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2,245,359

YARN MAKING

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FIG. 1.

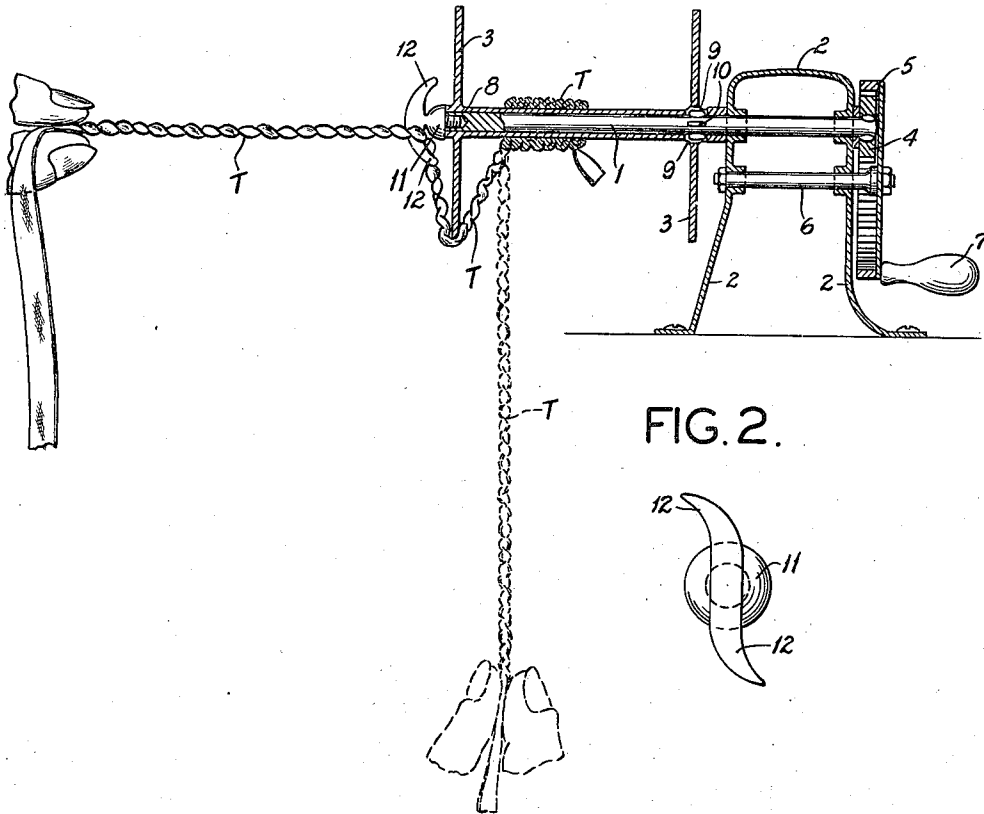


FIG. 2.

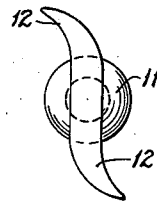


FIG. 3.

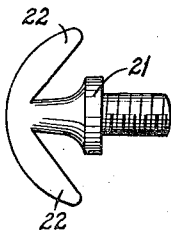
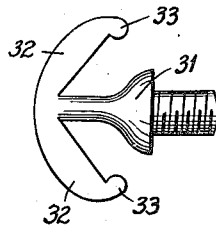


FIG. 4.



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YARN MAKING

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5 Claims. (Cl. 57—1)

This invention relates generally to yarn making and particularly to an apparatus for converting strands or ribbons of textile material into yarns suitable for use in home craft weaving.

In U. S. Patent No. 2,143,748, granted to Georgia E. Webster et al., an apparatus is disclosed for making textile yarns from strands or ribbons of textile material. While the apparatus there disclosed is operative and practical, it is complicated and expensive to manufacture and its mode of operation is sometimes difficult for the non-mechanically minded user, to comprehend. Furthermore, the apparatus requires that the yarn, after having been twisted and reeled, be unwound from the apparatus and rewound into a ball or upon another spool. During the re-winding procedure the yarn may lose some of its twist.

It has heretofore been proposed to provide an apparatus of more simplified construction wherein the reel is rotated only about its own axis and the twisting accomplished by drawing the textile strand axially from the reel through a slot in one of the end faces of the reel, but such an apparatus, like the apparatus of the Webster et al. patent, requires that the yarn be unwound from the reel into a ball or upon a spool.

The object of the present invention, generally stated, is to provide a simple apparatus, for twisting textile strands into yarn, which is simple to manufacture, easy to operate, and does not require that the yarn be unwound from the apparatus.

Another object of the invention is to provide such an apparatus with a yarn catch of the character which will adequately hold the strand during the twisting operation so long as the strand remains taut, but will readily release the strand when desired.

Other objects will become apparent to those skilled in the art when the following description is read in connection with the accompanying drawing, in which:

Figure 1 is a view in side elevation of a yarn maker constructed with one embodiment of the present invention, part being broken away in relation with the parts.

Figure 2 is an end view of the yarn catch shown in Figure 1.

Figure 3 is a view in side elevation of another form of yarn catch.

Figure 4 is a view in side elevation of still another yarn catch.

In accordance with the present invention, generally stated, a suitable driving mechanism is

provided with a spindle arranged to removably receive and drive a reel. On the outer end of the spindle a yarn catch is provided for holding the textile material during the twisting operation so long as the strand of textile material is maintained taut and extending substantially axially of the reel, but so formed that when the tension on the strand of textile material is relaxed or when the strand is moved substantially out of parallelism with the axis of the reel, the strand readily frees itself of the catch. Such a catch may be and, in the embodiments herein specifically described, is an integral part of the means for clamping the reel in position upon the spindle.

