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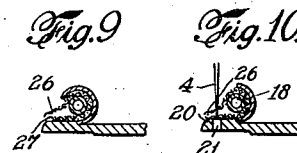
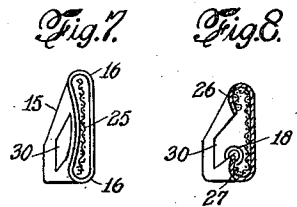
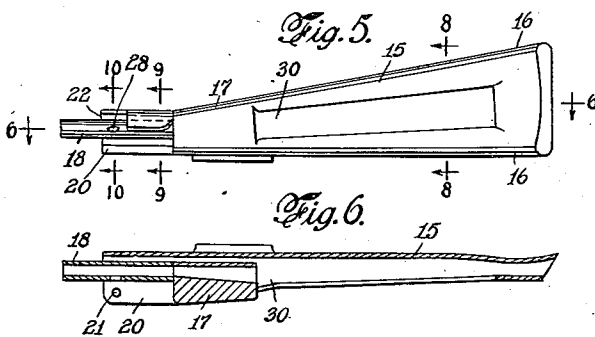
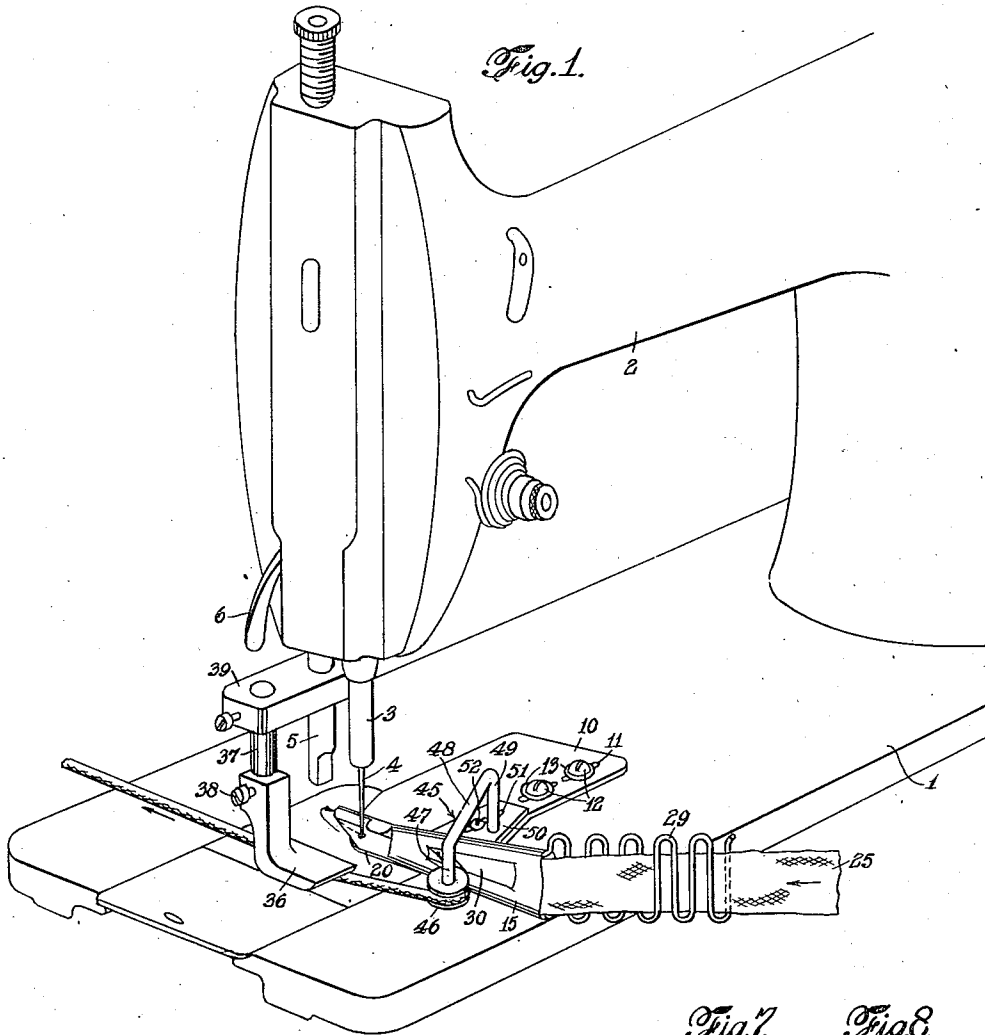
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2,256,793

