

Sept. 4, 1934.

G. H. MAGRATH

1,972,784

BOBBIN

Filed Jan. 17, 1933

Fig. 1

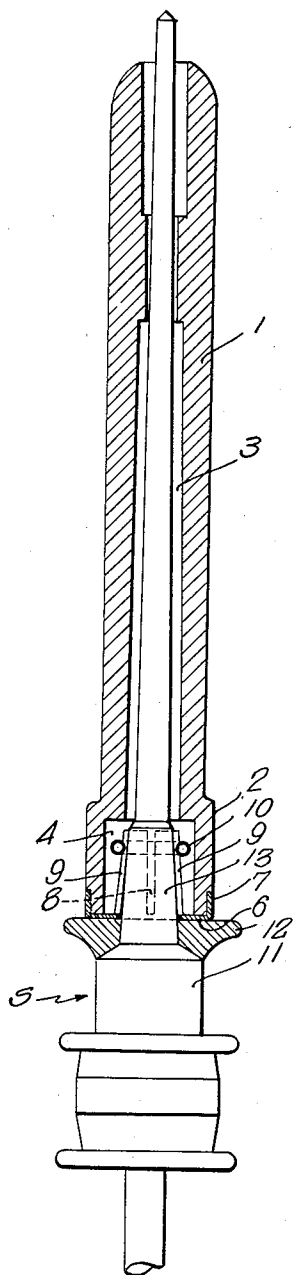


Fig. 2

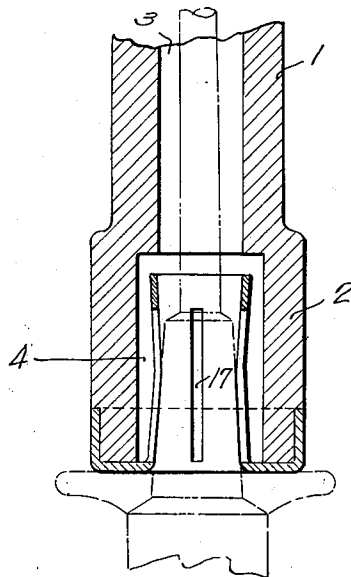


Fig. 3

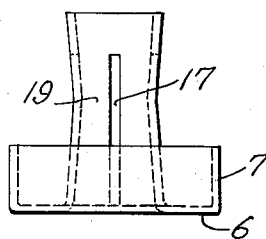
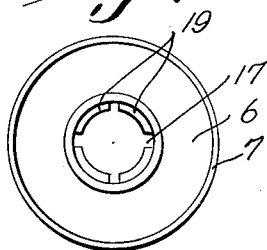


Fig. 4



Inventor
George H. Magrath,
By Robert Cushman Murphy,
his Attorney.

UNITED STATES PATENT OFFICE

1,972,784

BOBBIN

George H. Magrath, Whitinsville, Mass.

Application January 17, 1933, Serial No. 652,151

6 Claims. (Cl. 242—120)

This invention relates to an improvement in bobbins and in part is a continuation of my co-pending application Serial No. 647,003, filed December 13, 1932, now U. S. Patent No. 1,952,764, granted March 27, 1934.

The principal object of the invention is to provide a bobbin having a clutching device for holding the bobbin firmly in fixed position during the winding and/or spinning operation, which device may also provide a reinforcement for the bobbin and be readily assembled therewith, and which is of a simple construction, economical to manufacture, and efficient and reliable in operation.

Further objects relate to the construction of my improved bobbin and will be apparent from a consideration of the following description and accompanying drawing which shows different embodiments of the invention chosen for the purpose of illustration.

In the drawing:

Fig. 1 is a longitudinal sectional view of a bobbin constructed in accordance with the present invention and shown in operative position on a spindle of the type generally used in spinning operations;

Fig. 2 is a fragmentary side elevation, partly in section, of a bobbin embodying a modified construction;

Fig. 3 is an elevation of the spindle-engaging bushing shown in Fig. 2; and

Fig. 4 is a top plan view thereof.

