Sept. 13, 1938. C. SEAMAN 2,130,198

APPARATUS FOR FORMING BLIND STITCHED FACINGS

Filed Jan. 7, 1936 2 Sheets-Sheet 1

Fig. 1.

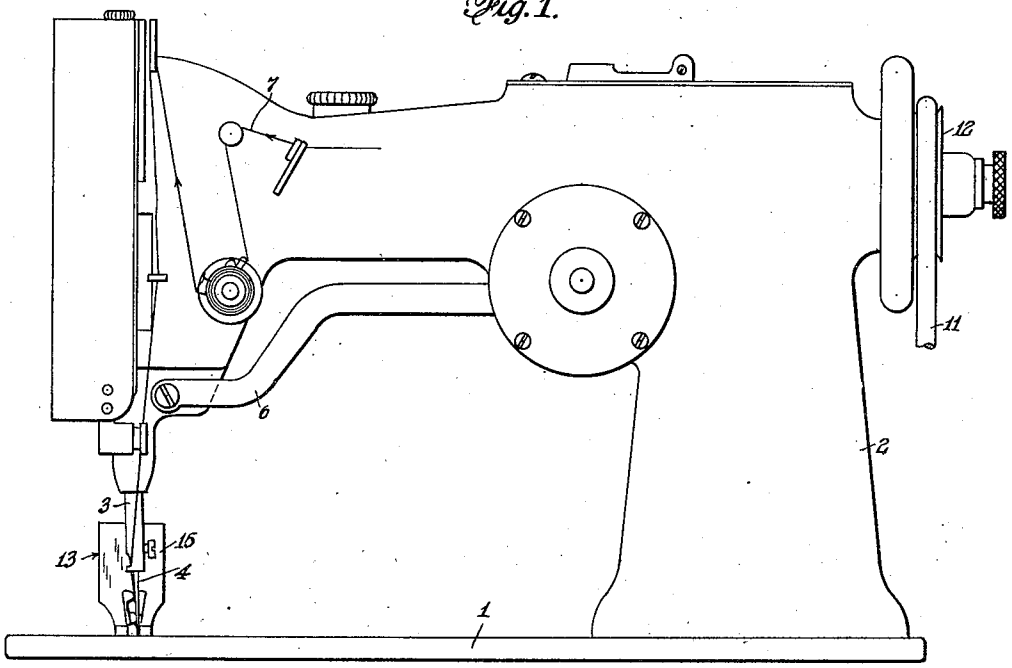


Fig. 2.

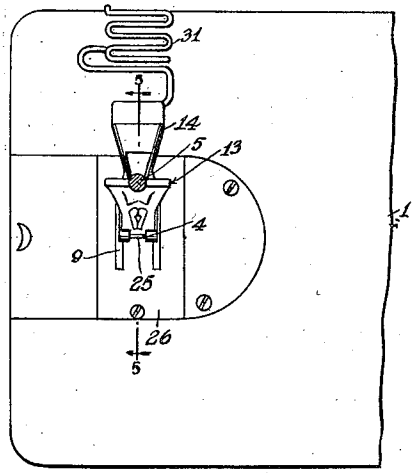
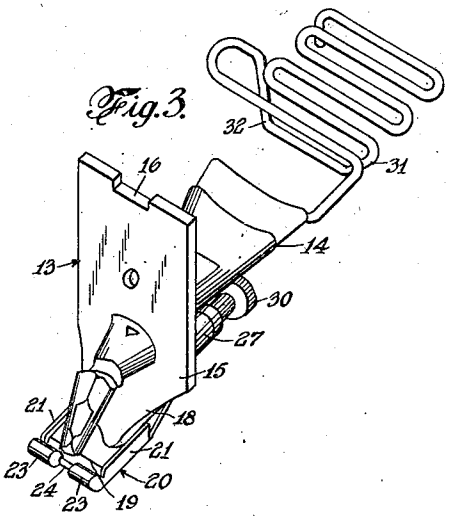


Fig. 3.



INVENTOR.
Charles Seaman
BY
Wm. S. Pritchard.
ATTORNEY.

Sept. 13, 1938. C. SEAMAN 2,130,198

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Filed Jan. 7, 1936 2 Sheets-Sheet 2

Fig. 4.

