May 8, 1934. G. W. BOWEN 1,958,126

BOBBIN

Filed March 30, 1931 2 Sheets-Sheet 1

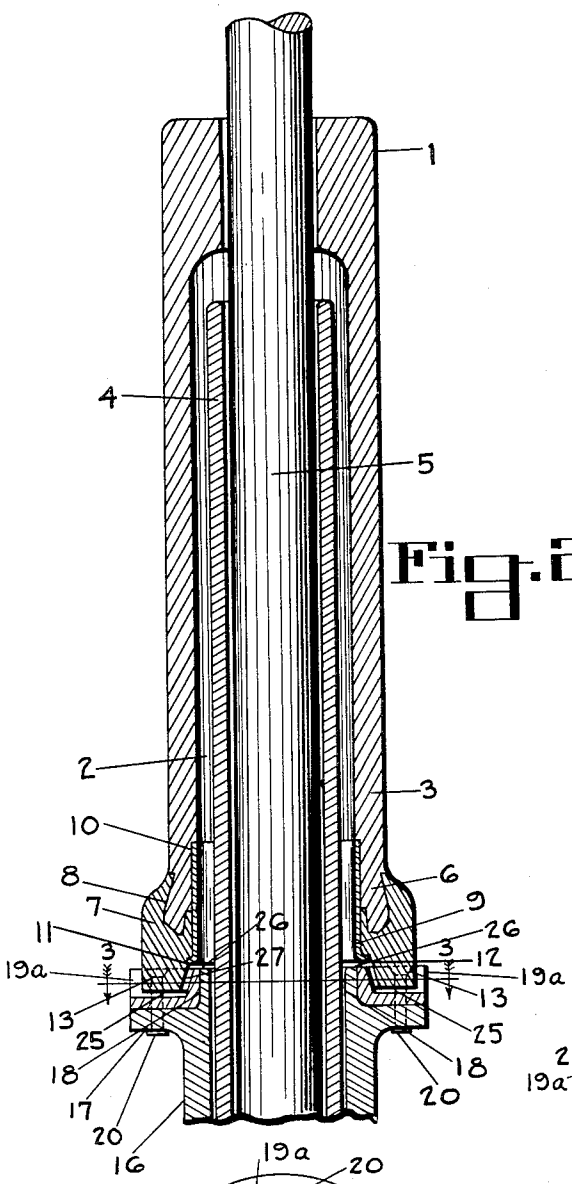


Fig. 2.

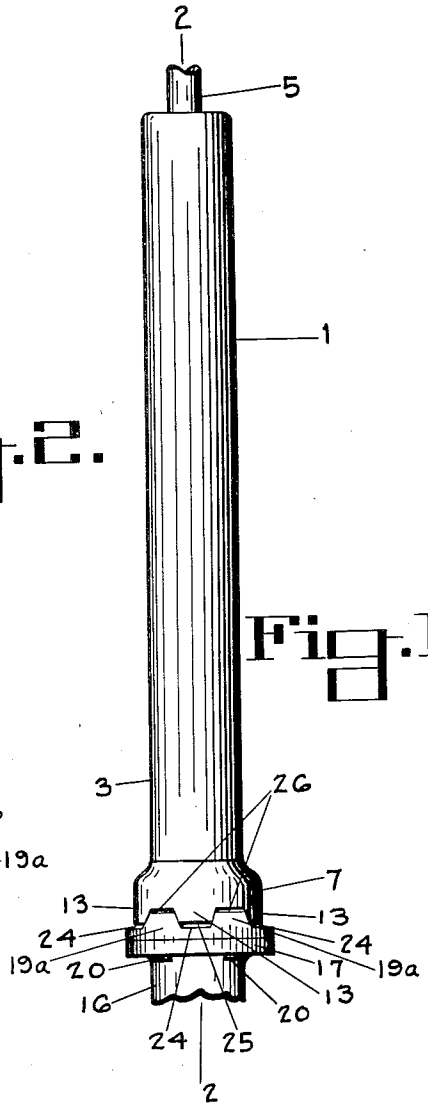


Fig. 1.

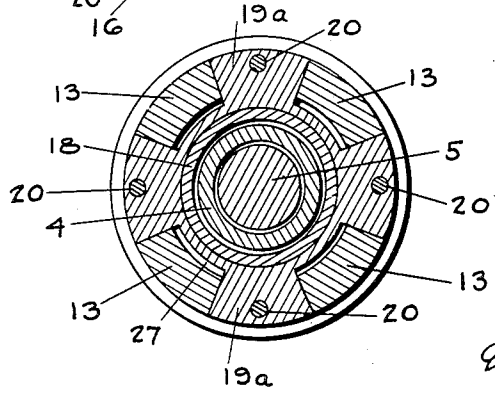


Fig. 3.