SEWING MACHINE AND ATTACHMENT THEREFOR

Filed Feb. 21, 1940

2 Sheets-Sheet 1



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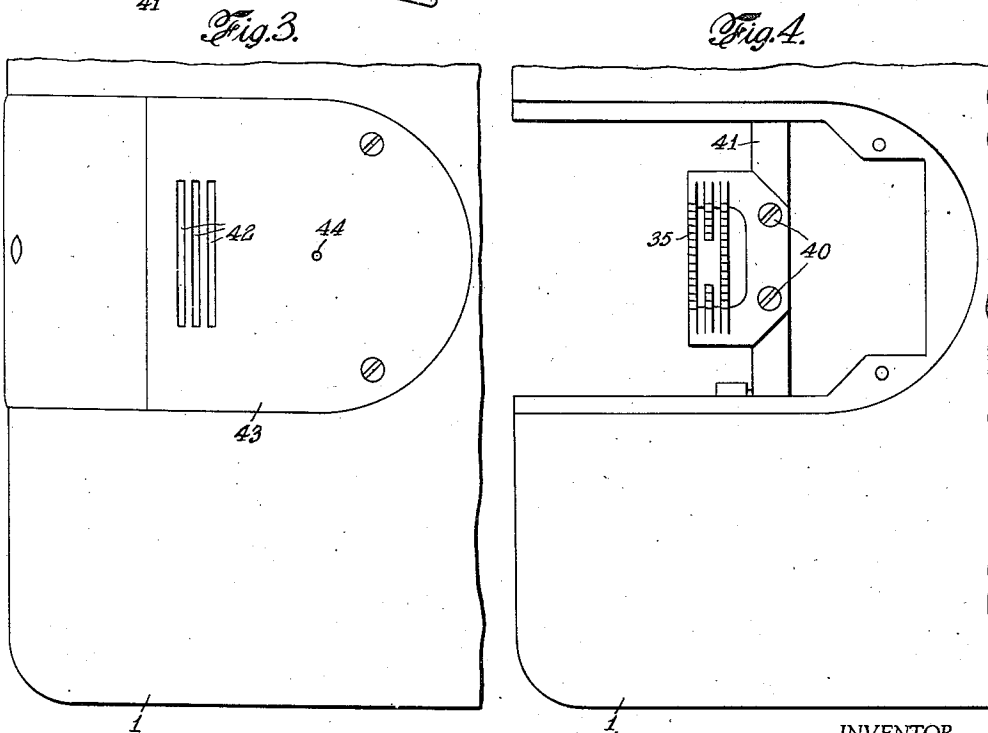
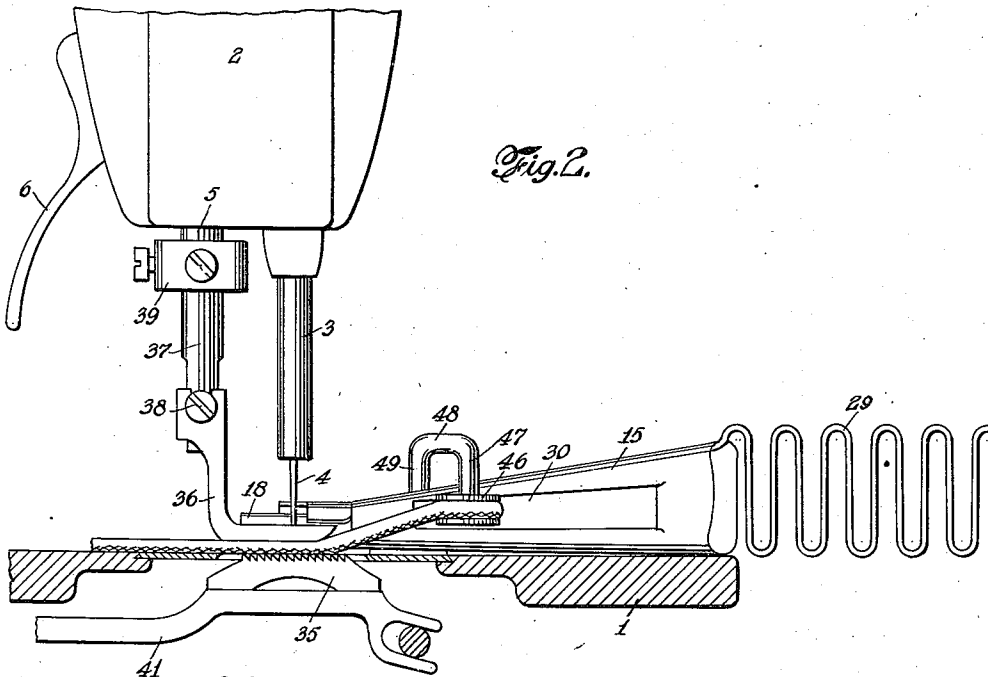
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SEWING MACHINE AND ATTACHMENT THEREFOR

