(No Model.)

W. CLARK.

CORE OR SPOOL FOR BALLS OF THREAD.

No. 555,498. Patented Mar. 3, 1896.

Fig. 1.

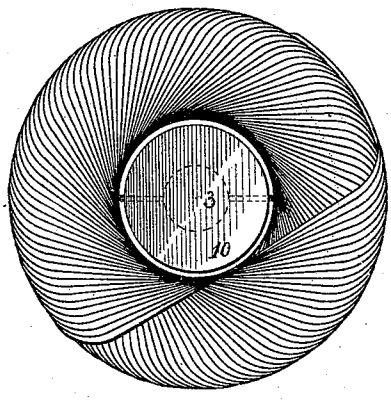


Fig. 2.

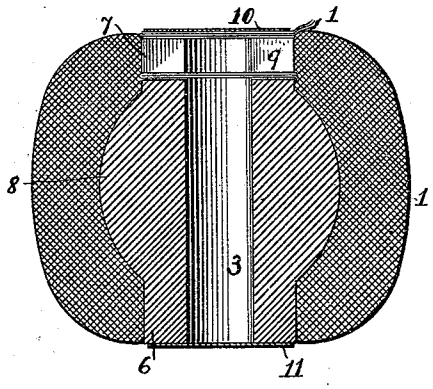


Fig. 3.

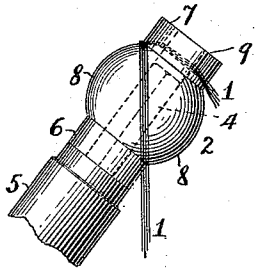
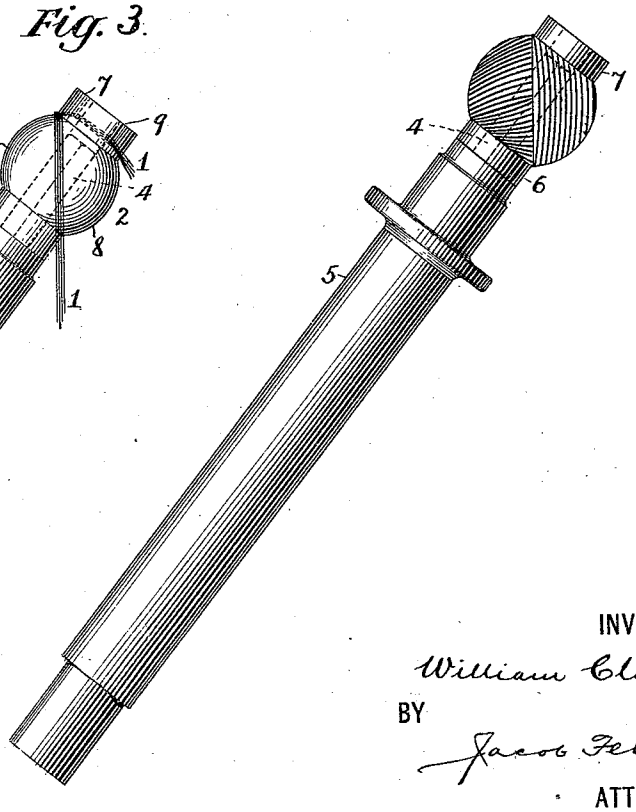


Fig. 4.



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CORE OR SPOOL FOR BALLS OF THREAD.

SPECIFICATION forming part of Letters Patent No. 555,498, dated March 3, 1896.

Application filed October 21, 1895. Serial No. 566,284. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM CLARK, a citizen of the United States, and a resident of Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Cores or Spools for Balls of Thread, of which the following is a specification.

My invention relates generally to cores or spools for balls of thread, either cotton or silk, but more particularly to balls of darning-cotton.

Darning-cotton is usually composed of four separate strands of two plies each, running side by side and wound in ball form. These strands are separate or detached so that the user may select either one, two, three, or four strands, according to the character of the work to be done. The selection and securement of any one or more of the individual strands have heretofore been difficult of attainment, largely because of the fact that the plurality of strands were wound in a twisted condition in the balling operation. Owing to the manner in which the cotton was heretofore put up and balled for the market it was impossible to avoid such twisting of the strands in the winding process.

One object of my invention is to make a core or spool upon which several strands (two or more) of the cotton may be wound even, flat, and parallel, thereby avoiding the twisting referred to and facilitating the selection and separation of the individual strands.

My invention has for a further object to provide means for fastening the ends of the cotton at the beginning and at the end of the winding process, and for also fastening the ends of the cotton during non-use of the ball, so as to prevent casual unwinding and entanglement, and at the same time maintain the ball in condition for immediate use; and it has for a still further object to provide a construction whereby the cotton is prevented from being moved or pushed endwise upon its block or support and thus becoming detached therefrom.

Other objects and advantages will appear hereinafter.

To these ends my invention consists in certain features of construction, hereinafter more fully described and particularly pointed out in the appended claims.

In the accompanying drawings, Figure 1 is an end view of a ball of darning-cotton provided with a core or spool embodying my improvements ready for the market. Fig. 2 is a central vertical section thereof. Fig. 3 is a detail view, reduced scale, of a core or block mounted upon the spindle of a balling-machine and showing the securement of the inner end of the cotton and the initial winding thereof. Fig. 4 is a view similar to Fig. 3, but showing the ball at a further but unfinished stage of the winding.

