

Nov. 3, 1931.

C. SEAMAN

1,830,177

ATTACHMENT FOR SEWING MACHINES

Filed Dec. 13, 1926

2 Sheets-Sheet 1

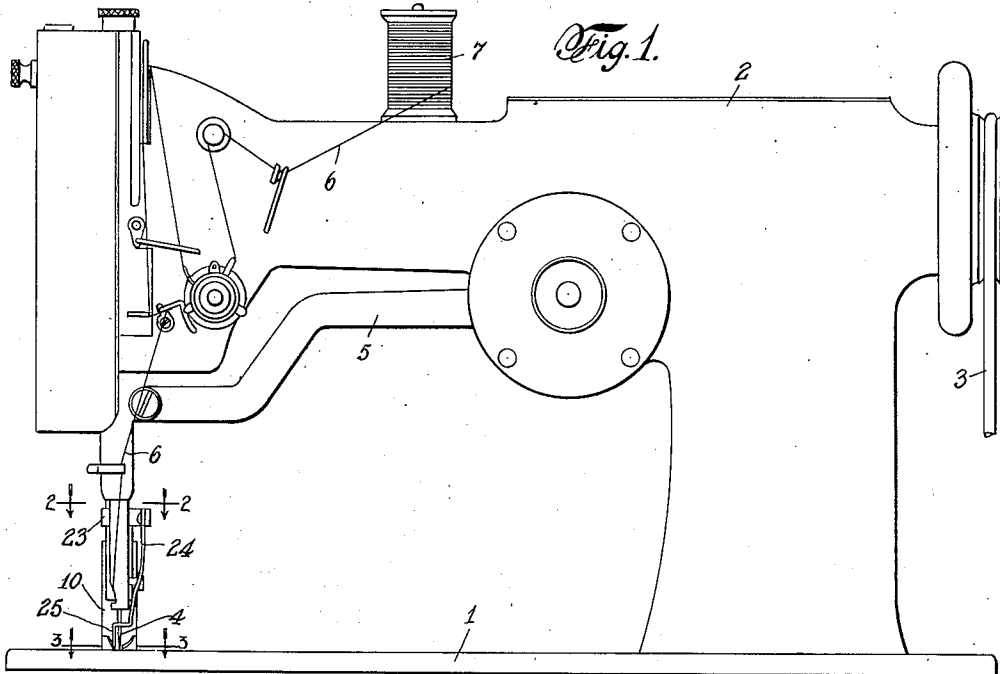


Fig. 2.

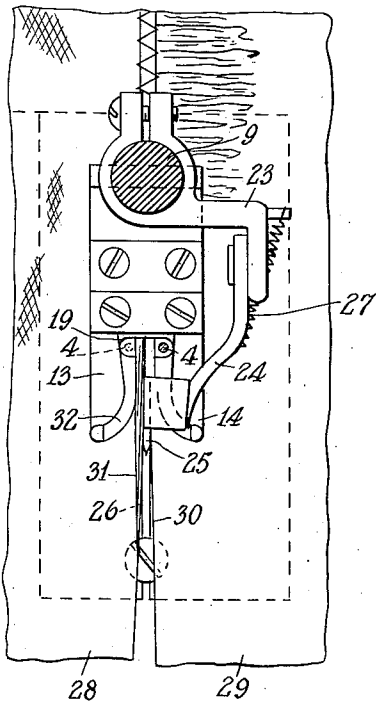
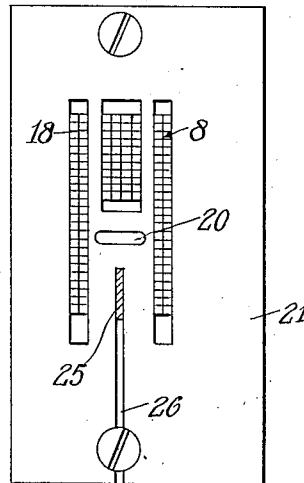


Fig. 3.



INVENTOR
Charles Seaman
BY *Wm. J. Cuthbert*
ATTORNEY

Nov. 3, 1931.