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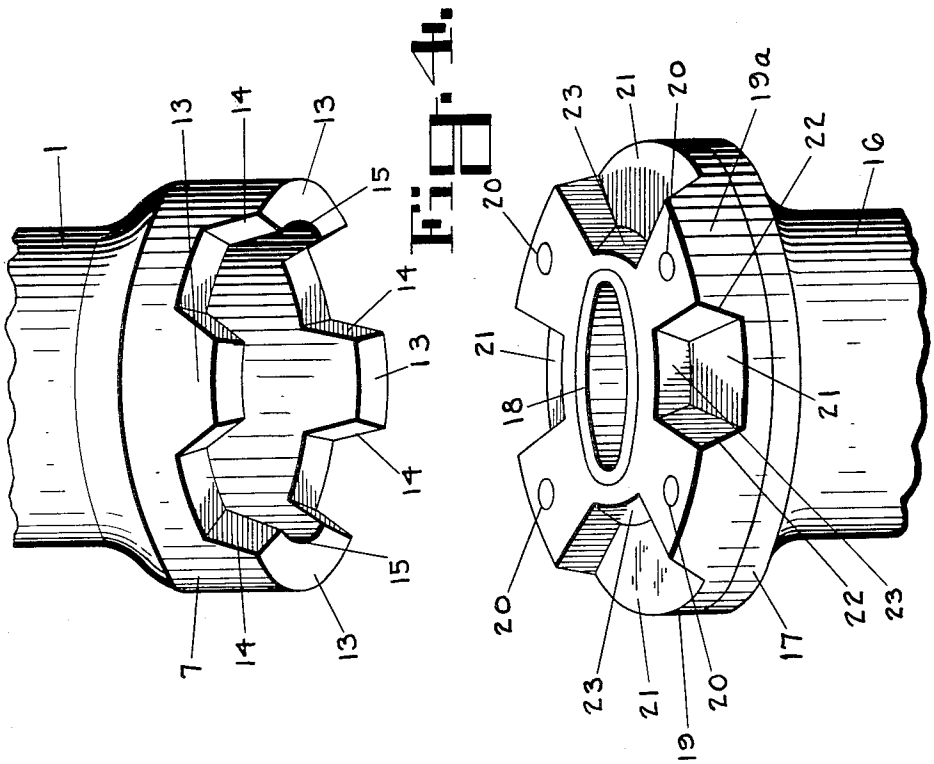


Fig. 4.

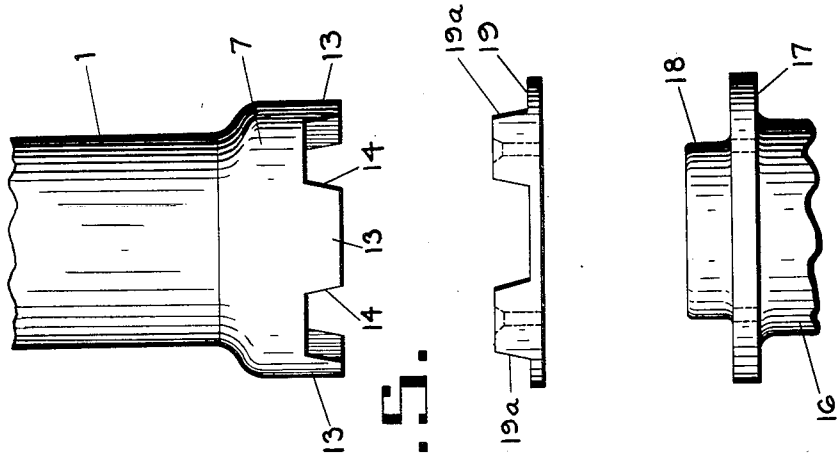


Fig. 5.

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BOBBIN

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Application March 30, 1931, Serial No. 526,354

12 Claims. (Cl. 242—46.2)

This invention relates to improvements in bobbins, particularly to bobbins adapted for use on cotton spinning machines.

In connection with bobbins in general use the importance has generally been recognized of providing some effective means of protecting the lower end or base portion of the bobbin not only against wear in its operative position on the driver but against injury through rough handling in the mill, as well as means to maintain the bobbin during operation constantly in concentric relation with its coacting spindle. This invention is designed to accomplish these desirable results by employing simple and effective means.

Therefore, an important object of the invention is to provide a bobbin with a resilient base portion co-operating with a resilient cap portion on the bobbin driver, adapted to afford protection to the lower or operative end of the bobbin and to greatly increase the life of the bobbin by reason of the resilient co-operating parts.