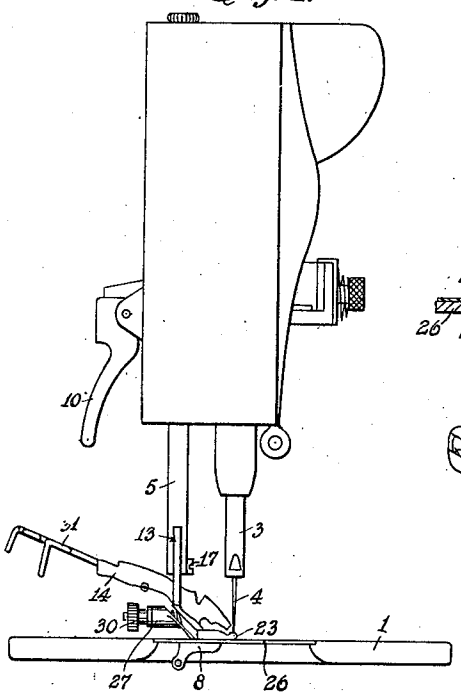


Fig. 5.

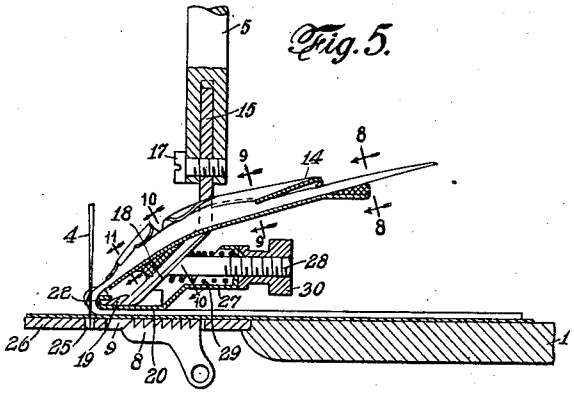


Fig. 8.

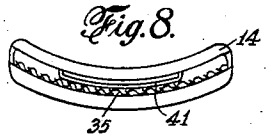


Fig. 9.

Fig. 10.

Fig. 11.

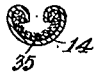


Fig. 12.

Fig. 13.

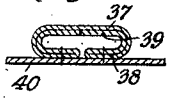


Fig. 15.

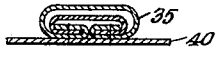


Fig. 6.

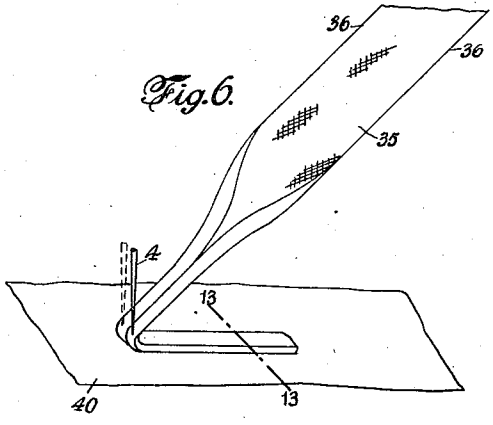


Fig. 14.

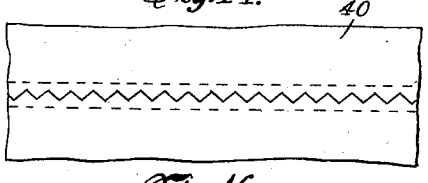


Fig. 16.

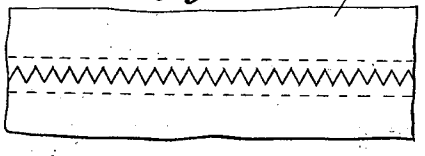


Fig. 7.

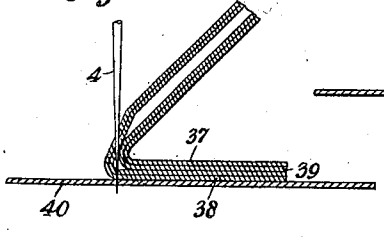
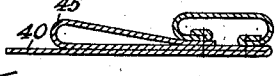


Fig. 17.

Fig. 18.



Charles Seaman INVENTOR.

BY Wm. S. Rutherford.

ATTORNEY.

Patented Sept. 13, 1938 2,130,198

UNITED STATES PATENT OFFICE

2,130,198

APPARATUS FOR FORMING BLIND STITCHED FACINGS

Charles Seaman, Jamaica Estates, N. Y.

