March 24, 1936. H. I. KLAWANS 2,035,130

MOP AND METHOD OF MAKING THE SAME

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FIG. 1.

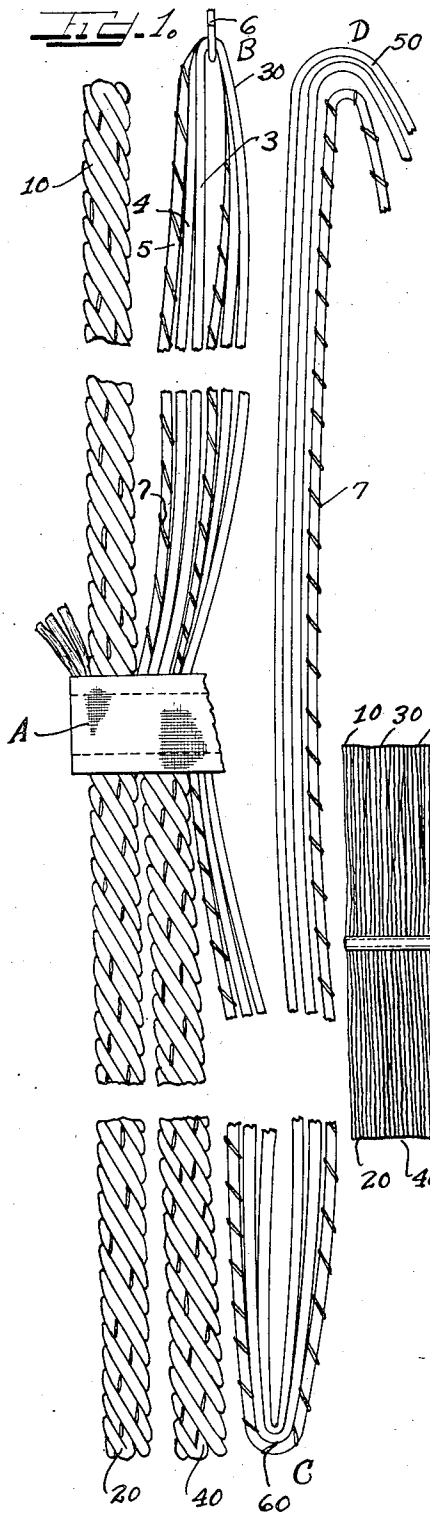


FIG. 2.

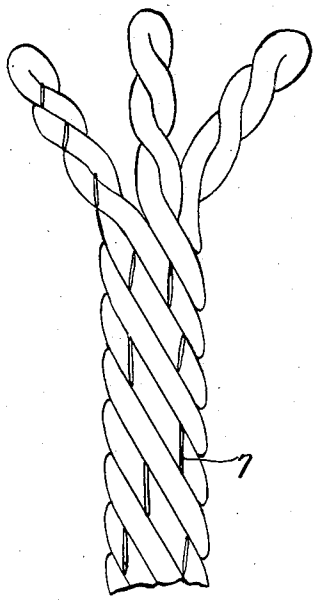
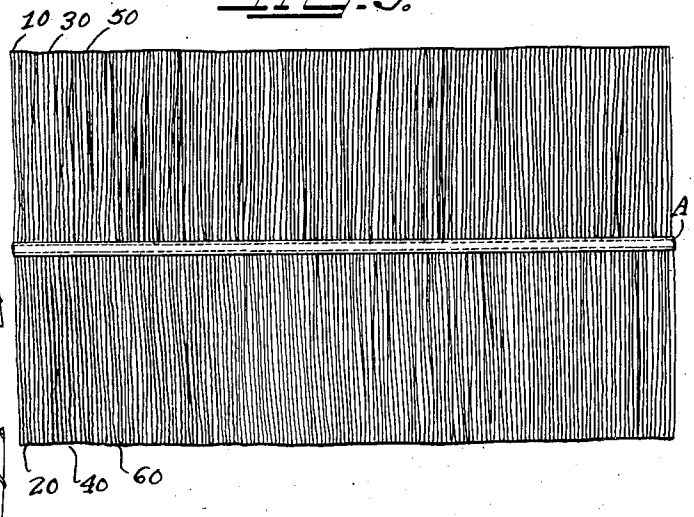


FIG. 3.



