March 16, 1954 C. B. WILSON 2,672,109

TUFTING DEVICE

Filed Sept. 28, 1951

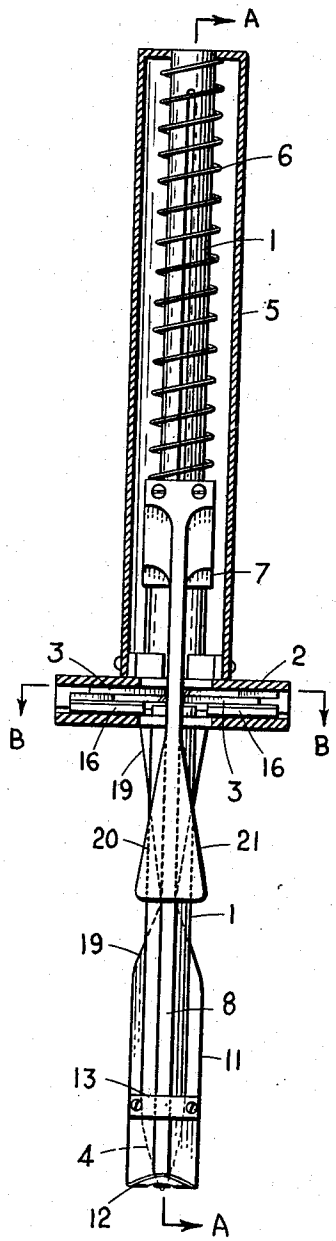


FIG. 1.

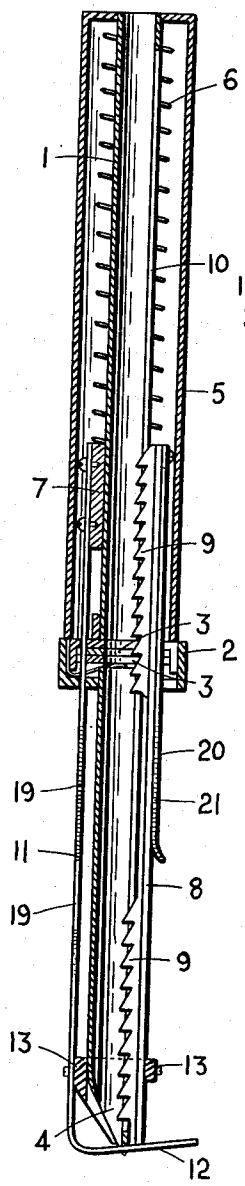


FIG. 2.

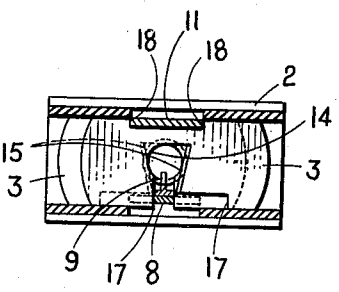


FIG. 3.

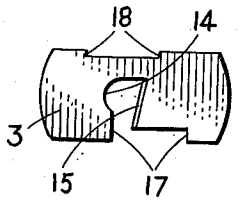


FIG. 4.

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TUFTING DEVICE

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1 Claim. (Cl. 112—80)

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This invention relates to a new or improved means for use in making rugs and the like and has for its chief object to provide a new or improved construction of needle or instrument to that described in my Patent 2,581,894, January 8, 1952.

According to the invention the instrument operates by passing the wool or its equivalent through a backing or base in successive penetrations of a needle or the like to form tufts which are cut automatically within the needle at each stroke from a length of wool or its equivalent fed into the needle.

According to a further feature of the present invention, the needle or instrument is provided with a knife, knives or other cutting implement or implements which is or are actuated automatically to cut the wool at each stroke of the needle or instrument either into or out of the backing or base, the knife, knives or other cutting implements being so positioned in the needle or instrument that they cut the wool into lengths which will provide the necessary U-shaped tufts when the lengths of wool have been passed through the backing or base.

The needle or instrument will be operated in the same manner as described in my said Patent No. 2,581,894, but instead of having to make separate movement or twist of the handle to cut the wool, the cutting is effected automatically once during each complete stroke or cycle of the needle or instrument through the backing or base.

A constructional embodiment is shown by way of example in the accompanying drawings, wherein:

Figure 1 is a part sectional elevation of a needle or instrument showing operating and cutting mechanism.

Figure 2 is a sectional elevation on the line A—A of Figure 1.

Figure 3 is a sectional plan view on the line B—B of Figure 1.

Figure 4 is a plan view of a cutter blade.

Referring to the drawings the needle or instrument consists of a tubular member 1 which is divided in two parts at a housing 2 which contains the cutter blades 3. The tubular member 1 receives the wool (not shown) and has its forward end 4 pointed or cut-away at an angle to facilitate its penetration through the backing or base. Associated with one portion of the tubular member 1 is an outer sleeve 5 constituting the handle of the needle or instrument and housing a spring 6 which surrounds the tubular member 1. The lower end of the spring 6 engages a collar

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7 which provides a bearing for the tubular member 1. This collar 7 carries an arm 8 having a number of teeth 9 which project through a longitudinal slot 10 in the tubular member 1 to engage and prevent the wool (not shown) being withdrawn when the needle is retracted ready for the next tuft formation during operation.