Further, the resilient base portion by reason of its inherent restricting characteristic is adapted to automatically follow the barrel portion during its expansion and contraction under varying atmospheric conditions, by which arrangement the base portion will not become loosened from the barrel portion. Moreover, because of its resilient nature the base portion is adapted to readily absorb any impact with hard objects incident to rough handling in the mill as well as to act as an insulator both in preventing any vibrations due to impact from splitting the wooden barrel and in protecting the barrels from being bruised or dented when thrown together, thereby eliminating any possibility of forming dents or rough places for yarn and lint to adhere to.

Another object is to provide efficient means for automatically seating and maintaining the bobbin in constant concentric relation to the supporting spindle and its vertical axis.

Another object is to provide means for holding the bobbin in constant spaced relation with the cap of the driver, thereby preventing wear at these points and greatly reducing friction and increasing the efficiency of the bobbin.

Another object is to provide constant means for so seating the base of the bobbin as to compensate for wear in use between the base and the co-operating means carried on the cap of the driver, whereby any variation in position of the co-operating parts is obviated and thus their concentric relation to the spindle is preserved.

In order that the nature of my invention may be readily understood I have illustrated certain embodiments of the invention in the accompanying drawings, in which,—

Figure 1 is a vertical elevation of my invention, shown in operative position mounted on a spindle and driver.

Figure 2 is a central vertical section of the bobbin and co-operating parts on the line 2—2 of Figure 1.

Figure 3 is a transverse section on the line 3—3 of Figure 2.

Figure 4 is an enlarged isometric view showing the base portion of the bobbin and the co-operating upper portion or cap of the driver separated from each other.

Figure 5 is a similar view in vertical elevation showing in separated positions the base portion of the bobbin and the co-operating upper portion of the driver with the detached cap portion.

Referring to the drawings 1 designates a cotton spinning bobbin provided with a central counterbore 2 forming thereby a barrel portion 3 and mounted upon a vertical, tubular fixed bolster 4, within which a spindle 5 is adapted to revolve. The lower end of the barrel portion 3 of the bobbin 1 is provided with an angularly extending wedge-shaped flange or annular tenon 6, to which is secured by cement or other adhesive a resilient base portion or buffer member 7 preferably of slightly yielding rubber or other suitable resilient material having spaced annular, upstanding extensions and provided with an annular dovetail-shaped groove 8 into which the annular tenon 6 extends and is secured. The resilient base portion 7 serves to protect the end of the bobbin as it is dropped down on the spindle 5, as is the general custom in putting a bobbin on the spindle 5, and further prevents splitting or breaking of the bobbin base 7, when thrown into the container, often carelessly, as bobbins are being stripped from the spindles.

Further, the smooth, yielding rubber base portion 7 serves to protect the machine operator from injury in handling the bobbin, as is possible with bobbins having metal bound or splintered bobbin bases.

It is evident, therefore, that the resilient base portion 7 employed in this invention presents important advantages over bobbins with wooden bases not only as noted above in preventing splitting of the base portion due to the strong impact of the base portion in falling upon the driver cap portion, but also in preventing the enlarging and distorting of the counterbore 2, which necessarily destroys the centralizing capacity of the bobbin

with relation to the spindle 5 and hence renders it inefficient and unfit for further use.

In order to securely fasten the rubber base portion 7 to the interior of the barrel 3 a flanged metal bushing 9 is inserted in the counterbore 2 and seated in a recess 10 therein, having a base flange 11 engaging an annular recess 12 in the inner wall of the rubber base portion 7 and thereby securely fastening the base portion 7 to both the interior and lower end of the barrel 3.

Radially depending from the base portion are preferably a plurality of spaced, wedge-shaped projections 13, preferably four, provided with inclined sides 14 and rear wall 15 (Figures 4 and 5). Located below the base portion 7 is a driver 16 rotatable on the bolster 4, provided with a gear (not shown), connected to the machine actuating mechanism, and having also an annular cap portion 17 provided with an upstanding inner wall 18 adjacent to the bolster 4. In the embodiment of the invention shown there is a driver cap 19, preferably mounted on the upper face of the annular cap portion 17 and formed of slightly yielding rubber or other resilient material, which may be attached by rivets 20 to drivers already in general use, thus readily adapting such drivers for use with the bobbin herein described. However, the driver cap 19 may be made integral with the cap portion 17 of the driver, while it is provided in either case with a plurality of upstanding projections 19*a* and recesses 21 adapted to receive the depending projections 13 of the bobbin base portion 7 and having similarly formed inclined sides 22 and rear wall 23 and co-operating with the projections 13. It is to be noted that the inclined sides 14 of the depending projections 13 so engage the inclined side walls 22 of the recesses 21 that the base of each projection 13 does not strike the bottom 24 of the recesses 21 (Fig. 1) leaving a clearance 25, whereby effective means is provided for compensating for wear between the co-operating parts, as well as providing constant means for automatically seating and maintaining the bobbin 1 in concentric relation with the vertical axis of the spindle 5, so that any possible variation in the position of the bobbin 1 and spindle 5 during operation is thereby obviated and their concentric relation is automatically retained. Moreover, by this arrangement the co-operating projections 13 and recesses 21 (Figs. 1 and 2) function to hold the bobbin 1 and driver cap 17 in spaced relation at certain points, where clearances 25, 26 and 27 between the two serve to prevent wear and to reduce friction, important factors in maintaining efficient operation of the bobbin.