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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

2,256,793

SEWING MACHINE AND ATTACHMENT
THEREFOR

Charles Seaman, Jamaica Estates, N. Y.

Application February 21, 1940, Serial No. 320,064

3 Claims. (Cl. 112-63)

This invention relates to sewing machines for making a trimming and to the method of making the same. More particularly, this invention relates to a sewing machine attachment for making trimmings and to the method of producing the same.

The nature and objects of this invention will become apparent from the following description, appended claims, and accompanying drawings in which:

Figure 1 is a perspective view of a machine head having secured thereto an embodiment of an attachment constituting the invention;

Figure 2 is an end view looking from the left of Figure 1;

Figure 3 is a top plan view of a part of the work support and illustrating the cloth plate;

Figure 4 is a top plan view of a portion of the work support with the cloth plate removed;

Figure 5 is a front elevation of the folder;

Figure 6 is a section taken on the line 6-6 of Figure 5;

Figure 7 is an end view of the folder showing the feed end thereof; and

Figures 8, 9 and 10 are sections taken on the lines 8-8, 9-9 and 10-10, respectively of Figure 6.

In accordance with the principles of the instant invention, a strip of the material which is to constitute the trimming is folded about its longitudinal axis so that the opposite longitudinal edges are substantially in superposed relationship and, while in this condition, is stitched by means of a needle passing through the material adjacent the superposed edges. After stitching, the material is reversed (turned inside out) so that the free edges are disposed on the interior of the product.

In the foregoing method, the material is automatically and positively threaded to and through the stations where each of the manipulative steps is performed without the aid of any manual operation whatsoever, except appropriately threading the material through the machine at the beginning of the operation. In other words, after the material has been threaded through the machine, it is unnecessary to manually handle the material, as for example pull it through the machine, as is the case with materials operated on by the usual sewing machines.

The apparatus constituting another phase of this invention comprises a sewing machine in combination with a folder, including means to reverse the stitched material and including means to receive the stitched material and feed the

same from the machine, as well as progressively pull the material from its source of supply through the folder to and from the needle and to and from the reversing means of the folder.

The folder contemplated by the instant invention is designed and constructed so that it will fold material passed therethrough about its longitudinal axis and bring the longitudinal edges thereof in substantially superposed relationship. The thus folded material, due to the construction and location of the folder with respect to the needle, will be presented to the needle in position for stitching through the superposed portions adjacent the edges thereof. The folder is also provided with means which reverse (turn inside out) the stitched material. As will hereafter be explained, the direction of travel of the material through the reversing means is opposite to the direction of travel of the material to the needle for stitching. The folder is also provided with means whereby the stitched product may be fed from the folder.

One of the important features of the invention resides in the means and manner of feeding the material through the machine. According to this invention, the material is pulled from its source of supply through the folder, past the path of the needle and through the reversing means by mechanism which receives the stitched material and feeds it from the machine. It is to be noted that this mechanism is designed primarily for use in machines wherein the usual feed dogs beneath and in the path of the needle are omitted.

