Jan. 10, 1939. G. E. WEBSTER ET AL 2,143,748

YARN MAKING

Filed Oct. 14, 1937

Fig. 1.

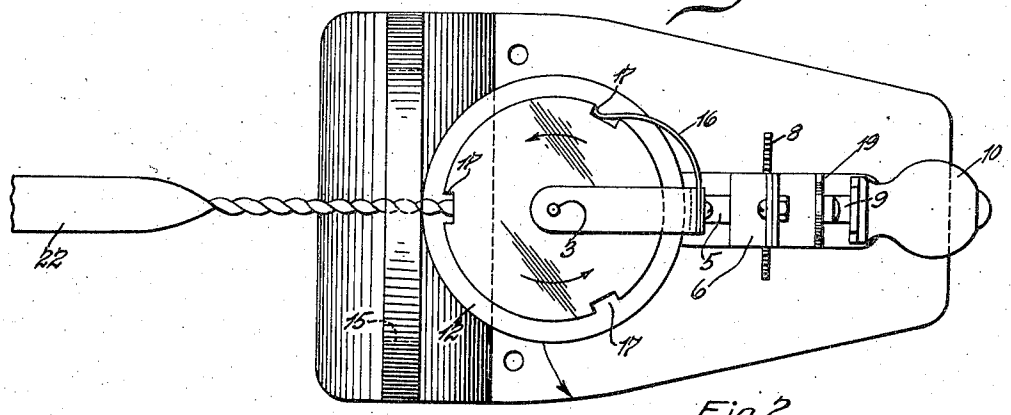


Fig. 2.

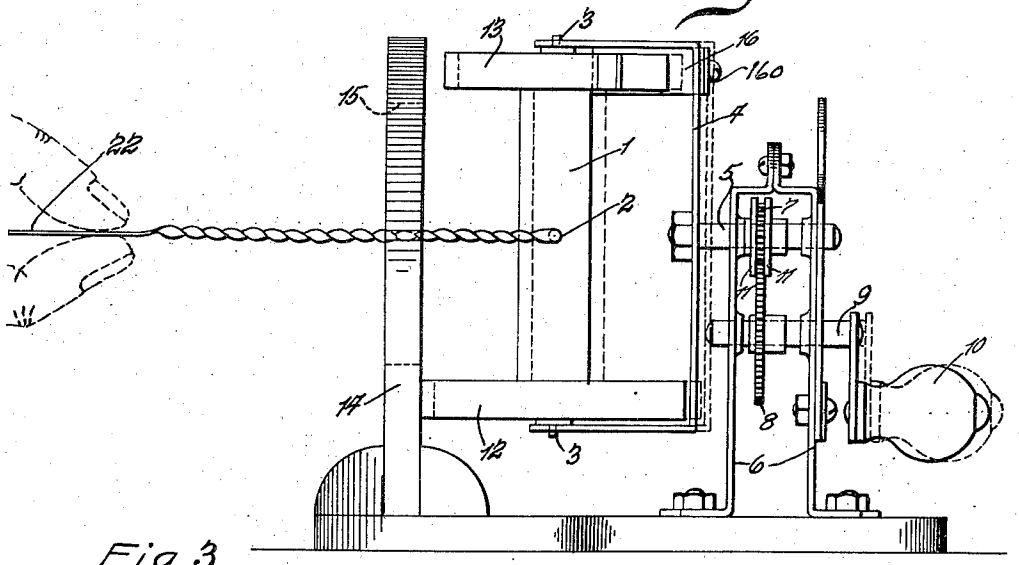


Fig. 3.

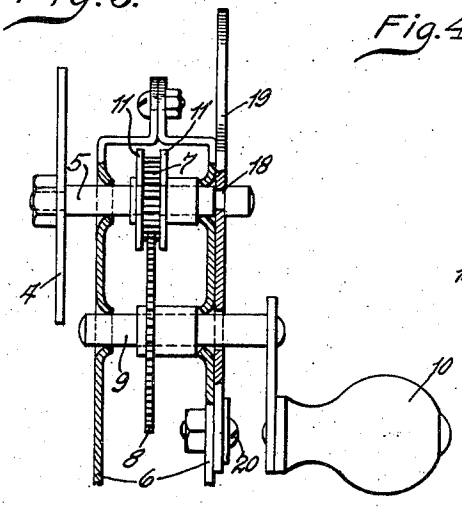
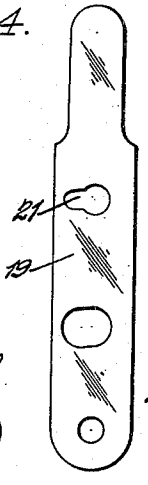


Fig. 4.



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YARN MAKING

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Application October 14, 1937, Serial No. 168,873

8 Claims. (Cl. 117—1)

This invention relates generally to yarn making and particularly to a process and apparatus for making textile yarns from strands or ribbons of textile material. As to common subject matter this application is a continuation in part of our co-pending application, Serial #38,904, filed September 3, 1935.

