Nov. 8, 1932. R. E. VICKERMAN 1,887,342

TUFT YARN SPOOL AND METHOD OF MAKING THE SAME

Filed Jan. 26, 1931

Fig. 1.

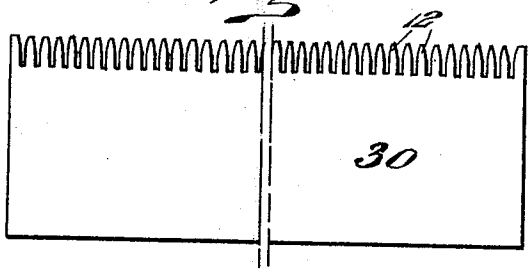


Fig. 2.

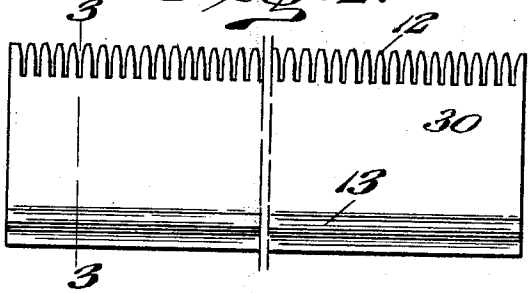


Fig. 3.

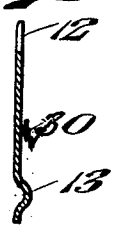


Fig. 6.

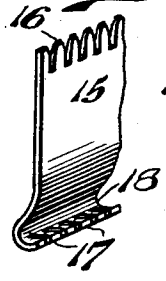


Fig. 7.

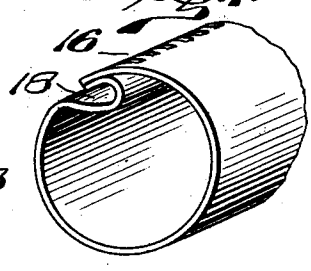


Fig. 4.

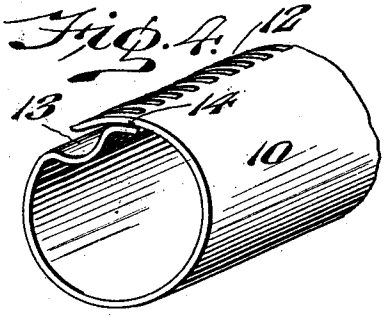
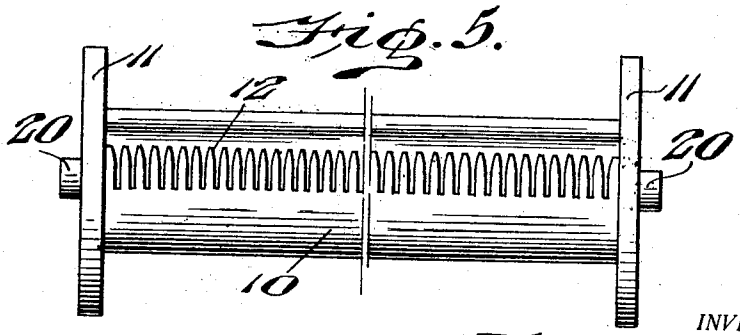


Fig. 5.



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UNITED STATES PATENT OFFICE

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TUFT YARN SPOOL AND METHOD OF MAKING THE SAME

Application filed January 26, 1931. Serial No. 511,171.

The present invention relates to yarn spools employed in the weaving of tufted pile fabrics and relates more particularly to an improved spool and method of making the same.

Some of the objects of the present invention are to provide an entirely new form of yarn spool; to provide a new method of forming yarn spools; to provide a yarn spool wherein provision is made for self anchoring the yarn so that relatively short ends are attached to the spool and accurate setting with a minimum of waste takes place; to provide a spool which is light, inexpensive to manufacture and embodies features of advantage not present in any spools heretofore devised or manufactured; to provide a yarn spool which makes the use of a holding clamp unnecessary; and to provide other improvements as will hereinafter appear.

In the accompanying drawing Fig. 1 represents a blank showing one step in the method of forming a spool in accordance with the present invention; Fig. 2 represents the same after two steps in the methods have been completed; Fig. 3 represents a section on line 3—3 of Fig. 2; Fig. 4 represents a perspective of the partially complete spool after the shaping and welding steps; Fig. 5 represents a side elevation of a finished spool embodying the invention; Fig. 6 represents a perspective of a partially formed blank showing another embodiment of the invention; and Fig. 7 represents a perspective of a portion of the spool body after formation prior to the attaching of the spool heads.