The collar 7 carries an arm 11 which is secured at its lower end to a collar 13 also fixed to the arm 8. The arm 11 is shaped so as to form a shoe or guide 12 which has an aperture for the passage of the pointed end of the tubular member 1. The fixed collar 13 provides a bearing for the tubular member 1 and the shoe 12 may also support the end of the arm 8 which carries the teeth 9 previously referred to.

The housing 2 secured to the outer sleeve 5 accommodates a pair of cutter blades 3 each having an aperture 14 for the passage of the wool (not shown) and an opposed cutting edge 15 (see Figures 3 and 4). The cutter blades are arranged to reciprocate in close relationship so that the cutting edges pass one another and are retained in position by means of leaf springs 16 (see Figures 1 and 2).

Each cutter blade is provided with abutments 17 and 18 by means of which they are actuated and controlled. The arm 11 is formed with cam shaped edges 19 which are engaged by the abutments 18 of the cutter blades 3. A further arm 20 having inclined sides 21 is engaged by the abutments 17 on the cutter blades 3.

In order to more clearly understand the actuation and controlling of the blades, the operation of the needle will now be described.

The end of the wool is fed through the tubular member 1 by the gripping action of the teeth as a result of the telescoping action and movement of the tubular member 1 relative to the fixed arm 8 and teeth 9.

When the end of the wool is at the lower end of the tubular member the needle or instrument is ready for operation.

The shoe 12 is placed on the canvas or backing and as will be seen from the drawings that in the normal position the cutter blades are open. To commence the stroke, the handle or outer sleeve 5 is pressed which causes the tubular member 1 to penetrate the canvas or backing and at the same time causes the abutments 17 and 18 of the blades 3 carried in the housing 2 to be engaged by the cam-shaped edges of the arms 20 and 11. The cutter blades 3 remain open until the abutments 17 are engaged by the inclined sides 21 of the arm 20 which causes the cutting blades to slide one past the other until the cut-

ting edges pass one another and in so doing sever the wool at a point approximately half way in the stroke of the needle. The cutting blades are permitted to close by reason of the recessed portion on the arm 11. It will be appreciated that the actual cutting takes place at the narrowest point of the arm 11. Further penetration of the needle through the backing or base causes the arm 20 to ride past the abutments 17 of the cutting blades 3 and the abutments 18 engage the widened inclined sides of the arm 11 which open and hold the cutting blades 3 for the remainder of the forward stroke of the needle.

During the withdrawal stroke of the needle the shoe 12 remains in contact with the canvas or backing and the teeth 9 hold the wool stationary whilst the tubular member 1 is withdrawn along the wool held thereby. During the withdrawal of the handle and tubular member the cutter blades are held open and the arm 20 which is of spring material rides over the edges and abutments 17 of the blades 3.

The cutting takes place within the tubular member and the first stroke passes one end and approximately half the tuft through the backing in which position the tuft is held stationary by the teeth 9.

The tubular member is withdrawn through the backing and the needle moved to the next point for penetration which when made passes the remaining portion of the tuft through the backing at the same time cutting a further tuft within the tubular member ready for the next penetration.

By repeating the strokes of the needle it will be seen that a substantially continuous action of cutting and tuft forming is achieved during which time the wool is fed continuously through the needle.

Whilst the invention has been described in connection with the making of rugs it is equally applicable with little modification to tapestry work, embroidery and other forms of needle work where a canvas or other base is employed.

I claim:

In a rug making needle the combination of a tubular member open at both ends for the passage of wool or its equivalent therethrough and formed in two parts, said member having a longitudinal slot and being pointed at its forward end, a cutter housing connected to said tubular member between said two parts thereof, an outer sleeve forming a handle connected to the rear end of said tubular member and to said housing, a collar within said housing and slidably surrounding the rear part of said tubular member, a compression coil spring located around said tubular member between said collar and the rear end of said outer sleeve, a stationary bar, an actuating bar and an actuating tongue all secured to said collar and passing through said housing, said stationary bar having forwardly inclined teeth projecting inwards through said slot, said actuating bar having converging and diverging surfaces forming a waist and having a foot with an aperture through which the forward part of the tubular member can move, said actuating tongue having cam surfaces and an out-turned nose which is located level with the waist on said actuating bar, and two movable cutters located transversely in said housing and having central apertures for the passage of the wool or its equivalent and having opposed knife edges, said cutters being pressed together by spring action and having two sets of actuating abutments, one set engaging the cam surfaces on said actuating tongue during the first part of the penetration stroke to close the cutters and cut the wool or its equivalent and the other set engaging the cam surfaces on said actuating bar to open the cutters and keep them open during the rest of the complete stroke, said cutters being arranged to ride under said actuating tongue without being actuated thereby on the withdrawal stroke.

CLIFFORD B. WILSON.

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