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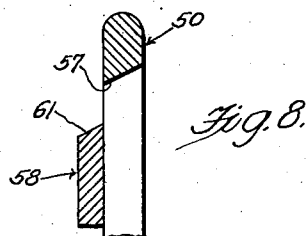
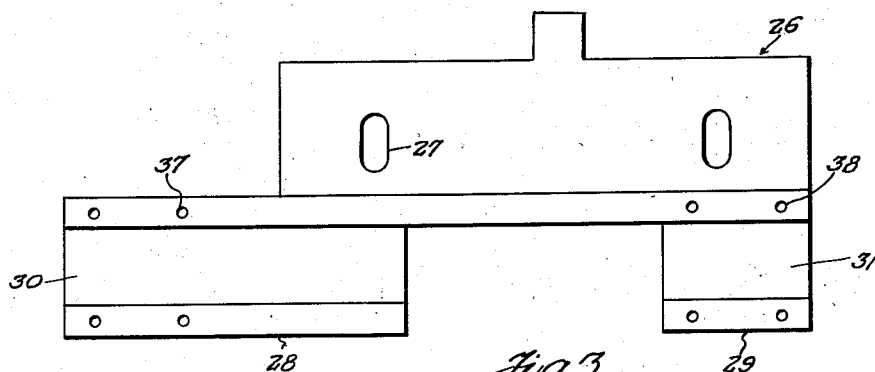
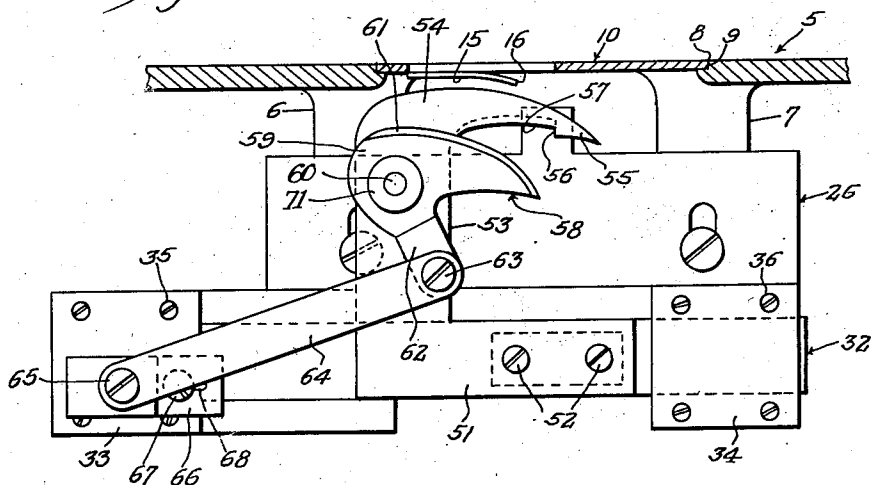
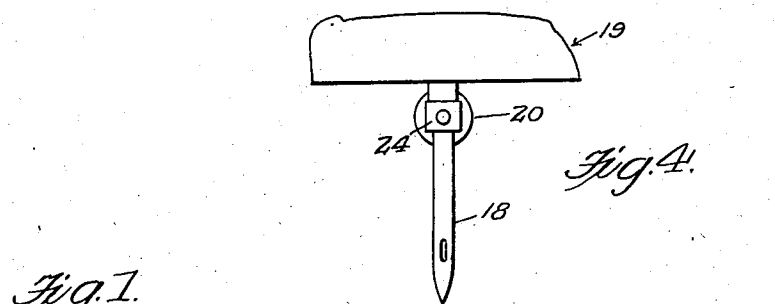
J. W. MAPLES ET AL

1,963,441

TUFTING ATTACHMENT

Filed May 29, 1933

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

Fig. 1.

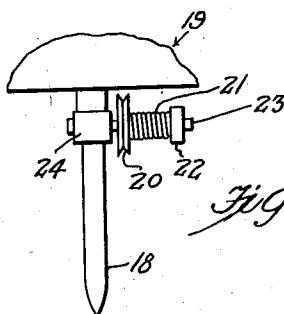
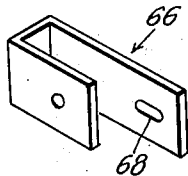


Fig. 5.

