May 3, 1949. S. ESKOW 2,468,870

MEANS FOR MANUFACTURE OF RUG BRAIDS

Filed July 19, 1946

2 Sheets-Sheet 1

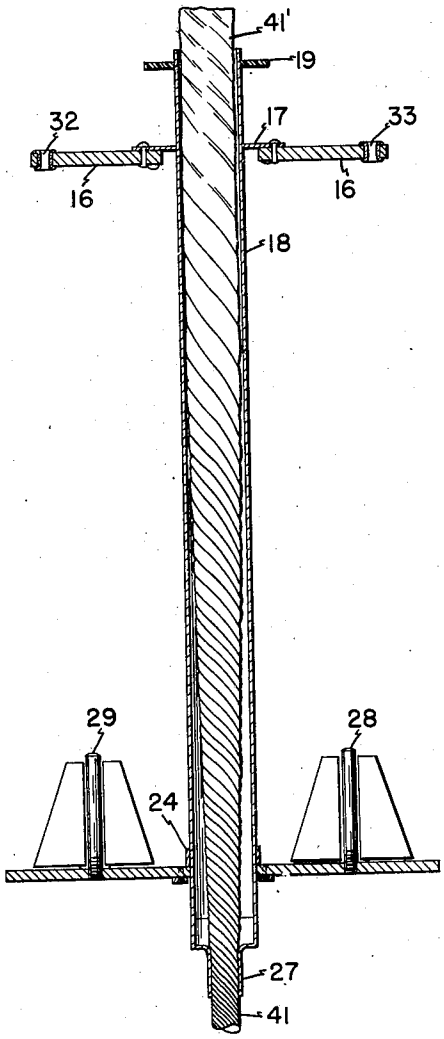


FIG. 2

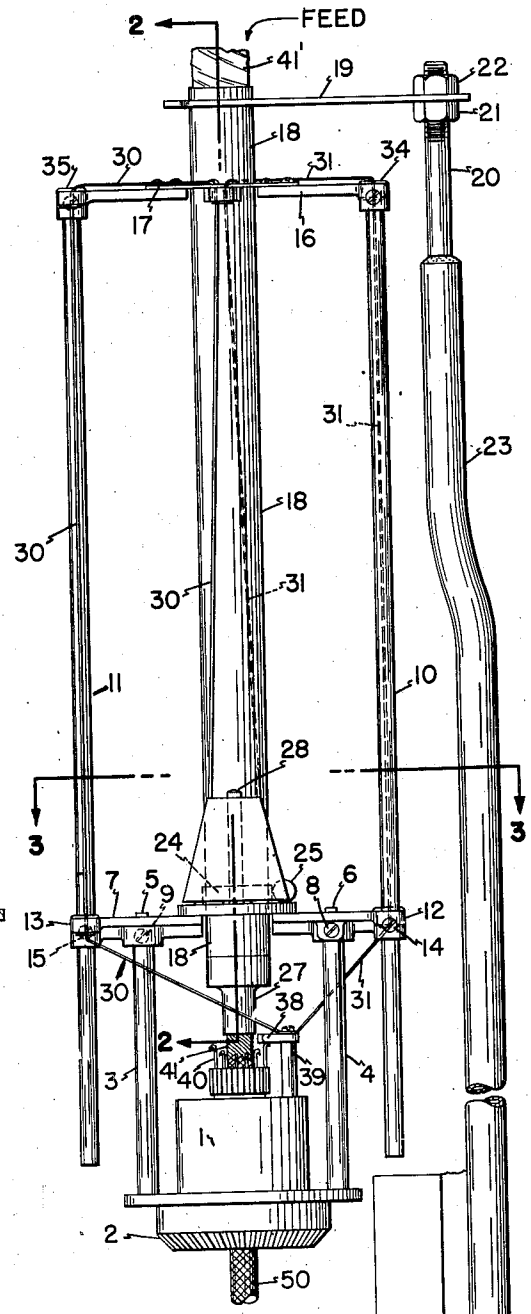


FIG. 1

INVENTOR.
SEYMOUR ESKOW
BY Ezekiel Wolf
his ATTORNEY

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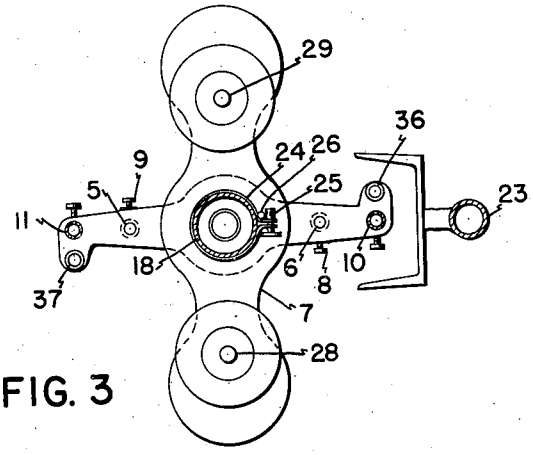


FIG. 3

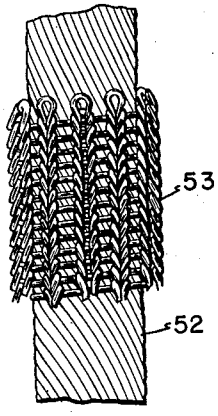


FIG. 5

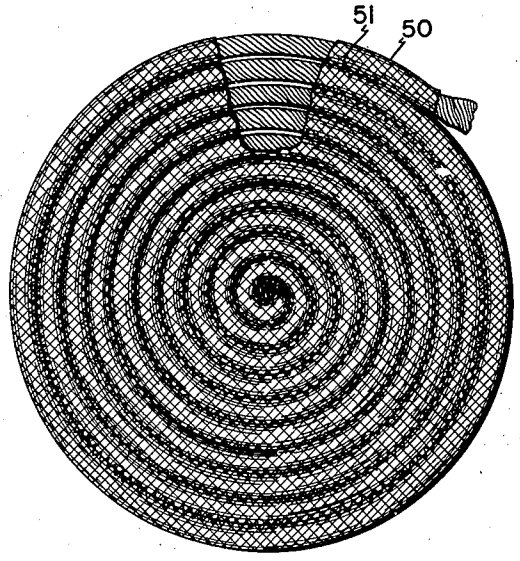


FIG. 4

INVENTOR.
SEYMOUR ESKOW
BY
ATTORNEY

Patented May 3, 1949

2,468,870

UNITED STATES PATENT OFFICE

2,468,870

MEANS FOR MANUFACTURE OF RUG BRAIDS

Seymour Eskow, Taunton, Mass.

Application July 19, 1946, Serial No. 684,699

5 Claims. (Cl. 66—9)

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The present invention relates to a method and means of manufacture of a cord having a filler which is commonly used in braided or knitted tubular covered core rugs. The invention more particularly relates to the manufacture of a so-called cable or cord in which a core filler is covered with a sleeve. The present invention is particularly adaptable for use with a soft filler of low tensile strength, such as scrap wool or fibre, cotton, wool, or other waste. Fillers of this type used in the prior art are comparatively weak and break readily as they are fed into the machine, so that machines must be constantly stopped to replace or insert the fillers. This not only hampers efficient manufacturing operations, but also is responsible for an inferior product, since the broken filler is not as strong or as uniform as a continuous filler, and since the filler itself is not strong, the cord is loose and yielding and has little restoring force. As a result, the rug made from the cord having a soft filler flattens out, becomes hard, takes up the dust and dirt and wears through quickly. By concentrating the material comprising the filler as is done in the present invention, it is possible to give the rug resilience and further to use a knitted cover, since the restoring force is inherent in the filler and tends to restore the roundness of the cord even with a knitted cover.

A further advantage in the present invention is that a loose filler may be used and fed in the usual manner to the machine of the present invention whereupon the filler is twisted and further formed and reduced in size to take a knitted cover, which the filler fills out after it is away from the effect of the twisting tube. By twisting the filler in the manufacture of the cord, the filler becomes more uniform, resilient, and stronger, and thereby produces an improved cord for use in rug construction.