The cotton is designated by the numeral 1, and by reference more particularly to Fig. 3 it will be observed that it is composed of four parallel strands, each of which in practice is made of two plies of cotton. Owing to the difficulty of illustration the convolutions of the cotton at Figs. 1, 2, and 4 are represented by single lines, but it will be understood that each of these lines is to be considered as representing a plurality of separate strands. In Figs. 1 and 2 the outer end or terminal of the thread is shown as composed of four separate strands.

The thread is wound upon a core, support, or block 2, which is formed with an opening 3 through its center or longitudinal axis to enable the block to be mounted upon the square or angular end 4 of a rotary spindle 5, forming a part of a balling or winding machine. The ends of the block are made cylindrical, as at 6 and 7, and between the ends the block is made globular or round, as seen at 8, thus providing a swell or convex portion at each side between the ends of the block. The cylindrical ends are made smaller in diameter than the globular portion. The cylindrical end 7 is formed with a diametrical slit or cut 9 extending from its outer surface inwardly to or about the junction of the parts 7 and 8. In the balling or winding of the thread the block is slipped upon the end of the spindle or mandrel and the inner end of the cotton is passed down through said slit or cut 9, as shown at Fig. 3, and the thread then carried diagonally across the globular portion 8 of the block, as also exhibited by said figure. The balling-machine is of about the usual

construction, and during the rotation of the block upon the mandrel the usual fly or winder operates to lay the several strands of the cotton about and upon the block in the manner indicated by the drawings. When the winding is completed, the outer severed extremity of the thread is also passed down into the slit, which acts as a fastening means and prevents the casual unwinding of the thread. The thread is so cut off from the supply-bobbin in the balling-machine as that there may be a prolonged or extended end, as illustrated, to facilitate the fastening of the thread until it may be desired for use. In practice labels 10 and 11 are pasted on the cylindrical ends of the block, the label 10 assisting some in preventing accidental detachment of the end of the thread from the slit. On commencing to use the thread the label 10 is broken or divided to permit the removal of the fastened end of the thread. The label being made of thin paper it may be readily broken by simply pulling the end of the thread outwardly from the slit.

The slit in the block is, of course, made of such depth that when the process of winding is commenced the thread or cotton may be securely fastened and by merely drawing the thread down through the slit. By this simple plan the operator is enabled to turn off the work more quickly and hence more cheaply. The slit is also useful in that it enables the cotton to be simply and securely fastened upon the completion of the winding process, and by pasting the label over the end of the block the cotton cannot become detached in handling. The end may, however, be readily found by the user and may be easily unfastened to obtain a supply of the cotton.

The swell in the center of the block performs two functions: First, it enables the cotton to be wound flat and smooth or without twisting and to form a ball from the very commencement of the winding. If the process of winding be commenced on an ordinary straight or parallel sided center it is almost impossible with ordinary balling-machines to avoid the riding of the strands one upon another and the creation of a twist in the thread, which, as explained, is objectionable; but by having a swell or convex middle portion the thread may be started at such an angle as that the multiple strands may be laid flat and parallel, as shown at Fig. 3, from start to finish in the winding operation, and thus entirely obviate the said objectionable twisting. The other function of the swell alluded to is to prevent the cotton from being pushed or pulled off the block at either end, as can readily be done with an ordinary straight or parallel sided block.

In addition to the above-recited advantages of the construction shown and described the following are likewise obtained: The ball being provided with a block to which the inner end of the cotton is secured, the cotton must be unwound or used from the outside, and hence the objections and difficulties arising from unwinding or using the ball from the inside are effectually surmounted. By reason of winding the ball upon a block, which is slipped off the mandrel with the ball, there is no possibility of closure or contraction of the ball, and hence a slackening of the tension of the convolutions at the time of removal of the ball from the machine, as heretofore, and as a consequence the liability of the convolutions or layers accidentally slipping off the ball during use is wholly overcome. Inasmuch as the block forms a rigid interior support for the ball there is never any possibility of the collapse or loss of form of the ball, and as a result during use the ball will maintain its rotundity, tension, density and compactness. For these reasons the ball may be used down to its block without any danger of entanglement of the cotton and without the waste and other annoyances attending the use of the previously-made balls.

My improvements in cores or spools may of course be employed in the winding of balls of knitting and sewing cotton as well as silk, and I do not wish to be limited to the use of darning-cotton nor to thread comprising a plurality of strands.

What I claim as new, and desire to secure by Letters Patent, is—

1. A core or spool for a ball of thread having a central perforation for its placement upon the mandrel of a balling-machine, and having a central globular portion, and also cylindrical ends made smaller in diameter than said globular portion; as set forth.

2. A core or spool for a ball of thread having a central perforation for its placement upon the mandrel of a balling-machine, and having a central globular portion, and also cylindrical ends made smaller in diameter than said globular portion, one of said ends having a slit extending inwardly to or near said globular portion; as set forth.

Signed at Stonington, in the county of New London and State of Connecticut, this 11th day of October, A. D. 1895.

WILLIAM CLARK.

Witnesses:
A. R. STILLMAN,
C. B. COTTRELL.