention is particularly applicable to such spindles, as they stand with but little additional work in fitting the parts, so that those mills equipped with such spindles may readily secure the advantages of a centrifugally-acting bobbin-clutch without being required to purchase an entirely new spindle outfit.

Referring first to the construction illustrated in Figs. 1 to 6, inclusive, a clutching member is shown separately in Figs. 4 and 6, comprising a thin metallic body 1, transversely convexo-concave and reduced in width and curved slightly inward at its upper end at 2. From the inner concave face extends a short arm 3, having an elongated downturned extension 4 at its inner end. A number of these clutching members are grouped around the spindle A above and adjacent the upper end of the sleeve *a*, (see Figs. 1 and 2,) and they are maintained in position by a retaining device, shown as a collar 5, adapted to be forced tightly upon the spindle and having a depending flange 6, provided with holes 7. (See Fig. 3.) The extensions 4 are inserted in the holes 7 from the outside, the short arms 3 loosely entering said holes, while the bodies 1 of the clutching members surround the flange 6, and then the flanged collar 5 is forced onto the spindle. Three or four of the clutching members are very efficient, and, as shown in Figs. 1 and 2, their incurved upper ends 2 overhang the collar 5, the loose connection between the flange and the clutching members permitting the latter to move outward radially by or through centrifugal action when the spindle is rotating, while limiting such movement and retaining them in place on the spindle. The said members 1 engage the walls of the chamber *b* of the bobbin B, Fig. 1, and thereby rotate the bobbin with the spindle, the incurved upper ends of said members providing for easy application of the bobbin. To avoid boring a deeper chamber, I prefer to mount a bobbin-rest 8 upon the sleeve *a* at the proper height, such rest being conveniently made as a metal ring, adapted to be

forced onto the sleeve from its upper end. No machining or toolwork upon the spindle or sleeve is necessary, as will be manifest from the foregoing description in connection with the drawings.

In the second form embodying my invention some slight machining is necessary, and I will now describe the arrangement illustrated in Figs. 7 and 8. The upper end of the sleeve *a* is turned down to leave an annular flat shoulder 9, and a disk-like collar 10 is forced onto the spindle above the upper end of the sleeve. Said collar has a series of equidistant radial notches 11 made therein (see Fig. 8) to receive hubs 12, formed on the inner faces of elongated blade-like clutching members 13, pins 14 passing through the hubs and pivotally connecting the members 13 with the collar, the members 13 being made wider than the slots. The members 13 can swing radially on their fulcra 14, their lower ends extending down nearly to the shoulder 9 on the sleeve, and when said members are pressed inward against the cut-away portion of the sleeve above the shoulder the outer faces of the clutch members lie substantially flush with the surface of the sleeve below the shoulder.

In order to limit the outward swinging movement of the clutch members, their upper ends are extended, as at 15, above the top of the collar 10 to strike the upper corner thereof when the free lower ends of the members are swung outward by centrifugal action. By slightly incurving the upper ends 15 an easy entrance to the mouth of the bobbin-chamber is secured.

The bobbin is shown in dotted lines, Fig. 7, in position on the spindle and vertically supported by the bobbin-rest 8. It is to be understood, however, that in either of the two structures herein shown the bobbin-rest may be omitted if it is desired to bore out the chamber in the bobbin to a greater depth. By using a bobbin-rest, however, the bobbin is maintained always at the same height on the spindle and without any tendency to split or strain its head by forcing it down onto the sleeve.

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, of a sleeve secured thereto and provided with a whirl, centrifugally-acting bobbin-clutching members located wholly above the sleeve, and means to positively and loosely connect said members with the spindle, and limit their radial movement independently of the sleeve.

2. The combination with a rotatable spindle, of a sleeve secured thereto and provided with a whirl, a motion-limiting and retaining device rigidly attached to the spindle above the sleeve, and radially-movable bobbin-clutching members loosely connected with and vertically sustained by said device independently of the sleeve, to engage and rotate a bobbin by or through the action of centrifugal force.

3. The combination with a rotatable spindle, of a sleeve secured at its upper end thereto to support the whirl, a series of symmetrically-arranged bobbin-clutching members around the spindle and located wholly above the sleeve, adapted to engage and drive a bobbin by centrifugal action, a collar fast on the spindle, and separate loose connections between it and the clutching members to vertically support and limit radial movement thereof.

4. The combination with a rotatable spindle, of a sleeve secured at its upper end thereto to support the whirl, an annular bobbin-rest on said sleeve above the whirl, and radially-movable, centrifugally-acting bobbin-clutching means operatively connected with the spindle above and adjacent the upper end of the sleeve, and vertically supported wholly independent of the sleeve.

5. The combination with a rotatable spindle, of radially-movable, centrifugally-acting bobbin-clutching members arranged around the spindle, and positive pivotal connections between the spindle and the upper ends of the clutching members, to vertically support the same and permit them to swing radially on said connections.

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

WILLIAM E. ALLEN.

Witnesses:
JOHN C. EDWARDS,
MARGARET A. DUNN.