July 24, 1956 E. KRATZ ET AL 2,755,753

SEWING MACHINE ATTACHMENT

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FIG. 1

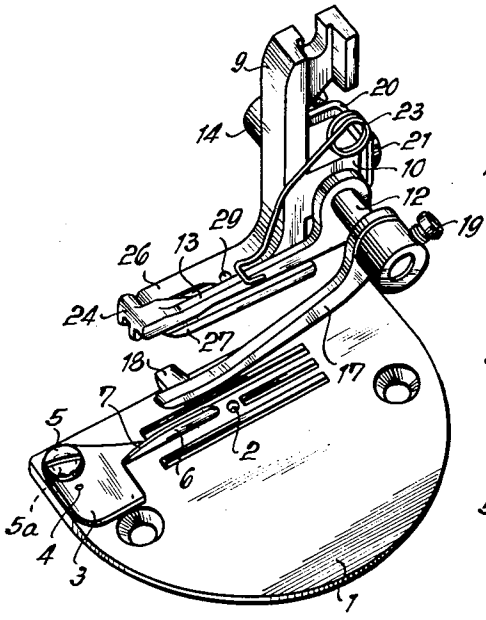


FIG. 2

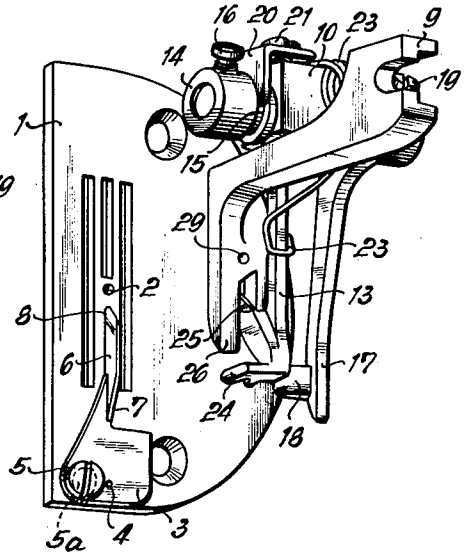


FIG. 5

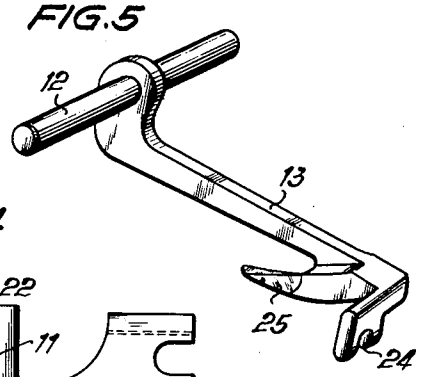


FIG. 3

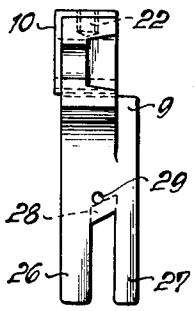
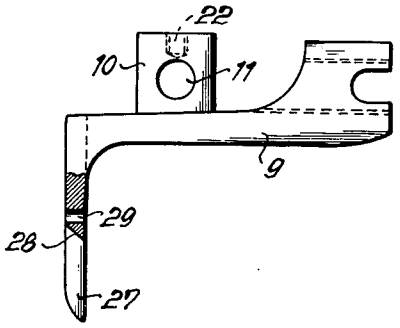


