June 29, 1954 J. R. CALDWELL ET AL 2,682,380

BOBBIN

Filed Jan. 21, 1949

FIG. 1.

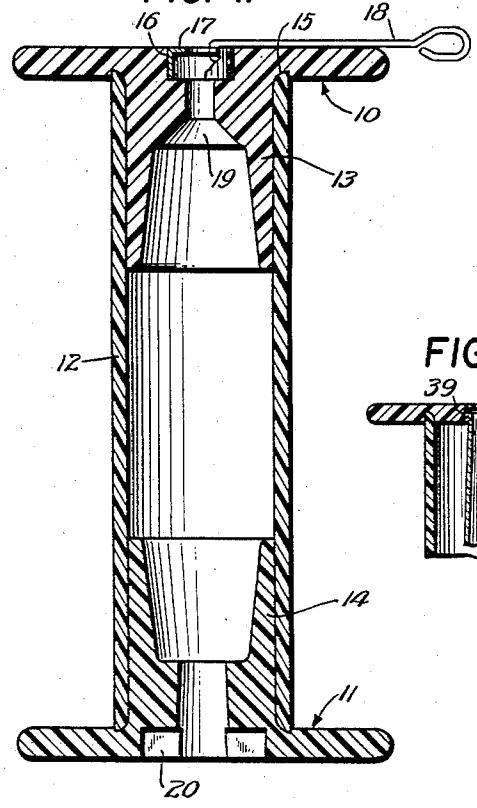


FIG. 2.

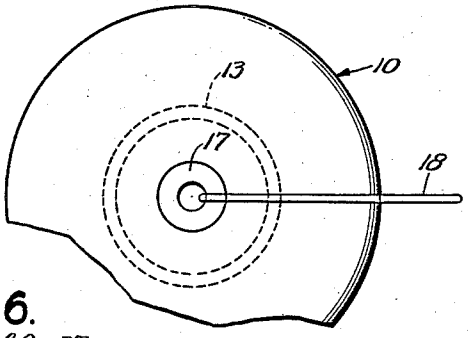


FIG. 6.

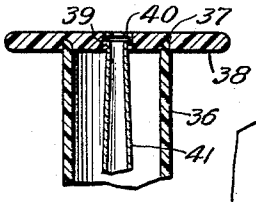


FIG. 3.

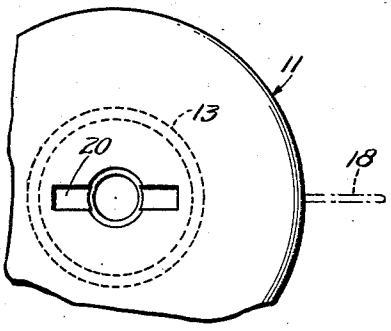


FIG. 4.

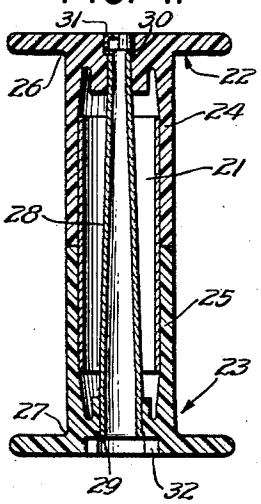
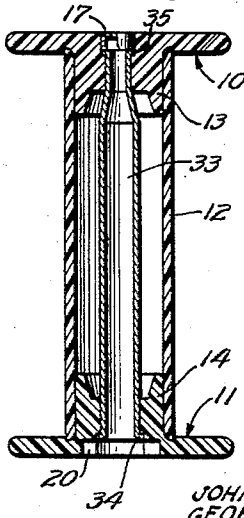


FIG. 5.



