METHOD AND TOOL FOR EVERTING TUBULAR CLOTH MATERIAL

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Filed: Apr. 13, 1970

Appl. No.: 27,771

U.S. Cl. .................................................. 223/39
Int. Cl. .................................................. A41h 43/00
Field of Search ...................................... 112/222, 223/102-104, 39-42, 39, 105, 37, 145/50.1, 61.8, 81/3

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ABSTRACT

An exerting tool for turning tubular cloth material inside out comprises an elongated rod provided adjacent at least one of its ends with an annular groove. One end of tubular cloth material to be exerted is placed over said groove and a plurality of windings of thread is wrapped tightly about the material in the groove to secure the material to the tool. The tubular material then is pushed over said secured end, whereupon it is turned inside out. A second groove adjacent the first named groove also may be provided in which to secure one end of a filler cord, by a similar wrapping of thread. The cord is extended from its secured end away from the tubular material, whereupon it is enclosed in the tubular material automatically as the latter is exerted.

8 Claims, 7 Drawing Figures
METHOD AND TOOL FOR EVERTING TUBULAR CLOTH MATERIAL

BACKGROUND OF THE INVENTION

This invention relates to the art of sewing, and more particularly to a method and tool for exerting tubular cloth material.

Dressmakers and seamstresses often find it desirable to provide belts, edgings, ornamental bows, hair ribbons and like articles from the same cloth material as is used in the making of a dress, suit, or other garment. Such articles generally are made by doubling a narrow strip of the cloth material longitudinally and stitching it together along the line which defines with the closed edge of the doubled material an elongated tube. The tube then is turned inside out to provide a finished exterior. The exerted tubular material may vary in diameter from a fraction of an inch to several inches, depending upon its desired use. The exerting of such tubular material frequently is accomplished by securing a safety pin to one end of the loop material and feeding the pin back through the tube to effect eversion. This procedure is tedious and time consuming and is suitable only for inverting relatively large diameter tubular material. For small diameter tubular material the correspondingly small size pin is extremely difficult to work back through the tube. Moreover, the safety pin tends to tear loose from the cloth material during the exerting procedure. In such event the tubular material most often must be discarded, or at least the partially exerted portion must be cut away.

Various types of exerting tools have been provided heretofore in an effort to overcome the aforementioned disadvantages of the safety pin. One such tool is an elongated rod provided at one end with the equivalent of a safety pin. The use of this tool reduces the time factor of the procedure, but still retains the other disadvantages associated with the safety pin.

Another such tool comprises a pair of concentric rods provided at one end with clamping heads movable toward each other for securing one end of tubular material between them. This tool is costly, is susceptible of failure to maintain its grip on the cloth and is restricted to use with relatively large diameter tubular material for.

Still another such tool is an elongated rod provided with an enlarged head at one end. In the use of this tool it is required to form a closure adjacent one end of the tubular material by stitching around the latter inwardly. The enlarged head is inserted in said end of the tube to abut the closure, whereupon the tubular material behind the closure is pushed forward over the enlarged head to effect eversion. The primacy difficulty with this tool resides in starting the eversion, since the stitching collapses the tube and renders it difficult to open the tube behind the stitching sufficiently to start it over the enlarged head. This tool also is restricted in use to relatively large diameter tubular material.

SUMMARY OF THE INVENTION

In its basic concept this invention involves securing one end of tubular cloth material about one end of an elongated rod by means of a tight wrapping of thread, and then pushing the tubular material over the wrapped end to effect the eversion.

It is by virtue of the foregoing basic concept that the principal objective of this invention is achieved; namely, to overcome the aforementioned disadvantages of prior methods and tubular cloth exerting tools.

Another important object of this invention is the provision of a method and tool by which a length of filler material may be enclosed within the tubular cloth material automatically as the latter is exerted.

A further important object of this invention is the provision of a simplified method and inexpensive tool by which the exertion of tubular cloth material may be accomplished with speed and facility.

The foregoing and other objects and advantages of this invention will appear from the following detailed description, taken in connection with the accompanying drawing of the preferred embodiment.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a foreshortened side elevation of a tubular cloth exerting tool embodying the features of this invention.

FIG. 2 is a foreshortened plan view as viewed from the top in FIG. 1.

FIG. 3 is a transverse sectional view taken on the line 3—3 in FIG. 1.

FIG. 4 is a fragmentary view in side elevation, partly broken away, illustrating an initial step of the method of this invention and the corresponding initial stage of the mode of operation of the exerting tool of this invention.

