Dec. 31, 1963 T. V. MOSS 3,115,658

MOP CONSTRUCTION

Filed Nov. 10, 1960

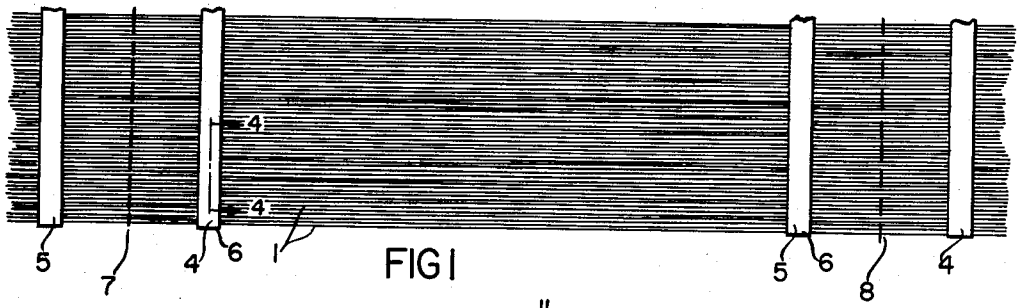


FIG 1

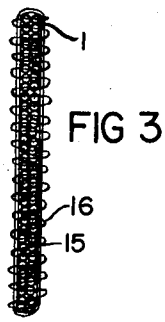


FIG 3

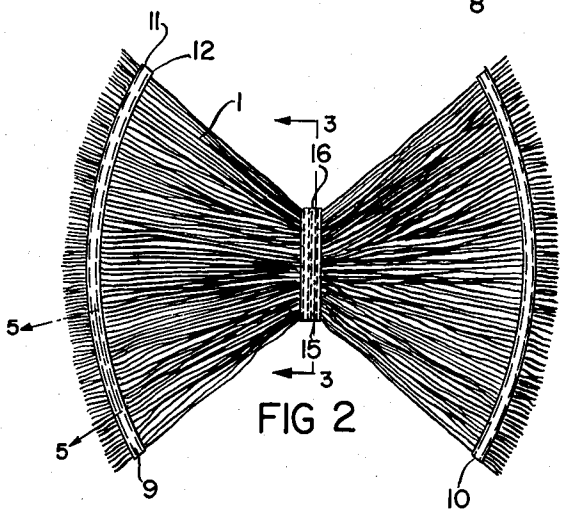


FIG 2

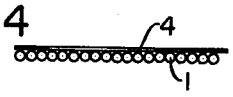


FIG 4

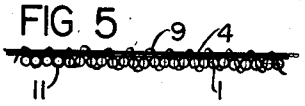


FIG 5

FIG 6

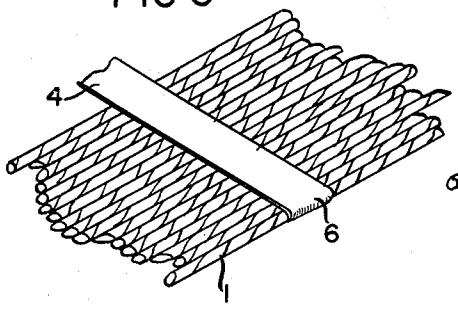
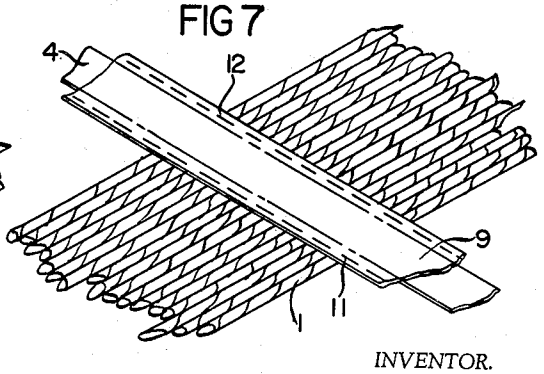


FIG 7



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MOP CONSTRUCTION

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11 Claims. (Cl. 15—229)

This invention relates, generally, as indicated, to a mop construction and more particularly to a particular mop construction and method of producing the same.