Other and further advantages derived from my invention will be more readily understood from the specifications annexed hereto, when taken in connection with the drawings illustrating an embodiment of my invention, in which Fig. 1 is an elevational view of the invention; Fig. 2 is a section taken on the line 2—2 of Fig. 1; Fig. 3 is a sectional view of line 3—3 of Fig. 1. Fig. 4 shows a rug made of a cord made in accordance with

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the present invention and Fig. 5 is an enlarged detailed view of a small portion of a cord.

In the arrangement indicated in the figures, the details of the knitting machine are not shown, since this is a standard machine commonly known in the art, such, for instance, as the machine shown in the patent of W. Larkin, No. 2,032,993, or in the patent of Meiwald, No. 1,814,324. In the construction shown in the present application, any well known tubular knitting machine may be used, that, for instance, as illustrated by 1 (Fig. 1) wherein the yarn spools and frame for feeding the yarn to the needles is rotated by some driving means about its axis. In the Larkin patent mentioned, the needles are mounted in grooves of a stationary needle cylinder and are moved parallel to the axis of the cylinder by a cam cylinder which is fixedly connected to a hub carrying the arms on which the yarn spools are mounted. A similar construction can be used here. In the drawings (Fig. 1) the drive, which is not shown, drives a bevelled gear 2, which rotates the head 1 and with it the projecting posts 3 and 4 mounted on the head. These projecting posts are provided with reduced heads 5 and 6, fitting into perforations in the plate 7, which is held to the posts by means of set screws 8 and 9. The plate 7 supports a number of upright rods 10 and 11, which are retained in sleeves or collars, 12 and 13 respectively, formed in the plate 7, through the sides of which are threaded set screws 14 and 15 for adjusting and holding the rods 10 and 11. The bars 10 and 11 support at their upper ends a plate 16 which is provided with an annular cover 17, through which the hollow tube 18 extends. The hollow tube 18 projects upward beyond the plate 16 and rests by means of a flange 19' for free rotation by means of the bracket 19, which is adjustably held by the threaded bar 20 between clamping nuts 21 and 22. The bracket 19 has a hole providing a sliding fit through which the tube 18 extends. The threaded bar 20 projects from a supporting bracket 23, which is supported in any desired fashion, as on the wall or by the machine. The lower end of the shaft of the tube 18 has fitted about it a clamping band 24, held to the tube by means of the clamping bolt 25 passing through outwardly extending arms of the band 24, by means of which the band is drawn tightly

about the tube 18. The tube 18 may be held in a raised position by the bracket 19 or it may be lowered to permit it to be locked to the plate 7 by means of a projecting stud 26, projecting from the plate 7 and engaging the outwardly extending arm of the clamping band 24. The lower end of the tube 18 projects through the bottom of the plate 7 and is formed with a reduced neck portion 27 which may be integral with the tube 18 or be removably attached to it, so that various sized neck portions may be used.

Mounted on the plate 7 are two spindles 28 and 29, on which the spools of yarn or thread are retained, for knitting the cover around the filler. These yarns, as indicated in Fig. 1 by the threads 30 and 31, pass upward from the spools through the eyelets 32 and 33 over the top of the plate 16 and downward through the eyelets 34 and 35, to and through the eyelets 36 and 37 (see Fig. 3) to eyelet holder 38 positioned on the post 39 projecting from the knitting head 1. From this eyelet head, the yarn goes to the needles 40 positioned in a circle about the filler 41', which in operation normally comes out at the neck 27.

In the operation of the device, the frame carrying the spool and other mechanism, which will be called the knitting head 1 is rotated about the yarn or core being extruded from the tube 18, knitting in its rotation a cover about the yarn or core. This rotation of the knitting head carries with it, by virtue of the connecting bars 3 and 4, the frame assembly 7 and the upright rods 10 and 11 and the plate 16. When the tube 18 locks with the plate 7 by virtue of the clamping collar 24 and stud 26, the tube 18 also rotates with the head as a single unit. The filler which leaves the collar 27 has a smaller diameter, at 41, than the filler as it enters the tube 18 at 41'. The larger diameter filler 41' is fed from a suitable holder positioned at some remote point, which may be two or more feet from the entrance into the tube 18. The filler enters the tube 18 in a relatively untwisted state, but due to the high rotational velocity of the knitting head and frame which rotates the tube 18, the core becomes twisted as indicated in Fig. 2, gradually tapering to the smaller diameter at the exit collar or sleeve 27. The filler 41' is approximately the size of the internal diameter of the tube 18 as it enters the tube, so that there is some tendency for the yarn to be rotated at the top of the tube, but for the most part the twist is provided by the collar 27, so that there is a somewhat increased twisting effect from the top of the tube to the bottom.