In the embodiments herein shown for the purpose of illustration the bobbin comprises an elongate cylindrical member having the usual blade portion 1 terminating at one end in an enlarged butt portion 2 and having an axial bore 3 which extends the entire length of the bobbin. In accordance with the present invention the butt portion is provided with an enlarged axial bore 4 which receives a spindle-clutching bushing or insert constructed and arranged yieldingly to engage the periphery of a spindle to hold the bobbin in place. Preferably, one end of the bushing is provided with a flange or rim member shaped to embrace the end of the butt portion of the bobbin to provide a reinforcement therefor and to hold the body portion of the bushing firmly in position within the bore.

In the embodiment shown in Fig. 1, the bobbin comprises a cylindrical bushing having a body portion which is received within the bore 4, and an annular flange 6 integral with the body portion, the flange terminating in an upwardly directed rim 7 which has a pressed or driven fit

about the end of the butt 2. The flange and rim member not only provide a reinforcement to the end of the bobbin but also firmly secure the body portion of the bushing in position within the bore 4. The body portion is provided with a plurality of spaced longitudinally extending slits 8 defining radially flexible fingers or segments 9 which may be bent inwardly, as shown in Fig. 1, to insure a firm grip on the spindle. The segments are spaced from the inner periphery or walls of the bobbin so as to permit an unrestrained flexing movement thereof.

The bushing may be of any suitable material, such as sheet metal, capable of providing spindle-engaging segments which possess more or less resiliency and sufficient stiffness yieldingly to oppose outward flexing movement. If desired, resilient means such, for example, as an annular spring member 10 circumsposed about the segments 9 may be employed yieldingly to restrain the flexing movement of the segments and increase their gripping action.

When the bobbin is placed over the blade of a spindle S, as shown in Fig. 1, the segments 9 are flexed outwardly and yieldingly engage the neck 13 of the spindle, and the butt portion seats upon the outer end of the whirl 11 which is provided with a flat shoulder portion, here shown as an annular collar 12 having a pressed fit about the whirl and conical neck 13. If desired the spindle may be made with the flat shoulder portion integral with the whirl, thus dispensing with the use of the collar 12. The diameter of the opening in the flange 6 preferably corresponds exactly with the diameter of the neck 13 at its base so that when the bobbin is properly seated its butt portion is snugly held in concentric position relative to the blade. The flange or ferrule portion of the bushing thus cooperates with the clutching segments to hold the bobbin in fixed position and insures a smooth vibrationless operation of the spindle and bobbin.

It will be noted that the collar 12 not only provides a firm seat for the bobbin, but furthermore cooperates with the clutching segments 9 to hold the bobbin in a definite fixed position relative to the whirl and range of travel of the yarn-guiding devices, thus overcoming the necessity of making readjustments of such devices before winding each bobbin as is usually required with the prior constructions wherein the bobbin is forced over the spindle so that the butt portion wedges about the neck and does not assume any definite or fixed position relative to the whirl or yarn-guiding devices. Moreover, with the

present construction there is no danger of the bobbin losing its grip on the spindle during the winding operation, or vibrating out of proper position, and consequently the winding operation may be carried out more accurately and at a greater speed than heretofore possible.

The embodiment shown in Figs. 2, 3 and 4, is quite similar to that shown in Fig. 1 except that the body portion of the bushing is provided with slots 17 intermediate its ends and the segments 19 defined thereby are bent inwardly at their central portions, as shown in Fig. 3, to provide sufficient resiliency firmly to grip the neck of the spindle. The bushing is retained within the bore 4 of the bobbin by its flange 6 and rim 7 as in the previously described embodiment. It will be noted that in each of these embodiments, the bushing not only provides a reinforcement which strengthens and protects the butt portion of the bobbin, but furthermore holds the spindle clutching segments in spaced concentric relation within the bore of the bobbin.