Reference may be had to my prior copending application, Serial No. 812,624, filed May 12, 1959, for mop swab, now Patent No. 3,011,198, the present application constituting a continuation-in-part of said copending application. In such copending application, there is disclosed a mop manufacture in which yarns are secured in a generally parallel relationship to provide a uniform mopping pattern with wide floor coverage to decrease operating labor costs. Moreover, such mop manufacture is adapted for continuous or semi-continuous operation to reduce the cost of the finished product while at the same time maintaining a great deal of uniformity that is ordinarily achieved only by hand methods. In such mop manufacture, the adjacent end portions of the yarns are interconnected prior to bunching together and securing such yarns at the mid-point of the mop. At a first work station, a pair of transverse fabric or plastic bands are disclosed as being applied to the parallel strands with the bands ordinarily being about 4 inches apart and secured to the yarns. A conventional manner of securing these bands to the parallel single layer of yarns is through a sewing operation. However, it will readily be appreciated that the handling of a wide swath of single layer unconnected parallel yarns such that a band may be sewn thereto on a sewing machine is extremely difficult. It has been attempted to apply an adhesive directly to such tapes to enable the mop strands to be secured together prior to the requisite sewing operation. However, the gummed adhesive tends to clog the sewing machine needle and such process has therefore proven difficult.

It is accordingly a principal object of the present invention to provide a mop construction and method of manufacture which will enable the parallel strands in a single layer readily to be secured together to be made manageable so that they may subsequently be sewn together.

It is another object to provide such method of mop manufacture which will still have all of the advantages of a sewn tape construction while yet using an adhesive initially for securing such strands together.

It is still another object to provide a mop construction having a uniform mopping pattern with extremely wide floor coverage decreasing labor costs.

Other objects and advantages of the present invention will become apparent as the following description proceeds.

To the accomplishment of the foregoing and related ends, the invention, then, comprises the features hereinafter fully described and particularly pointed out in the claims, the following description and the annexed drawings setting forth in detail a certain illustrative embodiment of the invention, this being indicative, however, of but one of the various ways in which the principles of the invention may be employed.

In said annexed drawing:

FIG. 1 is a semi-diagrammatic fragmentary plan view broken away at the top, illustrating certain preliminary steps in the manufacture of the present unique mop;

FIG. 2 shows such mop on a somewhat reduced scale after the yarns have been severed and gathered together and secured at their mid-points, both ends of the mop swab being spread to show the coverage obtained therewith;

FIG. 3 is a semi-diagrammatic transverse section taken substantially on the line 3—3 of FIG. 2;

FIG. 4 is a diagrammatic transverse section on an enlarged scale taken substantially on the line 4—4 of FIG. 1 through one of the bands serving to join the parallel yarns adjacent the respective ends of the latter prior to the final tape sewing operation;

FIG. 5 is a transverse section similar to FIG. 4 taken on the line 5—5 of FIG. 2 illustrating a fabric tape applied over the band shown in FIG. 4;

FIG. 6 is a fragmentary perspective view illustrating the band of FIG. 4 applied to the yarn; and

FIG. 7 is a view similar to FIG. 6 illustrating the fabric tape and manner of sewing the same over the band of FIG. 6.

Now referring more particularly to the drawing and especially to FIG. 1 thereof, a large number, e.g., 550 or more, of yarns 1 may be withdrawn in parallel relationship from banks of yarn cones or the like thereby forming a wide, flat assembly of parallel yarns lying in a single plane.

At a first work station, a pair of adhesive tape bands 4, 5 may be applied to the top side of such assembly transversely thereof, such adhesive tape bands of each pair being ordinarily approximately four inches apart and secured to one side of the yarns. The adhesive tape employed may be any conventional paper adhesive tape, masking tape of a conventional variety having been found especially effective.

The paper adhesive tapes 4 and 5 will join the array of yarns 1 together sufficiently to make such array manageable for a subsequent sewing operation. As shown more particularly in FIG. 6, the paper adhesive tape bands 4 and 5 may be lapped over the edge strand to form a neat package for handling purposes as indicated at 6.

The assembly thus joined by the paper adhesive tapes 4 and 5 travels to the right as shown in FIG. 1 to a second work station where the yarns are severed as by means of a rotary knife midway between the aforesaid pairs of bands 4 and 5 as shown by the dotted lines 7 and 8. It will, of course, be understood that such severing may be effected without halting the traveling of the assembly in the production line. When the yarns are severed at both the dotted line positions 7 and 8, it will be seen that a mop swab will have been produced comprising a flat single layer of parallel yarns joined together at points slightly spaced from their respective ends by the paper adhesive tape bands 4 and 5. Such paper adhesive tape bands may preferably be ¼ inch wide and serve to make the mop swab intermediate its ends manageable so that the array of yarns 1 may now be secured together in the proper flat form.

