

Sept. 22, 1953

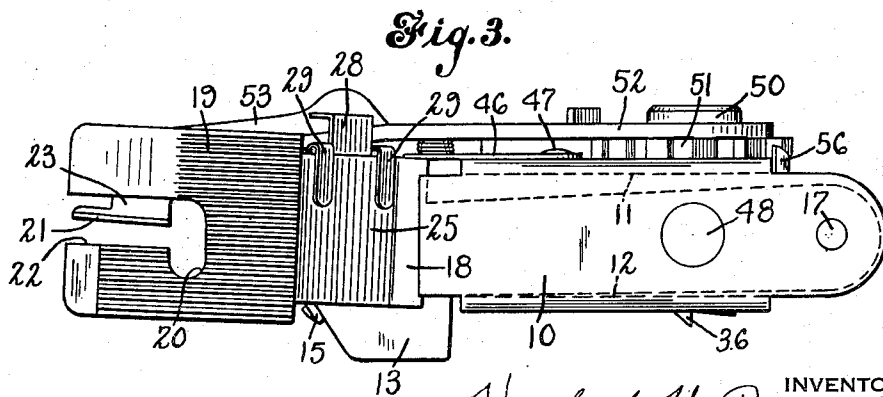
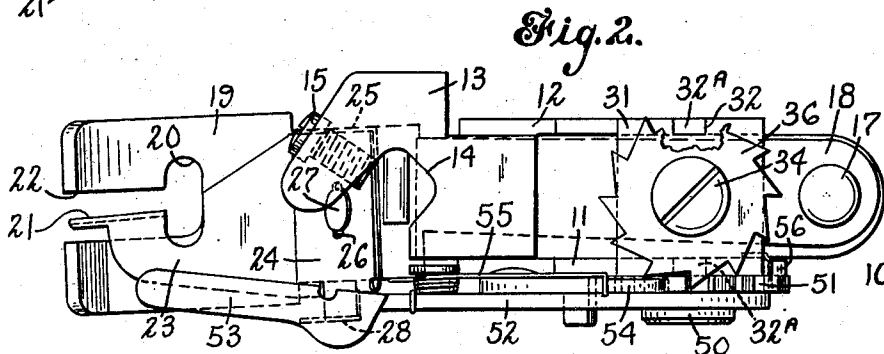
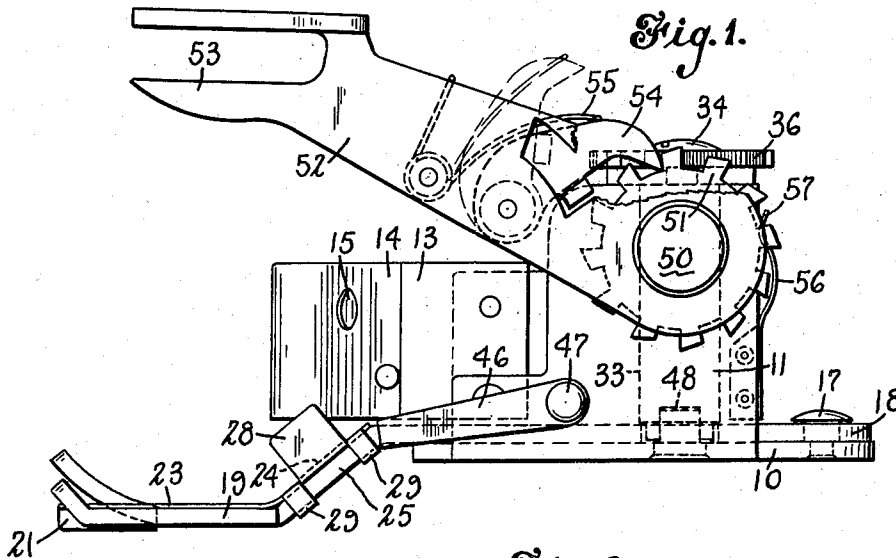
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2,652,796

