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YARN HOLDER

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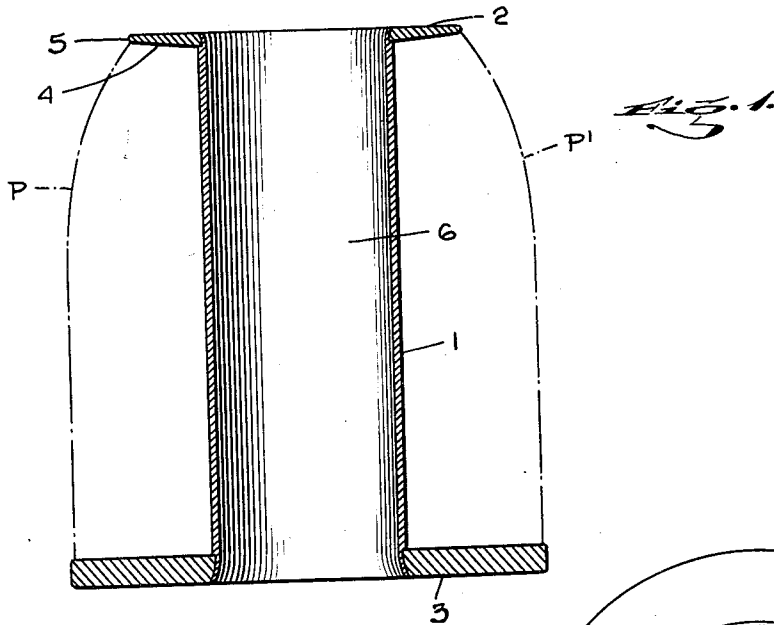
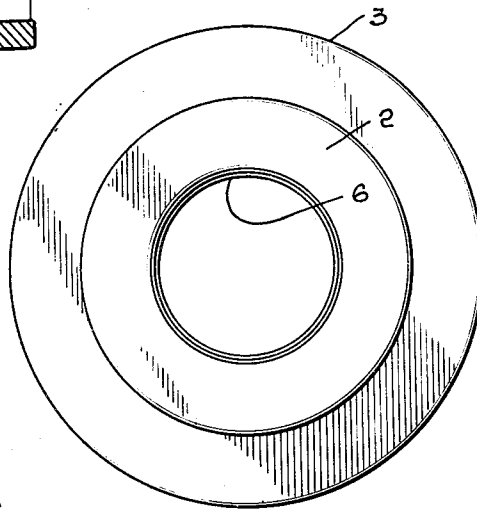
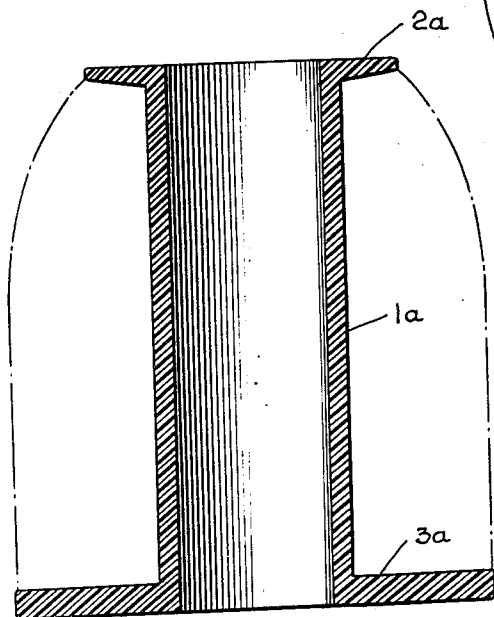


FIG. 2.



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YARN HOLDER

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1 Claim. (Cl. 242—118)

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The present invention relates to a bobbin especially adapted for tapered packages for use with two-for-one twisters.

In such twisters, the yarn from a supply bobbin is passed upwardly over the top end of the bobbin, over a yarn guide and downwardly through the center of the bobbin, thence laterally by way of a passage through the spindle to a flyer, and finally upwardly to take-up means. The rotation of the flyer causes the yarn to balloon about the supply bobbin between the flyer and take-up means. One rotation of the spindle in such two-for-one twisters imparts at least two twists in the yarn.

The bobbin comprising the present invention is especially adapted for such twisters, and particularly for such twisters as disclosed in applications of Norman E. Klein, Ser. No. 133,047 filed December 14, 1949, and Ser. No. 179,069, filed August 12, 1950, and an application of John W. May, Ser. No. 184,611, filed September 13, 1950, now Patent 2,597,015.