Now that the array of yarns has been made manageable, a sewing machine operator will remove the swab from the line and sew a woven fabric tape over the tops of the paper adhesive tapes 4 and 5. Thus, the woven fabric tapes 9 and 10 will be secured on one side of the array of yarns only directly over the tops of the paper adhesive tapes 4 and 5, such woven fabric tapes being substantially wider than the adhesive paper tapes so that they may be sewn to the array of yarns 1 laterally of such paper adhesive tapes as shown at 11 and 12. The stitches 11 and 12 will then preferably pass directly through the woven fabric tape into the array of yarns and not through the gummed paper adhesive tape 4, which adhesive may otherwise clog or jam the sewing needle. Reinforcing stitching may be provided at the ends of the woven fabric tapes 9 and 10, but normally such tapes will not be folded around the array of yarns as the paper tapes are as shown at 6. The woven fabric tapes when utilized with a quarter inch wide paper tape may preferably be ⅝ inch wide to allow sufficient lateral clearance so that the stitches 11 and 12 may secure the woven

fabric tape directly to the array of yarn. The thread for the stitching may preferably be of nylon or other suitable water resistant type which will hold and firmly secure the strands in their parallel single layer condition. A woven fabric tape is preferred because such tapes have no cut edges which will unravel. It will, of course, be understood that the woven fabric tape may optionally be secured over such paper adhesive tapes prior to the severing of the swab as shown at 7 and 8.

The new mop swab produced as above may now be folded or bunched with the yarns still lying parallel to one another and such yarns joined at their mid-point by means of a band 15 also of a woven textile fabric preferably stitched entirely through the bundle of yarns by means of parallel rows of stitching 16. Here the woven fabric band 15 will preferably completely surround the bunched layers of yarn. It will thus be seen that while the yarns 1 are bunched together at the center of the swab in a relatively thick layer, they may still be fanned out into single-thickness wide layers as shown at the right and left of such band 15 in FIG. 2 and thereby rendered particularly effective to cover large floor areas and to pick up a maximum of water.

While various cords and yarns well-known in the art may be employed in accordance with this invention, such as bleached hemp yarn or cord, it has been found that a mixture of cotton and rayon cord, and also cotton cord alone in a relatively open and therefore especially water absorptive twist is particularly desirable if reinforced with nylon or the like to provide the added strength and abrasion resistance. A cord or yarn comprising approximately ½ cotton and ½ rayon fibers, by weight, is especially satisfactory. While the very soft or open twist which is preferred affords much better water pick-up, the woven fabric tapes 9 and 10 secured adjacent to respective ends of the swab will prevent unraveling.

While the tapes 4 and 5 have been illustrated and described as of paper with a pressure sensitive or other adhesive coating, it will be understood that plastic or paper tapes having thermosetting adhesives or silicon adhesives likewise may be employed. Thus, a plastic tape may be bonded to the yarns 1 by means of an appropriate adhesive or solvent, or alternatively, when a thermoplastic tape is employed, by application of heat.

The application of the tapes 4 and 5 to the swab of yarns 1 may be accomplished either manually or automatically through appropriate dispensing mechanisms. Once such tapes are secured in place and the swab severed, the composite structure is readily managed and may have the woven fabric tapes 9 and 10 quickly and readily manually sewn thereto. The operators of sewing machines can then quickly secure both tapes 9 and 10 directly over the centers of the tapes 4 and 5, using such tapes as guides, with the stitching 11 and 12 passing beyond the edges of such tapes without the needle of the sewing machines puncturing or otherwise coming in contact with the adhesive coating on the tapes 4 and 5.

Other modes of applying the principles of the invention may be employed, change being made as regards the details described provided the features stated in any of the following claims or the equivalent of such be employed.