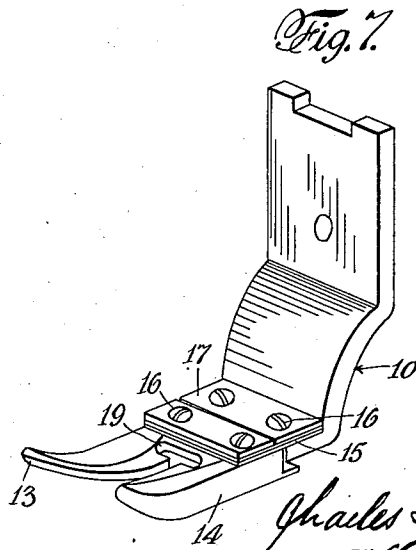
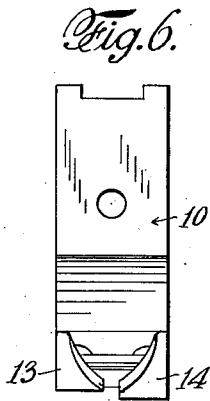
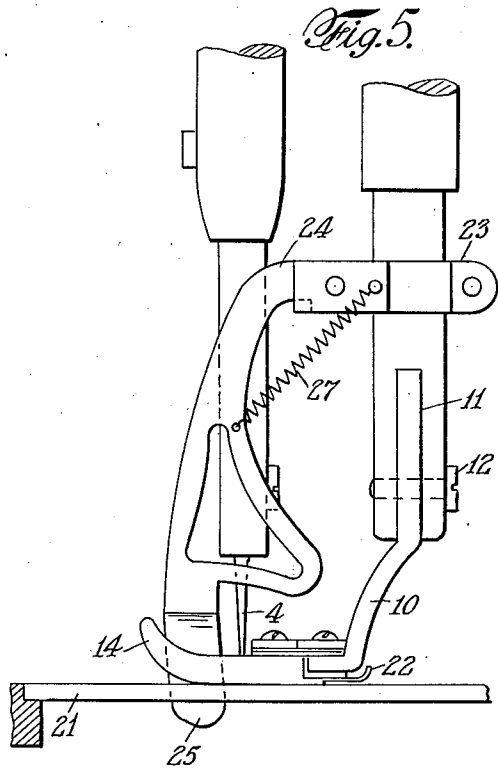
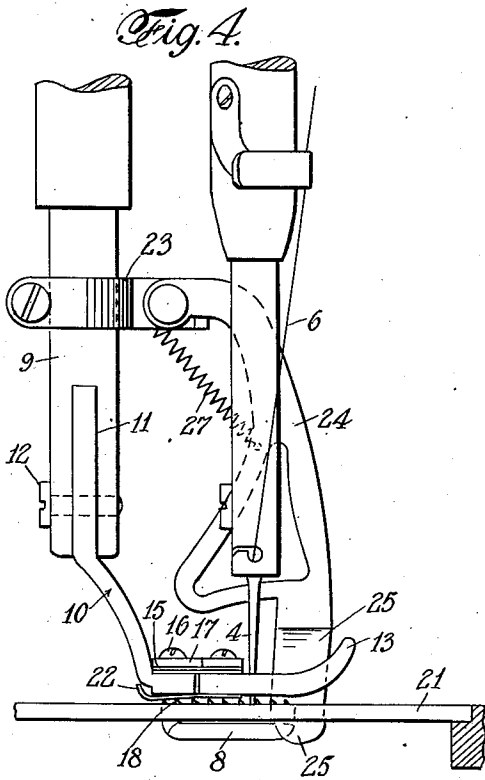
C. SEAMAN

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ATTACHMENT FOR SEWING MACHINES

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2 Sheets-Sheet 2



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

UNITED STATES PATENT OFFICE

CHARLES SEAMAN, OF HOLLIS, NEW YORK

ATTACHMENT FOR SEWING MACHINES

Application filed December 13, 1926. Serial No. 154,321.

This invention relates to a novel and improved attachment for a sewing machine which will permit shirring of lace and sewing of the same to the edge of another piece of material at the same operation. For the sake of simplicity I shall refer to the material to be shirred as lace and the material to which the shirred lace is sewed as cloth. It is to be understood, however, that I do not intend to limit myself by the use of these names, as the invention can obviously be used with any kind of suitable material.

In order to give the shirring effect to the lace it is necessary that the lace be fed through the machine faster than the cloth. Then when the shirred lace is sewed to the cloth it is puckered, thus giving the shirred effect. In prior art devices it has been customary to feed the lace by a device operating independently of the usual feeding devices disposed beneath the foot. Obviously this calls for complicated changes in existing machines.

It is the primary object of my invention to provide means which may be applied to standard sewing machines, particularly of the type forming a zigzag stitch, and which will give the desired result of a shirred lace sewed to the edge of a piece of cloth, without the necessity of employing a special machine for that purpose.

It is a further object of my invention to provide an attachment for shirring which shall embody a divider for separating the cloth from the lace and which may be easily moved from operative position when necessary so as to permit use of the machine for sewing of other kinds without shirring. In prior art practice dividers have been used but they have been so arranged that they have been impossible to remove without stopping the operation of the machine for several minutes, but this delay is avoided by my invention.

Other objects and advantages of my invention will become apparent during the following description taken in connection with the accompanying drawings, in which:

Figure 1 is a front elevation of a sewing

machine head having my invention applied thereto.

Figure 2 is a section on the line 2—2 of Figure 1, with the cloth and lace in position.