FIG. 5 is a fragmentary view in side elevation, partly broken away, similar to FIG. 4, illustrating a subsequent step of the method of this invention and a corresponding subsequent stage of the mode of operation of the exerting tool of this invention.

FIG. 6 is a transverse sectional view taken on the line 6—6 in FIG. 4, illustrating the arrangement of the exerting tool and tubular cloth material before exertion of the latter.

FIG. 7 is a transverse sectional view similar to FIG. 6 but showing the tubular cloth material after eversion.

DESCRIPTION OF THE PREFERRED EMBODIMENT

The tubular cloth exerting tool of this invention comprises an elongated rod 10 provided adjacent at least one end thereof with an annular thread-receiving groove 12 the function of which is explained in detail hereinafter. The length of the rod is variable, as desired, a convenient length being about 12 inches. The diameter of the rod determines the minimum diameter of tubular cloth material capable of being exerted. Thus, for example, a rod of one-sixteenth inch diameter is capable of exerting tubular cloth material of substantially the same or larger diameter.

The end of the rod opposite the groove 12 may simply terminate at the rod diameter, or it may be provided with an enlarged abutment head. In the preferred embodiment illustrated, the ed portion of the rod opposite groove 12 is enlarged to provide a diameter substantially greater than the rod. For example, the rod may be one-sixteenth inch in diameter and the enlarged head may be one-fourth inch in diameter. The enlarged end portion also is provided with an annular thread-receiving groove 12'. In this manner the exerting tool is operable most effectively to exert a number of sizes of tubular cloth material ranging in diameter from the diameter of the rod to diameters substantially greater than the enlarged end portion.

Each end portion of the rod preferably is tapered from the groove 12, 12' to its adjacent end, to minimize its dimension and thus minimize frictional engagement of the tubular cloth material during the exerting procedure. If desired, the tapered faces also may be hollow ground, as illustrated at 14 at the smaller diameter end in FIGS. 1 and 3, to further reduce such friction.

For some uses of the exerted tubular material it is desirable that the latter be reinforced internally in order to provide a more rounded and bulky cross section. For this purpose a length of string, bulky darning thread, or other suitable filler material is inserted through the tubular material, heretofore as by means of the safety pin previously described. In the present invention, however, this operation is achieved automatically, as explained hereinafter, by providing the tool with second annular thread-receiving grooves 16 and 16', one in each of the tapered end portions between the first named grooves 12 and 12' and the adjacent end of the tool.

The method of this invention and the operation of the exerting tool described hereinbefore is as follows, reference being made primarily to FIGS. 4—7 of the drawings: A length of unturned tubular cloth material 20 is formed (FIG. 6) by folding an elongated narrow strip of the material longitudinally and
securing the folded sections together along intermediate by means of stitching 22. The line of stitching is spaced from the closed edge of the folded material a distance predetermined to provide the desired diameter from the tubular material. In FIGS. 4 and 5, the tube diameter is illustrated as being only slightly greater than the diameter of the rod 10.

The tube of material then is slipped over the elongated rod from the smaller diameter end of the latter. Since the length of tubular material usually is greater than the length of the rod, the material is gathered onto the rod, accordion style, until the forward end of the material overlies the first named annular groove 12 (FIG. 4).

A length of thread 24 then is wrapped tightly about the tubular material in the area of the groove, to compress the material into the groove. By providing several windings of thread, purposely overlapped in random manner, unwinding is inhibited. This may be enhanced by moistening the thread and also by pulling rearward on the tubular material to cause the latter to move slightly rearward in the area of the groove and thus assist in the random overlapping of the thread windings. The excess length of thread simply is broken from the wrapping.

To facilitate winding of the thread it may be desirable to cut the tubular material on a bias, as illustrated, to expose a portion of the groove to view. This also minimizes the bulk of tubular material in the area of the groove.

Assuming a filler cord 26 also is to be included in the everted tubular material, one end of a length of such cord is positioned across the second groove 16 and secured by a similar wrapping of a plurality of windings of thread 28. Initially the length of filler cord is disposed along the tubular material 20, as illustrated in FIG. 4, to facilitate wrapping of thread 28. Thereafter the cord is looped back over the wrapping of thread 28 to extend forward from the end of the rod, i.e., in the direction away from the tubular material 20.