The sleeve or cover is knitted about the yarn so that while the filler is thoroughly twisted and thereby compressed, the knitted cover provides extensibility so that the tube as finished is readily filled out by the filler. This makes the rug comparatively resilient yet soft to tread upon, but insures retention of its original shape and thickness. A rug constructed in accordance with the present invention is indicated in Fig. 4, where the cord 50 is arranged in a helical fashion with stitching 51 on both faces of the cord forming a solid rug.

The cord 50 is of the type produced by the method and apparatus previously described and its more detailed form is indicated in Fig. 5, in which is shown the twisted filler 52 and the knitted cover 53. The form of rug made in accordance with the present invention is, of course, optional as to shape and size. It is, however, essential that the cover be knitted and the filler

be twisted from a soft, loose-formed filler to a tightly compressed twisted filler, about which a knitted sheath is formed to the size of the compressed twisted filler. It will be noted in the drawing that no take up is shown for the core. The take up is effected by the contact of the knitted cover with the core which advances the core through the tube.

It may be noted that twists may be so-called "false twists" or actual twisting. Actual twisting will be produced by the simultaneous rotation of the cover and core and this is, to a great extent, preferred. A false twist which compresses the core to the proper size to fit within the knitted cover may, however, be used particularly where the core remains in place because of its tautness or because of its stitching.

Having now described my invention, I claim:

1. Means for manufacturing a cord having a knitted cover and a soft yarn filler, comprising in combination a circular knitting machine having a knitting mechanism, including a rotating frame, by which the cover is made, said rotating frame including a tube through which the yarn filler is drawn, the tube having its axis concentric with that of the rotating frame and with one end thereof adjacent thereto, said tube having an internal diameter of the size such that the yarn contacts said end and twists therewith as the tube is rotated, and means connecting the tube with the rotating frame for rotating them together.

2. A means as set forth in claim 1 in which the cylindrical tube is detachably mounted from the remainder of the rotatable frame.

3. Means for manufacturing a cord having a knitted cover with a soft yarn filler, comprising an elongated cylindrical tube for receiving the soft yarn filler and twisting the same, having a smaller outlet opening, wherein the twisting takes place, than the inlet thereof, a tubular knitting machine having a rotatable knitting mechanism, means supported by said rotatable knitting mechanism for aligning the axis of the cylindrical tube with that of the rotatable knitting mechanism including a rotatable frame supporting said cylindrical tube from said rotatable knitting mechanism, and means detachably mounting said cylindrical tube from the remainder of said rotatable frame.

4. Means for manufacturing a cord having a knitted cover with a soft yarn filler, comprising a rotatable knitting mechanism having upwardly extending supporting rods, a plate supported thereby and rotatable with the knitting mechanism, a plurality of yarn spools mounted on said supporting plate, an elongated cylindrical tube having a smaller outlet than inlet, means supporting and positioning said tube with its axis coinciding with that of the rotatable knitting mechanism, means detachably mounting said tube from said plate whereby rotation of the knitting mechanism will rotate said tube.

5. Means for manufacturing a cord having a knitted cover with a soft yarn filler, comprising a tubular knitting machine having a rotatable knitting mechanism, a plate supported for rotation with the knitting mechanism having a plurality of spools mounted thereon, a frame fixedly carried by said plate through which the yarn is threaded to said rotatable knitting mechanism from said spools, a cylindrical tube having its axis aligned with that of the rotatable knitting mechanism, said knitting mechanism being positioned symmetrically in said frame, an

external supporting arm having a bracket extending and freely supporting said cylindrical tube, and means detachably mounting said cylindrical tube from said plate whereby the rotatable knitting mechanism and tube will be turned simultaneously.

SEYMOUR ESKOW.

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