Generally, the mechanism which feeds the material through the various parts of the machine and from the machine itself, as previously mentioned, comprises feed dogs and a presser foot cooperating therewith. The feed dogs are, contrary to the usual practice, offset with respect to the needle. As will appear, the feed dogs are positioned laterally of and wholly out of the path of travel of the needle of the sewing machine. Specifically, the feed dogs are disposed beneath the cloth plate and are actuated by the conventional four-motion feed-actuating mechanism. The presser foot cooperating with the feed dogs is carried by a bracket conveniently mounted on the sewing machine head.

The feeding mechanism is also offset with respect to the folder, and appropriate guide means are provided to guide the stitched product from the folder to said feeding mechanism.

In order to more fully explain the invention, reference is now made to the accompanying drawings wherein like reference numerals designate

like parts, and wherein the reference numeral 1 designates a work support of a sewing machine carrying a sewing machine head 2. The sewing machine head 2 is provided with a needle bar 3 which carries a needle 4, the needle bar 3 being reciprocated in the usual manner. The head 2 is also provided with a spring-pressed presser foot bar 5 which may be raised and lowered by manual operation of the lever 6.

Secured to the work support 1 is a base plate 10 of the attachment. In the form shown, this base plate 10 is provided with slots 11 whereby, by means of screws 12, the base plate 10, and hence the attachment, may be adjustably positioned on the work support 1. If desired, washers 13 may be interposed between the heads of the screws 12 and the base plate 10.

A folder, generally indicated by the reference numeral 15, is mounted on the base plate 10 in any suitable manner. In the form shown, the folder 15 is secured, as by soldering, to the forward end of the base plate 10. As shown in Figures 5 to 10, the folder 15 is designed to fold a strip of material passed therethrough about its longitudinal axis and bring the opposite longitudinal edges in substantially superposed relationship and present the thus folded material for stitching by the needle adjacent the superposed edges. The folder is appropriately curved and provided with guides 16 which terminate adjacent the block 17. Cooperating with the folder 15 are means which permit reversing of the stitched material. In the form illustrated in Figures 5 and 6, the means for permitting reversing of the stitched material comprises a tubular member 18 having one end thereof secured to the forward end of the block 17 and the other end extending beyond the throat of the folder. Due to the disposition of the folder 15 on the base plate 10 and the adjustability of the latter on the work support, the throat of the folder is positioned, with respect to the needle, so as to deliver the folded trimming in proper position and condition for stitching.

At the throat, the folder is provided with a substantially horizontal portion 20 which is provided with a hole 21 through which the needle 4 passes during the stitching operation. In order to permit the stitching operation, the upper horizontal portion of the throat, and particularly that portion above the hole 21, is cut away, as shown by the reference numeral 22.

The operations performed by the folder are shown in Figures 7 to 10 inclusive. It is to be noted that, as the trimming material 25 is fed through the folder, it is folded about its longitudinal axis so that the opposite edges 26 and 27 are brought into more or less superposed position, as shown in Figure 9. In this condition, the material is fed to the stitching position whereby the needle penetrates the superposed plies adjacent the edges thereof, as shown in Figure 10. After the material is stitched, it is fed beyond the end of the tubular member 18 and then turned rearwardly and passed through said tubular member 18, with the result that the product is reversed and free edges 26 and 27 as well as the stitches are on the inside of the product.

The tubular member 18 may be provided with means, generally indicated by the reference numeral 28, and specifically a hole, recess or cut-out portion, to avoid friction with the needle passing thereby and to permit the threading of the stitched material through the reversing member

18. If desired, a portion of the peripheral wall of the tubular member may be cut away.

Tension guides 29 are provided in advance of the folder 15 to smooth and flatten the material being fed to the folder. The tension guides which may be secured to the folder adjacent the feeding-in end also impose the desired tension on the material.

The path of travel of the material 25 is through the folder 15, past the path of travel of the needle 4 and reversing means 18, as indicated by the arrow. The stitched product, after passing through the reversing member 18, passes through the interior of the folder and leaves the folder through the exit 30. For reasons which will become apparent, the exit 30 is in a side of the folder 15, with the result that the stitched product emerges from said folder at an angle to the direction of feed of the material thereto.