Referring to the drawing one form of the present invention consists of a body 10 which forms the core for wrapping strands of yarn for later use in a loom for weaving tufted fabrics. The body 10 is provided with end flanges 11 for the purpose of preventing displacement of the strands axially from the ends. In the present instance the body 10 is of tubular construction and is formed with a row of teeth 12 which parallel the long axis of the body 10 in relatively close proximity to a groove 13 also extending lengthwise of the body and parallel to the axis thereof. While the part 13 is specified generally as a groove it really functions as a depression or clearance beneath the teeth 12 to give the latter an overhung relation so that the yarn strands pass respectively between the teeth to be more surely anchored. This construction is also designed to interrupt as little as possible the general cylindrical shape of the body 10 and as a result after one layer of yarn strands has been wrapped about the body 10, the teeth 12 and clearance groove 13 are concealed and the wrapped yarn has the appearance of a true cylinder throughout the length of the body. Thus while preserving the usual outer appearance of a wound spool the new article conceals a novel holding or anchoring means for the end of every strand on the body. The ends of the body 10 are respectively secured to heads or flanges 11 of a diameter to permit the proper build-up of the yarn as it is reeled upon the body 10.

The method of making the spool of the present invention consists in first stamping the row of teeth 12 along one edge of a rectangular blank 30 of sheet metal by the use of a die designed to shape and accurately form the teeth. Preferably the die is also shaped to complete in the same operation the groove 13 which runs longitudinally of the blank and parallel to the row of teeth but located near the opposite edge of the blank from the teeth 12. As so formed the blank is then rolled about a mandrel or other suitable tool to bring it to substantially cylindrical shape but with the teeth 12 overlapping the grooved edge of the blank. In this position the teeth 12 project over the groove 13 so that there is full clearance for the placing of each yarn strand in one of the slits between the teeth. The overlapped ends are then welded along the line of contact 14 so that the resulting tube is to all intents and purposes an integral body having an outer smooth periphery interrupted only by the groove 13 with its overhanging teeth 12. The heads or flanges 11 are now swaged, expanded, welded or otherwise made fast to the ends of the body 10 and the new spool is complete and ready for use. The heads 11 are each of disc form having projecting axially disposed ends 20

which journal the spool for rotation during winding and unwinding operations.

In the form of the invention shown in Figs. 6 and 7 a blank 14 of sheet metal is first preferably formed with two rows of teeth 15 and 16 along two opposite edges thereof, while a groove 17 is pressed into the metal in close proximity to one of the rows of teeth. The blank so formed is then rolled to tube shape with one row of teeth superposed upon the other and then welded in such position. This construction not only provides the desired overhanging comb with the clearance groove but also a row of teeth, each of which is of double thickness and so capable of resisting bending and displacement in use. In some instances it may be found desirable to roll the blank so formed with a groove into its substantially cylindrical shape prior to forming the teeth and in this case the two straight edges of the blank are brought together around the mandrel and then welded permanently together. The teeth are then milled or ground into the edge of double thickness to complete the comb. The final step is the securing of the spool heads to the body as heretofore explained.

It will now be apparent that a new method and article for winding yarns has been devised whereby each strand of the yarn is anchored at one end to the article and can be wound evenly and accurately to form a complete wound spool of substantially uniform dimensions. Furthermore for the spool of the present invention it is no longer necessary to draw the yarns across the body of the spool for a considerable length in order that they be held while a clamp bar is placed in position to hold the yarn ends. These extended ends of the yarn result in a tremendous waste when taken in the aggregate, all of which is avoided by the construction of the present invention. Furthermore this pulling of the yarn taut by the operator takes place in groups of yarn strands and gives a converging effect which leads to improper crossing of the strands so that there is also considerable waste when unwinding due to the unusable condition of these crossed strands. This disadvantage is entirely avoided by the present spool with its separate yarn end anchoring means. Also in the process of weaving the strands are all held by the spool of the present invention until the last convolution is unwound and therefore another saving takes place because these last convolutions of the yarn strands cannot unwind and hang loose and tangled over the side of the tuft frame. In spools as heretofore used this is a common fault and these unwrapped ends have to be cut off and add to the loss.

While but two forms of the present invention have been here shown by way of example it is understood that the invention is not specifically limited to either but may be embodied in various other forms without departing from the present invention. It is further to be understood that where the term groove is used it may not necessarily always be rolled into the blank and is to be understood as being included in any bending operation of the blank which would form a clearance space beneath a row of teeth.

Having thus described my invention, I claim:

As a new article of manufacture a spool formed from a metal blank having a row of teeth along one edge spaced to receive and anchor wrap threads respectively between them and rolled into a tube with the meeting edges superposed, one of said edge portions being bent to provide a longitudinally disposed groove opposite said teeth, and heads respectively on the ends of said tube.

Signed at Philadelphia, county of Philadelphia, State of Pennsylvania, this 23rd day of January, 1931.

ROBERT E. VICKERMAN.