Fig. 2.

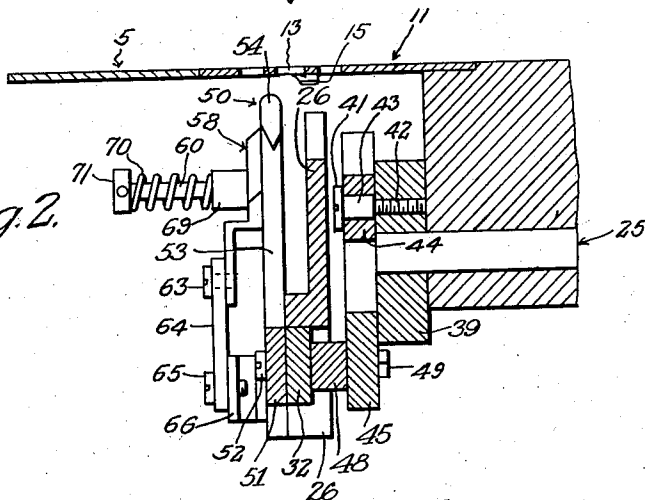


Fig. 5.a

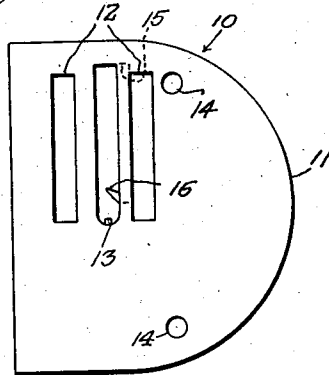
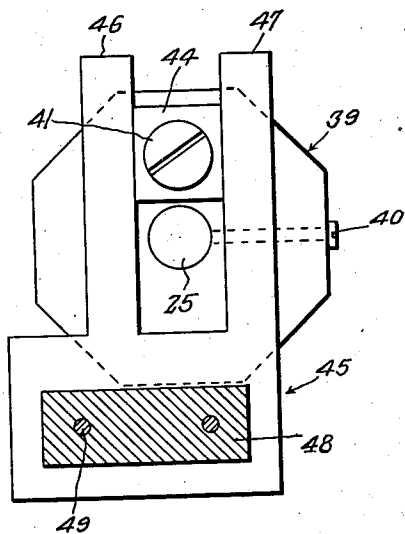


Fig. 6.

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UNITED STATES PATENT OFFICE

1,963,441

TUFTING ATTACHMENT

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Application May 29, 1933, Serial No. 673,516

3 Claims. (Cl. 112-79)

Our invention relates generally to tufting machines, and particularly to a tufting attachment for a sewing machine, and an important object of our invention is to provide an attachment of this class at low cost which may be installed on a sewing machine so as to be operable thereby.

It is also an important object of our invention to provide an attachment of this class which has few and simple parts which may be installed in operative relation to the sewing machine without extensive alterations to the sewing machine, and which may be readily removed and replaced when tufting operations are to be performed on the sewing machine.

Other objects and advantages of our invention will be apparent from a reading of the following description in connection with the drawings, wherein for purposes of illustration we have shown a preferred embodiment of our invention.

In the drawings:—

Figure 1 is a transverse vertical sectional view through a sewing machine showing the embodiment of the invention connected.

Figure 2 is a longitudinal vertical sectional view through Figure 1.

Figure 3 is a side elevational view of a support member and slide.

Figures 4 and 5 are elevational views of the sewing machine needle, the views being taken at right angles to each other.

Figure 5a is a transverse vertical sectional view through Figure 1 showing in end elevation the fork slide operatively connected to the rotatable block.

Figure 6 is a top plan view of the throat plate showing in dotted lines a loop retaining hook attached to the underside of the throat plate.

Figure 7 is a perspective view of a stationary bracket.

Figure 8 is a transverse vertical sectional view through the looper and its cooperating shearing member.

Referring in detail to the drawings, wherein like numerals refer to like parts throughout the same, the numeral 5 refers generally to the table portion of the sewing machine which is supported by the depending members 6, 7 which are transversely aligned with respect to the sewing machine. The table portion 5 has an opening 8 provided with a groove 9 for properly supporting the throat plate 10, the form of which is shown in detail in Figure 6 of the drawings.