As previously mentioned, the material is fed through the folder 15, beneath the needle 4, through the reversing means 18 and from the machine automatically. In the embodiment of the invention shown, this is secured by causing the stitched product (reversed stitched material) to be engaged and fed by means comprising feed dogs 35 and a presser foot 36 cooperating with said feed dogs, said feed dogs 35 and presser foot 36 being offset with respect to the needle 4. In other words, the feed dogs 35 and the presser foot 36 are positioned laterally of and wholly out of the path of the needle of the sewing machine. It is further to be noted that, according to this invention, there are no feed dogs underneath the needle as is the case in the usual type of sewing machine.

The presser foot 36 is adjustably mounted on a bar 37 by means of a set screw 38. The bar 37 is appropriately and adjustably secured in a bracket 39 carried by the normal presser foot bar 5 of the machine. It is to be noted that the bracket 39 is so designed that it positions the presser foot 36 directly over the feed dogs 35 with which it cooperates. By actuation of the lever 6, the presser foot 36 may be raised and lowered similarly to the usual presser foot.

Though in the specific embodiment just described the bracket 39 is mounted on the presser foot bar 5, it is to be understood that the invention is not restricted thereto. The presser foot 36 may be mounted on the head 2 in any desired and appropriate manner.

The feed dogs 35 are actuated by the conventional four-motion feed-actuating mechanism of the sewing machine. In the form illustrated in Figure 2, the feed dogs 35 are secured by means of screws 40 to the feed bar 41 of the four-motion feed-actuating mechanism. The feed dogs extend through slots 42 of the cover plate 43, which is also provided with an aperture 44 through which the needle may penetrate during the stitching operation.

Upon reference to Figures 2, 3 and 4, it will be noted that the feed dogs 35 are beneath the cover plate 43 and secured to and carried by the feed bar 41 so that it projects to the left and is offset with respect to the needle 4, as shown in Figure 4. In the usual sewing machine, the feed dogs would be secured to and carried by the feed bar 41 in a manner so that the feed dogs would project to the right in Figure 4 whereby the feed dogs would extend directly beneath the path of travel of the needle.

To facilitate the guiding of the stitched product, after it leaves the exit 30 of the folder 15, to

the feeding mechanism, there is provided a guide mechanism, generally indicated by the reference numeral 45. In the preferred form, this guiding mechanism 45 consists of a flanged roller 46 loosely and rotatably mounted on a vertical shaft 47. In the form shown in Figure 1, the shaft 47 is one leg of the inverted U member 48, the other leg 49 being secured to a plate 50, which is provided with a slot 51. By means of a screw 52 cooperating with the slot 51 and a hole (not shown) in the base plate 10, the plate 50 is adjustably mounted on said base plate 10. If desired, the leg 49 may be provided with a screw thread which cooperates with a threaded hole in the plate 50, whereby the member 48 and hence the shaft 47 may be adjustable irrespective of the adjustability of the plate 50.

In actual practice, the plate 50 and/or the leg 49 are adjusted so that the guide roller 46 delivers the product to the feeding mechanism in a substantially straight line, as shown in Figure 2. The roller 46 is further, by adjustment of the parts previously referred to, so positioned with respect to the exit 30 that the product will not engage the sides of said exit 30.

From the foregoing description of the details of construction of the means for mounting the guide roller 46, it will become apparent that it is freely suspended adjacent one end of the leg 47 and is rotated by the material passing thereover. In operation, the material 25 is fed through the tension guide 29 into the folder 15, wherein the material 25 is folded as shown in Figures 8 to 10 inclusive. The folder 15 is positioned by appropriate adjustment of the plate 10 on the work support 1, so that the folded material with the longitudinal edges thereof in substantially superposed position is presented to the needle for stitching adjacent said longitudinal edges. After stitching, the stitched material is passed through the tubular member 18 and caused to pass through the folder in a direction opposite to the direction of feed of the material to the needle. The reversed stitched material leaves the folder through the exit 30 and then passes to the flanged roller 46, from whence it is guided to the feeding mechanism. The feeding mechanism feeds the material from the source of supply, through the folder, past the path of the needle, through the reversing means, from the folder, around the guide, and finally from the machine.