Application January 7, 1936, Serial No. 57,872

4 Claims. (Cl. 112—176)

This invention relates to an apparatus for forming and attaching blind stitched facings, such as braid, strips, trimming and the like.

An object of this invention is to provide an attachment which can be applied to a standard sewing machine of the type forming a zig-zag stitching, whereby a facing is formed and attached by a blind stitching to any suitable material.

The other objects of the invention will become apparent from the following description, appended claims and accompanying drawings forming a part of this specification and wherein:

Figure 1 is a front elevation of a machine showing the attachment constituting one part of the instant invention applied in position.

Figure 2 is a top plan view of the attachment.

Figure 3 is a perspective view of the attachment.

Figure 4 is an end view of the machine together with the attachment as viewed from the left in Figure 1.

Figure 5 is a longitudinal section taken on lines 5—5 of Figure 2.

Figure 6 is a diagrammatic view to illustrate the path of the materials through the machine.

Figure 7 is a sectional view showing the path of the needle through the materials at the point of stitching.

Figure 8 is a section taken on lines 8—8 of Figure 5, including a guide for a separate filler not shown in Figure 5.

Figure 9 is a section taken on lines 9—9 of Figure 5.

Figure 10 is a section taken on lines 10—10 of Figure 5.

Figure 11 is a section taken on lines 11—11 of Figure 5.

Figure 12 is a detail of the throat of the attachment.

Figure 13 is a transverse section of the finished material taken along lines 13—13 of Figure 6.

Figure 14 is a view of the back of the finished material illustrated in Figure 6.

Figure 15 is a transverse section of another embodiment of a finished material made by the instant invention.

Figure 16 is a view of the back of the material illustrated in Figure 15.

Figures 17 and 18 are transverse sections of other embodiments of finished materials.

Referring now to the drawings wherein illustrative embodiments of the attachment and materials produced therewith are shown and wherein like reference numerals designate like parts, the reference numeral 1 designates a base upon which is supported a head 2 of a sewing machine which carries a needle bar 3 in which a needle 4 is positioned and a presser foot bar 5.

The sewing machine is of the type designed to sew materials with the so-called zig-zag stitch. In such a machine the needle 4 stitches first on one side and then on the other side of a seam, this movement being caused by any suitable mechanism such as an arm 6 which moves the needle horizontally between its vertical movements. The throw of the arm 6 can be adjusted whereby the horizontal movement of the needle may be determined. The precise details of the mechanism for horizontally moving the needle are well known in the art and, since they form no part of my invention, it is unnecessary to give a detailed description thereof.

A thread 7 supplied from a suitable source of supply, such as a spool (not shown), is led through the usual guides and other known devices to the needle. Toothed feed dogs 8 extend through apertures 9 and are adapted to feed material to the needle 4 for stitching. A hand lever 10 may be provided to elevate the presser foot bar 5 to permit the material to be adjusted in the machine. The machine is operated in the usual manner by means of a belt 11 driven by a suitable drive mechanism and cooperating with the pulley 12.

It is understood that the feeding mechanism causes the material to move beneath the needle in synchronism with the vertical movement of the needle. The type of machine hereinbefore described will produce the so-called zig-zag stitch, due to the fact that the material being stitched is given a forward feeding movement by the dogs 8 while the needle 4 is shifted horizontally.

The attachment constituting one phase of the instant invention may be generally described as a unitary device consisting of a presser foot and a folder.

Referring now to Figures 2, 3 and 5 wherein the attachment is illustrated, the reference numeral 13 generally designates the presser foot and the reference numeral 14 generally indicates the folder which extends through and is fixedly secured by any suitable means as by soldering in an aperture in the vertical leg 15 of the presser foot.

The vertical leg 15 of the presser foot 13 is provided at its free edge with a notch 16 which cooperates with a slot in the presser foot bar 5, whereby the attachment can be positioned thereon. A screw 17 passing through holes provided

both in the presser foot bar and upper leg 15 of the presser foot 13 detachably secures the attachment in position on the machine.

The lower leg 18 of the presser foot is bent in the form illustrated and terminates in a toe 19 which is provided with a shoe 20 which cooperates with the feeding dogs 8 by pressing the material against the material-engaging means. To prevent any free sharp edge of the toe 19 from injuring the material, the shoe 20 is formed with a flange 21 on each side thereof. In order to provide for a zig-zag stitching occasioned by the lateral shifting movement of the needle, the shoe 20 at the front thereof is formed with rolled edges 22 (see Figure 5) constituting spaced members 23 (see Figures 3 and 4), there being provided therebetween a slot or recess 24 which is disposed above a correspondingly placed slot 25 in the plate 26 overlying the feed dogs.