Figure 3 is a section on the line 3—3 of Figure 1.

Figure 4 is an end elevation of the attachment as viewed from the left of Figure 1.

Figure 5 is an elevation of the device appearing in Figure 4 as viewed from the opposite side thereof.

Figure 6 is a front elevation of the foot detached from the machine.

Figure 7 is a perspective view of the foot.

Referring now to the drawings, the numeral 1 designates a suitable base upon which is supported the head 2 of a sewing machine. This machine may be of any suitable type adapted to sew material with the so-called zigzag stitch. For the purposes of illustration I have shown the machine as operated by the usual belt 3. 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 the arm 5 which moves the needle horizontally between its vertical movements. The details of the mechanisms for causing these movements form no part of my invention and therefore I deem it unnecessary to disclose them in further detail.

The thread 6 is supplied from a suitable spool 7 and is led through the usual guides and other devices to the needle. Any usual and suitable feeding mechanism 8 is situated beneath the needle to operate upon the material which is being stitched. It is understood that this feeding mechanism causes the material to move beneath the needle in synchronism with the vertical movement of the needle. This type of machine will give a so-called zigzag stitch, due to the fact that the material being stitched is given a feeding movement by the device 8 while the needle is shifted horizontally. This stitch is usually employed where it is desired to stitch together two pieces of material, the seam passing beneath the needle and the needle forming a stitch first on one side and then on the other of the seam.

Supported upon the lower end of the bar 9 is a presser foot 10 which may conveniently be detachably secured in a notch 11 in the bar by means of the screw 12. This foot is provided with a pair of shoes 13 and 14 and these shoes are preferably formed integral with each other and secured to the main portion of the foot by means of a spring connection herein exemplified by a pair of spring plates 15 secured to both the main portion and the shoes by means of screws 16 and washer plates 17. By this arrangement it is possible for the shoes to give when a seam passes beneath them or when there is an inequality in the feed, thus relieving the lace of any strain.

The shoes are adapted to cooperate with the feeding device 8 by pressing the material against the material-engaging means exemplified by the teeth 18 of the device, best shown in Figures 3 and 4. In order to provide for the horizontal movement of the needle the shoes are provided with the laterally extending aperture 19, which is disposed above the correspondingly placed slot 20 in the plate 21 overlying the feeding mechanism.

Referring particularly to Figures 4, 5 and 6, it will be seen that the shoe 13 is raised a substantial distance above the shoe 14. The shoe 14 is rigid and is of sufficient thickness to hold the material passing beneath it in close contact with the teeth of the feeding device. This will insure a positive feeding of this material. On the other hand, the material passing beneath the shoe 13 is not acted upon directly by the rigid part of the shoe but, as best shown in Figure 4, it is resiliently held in contact with the teeth 18 by means of a leaf spring 22. This spring is placed rearwardly of the main portion of the shoe of which it forms a part so that the feeding device will not grip the material until the teeth come beneath the spring 22. By this means the material passing beneath the shoe 14 is given a feeding movement substantially greater than that given to the material passing beneath the shoe 13. The teeth disposed beneath the shoe 14 are caused by that shoe to act upon the material throughout the movement of the teeth, whereas the teeth beneath the shoe 13 will merely push the material up against the shoe without feeding it until the teeth reach the spring 22. By proper proportioning of parts the desired ratio of feeding movements of the different materials may be obtained. It is customary to shirr the lace and therefore that material is the one disposed beneath the shoe 14, whereas the cloth to which the shirred lace is to be stitched is disposed beneath the shoe 13 comprising the spring 22.

Secured on the vertical bar 9 is a bracket 23 upon which is pivotally mounted the arm 24 carrying at its lower end the divider 25. This divider is received within the slot 26 in

the plate 21 and is resiliently held in either operative or inoperative position by means of the spring 27. The operative position is shown in the drawings and the inoperative position is reached by merely lifting the arm upwardly and forwardly. This divider serves to guide and turn the edge of the cloth and the lace as they pass under the foot.

In Figure 2 I have shown the cloth at 28 and the lace at 29. The edge 30 of the lace passes to the right of the divider 25 and the divider engages the edge 31 of the cloth. The edge 31 of the cloth is caused by the operator to form an upstanding portion lying substantially vertical or parallel with the plate 25 which as indicated in Figure 2 folds the cloth over the edge 32 of the shoe 13, as the cloth is advanced to the needle and as said edge 31 passes through the needle aperture 19. The needle 4 preferably penetrates the fabrics 28 and 29 at points beyond the fold. Thus, the stitching encases the fold and because of its tension forms a bead-like construction of the folded edge of the fabric. It is of course obvious that this folding of the edge of the fabric 28 lying adjacent the plate 25 is not desirable or practical with heavy fabrics, but with the lighter fabrics such as silks and those used in women's lingerie and dresses this folding is quite desirable both from the standpoint of making a substantial seam as well as a neat appearance along the seam. The needle 4 stitches first on one material and then on the other, being shown in full lines in Figure 2 as stitching the lace and in dotted lines as stitching the cloth. The lace is positively fed during the entire feeding movement of the teeth of the feeding device, whereas the cloth is only fed through a portion of that movement. The result is the shirring effect desired. It will thus be seen that the two materials are stitched together with a folded edge on the cloth. In prior art devices this folded part has been so great that a raw edge has been left, which it was necessary to trim off. The trimming usually results in cutting of stitches thereby detracting greatly from the finished product.