Referring now to the drawing for an illustrative embodiment of the present invention, a spindle 1 may be mounted in a supporting housing 2, and be provided with an extension at one side of the housing for receiving a demountable reel 3. At the other end of the spindle 1 any suitable arrangement for rotating the spindle may be provided. As shown in the drawing, a gear 4 is connected to the end of spindle 1. Co-operating with the gear 4 is an internal gear 5, mounted for rotation upon an auxiliary shaft 6 suitably carried for the housing 2. The internal gear 5 may be provided with a handle 7 for convenient manipulation.

The extended end of spindle 1 may be arranged to receive a part for clamping the reel 3 in operative position on the spindle, for example, the spindle may be internally threaded, as shown at 8 for the reception of a clamping screw. In the embodiment shown in the drawing the inner end of reel 3 is provided with notches 9 for engagement with lugs 10 on spindle 1 when the reel is clamped "home," as shown in the drawing, but it will be understood that any other suitable arrangement may be provided positively or impositively transmitting a driving force from spindle 1 to reel 3.

A particular feature of the present invention resides in the provision of the clamping screw 11 of a character such as to perform the dual function of clamping the reel in position and holding the textile material in position for twisting. Such a clamping screw may be provided with one or more prongs 12 directed radially outward and axially inward with respect to the end of spindle 1. While in the embodiment shown in Figures 1 and 2 the prongs 12 do not extend outwardly on a radius but are circumferentially bent to a slight extent, they are nevertheless referred to as radially extending. As shown clearly in

Figure 2 of the drawing, the outer extremities of parts 12 are arranged to lead the body portion thereof during rotation of the device for a purpose which will clearly appear hereinafter, but obviously the prongs may be arranged with the lead in either or both directions or without the leading tip, as desired.

While the spindle end is shown as internally threaded to receive an externally threaded clamping screw, it is obvious that the reverse arrangement of male and female threads may be resorted to with equal advantage or that any other well known form of interconnection be substituted.

An alternative form is shown in Figure 3, in which the clamping screw 21 is provided with prongs 22, the inner surfaces of which are straight but nevertheless extending at an angle with respect to the axis of the spindle, and being directed radially outward and axially inward.

A further alternative form is shown in Figure 4, in which the clamping screw 31 is provided with prongs 32 having very slight overhangs 33, as shown.

In each of the clamping screw embodiments shown in Figures 1, 3 and 4, the prongs are arranged so that a strand of material will be engaged thereby when held taut, but will readily free itself when the tension is relaxed. In order to assure that the textile strand will be readily released upon relaxation, the prongs are substantially free of re-entrant portions, that is to say, there is no part which projects axially inward to a substantial extent. While the overhangs 33 in the embodiment shown in Figure 4 provide a slight obstruction, they are insufficient to interfere with the free release of the textile strand.

In the operation of the device of the present invention a strand or ribbon of textile material T is suitably secured to the reel 3 and drawn over the end thereof in the manner shown in full lines in Figure 1. The strand is caught under and over one of the prongs 12 of clamping screw 11, drawn taught, and held between the fingers. The device is then rotated by manipulation of handle 7 until the strand T is twisted to the desired extent. The tension on the strand T may then be relaxed by moving the hand slightly toward the device or arcuately away from the axis of the reel, whereupon the strand frees itself of prong 12. The hand is then moved to the position shown in dotted lines in Figure 1, and the device rotated a few turns, sufficient to reel up the twisted material, whereupon the strand T is gripped further back, re-engaged with prong 12, and the device further manipulated to twist the next section of yarn.

This operation is repeated until the complete strand of textile T has been twisted and reeled, whereupon clamping screw 12 is removed, reel 3 withdrawn while loaded with the yarn so that another corresponding reel may be inserted on spindle 1 in its stead and a further portion of textile material twisted and wound.

From the foregoing description it should be apparent that the invention accomplishes its objects and that a simple apparatus is provided for converting strands or ribbons of textile material into yarn suitable for home craft weaving. While one complete embodiment of the invention has been disclosed in detail, it is to be understood that the invention is not limited to the details of the foregoing disclosure but that such modifications and adaptations and the use of such individual features and combinations of features, as do not depart from the spirit of this invention, are, although not specifically described herein, contemplated by and within the scope of the appended claims.

Having thus described the invention, what is claimed is:

1. A device of the kind described comprising, a spindle, means for rotating the spindle, a demountable reel on the spindle, and means for clamping the reel on the spindle, said clamping means having a yarn engaging part located eccentrically of the spindle.

2. A device of the kind described comprising, a spindle, means for rotating the spindle, a demountable reel on the spindle, and means for clamping the reel on the spindle, said clamping means having a projection extending rearwardly from the end thereof toward the reel for releasably engaging yarn.

3. A device of the kind described comprising, a spindle, means for rotating the spindle, a demountable reel on the spindle, releasable means for holding the reel in driving engagement with the spindle, and means for catching an extended end of yarn to prevent the yarn from winding on the reel during rotation of the spindle for twisting the yarn.

4. A device of the kind described comprising, a spindle, means for rotating the spindle, a demountable reel on the spindle, and a yarn catch on the spindle, said yarn catch having a substantially un-reentrant prong.

5. A device of the kind described comprising, a spindle, means for rotating the spindle, a demountable reel on the spindle, and the yarn catch having a prong extending radially outward and axially inward with reference to the end of the spindle, said prong having no substantial radially inwardly extending portion.

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