United States Patent [19]

Roscher

[11] **3,860,194**

[45] **Jan. 14, 1975**

[54] **BOBBIN FOR TEXTILE FIBERS**

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[22] Filed: **May 21, 1973**

[21] Appl. No.: **362,575**

[52] **U.S. Cl.**..... **242/118.32,** 242/118.1, 242/118.41

[51] **Int. Cl.**..... **B65h 75/12**

[58] **Field of Search**..... 242/118.3, 118.1, 118.41, 242/118.11, 118, 118.31, 188.32; 68/198

[56] **References Cited**

UNITED STATES PATENTS

2,942,801	6/1960	Cederberg	242/118.1
3,259,334	7/1966	Smith	242/118.3

FOREIGN PATENTS OR APPLICATIONS

14,128	0/1895	Great Britain	242/118.41
668,284	3/1952	Great Britain	242/118.3

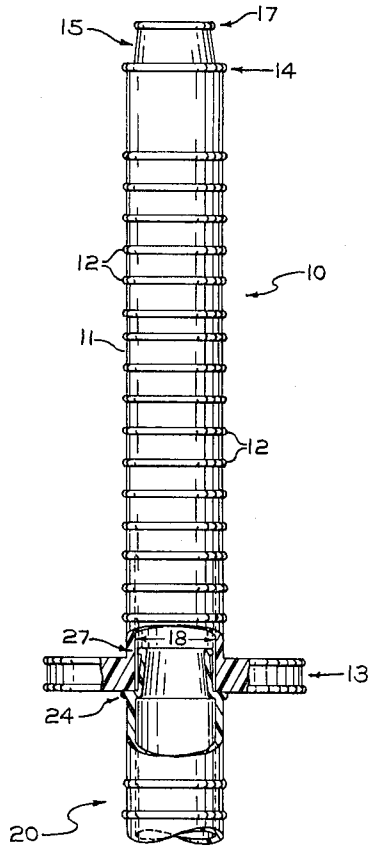
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[57] **ABSTRACT**

Bobbins for supporting textile fiber yarn are disclosed whose opposed ends are of a configuration which allows the top portion of the bobbin to nest within the interior of the bottom portion of a bobbin of the same configuration thereby rendering the bobbins disclosed readily stackable for packaging and subsequent shipment.