FIG. 4



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Fig.6

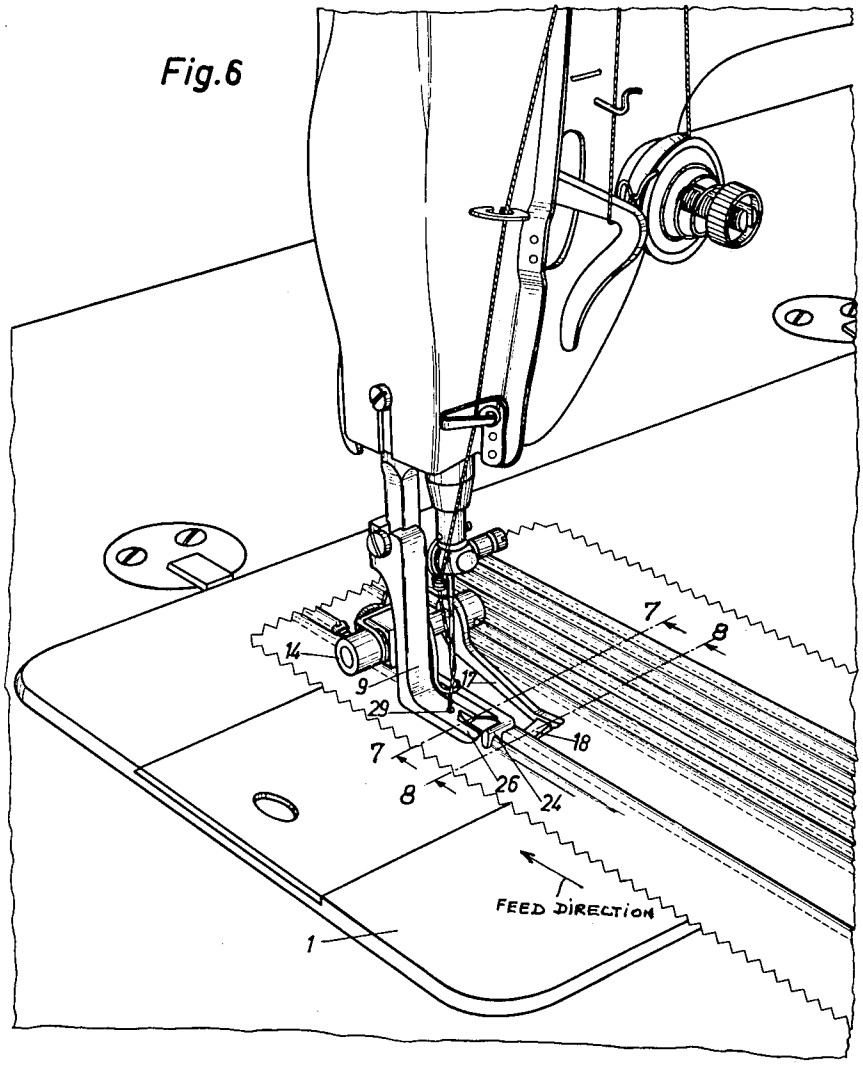


Fig.7

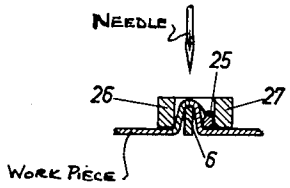
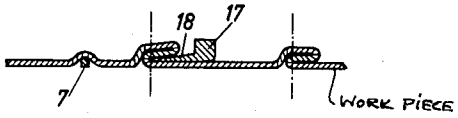


Fig.8



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SEWING MACHINE ATTACHMENT

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Claims priority, application Germany April 14, 1953

5 Claims. (Cl. 112—147)

The invention relates to a sewing machine attachment, and relates more particularly to attachments for use in sewing of folds. It is among the principal objects of the invention to provide for such an attachment that will securely and evenly form and sew folds in material, including hair-folds and including folds in extremely thin and sheer material.

The foregoing and other objects of the invention will be best understood from the following description of exemplification thereof, reference being had to the accompanying drawings, wherein:

Fig. 1 is a perspective view of an attachment in accordance with the invention;

Fig. 2 is a perspective view of the attachment of Fig. 1 but seen from the opposite side;

Fig. 3 is a plan view of a presser foot in accordance with the invention;

Fig. 4 is a plan elevational view, partly in section, of the presser foot shown in Fig. 3;

Fig. 5 is a perspective view of a fold guide in accordance with the invention;

Fig. 6 is a fragmentary perspective view of the attachment of the preceding views;

Fig. 7 is a large scale fragmentary sectional view taken on line 7—7 of Fig. 6; and

Fig. 8 is a large scale fragmentary sectional view taken on line 8—8 of Fig. 6.

In carrying the invention into effect in one of the embodiments which has been selected for illustration in the accompanying drawings and for description in this specification, and referring now particularly to Figs. 1 and 2, there is provided a stitching plate 1 that may be supported on the conventional work support of a sewing machine (not shown).

The stitching plate 1 is provided with a stitching hole 2 through which the needle (not shown) of the sewing machine protrudes during the sewing machine operation.

