May 25, 1943. D. C. EVERITT 2,320,271

EDGE TO EDGE SEWING MACHINE ATTACHMENTS

Filed Oct. 18, 1941

Fig. 1.

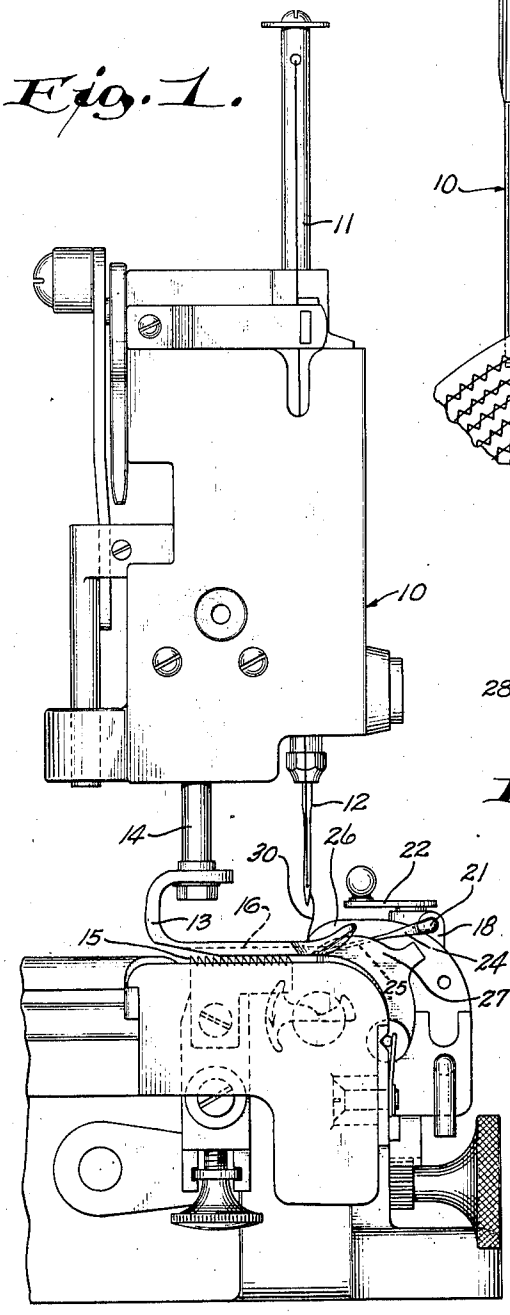
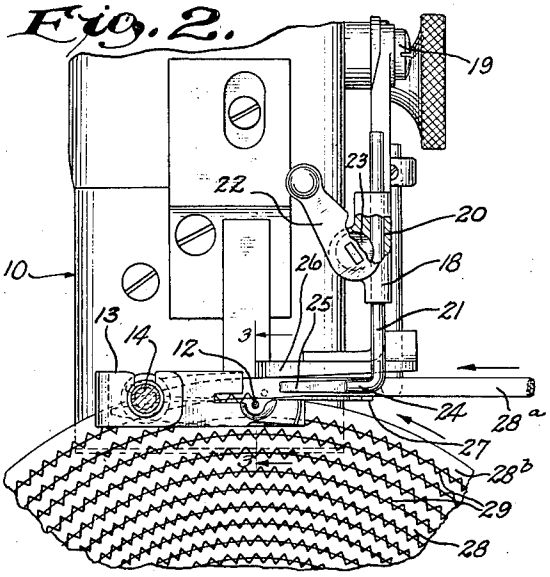



Fig. 2.



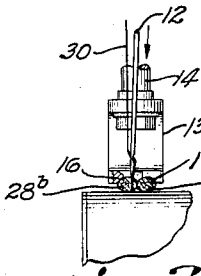




Fig. 3.

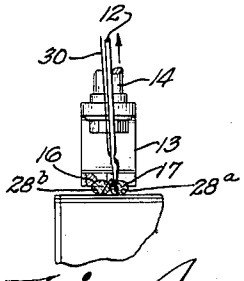



Fig. 4.

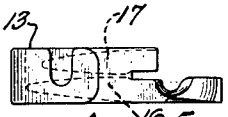



Fig. 5.

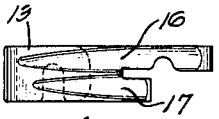



Fig. 6.

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## EDGE TO EDGE SEWING MACHINE ATTACHMENTS

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4 Claims. (Cl. 112—23)

This invention relates to improvements in edge to edge sewing machine attachments.