The operator then grasps the tubular material 20 between the fingers immediately behind the wrapping of thread 24 and pushes the loop material forward over the wrapping. Since the wrapping has compressed a circular area of the tubular material into the groove 12, the material rolls easily forward over the wrapping. Further, since the tight wrapping of thread 23 in the groove has a maximum diameter essentially the same as the rod, minimum obstruction is presented to movement of the tubular material forward over the wrapping.

As the tubular material is pushed forward over the wrapping, it encloses the filler cord 26 within it automatically during the eversion process (FIG. 5).

The operation is continued until the entire length of tubular material is pushed from the rod. Since the windings of thread 24 and 28 usually resist pulling the tube and cord materials free of the rod, the tube material and enclosed filler cord is cut transversely adjacent the end of the rod. The short length of tubular material which remains secured to the rod then is pushed rearward, back onto the rod, to expose the windings of thread 24 and 28 which then may be unwound to release the scrap end of material.

The exerted tubular material with encased filler cord is shown in FIG. 7.

The use of the enlarged end portion of the tool for exerting tubular material of larger diameter is substantially the same as the procedure described hereinafter.

From the foregoing it will be appreciated that the present invention provides a simplified method and economical tool by which to effect eversion of tubular material with speed and facility. The provision of the annular thread-receiving groove 12 affords positive attachment of tubular material to the tool by the simple expedience of the length of conventional thread. The provision of the second annular groove 16 affords equally expeditious means by which to incorporate filler material within the tube automatically during eversion.

It will be apparent to those skilled in the art that various changes may be made in the size, shape and arrangement of parts described hereinbefore and in the method steps also discussed. For example, instead of threading the tubular material onto the length of the rod 10 and securing the front end in the groove 12, the end of the rod may be inserted in one end of the tube of material with the latter overlapping only the second groove 16 and secured therein by a wrapping of thread. The eversion procedure then is accomplished by pushing or pulling the tubular material rearward over the wrapping and onto the elongated rod. The procedure previously described is preferred, however, for the greater facility of applying the wrapping of thread. As a further example, the second thread-receiving groove 16 for attaching filler material may be omitted, as will be apparent. The foregoing and other changes may be made without departing from the spirit of this invention.

Having now described my invention and the manner in which it may be used, I claim:

1. The method of exerting tubular cloth material prepared by stitching together a longitudinally folded strip of cloth material to form an elongated tube, the method comprising:
a. providing an elongated rod with an annular groove adjacent one end,
b. positioning one end of the tube of material to overlie said groove,
c. wrapping a length of thread in a plurality of windings tightly about the tubular material in the area of the groove to compress the tubular material into the groove and thus secure it to the rod, and

d. pushing the tubular material over the wrapped end to turn the tube inside out.

2. The method of claim 1 including pulling back on the tubular material in the direction opposite the wrapped end to effect overlapping of the thread windings to prevent unwinding of the latter.

3. The method of claim 1 wherein the rod extends into the tube of material from said secured end.

4. The method of claim 1 including the steps of:
a. providing the rod with a second annular groove spaced from the first named groove in the direction toward which the tubular material is pushed over the wrapped end,
b. positioning one end of a length of filler material to traverse said second groove and to extend therefrom in the direction toward which the tubular material is pushed over the wrapped end, and
c. wrapping a length of thread tightly about the filler material in the area of the second groove to secure it to the rod,
d. whereupon the filler material is confined within the everted tubular material as the latter is pushed over said wrapped end.

5. An exerting tool for turning elongated tubular cloth material inside out, comprising:
a. an elongated rod dimensioned for insertion in tubular cloth material to be exerted, and
b. an annular cloth- and thread-receiving groove adjacent at least one end of the rod,
c. the groove being dimensioned to receive therein a plurality of windings of thread by which to secure one end of an elongated tube of cloth material within the groove under the thread, and
d. a second annular filler- and thread-receiving groove adjacent the first named groove dimensioned to receive therein a plurality of windings of thread by which to secure one end of a length of filler material within the groove under the thread.

6. The exerting tool of claim 5 wherein the rod is tapered from the first named groove to the adjacent end, and the second groove is in the tapered portion of the rod.

7. The exerting tool of claim 5 wherein each end portion of the rod is larger in diameter than the opposite end portion and said annular grooves are provided in each of said end portions for exerting tubular cloth material of different diameters.

8. The exerting tool of claim 7 wherein each of said end portions of the rod is tapered from the first named groove to the adjacent end, and each second groove is in the associated tapered end portion of the rod.