I, therefore, particularly point out and distinctly claim as my invention:

1. The method of manufacturing a mop swab which comprises withdrawing a large number of mop yarns from a supply thereof, forming a single layer of such parrallel yarns, preliminarily joining such yarns together transversely of such layer in two closely spaced regions, advancing the yarn assembly, similarly preliminarily joining such yarns in two closely spaced regions at points relatively far removed from such first named regions of preliminary joining, severing such yarns intermediate each such closely spaced regions of preliminary joining to produce a flat mop swab of parallel yarns joined together closely adjacent their respective ends, sewing a strip of woven fabric tape through such regions of joining, and bunching and joining together such yarns of such swab in the region of their mid-points with their respective end portions left free to be fanned out in a single flat layer.

2. The method of claim 1 wherein the means employed preliminarily to join such yarns in such closely spaced regions is paper adhesive tape.

3. The method of claim 1 wherein the means employed preliminarily to join such yarns in such closely spaced regions is paper adhesive tape secured to one side only of said swab.

4. The method of manufacturing a mop swab which comprises withdrawing a large number of mop yarns from a supply thereof, forming a single layer of such parallel yarns, joining such yarns together transversely of such layer in two closely spaced regions, advancing the yarn assembly, similarly joining such yarns in two closely spaced regions at points relatively far removed from such first named regions of joining, severing such yarns intermediate each such closely spaced regions of joining to produce a flap mop swab of parallel yarns joined together closely adjacent their respective ends, sewing a strip of woven fabric tape through such regions of joining, and bunching and joining together such yarns of such swab in the region of their mid-points with their respective end portions left free to be fanned out in a single flat layer, such means employed to join such yarns in such closely spaced regions being paper adhesive tape, such woven fabric tape being secured directly over said paper adhesive tape with such stitching passing on each side of such paper adhesive tape without such stitching passing through the adhesive portion of such paper adhesive tape.

5. The method of forming a mop swab which comprises disposing a large number of mop cords in parallel in a single flat layer, first preliminarily interconnecting the respective end portions of such cords comprising such layer to facilitate the handling thereof, thereafter securing such end portions together by a woven fabric tape sewn thereto, and thereafter bunching such cords together in their longitudinal central region with such respective end portions being left free to fan out in a single layer.

6. The method of manufacture of mop swab which comprises the steps of forming a continuous layer of parallel mop cords, advancing such layer in the direction such cords extend, interconnecting the cords of such layer transversely of the latter and transversely of the direction of travel thereof at a pair of closely spaced points longitudinally of such cords, severing such cords intermediate such pair of closely spaced interconnecting regions, again interconnecting such parallel cords at such interconnected regions by sewing a woven fabric tape directly thereto, again interconnecting such parallel cords at two transversely closely spaced regions located much further from such previously mentioned two closely spaced regions than the distance between the closely spaced regions, again interconnecting such parallel cords by sewing a woven fabric tape thereto, severing such cords intermediate such further two closely spaced regions, the process being repeated indefinitely to produce mop swabs of parallel cords interconnected adjacent their respective ends, and thereafter bunching and securing the cords of such swabs together in their longitudinal central region.

7. The method of manufacturing a mop swab which comprises disposing a large number of mop cords in parallel in a single flat layer, first interconnecting the respective end portions of such cords comprising such layer by a thin paper adhesive tape, sewing a wider woven fabric tape directly over such paper adhesive tape with the stitching passing laterally of such paper adhesive tape directly through such mop cords, and thereafter bunching such cords together in their longitudinal

central region with such respective end portions being left free to fan out in a single layer.

8. A new mop swap comprising a plurality of parallel twisted mop cords, paper adhesive tapes joining together said cords in a single flat layer adjacent the respective ends of the latter, and woven fabric tapes secured directly to said mop cords centrally over said paper adhesive tapes, and means securing the central portion of such cords in bunched together relationship.

9. A new mop swab comprising a plurality of parallel twisted mop cords, thin paper adhesive tapes joining together said cords in a single flat layer adjacent the respective ends of the latter, and wider woven fabric tapes secured to said mop cords directly over said paper adhesive tapes, stitching through said woven fabric tapes on either side of said paper adhesive tapes securing said woven fabric tapes directly to said mop cords.

10. In the manufacture of a mop swab, preliminarily joining together an array of parallel water absorbent strands by adhesively bonding a first band thereto transversely of such array, thereby facilitating handling of

such array, then applying another strong band to such array adjacent such first band and parallel thereto, and stitching such strong band to such array in a region spaced from such adhesive.

11. The method of claim 10, wherein such strong band overlaps said first band and substantially conceals the latter.

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