The new bobbin holds a large amount of yarn thereby minimizing down time for doffing, utilizes the space inside the yarn balloon economically by permitting the yarn package carried thereby to conform closely with the shape of the balloon described by the yarn rotated about it and provides free over-end unwinding.

In general the bobbin comprises a hollow central core member provided with an annular top flange member and an annular bottom flange member. The ratio of the outside diameter of the top flange member to the outside diameter of the core is critical and does not exceed 1.73 to 1. This ratio is important since it permits the apex angle, that is, the included angle drawn from the outside diameter of the top flange to the yarn guide to be large, about 80°. Thus the distance of the yarn guide from the bobbin may be small, thereby effecting economy in the space required by the twister.

In the drawings:

Fig. 1 is a vertical sectional view of one construction of the bobbin of the invention.

Fig. 2 is a top view of the bobbin of Fig. 1.

Fig. 3 is a vertical sectional view of alternative construction of bobbin embodying the invention.

As shown in Figs. 1 and 2, the bobbin comprises a hollow central core or barrel member 1 provided with an annular top flange member 2 and an annular bottom flange member 3. The inner face 4 of the top flange member may be flared outwardly and the rim 5 smoothly contoured to facilitate over-end unwinding. The

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passage 6 in the core 1 is adapted to permit passage of the bobbin over the yarn guide and yarn tension device of a two-for-one twister spindle. The shape of the completed package of yarn on the bobbin is shown in dotted lines P—P'.

The bobbin shown in Figs. 1 and 2 may be manufactured simply and economically by first forming discs the size of the top and bottom flange members, punching in the center of each of these a hole slightly smaller than the overall diameter of a piece of tubing, which is to serve as the central core portion, turning down the punched discs on a lathe to the desired flare, chamfering one surface of each disc at the edge of the hole and then rolling the ends of the tubing into this chamfer in each member. By forming the core out of a light aluminum alloy, and the flange members out of synthetic plastic or resin, the top flange member, for example, being made from paper base Bakelite and the bottom member out of Bakelized linen, the overall weight of the empty bobbin is kept to a minimum. Thus the weight of the bobbin when packaged with yarn is correspondingly reduced, thereby permitting attainment of maximum speed rotation of the spindle of the two-for-one twister.

In the bobbin shown in Fig. 3, the core 1a, top flange 2a, and bottom flange 3a, are molded in one piece out of a light weight, strong plastic or synthetic resin, such as Bakelite.

As has been pointed out above, it is necessary that the ratio of the over-all diameter of the top flange member to the outside diameter of the core does not exceed 1.73 to 1. For example, if the top flange is 2 7/8 inches in diameter, the outside diameter of the core may be 1 3/4 inches. A bobbin highly satisfactory and efficient in the twisting devices of the aforesaid applications of Norman E. Klein and John W. May has the following dimensions: outside diameter of top flange 2 7/8 inches; outside diameter of core 1 3/4 inches; inside diameter of core not less than 1 1/8 inches; outside diameter of bottom flange 4 1/8 inches; over-all height of bobbin 4 1/8 inches and length of core between inner faces of flanges, 4 1/2 inches. Such a bobbin has a 4 1/2 inch traverse, holds about 1.2 lbs. of rayon yarn, utilizes the space inside the balloon economically and permits maximum twisting speed. The distance between the flange is small enough to permit a woman operator to lift a wound bobbin by grasping the flanges between her thumb and fingers, thus avoiding contact with the yarn and consequent danger of soiling or otherwise damaging the yarn.

A further advantage of the new bobbin, and particularly one dimensioned as above described, is that it may be readily wound by the method and on the redraw frame disclosed and claimed in a pending application of Norman E. Klein, Ser. No. 131,538, filed September 7, 1949.

The following is claimed:

A bobbin to serve as a support for the yarn supply of a two-for-one twister, comprising a hollow tubular core member, an annular top flange member having a central aperture of a diameter substantially equal to the inside diameter of the core member on which it is supported at the upper end thereof, and an annular bottom flange member having a central aperture of a diameter substantially equal to the inside diameter of the core member on which it is supported at the lower end thereof, said top flange member being about $2\frac{7}{8}$ inches, outside diameter of the core $1\frac{3}{4}$ inches, said inside diameter of the core $1\frac{3}{8}$ inches, said outside diameter of the bottom flange $4\frac{1}{8}$ inches, and the

over-all height of the bobbin $4\frac{1}{8}$ with a $4\frac{1}{2}$ inch length of traverse between said flanges.

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