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Fig. 4.

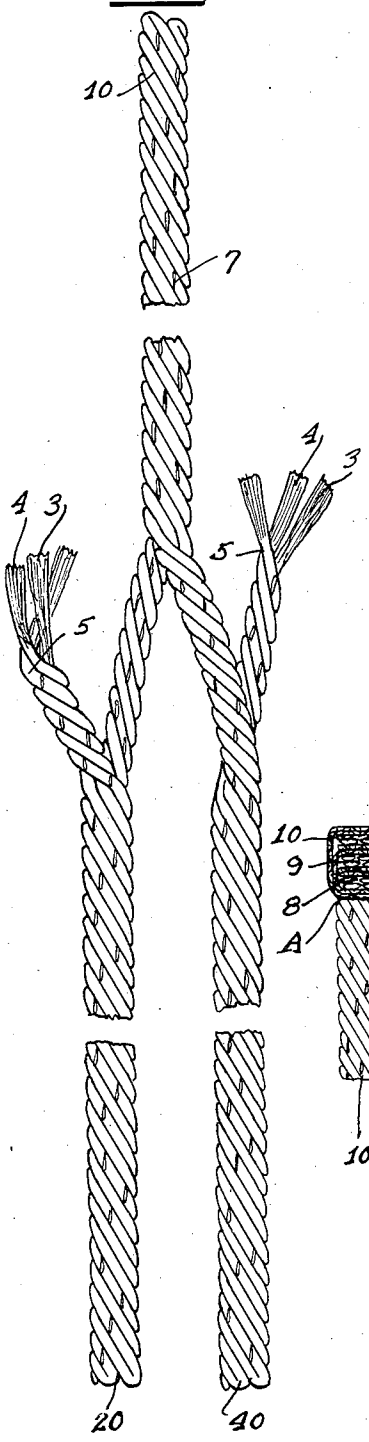


Fig. 5.

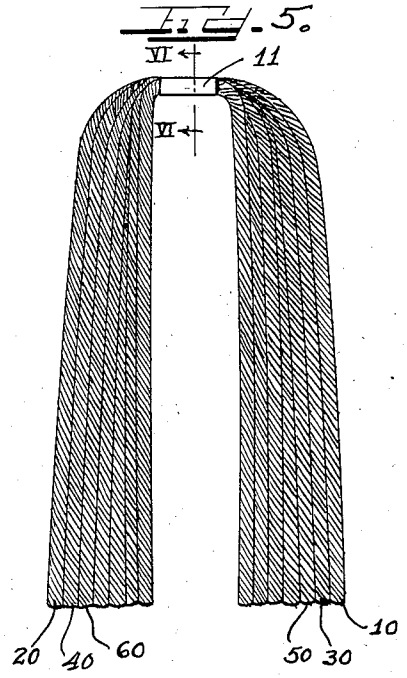
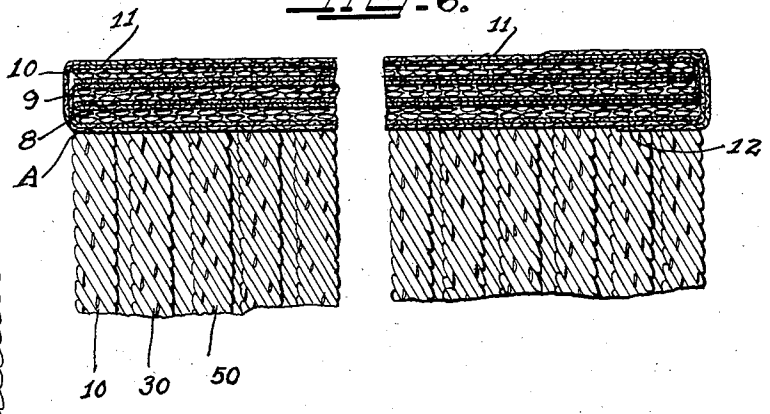


Fig. 6.