BLIND STITCH ATTACHMENT FOR SEWING MACHINES

Filed Jan. 12, 1951

2 Sheets-Sheet 1



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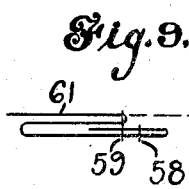
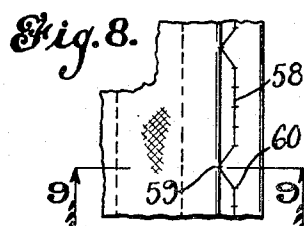
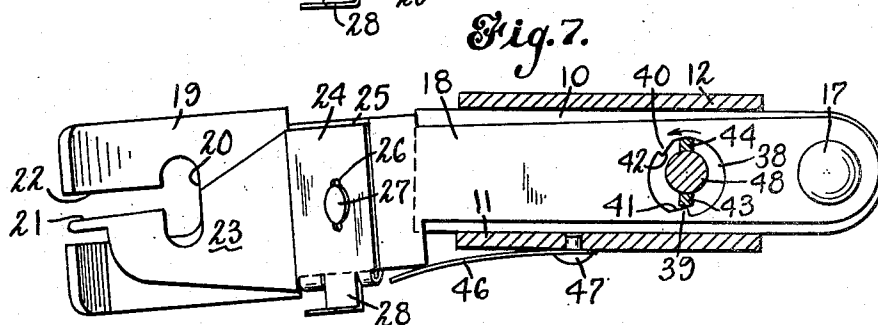
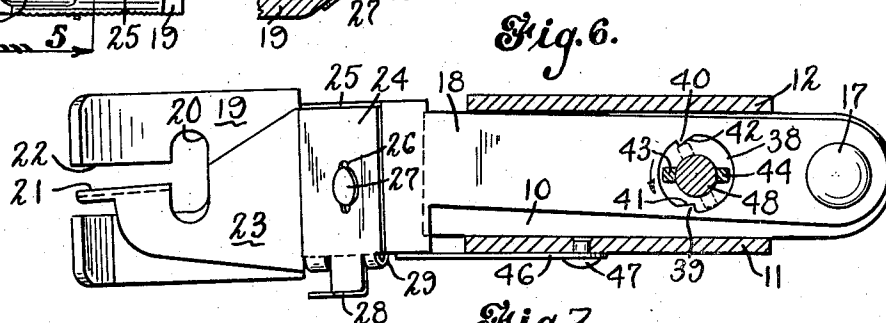
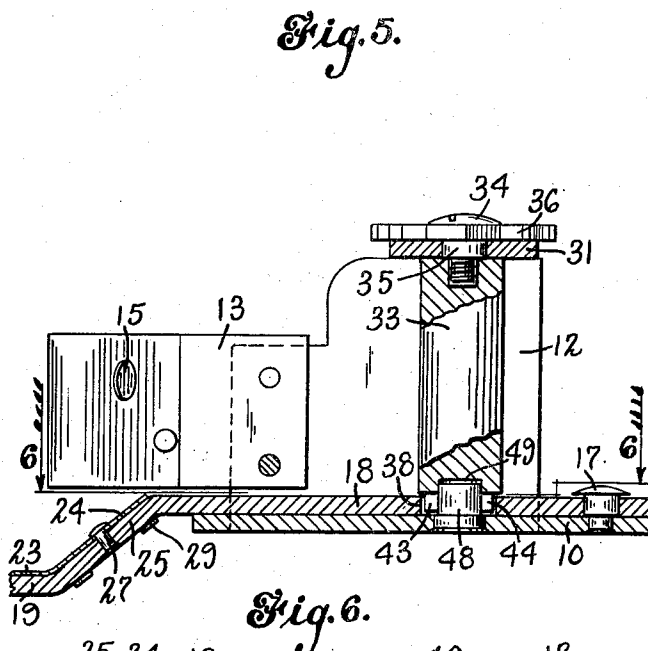
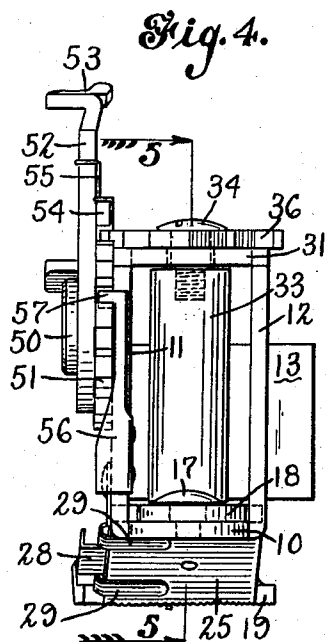
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BLIND STITCH ATTACHMENT FOR SEWING MACHINES