There are on the market standard forms of sewing machines known as "edge to edge sewing machines" designed especially for connecting laterally adjacent narrow strips of fabric or tape by means of zig zag stitching. While the available edge to edge sewing machines are satisfactory for certain types of work, especially in connection with flat strips of fabric, difficulties are encountered when it is attempted to use the same for the edge to edge sewing of rounded braids and like bulky strip material. Such difficulties are, moreover, pronounced in attempting the edge to edge sewing of rounded braids in convolute form for hat fabrics and like purposes.

With the above in mind it is, therefore, a primary object of the present invention to provide improved attachments for edge to edge sewing machines to adapt such machines for efficient and facile operation on rounded braids, and like bulky materials.

A further object of the invention is to provide attachments for an edge to edge sewing machine including a grooved pressure foot which will engage and guide an outer secured convolution of rounded braid in relation to an inwardly fed braid strand for proper edge to edge sewing of the same.

A further object of the invention is to provide a grooved pressure foot for an edge to edge sewing machine which holds adjacent braid strands firmly in such positions and relationships that the sewing machine needle will correctly engage and pass through proper portions of the adjacent braid strands.

A further object of the invention is to provide an adjustable and resilient strand guide finger attachment for edge to edge sewing machines which functions to exert a desired drag and flattening pressure on an inwardly fed braid strand to properly position the same for sewing purposes and to insure passage of the sewing needle through side edge portions of the strand.

A further object of the invention is to provide improved edge to edge sewing machine attachments which are of very simple construction, are strong and durable, are inexpensive to manufacture and install, and are well adapted for the purposes described.

With the above and other objects in view the invention consists of the improved edge to edge sewing machine attachments, and their parts and combinations as set forth in the claims, and all equivalents thereof.

In the accompanying drawing in which the same reference characters indicate the same parts in all of the views:

Fig. 1 is an end view of an edge to edge sewing machine head equipped with the improved attachments;

Fig. 2 is a fragmentary top view of the sewing machine head with work in proper position engaged by the improved attachments;

Fig. 3 is a fragmentary detail sectional view taken on line 3—3 of Fig. 2 and showing the needle in one position performing zig zag or edge to edge stitching;

Fig. 4 is a similar detail sectional view showing the needle in another position;

Fig. 5 is a top view of the improved pressure foot with which the sewing machine is equipped; and

Fig. 6 is an inverted plan view thereof.

Referring now more particularly to the drawing it wall appear that the head portion of an edge to edge sewing machine is indicated generally by the numeral 10. The mechanism of the sewing machine per se is of conventional structure and includes means for vertically reciprocating the needle bar 11 and needle 12 carried thereby in a slightly orbital path. Other conventionally actuated parts include a pressure foot 13 depended from a vertically movable rod 14, and a feed dog 15.

In the operation of edge to edge sewing machines it is contemplated that a new strand or extent of material be secured to an adjacent strand. The latter strand may be the outer convolution, row, or strip in a partially assembled fabric. It is the practice for the machine operator to move and manipulate the partially assembled fabric while the new strand or extent of material is being fed into the machine and secured by sewing. While this practice and the usual equipment on an edge to edge sewing machine permits expeditious sewing when the material is relatively flat, it is not practical when the use of round braids or other bulky and relatively "squashy" materials is attempted. This is because the proper side-wise relationship between the braids to be joined can not be maintained due to slippage and improper engagement with the under face of the pressure foot of the machine, and the tendency of the needle to penetrate the braids too centrally.

The present invention seeks to eliminate the above difficulties by providing certain improved attachments for edge to edge sewing machines

adapting said machines to the proper handling of rounded braid and bulky strip materials.

One of said improved attachments is the pressure foot 13. This pressure foot is modified from standard by the provision of a pair of grooves 16 and 17 on the under face of its work portion. These grooves extend length-wise of said foot portion and are relatively close together, being reduced at their inner end portions. The groove 17 is somewhat shorter than the proove 16. As will appear hereinafter the groove 16 receives and guides a braid strand which has already been secured in assembled relationship and holds it relative to a new extent of braid which is to be secured thereto edge-wise by zig zag stitching.

As will be noted from Fig. 1 the inner end of the pressure foot is upwardly beveled. In shaping the work, as the sewing progresses, the operators may turn or move the same and the reduced or beveled inner end of the pressure foot provides clearance for this purpose.