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UNITED STATES PATENT OFFICE

2,035,130

MOP AND METHOD OF MAKING THE SAME

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Application December 17, 1934, Serial No. 757,745

9 Claims. (Cl. 300—21)

The present invention relates to mops and method of making the same.

It is a well recognized fact that mops are constantly subjected to wringings and friction in use, and consequently are comparatively short-lived, because of the frittering away of the mop material.

Ordinarily, the mop heads or mop swabs are constructed of a plurality of separate lengths of yarn or cords of material of vegetable or animal origin, such, for example, cotton or wool, formed into slubs or roves, and in some cases with the strands of slubs or roves corded. The strands or cords are gathered together in closely grouped relation, by means of strips of tape or the like, fastened substantially midway between the ends of the strands or cords. Usually such mop heads or mop swabs are made with ends of the strands or cords free so that the severe use to which such heads or swabs is subjected results in rapid frittering away of the material.

It is an object of the present invention to provide mop heads or mop swabs having no free ended or cut end strands or cords.

Another object of the present invention is to provide mop heads or mop swabs having closed loop ended cords or strands.

A further object of the present invention is to provide a mop head consisting of grouped cords having closed looped ends.

A still further object of the present invention is to provide a mop head having closed loop ended cords or strands and provided with means for limiting the endwise stretch of such cords or strands.

Another and yet further object of the present invention is to provide a mop head which may be manufactured for sale at reasonable price, and which possesses enhanced wearing qualities.

Another and yet further object of the present invention is to provide a mop head fabric which may be manufactured in long lengths and from which individual mop heads may be severed to provide heads of any desired weight.

The invention further contemplates, as an object, a mop head having a plurality of reversely laid looped strands of yarns or rovings twisted to form a plurality of cords, which are secured together centrally of the loops, in closely grouped relation.

A still further object of the present invention is to provide a mop head wherein the fraying or frittering away of the cord or strand material incidental to constant wringing and scrubbing is prevented.

The invention has for an additional object, a method of making mop heads having loop ended cords.

The above, other and further objects of the present invention will be apparent from the following description, accompanying drawings, and appended claims.

The accompanying drawings illustrate embodiments of the present invention, and the views thereof are as follows:

Figure 1 is a fragmental plan view of several cords and also showing reversely laid, untwisted strands for forming other cords in accordance with the principles of the present invention.

Figure 2 is a plan view of an end portion of a cord showing the looped ends of the strands constituting such cord, as separated to more clearly illustrate such ends.

Figure 3 is a plan view of a mop head fabric constructed in accordance with the principles of the present invention.

Figure 4 is a fragmental plan view of several cords of the fabric of the present invention and illustrating one method of making such cords, and is illustrated, for clearness, with the binding or tape removed.

Figure 5 is an end elevational view of a mop head or mop swab as constructed in accordance with the principles of the present invention.

Figure 6 is a fragmental enlarged sectional view, taken transversely through a mop head or swab constructed in accordance with the principles of the present invention, with the section taken lengthwise of the binding material and showing a three-ply mop head.

The drawings will now be explained.

The mop head fabric, of the present invention, is formed by a plurality of reversely laid groups of associated strands formed into cords and with the loops of said strands constituting the margins of the fabric structure and the ends of the cords. The strands are fastened together, substantially midway of the length thereof, by tape which may be suitably stitched or otherwise fastened to the strands or cords. The fabric may be made in any convenient lengths, and then individual mop heads or mop swabs may be cut from such fabric to provide mop heads of any desired weight or length.

The mop head fabric, of the present invention, is formed by continuous long lengths of twisted associated strands arranged symmetrically with respect to a median line. Three such strands are herein shown, but it is to be understood that more strands may be utilized if desired.

The twisted strands are constrained along the median line of the loops, which constraint may be temporary, while the initially looped strands are being twisted, whereupon a permanent binding or tape is then stitched to the twisted loops, or may be permanent, from the beginning, by stitching binding or tape to the strands between the ends of the loops.