A fold forming device or folder 3 is connected to the upper surface of the stitching plate 1. The connection may be made by means of a pin 4 (Fig. 1) that is riveted to the folder 3, and which pin protrudes through a bore (not shown) of the stitching plate 1; furthermore, by means of a screw 5. The screw 5 is threaded into the stitching plate 1 and protrudes through a bore 5a that is formed in the folder 3. The bore 5a is larger than the outside diameter of the thread of the screw 5, for adjustment of the position of the folder 3.

The folder 3 comprises a bridge 6 which extends vertically, at right angle, to the top surface of the stitching plate 1. The bridge 6 includes near the forward end a slanting surface 7 that is inclined with respect to the stitching plate 1, and a rearward inclined surface 8 (Fig. 2). The rearward surface 8 terminates near the stitching hole 2.

There is provided a presser foot 9, that may be raised and lowered in conventional manner. The presser foot 9 carries a bearing structure 10 in which there is formed

a bearing bore 11. A shaft 12 is journalled in said bore 11. A fold guide 13 (Fig. 5) is rigidly secured to said shaft 12 and rotatable therewith about the axis of the shaft 12. A dog 14 is adjustably connected to one end of said shaft 12 on the opposite side of said bearing structure 10 relative to said fold guide 13, and the adjustable connection is provided by a set screw 16.

On the opposite end of the shaft 12 there is adjustably positioned a guide 17 that includes a sleeve that is adjustably held on the shaft 12 by means of a set screw 19. After tightening of the screw 19, the guide 17 tilts with the shaft 12 and thereby with the fold guide 13.

The dog 14 includes an annular recess 15, and a finger 20 extends into said recess 15. Said finger 20 includes an extension that is connected to the bearing structure 10 by means of a screw 21 that is threaded into a threaded bore 22 of said bearing structure 10 (Figs. 2 and 4). A spring 23 is held with one end by said screw 21, and extends with its other end to said fold guide 13 tending to press the same downwardly towards the stitching plate 1 urging it to rotate counter-clockwise about the axis of the shaft 12 in respect of Fig. 1. Due to this bias engendered by the spring 23, the entire shaft 12 will be urged towards rotation in that sense, including the guide 17. Said guide 17 has a wedge 18 that extends in a direction towards the presser foot 9.

Said fold guide 13 has a forward portion 24 that is of inverted U-shape to cooperate with the bridge 6 to form initially the fold in the material. Extending rearwardly from the front portion 24 there is an extension, such as a tongue 25 that has a top surface inclined in the working position of the attachment at a certain angle to said stitching plate 1. The tongue 25 furthermore is rounded on the inner surface (front surface, Fig. 5).

The presser foot 9 includes a horizontal portion that has two frontwardly directed tines 26 and 27 defining therebetween a recess of a predetermined width. At the inner rearward end of said recess between said tines 26 and 27, there is formed a downwardly inclined surface 28, the angle of inclination of which corresponds to the angle of inclination of said tongue 25. Said inclined surface 28 intersects the top surface of the horizontal portion of the presser foot 9 at an edge that forms the innermost edge of said recess and that is disposed at an obtuse angle to the longitudinal extension of said tine 26. Said tine 26 may be wider than the opposite tine 27. The inner edge of the tine 27 and the said inclined surface 28 including its said edge of intersection with the top surface of the presser foot constitutes a guiding means that is formed on the presser foot 9. The guiding means cooperates with said bridge 6 and said tongue 25 to complete the preforming of the fold in advance of the stitch.

In said horizontal portion of said presser foot 9, there is provided a hole 29 that is in register with the stitching hole 2. Said inclined surface 28 is adjacent said hole 29.

In the working position, said front portion 24 of the fold guide 13 is in register with the front end of said bridge 6, and said tongue 25 disposed between said bridge 6 and said tine 27 extending with its inclined top surface adjacent said inclined surface 28, and said tine 26 is on the other side (the left side, Fig. 3) of said bridge 6. In the working position, said wedge 18 of the guide 17 protrudes into the preceding fold abutting with its innermost edge against the stitch seam of said preceding fold, and thereby guides the succeeding fold formed and stitched at that instant.

The operation of the above described attachment is as follows. At the beginning, the operator will mark the position of the first fold as well as a position to the right of said first fold spaced therefrom for a distance comparable to that between adjacent folds. Thereafter, he

will space the guide 17 from the fold guide 13 for a distance corresponding to the space between individual folds, and will tighten the set screws 19. The operator will then proceed with the first fold, while guiding the material as visually registered between the guide 17 and the extra marking he had previously made on the material to the right of the first fold.