Filed Jan. 12, 1951

2 Sheets-Sheet 2



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2,652,796

BLIND STITCH ATTACHMENT FOR SEWING MACHINES

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Application January 12, 1951, Serial No. 205,800

7 Claims. (Cl. 112-160)

1 This invention relates to a blind stitch attachment for sewing machines, and more particularly to an attachment which may be readily applied to the ordinary household sewing machine in place of the usual presser foot, and which during the operation of the machine will effect a number of series of stitches in a straight line, and between two successive series of such straight-line stitches effect a zigzag stitch at one side of the line of stitches.

In certain instances it is desirable to perform what is termed blind stitching, such as when a hem is made in a garment. To do this a straight line of stitching is made on the wrong side of the material which does not pass through to the outside, and at intervals a stitch is made at one side of this line which does pass through to the outside or "catch" the material of the hem so as to hold the hem in place. Such a stitch can be performed by what is usually termed a zigzag stitch provided that a number of straight stitches is made between the zigzag stitches.

The present invention relates to a simple and effective attachment to the ordinary sewing machine by which blind stitching, such as described above, may be readily performed. The attachment is designed to be secured to the usual household sewing machine, and it is desirable, therefore, that it be simple in construction, and that it be of relatively light weight and economically made so that it may be sold at a reasonable price.

As illustrated, the device comprises a frame to which is pivoted a lever having a cloth-engaging foot at its forward end, this foot engaging the cloth so as to move it laterally of the line of stitching when the foot is moved laterally about its pivot. The device is so constructed that the cloth-engaging foot will, for a series of stitches, be restrained against movement, and will then be given an oscillating movement or a lateral and return movement so as to make at least one stitch at one side of the line of stitches previously formed. By properly folding the material upon which the operation is being performed, this will result in a blind stitching operation upon a hem, for example.

One object of the invention is to provide a sewing machine attachment capable of effecting a blind stitch which may be readily attached to, and used upon, the ordinary household sewing machine.

A further object of the invention is to provide a blind stitch attachment for sewing machines of simple construction which will at the same time be efficient in operation.

2 Still another object of the invention is to provide a blind stitch attachment for sewing machines having a pivoted lever provided at its forward end with a cloth-engaging foot, and having novel and simple mechanism for effecting oscillation of the cloth-holding foot about the pivot of the lever at the proper time in the operation of the device.

A still further object of the invention is to provide a blind stitch attachment for sewing machines of the character described which should be operated by means of a fork arm attached to the usual needle bar so that the oscillations of the cloth-engaging foot will be effected in timed relation to the operation of the needle bar.

To these and other ends the invention consists in the novel features and combinations of parts to be hereinafter described and claimed.

In the accompanying drawings:

Fig. 1 is a side elevational view of a blind stitch attachment embodying my invention.

Fig. 2 is a top plan view thereof;

Fig. 3 is a bottom plan view of the device;

Fig. 4 is a rear elevational view;

Fig. 5 is a sectional view on line 5-5 of Fig. 4;

Fig. 6 is a sectional view on line 6-6 of Fig. 5;

Fig. 7 is a view similar to Fig. 6 but showing the cloth-engaging foot in another position;

Fig. 8 is a top plan view of a piece of material showing the stitch effected by the attachment; and

Fig. 9 is a sectional view on line 9-9 of Fig. 8 showing the manner of folding the cloth to effect a blind stitch.