After the looped strands have been constrained along the median line, in either temporary or permanent manner, the loops are twisted by any suitable means, into cords having closed looped ends defining the margins of the fabric. The means illustrated herein for twisting the loops, consists of a pin or hook **6** adapted to engage a loop of the strands, and then be spun or suitably twisted to twist the loops into cords.

Arranging the strands as loops results in the formation of cords, along each side of the median line, wherein a cord on one side of the line is twisted from strands forming portions or continuations of two adjacent cords on the opposite side of the line.

Referring to Figure 1, a completed cord **10** is shown on one side of the tape A, and two completed cords **20** and **40** on the opposite side of the tape. Adjacent the cord **10** are untwisted looped strands **3**, **4** and **5**, occupying the position B. These strands are continued across the median line and looped in a similar manner on the opposite side of the median line, adjacent the cord **40**, in position C. The strands are thus continued again across the median line in the opposite direction to form loops in the position D. There is thus provided a series of reversely laid loops of such extent as to furnish a fabric of desired length, the formation of the reversely laid loops being continued as far as desired, in extent.

The looped strands are constrained or bound together along the median line, and the several loops on the opposite sides of the median line twisted to form cords.

The reversely looped arrangement of the associated strands, results in the formation of a cord on one side of the median line by strands which are continuations of the strands of two adjacent cords on the other side of the median line and substantially opposite from said one cord. That is to say, the looped strands in the position B, when twisted into a cord **30** constitute continuations of the strands forming the cord **40** and the strands in the position C. The strands in the position C when twisted into a cord constitute a cord **60**. The cord **60**, formed by twisting the strands in position C, include strands from position B, and strands from the position D. The strands in the position D when twisted form a cord **50**. This manner of arrangement of the strands, in reversely laid relationship with respect to a median line, may be carried on repeatedly until a fabric of desired length is attained.

The cord **20** is twisted from a loop which includes the free end of the strand, which free end is secured by the tape A. A portion of the strand constituting the loop **20** is continued across the median line and forms the cord **10**. The cord **40** is twisted from strands, some of which are continuations of the strands in the cord **10** and some of which are continuations of the strands in the position B, cord **30**.

The method of manufacturing the mop heads or swabs of the present invention comprises, generally, arranging a plurality of strands of yarn or rovings in loops, reversely laid or disposed with respect to a median line, and symmetrical with respect to the median line, and then twisting the several loops to form cords.

The method also contemplates the formation of a plurality of strands of material into a plurality of looped strands extending in opposite directions from a median line, twisting the loops so formed into cords, and stitching or otherwise securing tape, or the like, along such median line.

In order to prevent undue endwise stretch of the several cords, the same may be reinforced in any suitable manner. One manner of preventing substantial endwise stretch of the cords, is illustrated herein, and as illustrated, contemplates spirally winding one of the strands, such, for example, as the strand **5** with a reinforcement which is comparatively less extensible than the yarn or rovings. Such reinforcement might, for instance, be twine **7**. When the spirally wound strand **5** is twisted into cords, the reinforcing element **7** thus becomes interlaced in the completed cords, as may be readily observed in Figures 1, 2 and 4 of the drawings.

When the cords of such a mop head or swab are subjected to endwise stretch, by wringing, the presence of the reinforcing element **7** will prevent undue stretch to a point where frittering away of the cord material is prevented. In this manner, the mop head is given long life.

A mop head is made from the fabric of the present invention by cutting a piece from the long fabric of Figure 3, of appropriate weight or length, and then lapping this piece on itself to provide a multi-ply mop head.

Figure 6 shows a three ply mop head so made.

The head of Figure 6 comprises three plies **8**, **9** and **10**, formed by cutting a piece from the fabric and lapping the piece on itself. The piece of fabric includes the binding A before described, for retaining the cords in grouped relationship, as heretofore described.

The several plies are retained in lapped position by further binding or tape **11** which is applied about the lapped plies of the fabric and having one end **12** secured, as by stitching to prevent opening. Preferably the binding **11** is stitched through the several plies of the head.

A mop head may, of course, be fashioned of more or fewer number of plies than three as illustrated in Figure 6.