In the practice of home-craft weaving and other needle work operations, a corded yarn is generally employed. Frequently, however, it is desired to salvage textile materials from obsolete or worn garments and the like, but heretofore it has been difficult to convert into yarn suitable for weaving and needle work operations, such salvaged textiles.

The object of the present invention, generally stated, is to provide an apparatus and process for making yarns from salvaged fabric.

Another object of the present invention is to provide an apparatus for making such yarns whereby the characteristics of the resultant yarn may be controlled in a convenient manner.

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

Figure 1 is a plan view of an apparatus constructed in accordance with the present invention.

Figure 2 is a view inside elevation of the apparatus shown in Figure 1 and showing yarn in the process of manufacture from a ribbon of fabric.

Figure 3 is a detail view, partly in section, showing the operating mechanism of the device shown in Figures 1 and 2.

Figure 4 is a detail view of a lock forming a part of the apparatus shown in Figure 3.

In accordance with the present invention, yarns suitable for use in small scale weaving operations and suitable for use in the needle work art generally may be formed from salvaged textile material. The salvaged material may be either woven or knitted, and in accordance with the process of the present invention may be reduced or cut up into the form of ribbons or strips. Such ribbons may then be twisted to form a cord or yarn of the desired tightness. If desired, in the practice of the process of the present invention, the ribbons of fabric may be treated with a suitable adhesive substance in order to fix and set the twisted ribbon into the form of the resultant yarn.

The apparatus of the present invention is adapted to the making of yarns of any degree of tightness, and to that end the apparatus is so constructed and arranged that the operator may control the tightness of the yarn being formed at will, and when the desired tightness is achieved the yarn may be wound upon a reel.

Referring now particularly to the drawing for an illustrative embodiment of the present invention, a reel 1 is provided, having a suitable means, such as an aperture 2, to which the end of the ribbon to be treated may be secured. The reel 1 is mounted for rotation about its own axis, as well as about an axis normal thereto, and the operating mechanism is so constructed and arranged that the reel may be rotated about said normal axis with or without concurrent rotation about its own axis. Accordingly rotation of the reel about the normal axis may proceed to the extent desired to twist a ribbon of textile fabric to the extent desired, whereupon the reel may be rotated about its own axis in order to wind up the twisted yarn.

In the embodiment shown in the drawing the reel 1 is journaled at 3 for rotation about its own axis and is supported by a yoke 4. Centrally of the yoke 4 a shaft 5 is arranged extending in a direction normal to the axis of reel 1. Shaft 5 may be suitably mounted in brackets 6 with provision for slight translatory movement lengthwise of shaft 5. A pinion 7 is provided upon shaft 5 for engagement with a driving gear 8, the latter being secured to a shaft 9 which is in turn provided with a crank 10. Shaft 9 like shaft 5 is so mounted in brackets 6 as to provide for a slight translatory movement thereof. Pinion 7 may be provided with flanges, such as 11 or other suitable means, in order to prevent the pinion 7 from becoming disengaged with driving gear 8 upon translatory movement of either shaft 5 or shaft 9.

As clearly shown in Figure 2 reel 1 is provided with one end plate 12, which is of greater diameter than the opposite end plate 13. In the position shown in full lines in Figure 2 the periphery of end plate 12 is in contact with the inside surface of face 14. Face 14 is provided with a central aperture 15 of a diameter sufficient to permit the feeding of the yarn from end to end of reel 1. In the embodiment shown in the drawing the inner surface of face 14, just beyond the edge of aperture 15, provides a continuous track for engagement with the periphery of end plate 12 upon rotation of the reel about shaft 5 as an axis. Consequently, when the device is operated with the periphery of end plate 12 in contact with such track as just described, the frictional engagement between end plate 12 and face 14 operates as a clutch to cause reel 1 to rotate

about journal 3 concurrently with rotation thereof about shaft 5.

However, when the parts are translated into the position shown in broken lines in Figure 2, the periphery of end plate 12 is out of engagement with the inner surface of face 14, and consequently when the device is rotated about shaft 5 there is no transmission of force tending to rotate reel 1 about its own axis.

In order to restrain rotation of reel 1, when the periphery of end plate 12 is out of clutching engagement with face 14, a suitable brake may be provided. In the embodiment shown a leaf spring 16 is mounted upon yoke 4 in such relation that the outer end thereof contacts with the periphery of end plate 13 so as to apply a braking force thereto. Moreover, in order to prevent backward rotation of reel 1 about its own axis indentations such as 17 may be provided at a plurality of points in the periphery of end plate 13. Such indentations, as shown in the drawing, provide a sharp shoulder against which the outer end of spring 16 may engage to prevent clockwise rotation of reel 1, as seen in Figure 1. In the embodiment shown, however, spring 16 is connected to yoke 4 through a single screw 160 about which spring 16 may be pivoted 180° so as to lock reel 1 against counter-clockwise rotation as seen in Figure 1. Hence the device may be adapted for either right-handed or left-handed operation.