5 Claims, 2 Drawing Figures



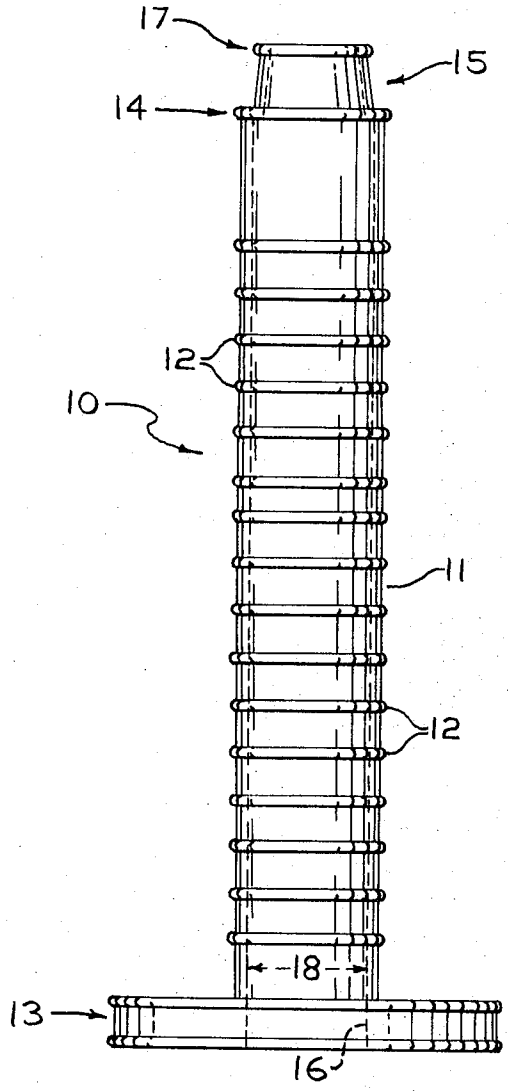


FIG. 1

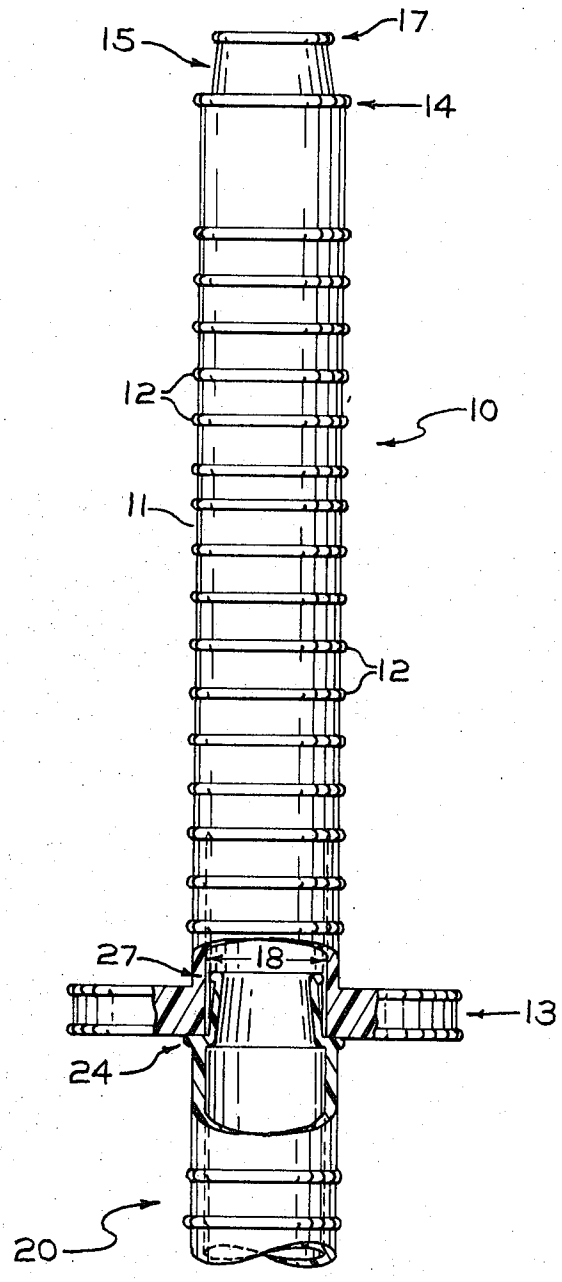


FIG. 2

BOBBIN FOR TEXTILE FIBERS

BACKGROUND OF THE INVENTION

This invention relates to hollow bobbins useful for supporting wound yarn on the exterior surface thereof.

Frequently bobbins having yarn wound thereon are shipped from yarn manufacturers to fabricators of textiles who weave the yarn into material used for clothing, draperies, upholstery, carpeting and the like. In order to ship these bobbins economically, a plurality of bobbins are placed in a suitable shipping container. This necessitates stacking the bobbins to enable an economical number of wound bobbins to be placed in the shipping container.

To stack standard textile bobbins it is necessary to place on the top of the first layer of bobbins, a thick cardboard sheet having indentations therein which will accept the base of the bobbins to be placed on the second layer, thereby lending vertical support to the stacked bobbins. Thusly, two, three, four, five, etc. layers of bobbins can be stacked for shipment without danger of the bobbins becoming dislodged from the initial stacking arrangement and falling into disarray, thereby tangling the yarn and generally yielding the yarn on the bobbins useless for further processing.

The indented cardboard sheet used to separate the layers of bobbins is costly due to the difficulty of fabrication of the identations therein in which the hub of the bobbins must fit.