To illustrate a preferred embodiment of my invention, I have shown in the drawings a sewing machine attachment comprising a sheet metal frame of substantially U-shaped construction. This frame comprises a base plate 10 and a pair of upstanding parallel side walls 11 and 12, which frame serves as a support for the working parts of the device. An adapter 13 is secured to the wall 12, this adapter having an opening or recess 14 which is adapted to receive the lower end of the presser bar of the machine and be secured thereto by the set screw 15.

Pivoted at 17 to the base member 10 is a lever 18, this lever having the usual forwardly projecting and downwardly offset foot 19 which engages the material which is being sewed. This foot is provided with a laterally elongated needle opening 20 so that it may be moved laterally and still accommodate the needle of the sewing machine within this opening.

Secured upon the foot 19 is a cloth guide which

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comprises a sheet metal member having a substantially vertically disposed cloth-engaging flange 21 extending downwardly through the slot 22 of the foot 19. The flange is secured to a body portion 23 of the guide member, which body portion extends rearwardly and is provided with a portion 24 overlying an inclined part 25 of the foot. The part 24 is provided with an elongated opening 26 receiving a rivet or the like 27 secured to the member 25 so that the guide 21 may be adjusted laterally of the foot and frictionally maintained by the rivet in any adjusted position. A finger piece 28 is provided by which the cloth guide may be shifted laterally of the foot 19, and the part 24 is also provided with a pair of reversely folded fingers 29 which extend below the member 25 and grip the underside thereof owing to the resiliency of the spring metal of which this guide is made.

A supporting plate 31 rests upon the upper edges of the frame members 11 and 12, this plate being provided with openings or notches 32 which receive lugs 32^A upstanding from the members 11 and 12, and these lugs may be peened over the edges of the notches so as to hold the plate 31 in place. Rotatably secured to this plate, and depending downwardly therefrom, is a shaft 33, the shaft having threaded therein a screw 34 having a bearing portion 35 rotatably mounted in an opening in the plate 31. Secured to the screw 34 to rotate therewith above the plate 31 is a ratchet wheel 36.

With the above construction, it will be apparent that as the ratchet wheel 36 is rotated, the shaft 33 which is also secured to the screw 34 will also be rotated. As the shaft 33 is rotated, by mechanism hereinafter described, in a counter-clockwise direction, referring to Figs. 2 and 6, it will be found advantageous to provide the screw 34 with left-hand threads so that its rotation will not tend to unscrew it from the shaft 33.

Referring more particularly to Figs. 5, 6 and 7, it will be noted that the lever 18 is provided with an opening or recess 38. Projecting inwardly from the edges of this recess are two projections or abutments 39 and 40, each of these abutments having a cam face designated at 41 and 42, and the shaft 33 which extends downwardly between the frame members 11 and 12 is provided with a pair of downwardly projecting pins 43 and 44 which are diametrically opposite each other, and which extend into the opening 38 to engage against the cam faces 41 and 42 of the abutments 39 and 40 as the shaft 33 is rotated. The abutments 39 and 40 are not diametrically opposed, and it will be seen from Fig. 7 that the pin 43 will engage the cam face 41 of the projection 39 prior to the engagement of the pin 44 with the face 42 of the projection 40. This will effect lateral movement of the lever 18 about its pivot in one direction as shown in Fig. 7, and upon a successive rotational movement of the shaft 33, the other pin will strike the cam face 42 of the projection 40, as shown in dotted lines in Fig. 6, and move the lever 18 in the other direction or upwardly as shown in this figure.