It will be noted that in the instant invention the construction of the sewing machine is in no wise impaired. When the attachment is to be secured to a standard sewing machine, the usual cover plate is removed and the usual feed dogs are removed. The feed dogs 35 are secured to the feed bar 41 as hereinbefore described, it being understood, of course, that the teeth of the feed dogs 35 are arranged so that proper feeding action will be secured. After the feed dogs 35 have been secured to the feed bar 41, the cover plate 43 is secured in position. At some stage in the adaptation of the conventional sewing machine, the normal presser foot is removed from the presser foot bar and the bracket 39 secured to the said presser foot bar. The presser foot 36 is then mounted in the bracket. The base plate 10 is then secured to the work support 1, adjustment being made so that the needle 4 will penetrate the superposed plies adjacent the edges thereof and pass through the hole 21 of the folder. The plate 50 is secured to the base plate 10, and adjustment is made to properly position the guide roller 46 as previously de-

scribed. In some machines, it may be necessary to adjust the four-motion feed-actuating mechanism so that the feed dogs have the necessary movement for feeding.

Since it is obvious that various changes and modifications may be made in the above description without departing from the nature or spirit thereof, this invention is not restricted thereto except as set forth in the appended claims.

I claim:

1. In a sewing machine having a reciprocating needle and a conventional four-motion feed-actuating mechanism beneath the cloth plate, a folder adapted to fold a material about its longitudinal axis and bring the longitudinal edges in superposed relationship and present the thus folded material in position for stitching by the needle adjacent the superposed edges, said folder having means to reverse the stitched material and means permitting the stitched product to be fed from said folder, and means to engage the stitched product and feed the same from the machine, said engaging means also feeding the material through the folder to the needle, through the reversing means and from the folder, said engaging means comprising feed dogs positioned beneath the cloth plate, said feed dogs being mounted on the four-motion feed bar of said four-motion feed-actuating mechanism and having its work-engaging surfaces laterally spaced a substantial distance from and wholly laterally of the line of feed past the needle, and a presser foot cooperating with said feed dogs.

2. In a sewing machine having a reciprocating needle and a conventional four-motion feed-actuating mechanism beneath the cloth plate, a folder adapted to fold a material about its longitudinal axis and bring the longitudinal edges in superposed relationship and present the thus folded material in position for stitching by the needle adjacent the superposed edges, said folder having means to reverse the stitched material and means permitting the stitched product to be fed from said folder, means to engage the stitched product and feed the same from the machine, said engaging means also feeding the material through the folder to the needle, through the reversing means and from the folder, and means to guide the stitched product to the said engaging means said engaging means comprising feed dogs positioned beneath the cloth plate, said feed dogs being mounted on the four-motion feed bar of said four-motion feed-actuating mechanism and having its work-engaging surfaces laterally spaced a substantial distance from and wholly laterally of the line of feed past the needle, and a presser foot cooperating with said feed dogs.

3. In a sewing machine having a reciprocating needle and a conventional four-motion feed-actuating mechanism beneath the cloth plate, a folder adapted to fold a material about its longitudinal axis and bring the longitudinal edges in superposed relationship and present the thus folded material in position for stitching by the needle adjacent the superposed edges, said folder having means to reverse the stitched material and means permitting the stitched product to be fed from said folder, and means to engage the stitched product and feed the same from the machine, said engaging means also feeding the material through the folder to the needle, through the reversing means and from the folder, said engaging means comprising feed dogs positioned beneath the cloth plate, said feed dogs being

mounted on the four-motion feed bar of said four-motion feed-actuating mechanism and having its work-engaging surfaces laterally spaced a substantial distance from and wholly laterally of the line of feed past the needle, a presser foot cooperating with said feed dogs, and means secured to the machine head and carrying said presser foot.

4. In a sewing machine having a reciprocating needle and a conventional four-motion feed-actuating mechanism beneath the cloth plate, a folder adapted to fold a material about its longitudinal axis and bring the longitudinal edges in superposed relationship and present the thus folded material in position for stitching by the needle adjacent the superposed edges, said folder having means to reverse the stitched material and means permitting the stitched product to be fed from said folder, means to engage the stitched product and feed the same from the machine, said engaging means also feeding the material through the folder to the needle, through the reversing means and from the folder, a loosely mounted rotatable roller to guide the stitched material to said engaging means, said engaging means comprising feed dogs positioned beneath the cloth plate, said feed dogs being mounted on the four-motion feed bar of said four-motion feed-actuating mechanism and having its work-engaging surfaces laterally spaced a substantial distance from and wholly laterally of the line of feed past the needle, a presser foot cooperating with said feed dogs, and means secured to the machine head and carrying said presser foot.