In order to avoid the possibility of inadvertent translation of the parts from the position shown in broken lines to the position shown in full lines in Figure 2, a suitable lock may be provided. In the embodiment shown shaft 5 is provided with a groove 18, located so that when the parts are in the broken line position shown in Figure 2, groove 18 will be located exteriorly of bracket 6, but when the parts are translated in the full line position the groove 18 will be located leftwardly thereof. A lever 19 is pivoted to bracket 6 at 20, and is provided with a key slot 21, having an enlarged portion of a diameter sufficient to accommodate the full size of shaft 5, and a portion of smaller diameter for interlocking with groove 18. Accordingly, when the parts are in the position shown in broken lines in Figure 2, lever 19 may be moved so that the narrow end of key slot 21 is interlocked with groove 18, but when it is desired to move the parts into the full line position lever 19 may be moved so as to release groove 18 and permit shaft 5 to be translated to the left.

In the operation of the device when it is desired to form yarn from a ribbon of textile material, such a ribbon as 22 may be connected with aperture 3 in reel 1. With the ribbon gripped at a convenient distance from the device and with the apparatus in the broken line position, wherein plate 12 is out of clutching engagement with face 14, rotation of crank 10 may be proceeded with, whereupon ribbon 22 will become twisted. Rotation of the parts in this position may continue until the ribbon 22 has been twisted to the desired extent between the point of gripping and the reel, whereupon by a slight force applied upon crank 10 it may be moved to the left to effect a clutching engagement between end plate 12 and face 14 as hereinbefore described. Further rotation of the parts in this position effects a concurrent twisting and reeling of the twisted yarn upon reel 1. Thereafter ribbon 22 may be gripped at a remote point and the twisting operation repeated while the parts are in broken line position.

From the foregoing description it should be apparent that the present invention accomplishes its objects, and that an apparatus is provided whereby strips or ribbons of fabric or other textile material may be readily twisted into a form suitable for reuse in the textile arts. While in the foregoing description and in the accompanying drawing a full disclosure has been made of one embodiment of the invention, it is not to be understood that the invention is limited to that embodiment. On the contrary, it is to be understood that the foregoing disclosure is merely illustrative of one form in which the invention may be carried out. It is realized that various modifications and reorganization of the parts will present themselves to those skilled in the art without departing from the spirit of this invention and it is to be distinctly understood, therefore, that such modifications, 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.

A novel yarn may be produced by the use of ribbons of woven textile material from which a few longitudinally extending threads have been removed at one or both margins. Such a ribbon may be twisted to an extent sufficient to form a yarn having a tight core but which has the appearance of a loose yarn because of the fringe produced by the extending ends of the transverse threads.

Having thus described the invention what is claimed is:

1. A device of the kind described comprising, a reel, means for rotating the reel about an axis normal to the axis thereof, and means for selectively rotating said reel about its axis concurrently with rotation about such normal axis.

2. A device of the kind described comprising, a reel mounted for rotation about its axis and about an axis normal thereto, means for rotating said reel, said means being movable between a position wherein said reel is rotated about both said axes and a position where said reel is rotated only about said normal axis.

3. A device of the kind described comprising, a reel mounted for rotation about its axis and about an axis normal thereto, means for rotating said reel about said normal axis, and a clutch engageable to rotate said reel about its own axis concurrently with rotation about said normal axis.

4. A device of the kind described comprising, a reel mounted for rotation about its axis and about an axis normal thereto, means for rotating said reel about said normal axis, one end plate of said reel being larger than the other, a stationary track, and means for translating said reel into and out of position whereat said larger end plate engages said track.

5. A device of the kind described comprising, a reel mounted for rotation about its axis and about an axis normal thereto, means for rotating said reel about said normal axis, one end plate of said reel being larger than the other, a stationary track, and means for translating said reel into and out of position whereat said larger end plate engages said track, and a lock for maintaining said translatory means in position where said end plate is out of engagement with said track.

6. A device of the kind described comprising, a reel, means for rotating the reel about an axis normal to the axis thereof, and means for selectively rotating said reel about its axis concurrently with such twisting, and means for preventing rotation of said reel in one direction about its own axis.

7. A device of the kind described comprising, a reel mounted for rotation about its axis and about an axis normal thereto, means for rotating said reel about said normal axis, one end plate of said reel being larger than the other, a stationary track, and means for translating said reel into and out of position whereat said larger end plate engages said track, and means for restraining rotation of said reel.

8. A device of the kind described comprising, a reel mounted for rotation about its axis and about an axis normal thereto, means for rotating said reel about said normal axis, one end plate of said reel being larger than the other, a stationary track, and means for translating said reel into and out of position whereat said larger end plate engages said track, and a peripheral brake on the smaller end plate of said drum.

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