It will be observed that the present invention contemplates the formation of a mop head by the utilization of long lengths of associated strands of material which are reversely laid with respect to a medion line to form loops, and with the loops twisted to form twisted cords with closed looped ends. The construction is such that, except as to certain of the cords at the ends of the fabric, the cords on one side of the median line or tape are fashioned from continuations of cords on the opposite side of the median line or tape.

The length of the associated strands of material utilized may be as long as desired, to provide a mop fabric from which pieces may be cut to form individual mop heads. The invention also contemplates the manufacture of mop head pieces, of appropriate length, for individual mop heads, as well as the manufacture of a long fabric from which the individual heads may be cut.

It will be observed that the present invention provides a mop head having cords with closed looped ends as the extremities of the mopping fabric, so that the cords have no free ends which may readily disintegrate and fritter away from wringing or use.

One method of making the mop fabric of the

present invention comprises the provision of a swinging arm arranged to carry the associated strands back and forth across a median line, thus forming the looped strands on each side of the median line. As the arm is swung toward its limit of movement in either direction, a rearward movement is imparted to it to bring the strands at the median line closely together. The tape is stitched to the strands, along the median line, as the loops are being fashioned. While the arm is swinging away from the median line, to form a loop on that side of the line, the loop previously formed on the other side of the line is being twisted into a closed loop cord. That is to say, while, on one side of the median line, the strands are being formed into a loop, the looped strands on the opposite side of the median line, just formed, are being twisted into cords. This cycle of movement is carried out until a fabric of desired length is made.

It will be understood that mop fabric made in accordance with my invention may be variously made up into various constructions and types of mop heads adapted for specific uses, such as dust mops, oil mops, wax mops and the like.

I am aware that many changes may be made and numerous details of construction may be varied through a wide range without departing from the principles of this invention, and I therefore, do not purpose limiting the patent granted hereon otherwise than necessitated by the prior art.

The invention is claimed as follows:

1. The method of making a mop head having closed loop ended cords, which comprises the steps of arranging a plurality of strands of yarn or rovings in loops reversely disposed with respect to a median line and with the loops substantially symmetrical with respect to said median line, securing said looped strands along the median line, and twisting the several stranded loops on the opposite sides of the median line to form cords.

2. A method of making a mop head having loop ended cords, which comprises the steps of looping a plurality of strands of yarn or rovings symmetrically with respect to a median line, twisting the several looped strands to form cords, and securing said cords along the median line.

3. A method of making a mop head which comprises the formation of a plurality of strands into a series of loops, stitching a binding to the series of looped strands at points substantially midway from the looped ends thereof, and twisting the looped strands to form a series of cords all attached to the binding.

4. A method of making a mop head which comprises spirally winding a mop strand with material less stretchable than the strand, forming a plurality of strands of material including said one strand into a plurality of loops extending in opposite directions from a median line, constraining said loops at points remote from the looped ends thereof, then twisting said loops between the points of constraint and the looped ends to form closed loop ended cords.

5. The method of making a mop head which comprises reversely looping a plurality of associated strands, securing together the intermediate portions of said looped strands and twisting said looped portions into cords, again reversely looping a continuation of said strands from the last formed loop, securing together the intermediate portions and twisting the loops thus formed into cords and repeating the steps to form a continuous mop head strip.

6. A mop head comprising a continuous length of grouped or associated strands, successive lengths of said strands being reversely looped and twisted to form cords extending in opposite directions from a median line, a cord on one side of said median line consisting of continuations of two adjacent cords on the opposite sides of said median line, and binding material joining said cords along said median line.

7. A mop head comprising a plurality of grouped continuous strands reversely looped with respect to a median line and arranged with the strands in a loop on one side of the median line as continuations of the strands of a two adjacent loops on the opposite side of the median line, said loops being twisted forming loop ended cords, and binding material joining said cords along the median line.

8. A mop head construction including a plurality of closed loops, every loop being twisted together and forming a cord.

9. A mop head construction comprising a plurality of lengths of strand material looped to form closed ends, said looped strands twisted together in groups of three to form twisted cords having closed ends.

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