While I have shown and described different embodiments of the invention, it is to be understood that the present disclosure is for the purpose of illustration only, and that various changes in shape, proportion and arrangement of parts, as well as the substitution of equivalent elements for those herein shown and described, may be made without departing from the spirit and scope of the invention as set forth in the appended claims.

I claim:

1. A bobbin comprising an elongate cylindrical member having a butt portion at its base provided with an enlarged axial bore, and clutching means for frictionally engaging a spindle, said means comprising a tubular bushing having a concentric flange at its outer end, said flange having a pressed fit about the butt portion of said cylindrical member, the body portion of said bushing projecting upwardly within said bore in spaced relation to the inner periphery of the bobbin throughout its entire length and defining therewith an annular recess, said body portion having at least one slit therein to provide a radially expansible sector, and resilient means disposed in said recess for urging said sector inwardly yieldingly to engage throughout its entire length the periphery of a spindle to hold the bobbin in place.

2. A bobbin comprising an elongate cylindrical member having a butt portion at its base provided with an enlarged axial bore, and clutching means for frictionally engaging a spindle, said means comprising a tubular bushing having a concentric flange at its outer end, said flange having a pressed fit about the butt portion of said cylindrical member, the body portion of said bushing projecting upwardly within said bore in spaced relation to the inner periphery of the bobbin throughout its entire length and defining therewith an annular recess, said body portion having a plurality of longitudinally extending slits defining radially flexible segments, and resilient means disposed in said recess for engaging said segments yieldingly to urge them inwardly to engage throughout their entire length the periphery of a spindle.

3. A bobbin comprising an elongate cylindrical member having a butt portion at its base provided with an enlarged axial bore, and clutching means for frictionally engaging a spindle, said means comprising a tubular bushing having a peripheral flange at its outer end engaging the periphery of said cylindrical member and a plurality of upwardly projecting resilient fingers disposed within said bore and disposed throughout their entire length in spaced relation to the inner periphery of said cylindrical member and defining therewith an annular recess, and resilient means disposed in said recess for engaging said fingers yieldingly to urge them inwardly to engage throughout their entire length the periphery of a spindle.

4. A bobbin comprising an elongate cylindrical member having a butt portion at its base provided with an enlarged axial bore, and clutching means for frictionally engaging a spindle, said means comprising a tubular bushing having an upturned concentric flange at its outer end fitting about the end of said cylindrical member and firmly securing the bushing thereto, and a plurality of radially flexible, inwardly bent segments circumposed within said bore and disposed throughout their entire length in spaced relation to the inner periphery of said cylindrical member, said segments being constructed and arranged yieldingly to engage throughout their entire length the periphery of a spindle to hold the bobbin in place.

5. A bobbin comprising an elongate cylindrical member having a butt portion at its base provided with an enlarged axial bore, and clutching means for frictionally engaging a spindle, said means comprising a tubular bushing having a concentric flange at its outer end, said flange having a pressed fit about the end of said cylindrical member and holding said bushing in fixed position, the body portion of said bushing projecting upwardly within said bore and being disposed throughout its entire length in spaced relation to the inner periphery of the bobbin and having a plurality of longitudinally extending slits defining radially flexible segments adapted yieldingly to engage throughout the major portion of their length the periphery of a spindle to hold the bobbin in place.

6. A bobbin comprising an elongate cylindrical member having a butt portion at its base provided with an enlarged bore, and clutching means for frictionally engaging a bobbin, said means comprising a tubular bushing provided with a concentric flange at its outer end having a pressed fit about the end of said member, the body portion of said bushing projecting upwardly within said bore and being disposed throughout its entire length in spaced relation to the inner periphery of the bobbin and having a plurality of longitudinally extending slits intermediate its ends defining radially flexible segments, said segments being bent inwardly at their central portions to engage throughout the major portion of their length the periphery of a spindle, one end of said bushing being secured to said cylindrical member to hold the bushing in fixed position.

GEORGE H. MAGRATH.