During the working on succeeding folds, however, the wedge 18, as previously described, will reach into the previously made fold and slide against the seam at the gorge thereof to guide the making of the next fold (Fig. 8).

During the making of many of the folds, the remaining parts will operate as follows. As the material is pushed rearwardly (Fig. 3), a fold will initially be formed between the front end of the bridge 6 (Fig. 1) and the inverted U-shaped front portion 24 of the fold guide 13. The fold will also have at that instant an inverted U-shape (Fig. 7). Throughout the operation, the fold guide 13 will be pressed downwardly by the spring 23. As the material progresses rearwardly along the bridge 6, the fold will now be formed between the bridge and on one side the tine 26 and on the other side the tongue 25. The tongue 25 is tapered rearwardly and, as has been mentioned, is rounded on the side adjacent the bridge 6. Thereby, there is generated only a minimum friction resistance for said material, and the material, owing to the rounding and tapering of the tongue 25 will tend to be bent over towards the right (Fig. 3). Upon sliding off the bridge 6 at the inclined surface 8 thereof and underneath the inclined surface 28 of the presser foot 9, the fold will be completely turned sidewardly to the right and will subsequently be stitched near the root of the fold (Fig. 8) by the sewing machine needle (Fig. 7) that proceeds through the aligned holes 29 and 2 (Figs. 3 and 1).

It will be apparent to those skilled in the art that the novel principles of the invention disclosed herein in connection with specific exemplification thereof will suggest various other modifications and application of the same.

It is accordingly desired that in construing the breadth of the appended claims they shall not be limited to the specific exemplification of the invention described herein.

Having thus described the invention, what we claim as new and desire to be secured by Letters Patent, is as follows:

1. In a sewing machine attachment, for use in forming and stitching a series of parallel folds in a material on a sewing machine, in combination, a stitching plate, a presser foot including a horizontal portion having a hole and being reciprocably movable to and from a working position, near the surface of said stitching plate, said presser foot including two tines defining therebetween a recess, a bridge adjustably connected to said stitching plate and extending into said recess in the working position of said presser foot, a fold guide journalled on said presser foot about an axis at an angle to the direction of reciprocation of said presser foot, and being tiltable about said axis to and from a station above said bridge and having means operable in said station of said fold guide to pre-form with said bridge said fold in advance of said presser foot, guiding means on said presser foot, said fold guide having an extension disposed in said station laterally adjacent said bridge and said guiding means, and cooperating therewith to complete the pre-formed fold in advance of the stitch, with the root of the fold formed in the stitching plane, and a guide connected to said fold guide for tilting therewith about said axis and adjustably spaced from said fold guide to determine the distance between two adjacent folds.

2. In an attachment as claimed in claim 1, said bridge having a slanting forward surface and an inclined rear surface.

3. In an attachment as claimed in claim 1, said guide having a wedge arranged to protrude into a fold made in a preceding operational step for spacing said fold uniformly from each other.

4. In a sewing machine attachment, for use in forming and stitching a series of parallel folds in a material on the sewing machine, in combination, a stitching plate, a presser foot including a horizontal portion having a hole and being reciprocably movable to and from a working position near the surface of said stitching plate, said presser foot including two tines defining therebetween a recess, a bridge adjustably connected to said stitching plate and extending into said recess in the working position of said presser foot, a fold guide journalled to said presser foot about an axis at an angle to the direction of reciprocation of said presser foot and being tiltable about said axis to and from a station above said bridge, means secured to said fold guide and operable in said station to form with said bridge said fold, and a guide connected to said fold guide for tilting therewith about said axis and adjustably spaced from said fold guide to determine the distance between two adjacent folds, said fold guide including a rearwardly extending tongue tapered rearwardly towards said recess in said working position of said presser foot the top surface of said tongue being inclined relative to said stitching plate for a certain angle of inclination when said fold guide is in said station, an inclined surface formed on the underside of said presser foot intersecting the innermost portion of said recess, the angle of inclination of said inclined surface being similar to the said certain angle of inclination.

5. In an attachment as claimed in claim 4, the edge of intersection of said inclined surface with said recess forming an obtuse angle with the longitudinal direction of a tine.

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