Therefore, it is desirable to produce a bobbin which is self nesting and needs no interlaying support to lend vertical stability to the stacked bobbins.

SUMMARY OF THE INVENTION

The present invention provides a bobbin, which when stacked on top of another bobbin, is vertically stable, thus obviating the need for indented supporting cardboard interlayers between individual bobbins.

In accordance with the present invention, a novel, hollow bobbin is provided having a generally cylindrical body. At the bottom of the bobbin body there is a hub of greater perimeter than the circumference of any cross-section of the cylindrical body of the bobbin taken perpendicular to the axis of the cylindrical body of the bobbin. The bobbin has at the apex thereof a flange member of greater cross-sectional diameter than the aperture of the interior of the base of the bobbin. The hub and flange of the bobbin define the length of the yarn package to be wound on the cylindrical body of the bobbin. The bobbin is further provided with an extension at the top of the flange, the extension having a configuration wherein the maximum cross-sectional diameter of the extension is 10 to 30 one thousandths of an inch less than the cross-sectional diameter of the interior of the bobbin at the point at which, when two of the bobbins are nested with the top of one bobbin being inside the bottom of the other, the periphery of the extension at the maximum cross-sectional diameter is adjacent to said point. The bobbin is provided with an extension having enough length to impart vertical stability when the bobbins are nested.

The body of the bobbin is generally cylindrical; generally cylindrical as used herein means that any cross-section taken perpendicular to the axis of the cylindrical body is circular. Further the body of the bobbin can be tapered from the apex to the base of said body or vice versa to assist in unwinding the yarn from the bobbin.

Also the extension at the top of the flange of the bobbin is generally cylindrical and can be tapered inward from the flange to the apex of the extension or vice versa. In addition the extension can be provided with a flange member which will constitute the maximum cross-sectional diameter of the extension.

The bobbin can be constructed of plastics such as polystyrene, polyvinylchloride, polypropylene or the like; metals, such as aluminum, steel, magnesium, alloys thereof or the like, cardboard or any other material providing sufficient strength to support the yarn wound thereon.

Often, the cylindrical body may be grooved or ridged on its surfacae in a circumferential manner to alleviate slippage of the wound yarn thereby preventing tangling and other problems caused by shifting of the strands on the bobbin surface.

When stacked the bobbins may have a cardboard sheet over a plurality of bobbins in a single layer, with apertures in the sheets, the periphery of such apertures may rest on the flange at the apex of the generally cylindrical body thus providing horizontal support to the nested stacks of bobbins placed in side by side relationship in shipping containers.

BRIEF DESCRIPTION OF DRAWINGS

The invention is further illustrated in the accompanying drawings in which:

FIG. **1** is an elevational view of a single bobbin of the instant invention, and

FIG. **2** is an elevational view, partly in section, displaying two bobbins of the instant invention in a nested position.

Referring to FIG. **1**, there is shown therein a bobbin **10**, of elongated hollow generally cylindrical structure having a total height of 13.75 inches ±0.0313 inch, on which the yarn is to be wound. The cylindrical body **11**, having a height of 12.125 inches ±0.015 inch, of the bobbin **10** has ridges **12** spaced 0.625 inch apart along the body **11** of the bobbin **10** to prevent the yarn from slipping on the bobbin during winding and unwinding. At the bottom of the cylindrical body **11** of the bobbin **10**, is a hub, number **13**, having a maximum diameter of 5.50 inches at its outer periphery to support the entire structure of the bobbin **10** on a surface and which can be used to rotate the bobbin **10** if desired. At the apex of the cylindrical body **11** is a flange **14** which extends 0.275 inch ±0.005 inch beyond the surface of the body of the bobin **11**, and is 0.1875 inch in thickness. The hub **13** and the flange **14** define that portion of the bobbin surface which carries the wound yarn. At the top of the flange **14** is an extension **15** having a height of 1.1875 inches, which will nest in the hollow interior **16** of another bobbin. At the apex of the extension **15** is a further flange **17**, 1.653 inches ±0.005 inch in diameter. The maximum diameter of the flange **17** is slightly less than the diameter of the interior of the bobbin in the area defined by the arrows at **18**; the diameter of the area of the bobbin at **18** being 1,683 inches ± 0.003 inch.