5. In a sewing machine having a presser foot bar, a reciprocating needle and a conventional four-motion feed-actuating mechanism beneath the cloth plate, a folder adapted to fold a material about its longitudinal axis and bring the longitudinal edges in superposed relationship and present the thus folded material in position for stitching by the needle adjacent the superposed edges, said folder having means to reverse the stitched material and means permitting the stitched product to be fed from said folder, and means to engage the stitched product and feed the same from the machine, said engaging means also feeding the material through the folder to the needle, through the reversing means and from the folder, said engaging means comprising feed dogs positioned beneath the cloth plate, said feed dogs being mounted on the four-motion feed bar of said four-motion feed-actuating mechanism and having its work-engaging surfaces laterally spaced a substantial distance from and wholly laterally of the line of feed past the needle, a presser foot cooperating with said feed dogs, and a bracket secured to the presser foot bar and carrying said presser foot.

6. In a sewing machine having a reciprocating needle and a conventional four-motion feed-actuating mechanism beneath the cloth plate, a folder adapted to fold a material about its longitudinal axis and bring the longitudinal edges in superposed relationship and present the thus folded material in position for stitching by the needle adjacent the superposed edges, said folder having means to reverse the stitched material, said folder having means in one side thereof to permit the reversed stitched product to pass from said folder at an angle to the direction of travel of the stitched product through said folder, means offset with respect to said folder to en-

gage the stitched product and feed the same through the machine, and means to guide said stitched product to said engaging means, said engaging means also feeding the material through the folder to the needle, through the reversing means and from the folder, said engaging means comprising feed dogs positioned beneath the cloth plate, said feed dogs being mounted on the four-motion feed bar of said four-motion feed-actuating mechanism and having its work-engaging surfaces laterally spaced a substantial distance from and wholly laterally of the line of feed past the needle, and a presser foot cooperating with said feed dogs.

7. In a sewing machine having a reciprocating needle and a conventional four-motion feed-actuating mechanism beneath the cloth plate, a base plate secured to the work support, a folder carried by said base plate, said folder being adapted to fold a material about its longitudinal axis and bring the longitudinal edges in superposed relationship, said folder being disposed to present the thus folded material in position for stitching by the needle adjacent the superposed edges, said folder being provided with means to reverse the stitched material and means in one side thereof permitting the product to pass therefrom, means to engage the stitched product and feed the same from the machine, said engaging means comprising feed dogs positioned beneath the cloth plate, said feed dogs being mounted on the four-motion feed bar of said four-motion feed-actuating mechanism and having its work-engaging surfaces laterally spaced a substantial distance from and wholly laterally of the line of feed past the needle, a presser foot cooperating with said feed dogs, and means to guide the product from said folder to said engaging means, said guide means comprising a roller positioned to receive the product from the folder and direct it to the said engaging means.

8. In a sewing machine having a reciprocating needle and a conventional four-motion feed-actuating mechanism beneath the cloth plate, a base plate secured to the work support, a folder carried by said base plate, said folder being adapted to fold a material about its longitudinal axis and bring the longitudinal edges in superposed relationship, said folder being disposed to present the thus folded material in position for stitching by the needle adjacent the superposed edges, said folder being provided with means to reverse the stitched material and means in one side thereof permitting the product to pass therefrom, means to engage the stitched product and feed the same from the machine, said engaging means comprising feed dogs positioned beneath the cloth plate, said feed dogs being mounted on the four-motion feed bar of said four-motion feed-actuating mechanism and having its work-engaging surfaces laterally spaced a substantial distance from and wholly laterally of the line of feed past the needle, a presser foot cooperating with said feed dogs, and means to guide the product from said folder to said engaging means, said guide means comprising a roller positioned to receive the product from the folder and direct it to the said engaging means, said roller being mounted on a leg of an inverted U-member, the other leg of said inverted U-member being disposed on a plate secured to said base plate.

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