As will hereafter be explained, the material after it passes through the folder 14 is caused to enter into the slot 24 and is bent around the horizontal edge thereof, whereby the material is positioned for stitching. As a consequence, the slot 24 is made of such width as to accommodate the folded material presented thereto. To provide for adjusting the shoe relative to the needle, the rear portion thereof is formed with a hollow tubular member 27 loosely mounted on a screw 28 fixedly carried by the leg 18. The tubular member 27 which may be provided with a flange at its rear end is adapted to embrace a spring 29 mounted on said screw and which spring is adapted to normally force said tubular member away from contact with the leg 18. If desired, adjacent the tubular member there may be provided a sleeve and a washer which are loosely mounted on the screw and adapted to slide longitudinally thereof. Cooperating with the tubular member 27 is a nut 30 which is adapted to bear against the tubular member to determine the longitudinal position of the tubular member, whereby the shoe of the presser foot may be adjusted against the tension of the spring to any desired relation with respect to the needle.

The folder 14 is adapted to receive the facing material and, as the facing material passes therethrough, to progressively inturn the edges as illustrated by Figures 9 to 12 inclusive, so as to roll the edges of the facing material to form a plurality of plies and to discharge the same at a point adjacent the rear edge of the aperture 24 between the elements 23. The material passes through the folder 14 is fed downwardly over the edge of the rear edge aperture 24 and under the presser foot in engagement with the feed dogs 8 by which the material is progressively fed through the machine. A tensioning gate 31 formed, for example, by a wire bent into the form of reverse folds, may be secured through the folder 14 in a position to feed material to the mouth thereof. The tensioning gate 31 may have a downwardly extending loop 32 formed therein which is adapted to receive and support a material, such as a block of wax, for treatment of the facing material as it is passed to the folder. The wax may be frictionally held in the tensioning gate 31 adjacent the loop 32 in a position such that the facing is caused to pass over the top edge of the wax on its way to the folder 14. This treatment serves to render the material more amenable to the operation of the folder, particularly when relatively stiff materials are being folded.

The folder material which is to constitute the facing, as above explained, after it passes from the folder, is bent rearwardly and passed under the presser foot in engagement with the feed dogs. The needle 4 stitches the folded material at the bend thereof, whereby the needle penetrates and emerges from the under surface of the under ply of each of the edge folds as shown in Figures 6 and 7 to produce a blind stitched facing.

In operation of the device, a strip of facing material 35 fed from a suitable source of supply is passed through the tensioning gate 31 and thence through the folder 14 where each longitudinal edge 36 of the facing material 35 is progressively rolled as shown in Figures 8 to 12 inclusive to form a top ply 37 and an under ply 38 and a ply 39 intermediate the said top and bottom ply. The folded facing material 35 passes from the throat of the folder around the rear edge of the slot 24 and between the presser foot and feed dogs (see Figure 5). If the facing is to be attached to a base material, the latter indicated by the reference numeral 40, is fed from the front of the machine in the manner indicated in Figure 7.

The presser foot is preferably adjusted so that the needle in its penetrating stroke adjacent one edge fold is caused to enter the under side of the ply 38, extend through the inner ply or plies 39 but not the top ply 37, emerge from the said under side of the ply 38 and then penetrate the base material 40. After one edge fold is stitched, as just described, the needle is shifted laterally and the other edge is similarly stitched. Since the material is being progressively fed during the stitching operation, a zig-zag stitching is secured. The folded facing material, as shown in the drawings, is fed downwardly, bent around the presser foot and fed rearwardly. As a consequence, the facing is drawn against the base material and since the needle does not penetrate the top ply 37, the stitching is visible only from the back of the base material 40, the facing being blind stitched.

It is obvious that by changing the position of the presser foot with respect to the needle, a greater or less number of plies can be penetrated by the needle.

In Figure 13 there is illustrated one embodiment of a facing made in accordance with this invention. It is to be noted that the intermediate ply 39 extends over the entire inner periphery of the facing. By utilizing facing materials of widths narrower than that employed in making the facing illustrated in Figure 13, the intermediate ply may be made to extend over any predetermined portion of the inner periphery of the facing. By utilizing a facing material, the edges of which are prefolded prior to introduction into the folder, a facing made with a plurality of intermediate plies may be secured.