Referring to FIG. **2** a pair of identical bobbins indicated generally by **10** and **20** are illustrated which are in a nested position. As shown in FIG. **2**, the distance in the interior of the bobbin **10** defined by the arrows at **18** is 0.030 inch greater than the maximum diameter

of the flange **27** of the bobbin **20.** It will be noted that the hub **13,** of the bobbin **10** resting on the flange **24** of the bobbin **20** provide for adequate nesting of the bobbin **10** on the bottom of the bobbin **20,** thereby providing vertical stability to the twin bobbins **10** and **20** in the nested position.

Although the present invention has been described with reference to specific details of a certain embodiment thereof it is not intended that such details shall be regarded as limitations upon the scope of the invention insofar as it is included in the accompanying claims.

I claim:

1. A textile bobbin having a hollow interior comprising a generally cylindrical body, having at the bottom thereof a hub of greater perimeter than the circumference of any cross-section of the cylindrical body taken perpendicular to the axis of said cylindrical body, said cylindrical body having at the apex thereof a flange member of greater cross-sectional diameter than the aperture of the interior of the base of said bobbin, said flange member having a surface at the top thereof disposed perpendicular to the axis of said cylindrical body, said hub and said flange defining the length of the yarn package to be wound on said cylindrical body of said bobbin, said bobbin having an extension at the top of said flange of a configuration wherein the maximum cross-sectional diameter of said extension is 10 to 30 one thousandths of an inch less than the cross-sectional diameter of the interior of the bobbin at a point which, when two of said bobbins are nested with the top of one inside the bottom of the other, the periphery of the extension at the maximum cross-sectional diameter is adjacent to said point, and the bottom of said hub of one bobbin rests on the surface of said flange of the other bobbin, said extension at the top of said flange being of sufficient length to impart vertical stability to the nested bobbins.

2. The bobbin of claim **1** wherein the extension is generally cylindrical with a flange positioned at the apex thereof.

3. The bobbin of claim **1** constructed of polystyrene.

4. The bobbin of claim **1** wherein the gennerally cylindrical body has recurring ridges on the surface thereof.

5. Two bobbins nested vertically, the top of one inside the bottom of the other,

the first bobbin having at the bottom thereof a hub of greater perimeter than the circumference of any cross-section of the cylindrical body taken perpendicular to the axis of said cylindrical body, said cylindrical body having at the apex thereof a flange member of greater cross-sectional diameter than the aperture of the interior of the base of said bobbin, said flange member having a surface at the top thereof disposed perpendicular to the axis of said cylindrical body, said hub and said flange defining the length of the yarn package to be wound on said cylindrical body of said bobbin, said bobbin having an extension at the top of said flange of a configuration wherein the maximum cross-sectional diameter of said extension is 10 to 30 one thousandths of an inch less than the cross-sectional diameter of the interior of the bobbin at a point which, when two of said bobbins are nested with the top of one inside the bottom of the other, the periphery of the extension at the maximum cross-sectional diameter is adjacent to said point, and the bottom of said hub of one bobbin rest on the surface of said flange of the other bobbin, said extension at the top of said flange being of sufficient length to impart vertical stability to the nested bobbins;

the second bobbin having the same configuration as the first bobbin; the extension of the first bobbin positioned in the interior of the bottom of the second bobbin, with the bottom of the second bobbin resting on the flange at the apex of the body of the first bobbin and the extension of the first bobbin being positioned a sufficient distance inside the bottom of the second bobbin to provide vertical stability to the nested bobbins.

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