A flat spring member 45 is secured at one of its ends, as at 47, to the frame member 11, and at its free end, this spring bears against an edge portion of the lever 18 so as to normally hold this lever in the position shown in Fig. 6, which is the position for the straight stitching operations. This prevents play of the lever 18 when

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the pins 43 and 44 are not in engagement with either of the projections 39 and 40. The shaft 33 is held at its lower end by a plug 48 secured in the base 10 and extending upwardly through the opening 38 in the lever to be received in a recess 49 of the shaft.

Rotatably mounted upon a pin 50 secured to the frame member 11, as shown more especially in Figs. 1 and 4, is a second ratchet wheel 51. Also rotatably mounted upon this pin is the usual fork arm 52 having a forked end 53 designed to be secured to the needle bar of the sewing machine so as to be actuated thereby in a well-known manner in a rocking movement about its pivot.

Pivoted to the fork arm 52 is a pawl 54, this pawl, when in the position shown in full lines in Fig. 1, being urged toward the ratchet wheel 51 by the spring 55. The head or free end portion of the pawl is so constructed that when the latter is moved to the dotted-line position shown in Fig. 1, the spring 55 will engage over the curved end portion of the pawl and hold it releasably in this dotted-line position in which it is not in engagement with the teeth of the ratchet wheel 51.

As shown in Figs. 1 and 2, the pawl 54 engages one edge, namely the rear edge, of the teeth of the ratchet wheel 51 while the forward edges of these teeth engage the teeth of the ratchet wheel 36 so that the latter is driven from the wheel 51. Reverse movement of the ratchet wheel 51 or movement in a counter-clockwise direction, as shown in Fig. 1, is prevented by a holding pawl in the form of a resilient spring member 56, secured at its lower end to the frame, and having on its upper end a laterally extending tooth 57 to engage the rear side of the teeth of the ratchet wheel 51.

From the above, it will be obvious that as the fork arm 52 is reciprocated by the needle bar, the ratchet wheel 51 will be moved in a step-by-step movement in a clockwise direction by the pawl 54, the movements of the ratchet wheel taking place on the upward stroke of the lever 52; the ratchet wheel 51 will be idle during the downward stroke of the fork arm 52 at the time the needle enters the material which is being sewed. Step-by-step movement of the ratchet wheel 51 also effects step-by-step movement of the ratchet wheel 36 in a counter-clockwise direction, as viewed in Fig. 2, and likewise effects similar step-by-step rotational movement of the shaft 33.

It will be apparent that as long as the pins 43 and 44 move in the unobstructed portions of the opening 38, no movement of the lever 18 will take place, and straight-line stitching will be effected as shown at 58 in Fig. 8. This is the position of the parts shown in Fig. 6. Upon continued rotation of the shaft 33, the pin 43 will strike the cam surface 41, and move the lever 18 to the position shown in Fig. 7. This movement will, of course, occur on the upward stroke of the fork arm, and upon the next downward stroke, a side stitch will be made at one side of the line of stitching 58, as indicated at 59. Upon the next upward stroke of the needle bar, the pin 44 will strike the cam surface 42 and return the lever 18 to the position shown in Fig. 6, thus effecting the first stitch 60 of the next series of straight-line stitches. The lever 18 will remain in this position until the pin 44 engages the cam surface 41, at which time the lever will be moved to effect another side stitch. Thus, it will be

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seen that the attachment will effect a number of series of straight-line stitches with an offset or side stitch between these straight-line stitches.

In a blind stitching operation, the cloth is folded as shown in Fig. 9, the upper surface of the upper fold 61 being the wrong side of the material. The straight line of stitching is shown at 58, and the offset or side stitch which catches the hem is shown at 59. After the work has been completed, the fold 61 is turned over to the dotted-line position shown in Fig. 9 so that the right side of the goods will be exposed at the outside of the hem. When the pawl 54 is in the dotted-line position shown in Fig. 1, there will be no movement of the shaft 33, and straight-line stitching may be effected by the attachment.

While I have shown and described a preferred embodiment of my invention, it will be understood that it is not to be limited to all of the details shown, but is capable of modification and variation within the spirit of the invention and within the scope of the claims.