INVENTORS
JOHN R. CALDWELL
GEORGE L. LAKE
BY
Mitchell & Becket
ATTORNEYS

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BOBBIN

John R. Caldwell, Hampton, and George L. Lake, Atlanta, Ga., assignors to Meadows Manufacturing Company, Atlanta, Ga., a corporation of Georgia

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2 Claims. (Cl. 242—118)

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Our invention relates to an improved bobbin construction, and the invention will be particularly described in relation to a bobbin for an updraft spinning frame, commonly known as a throwing frame.

It is an object to provide an improved device of the character indicated.

It is another object to provide an improved bobbin construction wherein continuously smooth surfaces may be presented to the yarn so as to avoid chances of snagging.

It is a further object to provide an improved bobbin construction featuring lightness of weight and complete symmetry of weight distribution about the spinning axis.

It is also an object to provide an improved bobbin construction utilizing plastic materials for all external surfaces likely to come in contact with yarn.

It is a general object to meet the above objects with a sturdy and inexpensively fabricated structure.

Other objects and various further features of the invention will be pointed out or will occur to those skilled in the art from a reading of the following specification in conjunction with the accompanying drawings. In said drawings, which show, for illustrative purposes only, a preferred form of the invention:

Fig. 1 is a vertical sectional view of a bobbin incorporating features of the invention;

Fig. 2 is a partly broken-away top view of the bobbin of Fig. 1;

Fig. 3 is a partly broken-away bottom view of the bobbin of Fig. 1;

Fig. 4 is a vertical sectional view of a modified bobbin construction according to the invention;

Fig. 5 is another vertical sectional view of a further modification; and

Fig. 6 is a fragmentary sectional view of still another arrangement.

Briefly stated, our invention contemplates an improved bobbin construction, wherein two end-flange members are centrally circularly formed with parts which are to face each other and which are to fit a tubular member serving to locate and align the end-flange members in a complete assembly. The end-flange members may be of molded plastic construction with mutually facing axially extending circular recesses or with mutually facing cylindrical shank portions, and in one form a plastic tubular member fits over the outer cylindrical surfaces of the shank portions. In another form, the tubular member fits within

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cylindrical surfaces on the shank portions, and the shank portions may provide the external surface of the main body of the bobbin. In each case, the tubular member which engages the shank portions may be sufficient to retain the assembly, but in certain cases a further inner tubular member preferably of metal may be provided with abutment lugs or the like to engage each flange member and thus to retain the completed assembly. Such central tubular members may be internally contoured to fit the spindle blade for the particular type of spindle on which the bobbin is to be mounted.

Referring to Figs. 1, 2, and 3 of the drawings, our invention is shown in application to a bobbin comprising two end-flange members 10—11 joined by a tubular member 12. The end-flange members may be of molded plastic construction, as for example rag-filled Bakelite, and may be formed integrally with generally cylindrical shank portions 13—14. In the form shown, the shank portions 13—14 have outer cylindrical surfaces to fit the inner surface of the tubular member 12, which may also be of plastic construction. For purposes of assuring a non-snagging fit at the adjacent external surfaces of the end flanges 10—11 and of the tubular member 12, I prefer to provide axially extending annular recesses, such as the recess 15 in the end-flange member 10, at the juncture of the flange and shank portions of member 10. The recess 15 should be such as closely to receive a slightly axially projecting end of the tubular member 12. It will be clear that when the tubular member 12 is joined to the flange member 10 in the manner indicated, and held as by press-fitting, by cement, or by other means, there will be no cracks or burrs presented to snag the yarn.

The upper flange member 10 may be recessed centrally on its outer face, and in said recess may be inserted a ferrule 16, preferably of metal and including an upper inwardly directed flange or lip 17 for the guiding support of a flyer ring 18. The ferrule and flange may be considered as an inverted cup with a large hole in the cup bottom to form the flange 17. Both end-flange members may include central through passages for the accommodation of a spindle, and the size of these passages will of course depend upon the spindle to which the bobbin is to be applied. In a preferred form, however, the lower end of the upper end-flange member 10 includes an outwardly flared internal surface, as at 19, for the more ready non-fouling insertion of the tip of the spindle blade, as will be clear. The lower end-

flange member 11 may be provided with special key-receiving recesses 20 for driving engagement with the spindle, as will be clear.