The throat plate 10 comprises a rectangular plate which has a semi-circular side 11. Near one end of the plate is a pair of transversely

spaced longitudinally arranged slots 12 which have between them a needle passing opening 13 which is made in the form of an elongated slot. Other openings 14 are provided in the plate for receiving throat plate mounting means, (not shown).

To the underside of the throat plate 10 and in a position which is between the slots 12 and at one side of the needle receiving opening 13 is the loop retaining hook 15, which is a flat semi-flexible bar which has its outer end downwardly turned as indicated at 16. It will be observed that the end 16 of the hook 15 is located partly within the needle receiving opening 13 so that when the needle 18 passes downwardly through the needle receiving opening 13 the end 16 of the hook will be adjacent to but spaced from the needle.

The numeral 19 generally designates a portion of the sewing machine carrying the needle operating mechanism, in which the vertically reciprocable needle 18 is secured. The needle clamping collar of the mechanism has mounted thereon the spring tensioned wheel 20 which is tensioned by a spring 21 adjusted by a nut 22, the wheel 20, the spring 21, and the nut 22 being carried on a suitable spindle 23 projecting from the adjustable collar 24 which carries the needle 18.

Under the throat plate and suitably aligned with the openings therein is the looping and shearing mechanism which is driven by the main horizontal rotatable shaft 25 of the sewing machine drive.

A mounting member and slide generally designated 26 is transversely elongated and has vertical openings 27 longitudinally spaced therein to receive screws for attaching the same in a vertically adjustable manner to the depending supports 6, 7 of the sewing machine structure in the manner indicated in Figure 1. The lower part of the support 26 has an elongated portion 28 and a shorter portion 29 which are provided on their left hand faces with a longitudinal groove 30 and a longitudinal groove 31, respectively, in which slide the opposite ends of a slide member generally designated 32.

A plate 33 and another similar plate 34 are attached by screws or the like 35, 36 which enter the holes 37, 38 in the slide portion of the member 26, to enclose and confine in the grooves 30, 31, the slide member 32.

Means for operating the slide member and reciprocating the same backwardly and forwardly comprises the block, shown as an octagon 39 having a central opening which receives the pro-

jecting end of the shaft 25. A set screw 40 traversing the octagon 39 from one side engages the shaft 25 so as to lock the member 39 on the shaft to rotate therewith. A bearing screw 41 has a portion 42 threaded into the octagon 39 and an enlarged smooth portion 43 outwardly of the member 39 to rotatably mount a rectangular slide block 44 which is vertically slidable between the arms 46, 47 of the forked slide 45 which has a spacer block 48 by means of which it is spaced from and connected to the slide 32. Suitable bolts 49 traverse the forked slide 45 and the spacer block 48 and enter the slide 32 for connecting these parts so that there is no movement between the forked slide 45, the spacer block 48 and the main slide 32, the arms of the forked slide being constantly maintained in the vertical position. It will be obvious that when the shaft 25 rotates and swings the slide block 44, that the forked slide will be worked back and forth so as to similarly move the main slide 32.

Mounted on the left hand side of the main slide 32 is the looper which is generally designated 50 and comprises a horizontally elongated base portion 51 secured by means of suitable bolts 52 which enter parts of the slide 32, and a vertically extending portion 53 which has on its upper end a forwardly curved hook portion 54.

The hook portion 54 has on its front end a triangular portion 55 which forms a shoulder or notch 56 with the lower edge portion 57. The lower edge portion 57 is cut at an angle so as to shear when cooperated with by the shear member to be described.

The shear member is clearly shown in Figure 1 and is generally designated 58 and comprises a bill-shaped main portion 59 which is pivotally mounted on a spindle 60 carried by the looper 50, the upper edge 61 of the main body portion being given an angularity to cooperate with the angular edge 57 of the looper in shearing relation when they pass each other. The upper edge 61 is curved as will be observed. From the lower side of the main body portion 59 depends an arm 62 to which is connected by a pivot screw 63, the upper end of a connecting rod 64 whose remaining end is pivotally anchored by a pivot screw 65, to a U-shaped stationary bracket 66 anchored to the retaining plate 33 in a longitudinally adjustable manner by a screw or bolt 67 passing through a slot 68 into the plate 33. The form of the stationary bracket 66 is shown in Figure 7.