What I claim is:

1. A blind stitch attachment for sewing machines comprising a frame, a lever pivoted to said frame on a vertical axis and having a cloth-engaging foot at its forward end, a vertically disposed shaft rotatably carried by the frame above said lever, a fork arm pivoted to the frame and connected to said shaft to rotate the latter in a step-by-step movement, abutment means on said lever, and means on the lower end of said shaft to engage said abutment means and shift said lever about its pivot, and a spring acting between a part of the frame and said lever to urge the latter in one direction about its pivot.

2. A blind stitch attachment for sewing machines comprising a frame, a lever pivoted to said frame on a vertical axis and having a cloth-engaging foot at its forward end, a vertically disposed shaft rotatably carried by the frame above said lever, a fork arm pivoted to the frame and connected to said shaft to rotate the latter in a step-by-step movement, said lever having an opening therein, spaced abutments on, and projecting inwardly from, the periphery of said opening, and said shaft being provided with spaced downwardly projecting members on its lower end extending into said opening to engage one and then the other of said abutments upon successive rotational steps of movement of said shaft.

3. A blind stitch attachment for sewing machines comprising a frame, a lever pivoted to said frame on a vertical axis and having a cloth-engaging foot at its forward end, a vertically disposed shaft rotatably carried by the frame above said lever, a fork arm pivoted to the frame and connected to said shaft to rotate the latter in a step-by-step movement, said lever having an opening therein, spaced abutments on, and projecting inwardly from, the periphery of said opening, and said shaft being provided with spaced downwardly projecting members on its lower end, extending into said opening to engage one and then the other of said abutments upon reciprocating movements of said fork arm.

4. A blind stitch attachment for sewing ma-

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chines comprising a frame, a lever pivoted to said frame on a vertical axis and having a cloth-engaging foot at its forward end, a vertically disposed shaft rotatably carried by the frame above said lever, a fork arm pivoted to the frame, a ratchet wheel on the upper end of said shaft, a pawl carried by the fork arm, a second ratchet wheel rotatably mounted on the frame, one edge of each of the teeth of said last-named ratchet wheel engaged by the pawl, and the other edge thereof engaging the teeth of the first-named ratchet wheel, and connecting means between said shaft and said lever to oscillate the latter upon rotation of the shaft.

5. A blind stitch attachment for sewing machines comprising a frame, a lever pivoted to said frame on a vertical axis and having a cloth-engaging foot at its forward end, a vertically disposed shaft rotatably carried by the frame above said lever, a fork arm pivoted to the frame and connected to said shaft to rotate the latter in a step-by-step movement, a pair of spaced abutment means on said lever, and pins projecting downwardly from the lower end of said shaft to engage said abutment means and effect oscillation of said lever, the spacing of said abutment means being such that only one is engaged by said pins at any one time.

6. A blind stitch attachment for sewing machines comprising a frame, a lever pivoted to said frame on a vertical axis and having a cloth-engaging foot at its forward end, a vertically disposed shaft rotatably carried by the frame above said lever, a fork arm pivoted to the frame and connected to said shaft to rotate the latter in a step-by-step movement, and connecting means between said shaft and said lever to oscillate the latter about its pivot, and yieldable means acting between the lever and frame to resist movement of the lever in one direction.

7. A blind stitch attachment for sewing machines comprising a frame, a lever pivoted to said frame on a vertical axis and having a cloth-engaging foot at its forward end, a vertically disposed shaft rotatably carried by the frame above said lever, a fork arm pivoted to the frame, a ratchet wheel on the upper end of said shaft, a pawl carried by the fork arm, a second ratchet wheel rotatably mounted on the frame, one edge of each of the teeth of said last-named ratchet wheel engaged by the pawl, and the other edge thereof engaging the teeth of the first-named ratchet wheel, connecting means between said shaft and said lever to oscillate the latter upon rotation of the shaft, and means for holding said pawl in inoperative position.

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