In Fig. 4, we show a modified bobbin construction wherein the tubular member 21 joining the two end-flange members 22—23 internally engages the shank portions 24—25 of these end-flange members. The tubular member 21 may be of plastic construction, but in the preferred form shown, a simple metal tube is employed. The outer cylindrical surfaces of the shank portions 24—25 may extend into end-to-end adjacency so as to provide an effectively continuous smooth outer contour for the assembly and thus to present no snagging portions for catching yarn. In view of the fact that the outer bobbin surface is defined by the shank portions, the cylindrical surfaces of these portions may be filleted to the flanges proper, as at 26—27, for a smooth outer contour. The described construction may be self-retaining, as by a press-fit assembly, but for greater rigidity we prefer to employ a further tubular member 28 within the tubular member 21 and including abutment means such as radially outwardly turned flange or lug means 29—30 lockingly to engage both end-flange members 22—23. The internal contour of the inner tubular member 28 is preferably such as to conform with the spindle upon which the bobbin is to be mounted. As in the first described arrangement, the bobbin of Fig. 4 may include a recess-mounted flyer ferrule 31 at one end, and suitable keying means 32 at the other end.

In Fig. 5, we show a further modified construction which generally resembles the construction of Fig. 1 and which, therefore, is shown with many of the same reference characters. In Fig. 5, an outer tubular member 12 of plastic material joins two end-flange members 10—11 by fitting over the outer cylindrical surfaces of the shank portions 13—14 thereof. However, for improved retaining purposes we have additionally provided an internal tubular member 33 which may be of metal and which preferably includes retaining-abutment lugs or the like 34—35 lockingly to engage the two flange members 10—11. Again, the internal contour of the tubular member 33 is preferably such as to conform with the particular spindle upon which the bobbin is to be mounted, and the end-flange members 10—11 may include a flyer ferrule 17 and driving key means 20, respectively.

In Fig. 6, we show still another arrangement wherein the end-flange members are not provided with shank portions. In the arrangement of Fig. 6 the tubular member 36 which provides the body of the bobbin is fitted at its projecting ends into suitable axially extending annular recesses, such as the recess 37 in the upper end flange 38. The end flange 38 may, therefore, be made from flat stock appropriately stamped and recessed. Such recessing may include provision for insertion of the flyer guide or ferrule 39; and, if desired, the same recess which supports the ferrule 39 may also provide a seat or abutment ledge 40 against which a central retaining tubular member 41, similar to the tubular members 28 and 33 of Figs. 4 and 5, may engage the flange 38.

It will be seen that we have described relatively simple bobbin constructions which need present no snagging ledges or burrs to catch yarns. The bobbin constructions may be mass produced cheaply and with faithfully reproduced assured symmetry of weight distribution about the spinning axis. The use of plastic materials assures complete smoothness of outer surfaces, and the appropriately formed inner contours may assure proper locating engagement with the spindle upon which the bobbin may be mounted.

While we have described our invention in detail for the preferred forms shown, it will be understood that modifications may be made within the scope of the invention as defined in the appended claims.

We claim:

1. In a bobbin of the character indicated, a pair of end members each comprising a plastic cylindrical plug portion and an integral radial flange, a tubular plastic member concentric with said plug portions and into the ends of which said plug portions fit, said end members having axial bores therethrough to fit over a spindle blade, one of said end members having a converging inner wall to guide the spindle blade into the bore of that end member, said last mentioned end member at the axially outer side having a counterbore, a metallic cup securely mounted in said counterbore with the cup bottom at the axially outer side, said cup bottom having a central aperture of substantially smaller diameter than the cup so as to provide an undercut space for receiving the hook of a flyer ring.

2. The combination defined in claim 1, in which the other of said end members has an externally opening keyway for receiving a key.

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