In certain instances as, for example, with thin material, it is desirable to include a separate filler in the folds. For this purpose a filler may be fed into the folder 14 by introducing the same through the guide 41. Figure 15 illustrates one embodiment of a facing made with a separate filler. It is to be noted that in this embodiment the stitching penetrates the under ply of the filler. If desired, the stitching may also penetrate the top ply of the filler.

When the intermediate plies extend over the entire periphery of the inner surface of the facing, as shown in Figure 13, or when the facing material is prefolded prior to the introduction into the

folder, the intermediate ply or plies function as and are referred to as fillers. In these cases obviously the filler is integral with the material of which the facing is made.

When it is desired to make a more attractive material, the base material **40** may be given an edge fold **42** and the facing stitched thereon as illustrated in Figure 17. In this embodiment it is to be understood that the facing may be of any of the previously described forms with or without a filler.

Materials of the type illustrated in Figure 17 may be made more attractive by also including a heading. A facing with a heading **45** is shown in Figure 18. It is apparent that by various combinations numerous different appearing attractive materials can be made by the instant device.

The cross-section of the facing may be either circular or rectangular.

It is to be understood that, though the invention has been described in connection with the use of the type of folder designated generally by the reference numeral **14**, it is to be understood that any other folder forming the desired edge folds can be utilized.

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

I claim:

1. In a sewing machine adapted to produce a blind stitched facing, a needle, means to horizontally move the needle to produce a zig-zag stitching, a presser foot having a pair of spaced members and provided with an edge between said spaced members positioned adjacent the vertical path of travel of the needle, a folder designed to fold each longitudinal edge of a facing to form an edge fold having at least a top ply and an under ply at the respective edges, means to feed the same around the edge of the presser foot between said spaced members to present the respective under side of the under ply to the needle for alternately stitching each edge fold from the under side of the respective under ply whereby the needle in its penetrating stroke adjacent each edge will enter and emerge from the respective under side of the under ply without penetrating the outer surface of the facing to produce a blind stitch.

2. In a sewing machine adapted to produce a blind stitched facing, a needle, means to horizontally move the needle to produce a zig-zag stitching, a presser foot provided with a pair of spaced members and having an edge between said spaced members positioned adjacent the vertical path of travel of the needle, a folder designed to fold each longitudinal edge of a facing to form an edge fold having a top ply and an under ply at the respective edges, said folder being secured to a leg of the presser foot and having its mouth and throat on opposite sides of said leg, means to feed the folded facing around the edge of the presser foot between said spaced members to present the respective under side of the under ply to the needle for alternately stitching each edge fold from the under side of the respective under ply, whereby the needle in its penetrating stroke adjacent each edge will enter and emerge from the respective under side of the under ply without penetrating the outer surface of the facing to produce a blind stitch.

3. An attachment for a sewing machine of the type which produces a zig-zag stitching comprising a presser foot provided with a pair of spaced members and an edge between said spaced members, said edge to be positioned adjacent the travel of the needle of the machine, a folder designed to fold each longitudinal edge of a facing to form an edge fold having at least a top ply and an under ply at the respective edges, said folder being secured to a leg of the presser foot and having its mouth and throat on opposite sides of said leg, said throat being positioned relative to the presser foot edge between said spaced members to permit the folded facing to be bent transversely and around said edge to position the under side of the under ply of each edge fold to permit the needle of said machine to alternately and progressively stitch each edge fold by entering and emerging from the respective under side of the respective under ply without penetrating the top ply to produce a blind zig-zag stitched facing.

4. An attachment for a sewing machine of the type which produces a zig-zag stitching comprising a presser foot provided with a pair of spaced members and having an edge between said spaced members to be positioned adjacent the vertical path of travel of the needle, a folder designed to fold each longitudinal edge of a facing to form an edge fold having at least a top ply and an under ply at the respective edges, said folder being positioned relative to the presser foot to permit the facing to be bent transversely and around said edge between the said spaced members to present the respective under side of the under ply for alternately stitching each edge fold from the under side of the respective under ply whereby the needle in its penetrating stroke adjacent each edge will enter and emerge from the said respective underply without penetrating the outer surface of the facing to produce a blind stitch.

CHARLES SEAMAN.