While the form of mechanism here shown and described is admirably adapted to fulfill the purposes of the invention, it is to be understood that it is not intended to confine the invention to the exact embodiment herein disclosed, and that various modifications may be made that will come within the scope of the invention.

I claim:—

1. A bobbin comprising a barrel portion and a base portion of resilient material, the barrel portion being provided at its lower end with an outwardly flaring tenon member seated in the said resilient base portion.

2. A bobbin comprising a barrel portion and buffer member of resilient material secured thereto, the barrel portion being provided at its lower end with an angularly disposed tenon member mounted in the said resilient buffer member.

3. A bobbin comprising a barrel portion and a base portion of resilient material, the barrel portion being provided at its lower end with an annular depending member, wedge-shaped in cross-section and adhesively secured in a similarly shaped annular opening in the said resilient member.

4. A bobbin having a base portion of resilient material fixedly attached thereto and mounted on a spindle, a driver for the said bobbin operatively connected to the base portion and provided with wedge-shaped recesses having inclined sides and inner wall, and means for automatically centralizing and maintaining the said bobbin in vertical relation to the vertical axis of the said spindle comprising a plurality of wedge-shaped members depending from the base portion, having an inclined inner wall and co-operating and interfitting with corresponding inclined sides and inner wall of wedge-shaped recesses in the said driver.

5. A bobbin comprising a base portion provided with one or more spaced depending wedge-shaped members, and a driver for the said bobbin having a cap portion provided with one or more wedge-shaped members and intervening recesses adapted to receive and hold the said wedge-shaped depending members fixed operatively with relation to and in contact with their sides and in spaced relation to the base of the said recesses.

6. A bobbin comprising a base portion provided with one or more spaced depending wedge-shaped members, and a driver for the said bobbin having a cap portion provided with one or more elongated wedge-shaped members extending radially and horizontally from the center of the cap portion and provided with recesses adapted to receive and hold the said wedge-shaped depending members in contact with their sides and in spaced relation to the base and inner wall of the said recesses.

7. A bobbin comprising a base portion provided with one or more spaced depending wedge-shaped members having a relatively wide tip portion and intervening recesses, and a driver for the said bobbin having a cap portion provided with one or more upstanding, spaced wedge-shaped members provided with wedge-shaped recesses having a relatively wide flat base adapted to receive and hold the said wedge-shaped depending members fixed operatively with relation to and in contact with their sides and in spaced relation to the base of the said recesses as well as holding the said upstanding wedge-shaped members in spaced relation to the upper wall of the recesses of the said bobbin base portion.

8. A bobbin comprising a barrel portion and a base portion of resilient material, the barrel portion being provided at its lower end with an angularly disposed member mounted in the said resilient member, and a bushing inserted in a recess in the lower end of the said barrel portion and having an outwardly extending flange at its lower end adapted to enter an annular recess in the inner wall of the resilient base portion, whereby the said base portion is securely fastened to the interior and lower end of the barrel portion.

9. A bobbin and a driver therefor, the said bobbin comprising a base portion of resilient material adapted to co-operate with the said driver, and interlocking means on the said base portion and driver adapted to interfit and co-operate with each other in their operative relation.

10. A bobbin comprising a barrel portion and an annular, resilient base portion superimposed

on an annular tongue portion depending from the said barrel portion and fixedly attached thereto by means of annular upstanding portions of said resilient base portion adapted to extend completely over the said tongue portion, interiorly disposed means within the barrel portion adapted to co-operate with the tongue portion in seating and holding the resilient base portion thereon.

11. A bobbin and a driver therefor, the said bobbin comprising a base portion of resilient material adapted to co-operate with the said driver, and interlocking means on the said base portion and driver disposed in a horizontal plane and adapted to interfit and co-operate with each other in their operative relation.

12. A bobbin and a driver therefor, the said bobbin comprising a base portion of resilient material adapted to co-operate with the said driver, wedge-shaped members depending from the base portion, and wedge-shaped members extending upwardly from the said driver and interfitting with the said depending wedge-shaped members of the base portion, forming thereby a driving and separable connection there-between, disposed in a horizontal plane.

GEORGE WALTER BOWEN.