From Figs. 5 and 6 it will be observed that there is a slot between the free ends of the legs of the foot 13 adjacent which the needle reciprocates during sewing operations. On the underside of the foot, alined with and extending rearwardly from the slot is a ridge which forms side walls for both of the grooves 16 and 17 rearwardly of the slot. The slot, in effect, serves to reduce the width of the grooves thereadjacent and the elimination of the ridge at the slot results in the inner margins of the grooves adjacent the slot being substantially unobstructed.

As will appear hereinafter the braid strands to be laterally joined by stitching are relatively bulky and squashy. A braid strand 28*a* which is to be joined to a braid strand 28*b* is led to the pressure foot 13 from a position slightly divergent to that of the strand 28*b*, the latter being lodged within the pressure foot groove 16 and the former being engaged by the pressure foot groove 17. In the neighborhood of the slot between the free ends of the legs of the pressure foot the strands are crowded into mutual contact and this is where the needle reciprocates; so that crowding together of the strands in this region permits the needle to effectively engage proper side edge portions of the strands for connection by edge to edge sewing. Thereafter the joined strands are engaged and firmly held in the rearward extents of the grooves 16 and 17 and the ridge lodges in the line of connection between the braid strands.

The sewing machine also includes an adjustably mounted sleeve block 18 which is pivotal in a vertical plane on a pivot bolt 19. A bore 20 in said block longitudinally adjustably receives the shank of an improved guide finger 21. The guide finger is secured in a desired position of longitudinal and angular adjustment by means of a pivotal lever arm 22 carrying and operating a cam 23. The cam is housed within a boss portion of the block 18 and when in certain positions eccentric edge portions of the cam will impinge against the guide finger shank, as in Fig. 2. The free end portion of the guide finger 21 is formed with a right angular extension arm 24. said arm portion is reduced and merges into a yielding, spring metal strip 25 which is slightly bowed. When properly adjusted and positioned the yielding extension strip 25 is positioned immediately over the infeed strand guide channel which is provided between fixed vertical plate elements 26 and 27 on the machine. Said strip 25 is intended to frictionally bear and exert a drag on the infeed braid strand.

In the operation of the sewing machine and improved attachments, the efficiency thereof is most pronounced when the edge to edge sewing operations are being performed on relatively bulky and squashy round bodied fibrous material braid strands, as shown in Fig. 2 of the drawing. In said view of the drawing the fragment of fabric 28 has been made up by the edge to edge sewing of a fibrous, round-bodied braid strand 28*a*, fed into the sewing machine from a source. In the exemplification shown the fabric is formed of convolutions wherein each convolution is secured to its laterally adjacent convolutions by zig-zag stitches 29. The fabric is shaped and advanced by hand as the sewing and securement progresses. It will be observed that it is necessary to maintain a relatively fixed or stable relationship as between the outermost assembled convolution 28*b* of the fabric and the strand 28*a* being sewed. It is essential that the material and strands do not slip while held and engaged under the pressure foot 13 and it is furthermore desirable during oscillating reciprocations of the needle 12 that the adjacent strands 28*a* and 28*b* be held so that the needle will alternately pierce and carry the sewing thread 30 through portions of said strands relatively close to the adjacent sides of the same. In these particulars the efficacy of the improved attachments 13 and 21 becomes of greatest value. It will be noted from Figs. 2, 3, and 4 that the outer convolution 28*b* of the formed fabric 28 is engaged between the feed dog 15 and the pressure foot 13, being accommodated and held in the groove 16 on the bottom face of the pressure foot. Likewise, the new infeed strand 28*a*, in the process of being sewed to the fabric, is held between the feed dog and the pressure foot and adjacent the needle said strand lodges in the groove 17 of the pressure foot. With the adjacent strands thus being held in the grooves 16 and 17 they are crowded into close side by side relation during the sewing operations and the portions of the strands being sewed can not slip out of proper position, even if the formed fabric is moved. The yieldable extension 25 on the braid guide finger bears on and frictionally engages the strand 28*a* as it is being advanced toward the needle. This prevents ruffling or improper in-feeding, maintains said strand in proper position in cooperation with the groove 16, and somewhat flattens the relatively bulky strand 28*a* in order that the needle may pierce a side edge portion of the same rather than a medial portion.

It should be mentioned that in edge to edge sewing operations the needle reciprocates upwardly and downwardly alternately. It also oscillates side-wise so that on one downward movement it will pierce the inner strand 28*b* and on the next downward movement it will pierce the outer strand 28*a*, and so on, as depicted in Figs. 3 and 4, and resulting in the line of zig-zag stitching shown.

The improved edge to edge sewing machine attachments are of simple and novel construction, are effective in operation, and are well adapted for the purposes described.