On the spindle 60 outwardly of the boss 69 on the shear member 58 is a spring 70 which is adjustably confined by a set screw equipped collar 71, to adjust the approach of the shear member 58 to the looper.

The yarn or other material to be used in the tufting is placed through the needle 18 in the usual manner and led over the tensioning device 20. When the needle 18 passes downwardly through the needle receiving opening 13 in the throat plate, the looper advances and places itself in such relation to the needle 18 that as the needle rises, the pointed portion 55 of the looper retains the thread or yarn. The thread or yarn being tensioned by the device 20, the rise of the needle will elongate the resultant loop. As the needle further rises, the looper 54 moves backwardly and its notch or shoulder 56 engages and carries the loop backwardly and passes the same over the loop retainer 15, so that the loop is retained from advancing forwardly upon the next forward motion of the looper. When a certain number of the loops have accumulated on the

hooked portion of the looper, that is, have advanced toward the wide portion thereof, such loops will be sheared by the accompanying action of the shearing member 58, so that as the cloth (not shown) on the table 5 of the sewing machine advances to a point where it is about to leave the throat plate 11, the loops will have been severed so that the tufting is formed by the severed arrangements of the loops impaled in the cloth.

It is to be observed that the yarn which is to form the tufting is guided to the needle through the tension device 20, the needle being forced through the fabric or cloth in the usual manner. When the needle reaches its lowest point and starts upwardly again, it opens the yarn out in the form of a loop, then the looper moves forwardly so as to go through the loop far enough for the yarn to fall behind the notch or shoulder 56 thereof, following which the looper travels backwardly and carries with it the entrapped loop of yarn. When the looper reaches its farthest backward position the loop of yarn falls into the yarn retaining notch formed by the beak of the hook 15 on the throat plate and is held taut on the looper in its backward slide by the action of the feeder which raises the fabric or cloth and feeds it backward with the looper, this action being permitted by the slots 12 in the throat plate 11. It is also to be observed that the looper enters the loops from the direction of the feed so that as each new loop is caught, the previous ones are fed farther back on the looper and on the hook 15, the hook 15 preventing the loops from slipping forwardly should the tension on the yarn be slackened. It will be observed that the shearing member 58 is operated by the backward and forward movement of the looper so that the cutting cooperation thereof is synchronized with the motion of the looper. When the loops reach the rearward part of the looper they are severed by the shearing member. The elongated form of the opening 13 in the throat plate permits the loops to be fed back to the shearing part of the looper.

Although we have shown and described herein a preferred embodiment of our invention, it is to be definitely understood that we do not desire to limit the application of the invention thereto, and any change or changes may be made in material and structure and arrangement of parts, within the spirit of the invention and the scope of the subjoined claims.

What is claimed:—

1. In a sewing machine, the combination with a reciprocating needle, of a sliding looper to enter the loop from the direction of the feed of the material, so that successive loops will be fed in one direction on the looper, and means on the looper for engaging and holding the loops to prevent the loops from leaving the looper in its backward motion, and stationary means on the sewing machine for confining the loops when the loops have been pulled back by the looper, so as to retain the loops in the backward position.

2. In a sewing machine, the combination with a reciprocating needle, of a sliding looper to enter a loop from the direction of the feed of the material, a stationary hook member on the sewing machine for confining the loops when the loops have been pulled back by the looper, to retain the loops in the backward position, loop cutting means for cutting the loops confined by said hook member, and means for oscillating the cutting means by the sliding movement of the looper.

3. In a sewing machine, the combination with a reciprocating needle, a reciprocatory member supported by the machine below the needle, a looper carried by said reciprocatory member and including a shank and a substantially horizontal portion of curved construction and tapering to its free end, said end having a shoulder on its under edge spaced from the extremity of said free end, means for reciprocating said member, a cutter pivoted to the shank of the looper and having its upper edge beveled and of arc shape, a shank depending from the pivotal point of the cutter, and a pitman pivoted to the shank and to a stationary part of the machine. 80

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