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J. BRANDWOOD

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BOBBIN

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Fig. 1.

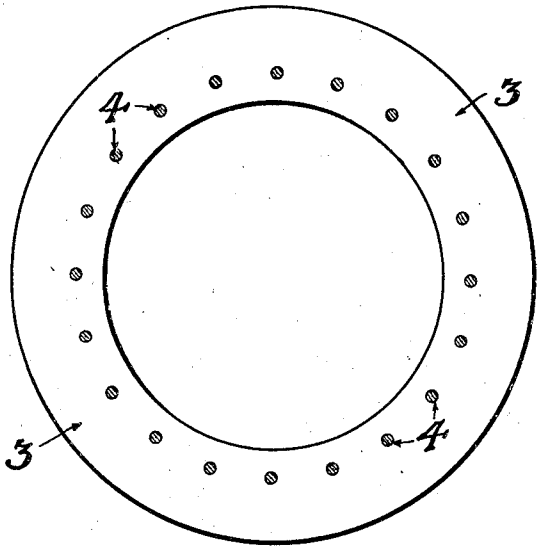
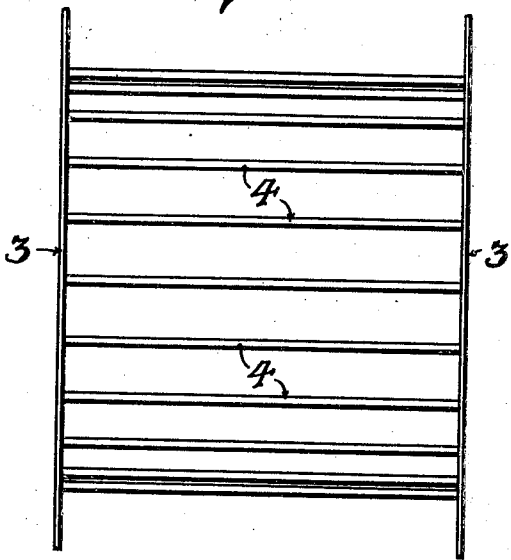


Fig. 2.



Inventor:
Joseph Brandwood
By His Attorney:
W. Connel

UNITED STATES PATENT OFFICE.

JOSEPH BRANDWOOD, OF WABAN, MASSACHUSETTS.

BOBBIN.

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In the treatment of artificial silk yarns with liquor it is customary to wind the said yarns on hanks and then subject them to the liquor treatment, such treatment taking place by absorption. Attempts to treat such yarns with liquids under pressure have hitherto been unsuccessful owing to two main factors, firstly, the yarn lengthens and then loosens on being wetted, and secondly, they are when in compact form resistant to liquors applied to them under pressure and tend to mat together on the support on which they are wound on such pressure being applied, with the result that runs or channels are formed in the mass of yarn and uneven treatment becomes inevitable.

The object of my present invention is a bobbin on which artificial silk yarns may be wound—or spun direct in any process which allows of the spinning of the yarns upon a bobbin—for the purpose of treating with liquors, as for instance wash water, bleach, or dye liquors, under pressure or vacuum, the mass of yarn so wound, in an efficient manner, the form of bobbin overcoming the hindrances above referred to and indeed taking advantage of one of the hitherto preventative factors mentioned.

According to the invention I provide a bobbin with end flanges and a yarn bearing surface composed of longitudinal rods placed between the end flanges and spaced angularly apart, on which rods the yarns are wound. The end flanges are annular so that when placed on a perforated or analogous spindle liquor can be forced through the yarn mass and between the rods, either inwardly to, or outwardly from, the centre of the bobbin. The diameter of the flanges and the diameter of the circle of rods, as well as the distance between the rods, are such that thickness of yarn wound on the rods will be flexible when wetted and yield between the rods under pressure or just slacken off the rods according to the direction of the pressure of liquor.

The invention is shown in the accompanying drawings, now to be referred to, Figure 1 being a cross section of the bobbin and Figure 2 a side elevation. The drawings are to scale. The end flanges 3, are annular and are made of "Monel" metal or other non-corrodible metal or alloy, but they may be of less costly metal, or alloy and be covered

with a varnish of ebonite, "bakelite," or the like. The rods 4 are circular in cross section and of similar material to the flanges or may be similarly covered with varnish, and may be connected to the flanges 3 by soldering.

As an example of the relative proportions, the internal diameter of an annular flange 3 may be say five inches and the external diameter is eight inches, the diameter of the circle on which the rods 4 are placed being six inches and as there are twenty rods forming the yarn surface, the distance between centers of the rods is substantially equal to the thickness of yarn which may be wound upon the said rods. The flanges will therefore allow of a tubular yarn package being wound on the rods with one inch thickness of yarn, wound on same with a quick traverse cross wind. On being subjected to any liquor treatment under pressure inwardly the yarn mass, slightly slackened owing to the wetting of same, will yield between the supporting rods as far as may be, whilst the spaces between the rods afford a clear passage for the liquor passing through the yarns. On the liquor circulation being reversed that is, from the interior to the exterior of the bobbin, the yarn mass will slacken slightly all round off the rods, there being thus no danger of disarranging the inner windings or of any matting of the yarns taking place.

It will be understood that the rods employed may be fewer in number, and therefore more widely spaced apart, than as shown in the figures, in proportion to the thickness of yarn wound on the bobbin.

I claim:

For use in the treatment with liquids under pressure of artificial silk yarns a bobbin comprising annular end flanges, and rods fitted between the said end flanges and parallel to the longitudinal axis of the bobbin and angularly spaced apart, the diameter of the circle on which the rods are placed being to the external diameter of the end flanges in a ratio of substantially 6 to 8, and the distance between centres of the rods being substantially equal to the thickness of yarn which can be wound upon the bobbin, for the purpose set forth.

In testimony whereof I have hereunto set my hand.

JOSEPH BRANDWOOD.