What is claimed as the invention is:

1. In a sewing machine including a thread-carrying, reciprocating needle having lateral vibrations transverse to the line of feed, a pressure foot having mounting means at one end and hav-

ing a free end and engageable with braid strands which are divergent forwardly of said foot, said foot at its free end also having a pair of adjacent legs whose under surfaces form work engaging faces, there being a slot between the free end portions of the legs adjacent which the needle reciprocates for sewing operations, the under surfaces of said legs having closely adjacent braid receiving grooves therein extending from the free ends of the legs toward the mounted end of the foot, the extent of the grooves toward the mounted end of the foot being separated by a ridge which is in longitudinal alinement with said slot and which terminates at said slot, said ridge forming side walls for both grooves, said slot having a width which is substantially equal to the width of the base of the forward end of the ridge whereby the inner margins of the grooves adjacent the slot are substantially unobstructed to cause strands in the two grooves to be crowded into contact with one another along a line extending midway of the slot and ridge.

2. In a sewing machine including a thread-carrying, reciprocating needle having lateral vibrations transverse to the line of feed, a pressure foot having mounting means at one end and having a free end and engageable with braid strands which are divergent forwardly of said foot, said foot at its free end also having a pair of adjacent legs of different lengths whose under surfaces form work engaging faces, there being a slot between the free end portions of the legs adjacent which the needle reciprocates for sewing operations, the under surfaces of said legs having closely adjacent braid receiving grooves therein extending from the free ends of the legs toward the mounted end of the foot, the extent of the grooves toward the mounted end of the foot being separated by a ridge which is in longitudinal alinement with said slot and which terminates at said slot, said ridge forming side walls for both grooves, said slot having a width which is substantially equal to the width of the base of the forward end of the ridge whereby the inner margins of the grooves adjacent the slot are substantially unobstructed to cause strands in the two grooves to be crowded into contact with one another along a line extending midway of the slot and ridge, and a strand guide finger overlying and engaging a portion of one of the braid strands forwardly of the pressure foot to prevent displacement of said strand and to aid in directing it toward the groove in the shorter leg of the pressure foot.

3. In a sewing machine including a thread-carrying, reciprocating needle having lateral vibrations transverse to the line of feed, a pressure foot having mounting means at one end and having a free end and engageable with braid strands which are divergent forwardly of said foot, said foot at its free end also having a pair of adjacent legs of different lengths whose under surfaces form work engaging faces, there being a slot between the free end portions of the legs adjacent which the needle reciprocates for sewing operations, the under surfaces of said legs having closely adjacent braid receiving grooves therein extending from the free ends of the legs toward the mounted end of the foot, said grooves being of arcuate form in cross-section and having cross-sectional areas less than those of deformable strands lodged therein, the extent of the grooves toward the mounted end of the foot being separated by a ridge which is in longitudinal alinement with said slot and which terminates at said slot, said ridge forming side walls for both grooves ,said slot having a width which is substantially equal to the width of the base of the forward end of the ridge whereby the inner margins of the grooves adjacent the slot are substantially unobstructed to cause strands in the two grooves to be crowded into contact with one another along a line extending midway of the slot and ridge, and a strand guide finger overlying and engaging a portion of one of the braid strands forwardly of the pressure foot to prevent displacement of said strand and to aid in directing it toward the proper groove in said pressure foot.

4. In a sewing machine including a thread-carrying, reciprocating needle having lateral vibrations transverse to the line of feed, a pressure foot having mounting means at one end and having a free end and engageable with braid strands which are divergent forwardly of said foot, said foot at its free end also having a pair of adjacent legs of different lengths whose under surfaces form work engaging faces, the under surface of said foot adjacent its mounted end being upwardly beveled, there being a slot between the free end portions of the legs adjacent which the needle reciprocates for sewing operations, the under surfaces of said legs having closely adjacent braid receiving grooves therein extending from the free ends of the legs toward the mounted end of the foot, the extent of the grooves toward the mounted end of the foot being separated by a ridge which is in longitudinal alinement with said slot and which terminates at said slot, said ridge forming side walls for both grooves, said slot having a width which is substantially equal to the width of the base of the forward end of the ridge whereby the inner margins of the grooves adjacent the slot are substantially unobstructed to cause strands in the two grooves to be crowded into contact with one another along a line extending midway of the slot and ridge, and a strand guide finger overlying and engaging a portion of one of the braid strands forwardly of the pressure foot to prevent displacement of said strand and to aid in directing it toward the proper groove in said pressure foot.

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