If it is desired to turn a corner with the cloth and lace so as to form an angle in the article being made, this may be done by lifting the divider upwardly and forwardly out of the way. The machine may then be operated for a few stitches in the ordinary manner and then the divider may be lowered and work resumed as before. Again, if it is desired to use the same machine for ordinary zigzag stitch work, the foot may be replaced by an ordinary presser foot and the divider may be raised out of the way. In prior art constructions using a divider it has been customary to place the divider upon the plate corresponding to the plate 21 and thus the machine is rendered useless for anything besides the special work for which the divider is used.

When other work has to be done the plate with the divider thereon has to be removed and replaced by another plate. All of this consumes time and is avoided by my invention, by means of which a divider may be moved instantaneously into either operative or inoperative position.

The divider operates as a guide to form the folded edge on the cloth and also to keep the cloth and lace in their proper relation to one another. While it is possible for an expert workman to operate the machine without the divider to stitch shirred lace to the cloth, nevertheless, it is very difficult because the two materials must be accurately guided into position beneath the needle. This is accomplished by means of the divider and so well and efficiently accomplished that the device may be successfully operated by a workman of ordinary skill.

I am aware that various changes in details may be made without departing from the scope of my invention and I therefore do not intend to be limited except by the appended claims.

I claim:

1. A sewing machine comprising a reciprocating needle, a feeding device adapted to feed materials beneath said needle to be stitched together thereby, said feeding device having teeth disposed on opposite sides of said needle and both operating at uniform speeds, a presser-foot having shoes cooperating with said teeth to effect the feeding movement, one of said shoes causing said teeth on one side of the needle to feed the material at the natural speed of the feeding device, and the other shoe having an area to cooperate with the teeth on the opposite side of the needle to feed the material during part of their feeding movement.

2. A sewing machine comprising a vertically movable needle, a feeding device adapted to feed materials beneath said needle to be stitched together thereby, said feeding device having teeth disposed on opposite sides of said needle for engagement with the material, and means rendering the teeth on one side of the needle inoperative for feeding a material in contact therewith during part of their movement.

3. A sewing machine comprising a reciprocating needle, a feeding device adapted to feed materials beneath said needle to be stitched together thereby, said feeding device having teeth disposed on opposite sides of said needle, and a foot having two shoes each of which is adapted to cooperate with the teeth on one side of said needle to feed the material disposed on that side, one of said shoes being relatively rigid and the other relatively resilient at its heel portion and having its forward bottom surface in a plane higher than the corresponding surface of the other shoe.

4. A sewing machine comprising a reciprocating needle, a feeding device adapted to feed materials beneath said needle to be stitched together thereby, said feeding device having teeth disposed on opposite sides of said needle, and a foot having two shoes, each of which is adapted to cooperate with the teeth on one side of said needle to feed the material disposed on that side, one of said shoes having a surface for holding the material passing beneath it in contact with said teeth throughout the feeding movement of said teeth and the other shoe having a surface permitting said teeth to operate idly during a portion of their feeding movement.

5. A sewing machine comprising a needle adapted to form zigzag stitching, a foot disposed beneath said needle and having two shoes, a divider pivotally mounted above said shoes, a finger grip between said pivoted and distal ends of the divider, the distal end of the divider being adapted to be swung into operative position between said shoes and into inoperative position thereabove.

6. A sewing machine comprising a presser foot bar, a bracket secured thereon, a foot secured to said bar and having a pair of shoes, a divider pivoted on said bracket and adapted to be received between said shoes, said divider being adapted to turn the material over the edge of one of said shoes and means resiliently holding said divider in either inoperative or operative position.

7. A sewing machine presser foot comprising a main portion and a pair of divided shoes integrally connected at their heel portions and positioned forwardly of said main portion, and a resilient plate secured to said shoes and said main portion thus permitting said shoes to give as material passes thereunder.

8. A sewing machine comprising a feeding device, a plate overlying said device, a presser foot cooperating with said feeding device and comprising a pair of shoes, and a divider pivotally mounted above said foot and having its distal end disposed between said shoes, said distal end of the divider being received in a slot in said plate.

In testimony whereof, I have affixed my signature to this specification.

CHARLES SEAMAN.