

Nov. 13, 1956

C. G. BAEHR ET AL
SEWING MACHINE ATTACHMENT

2,770,206

Filed June 9, 1949

3 Sheets-Sheet 1

Fig. 1.

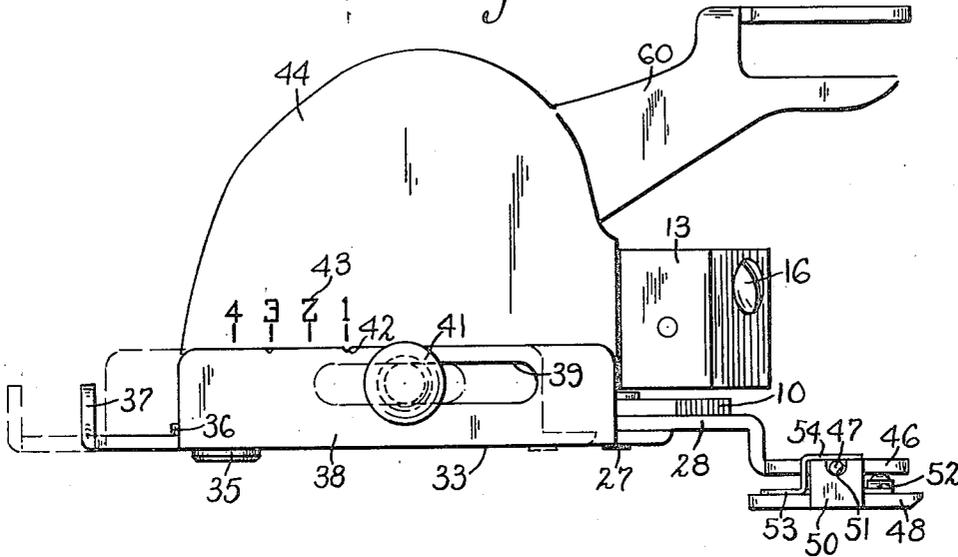
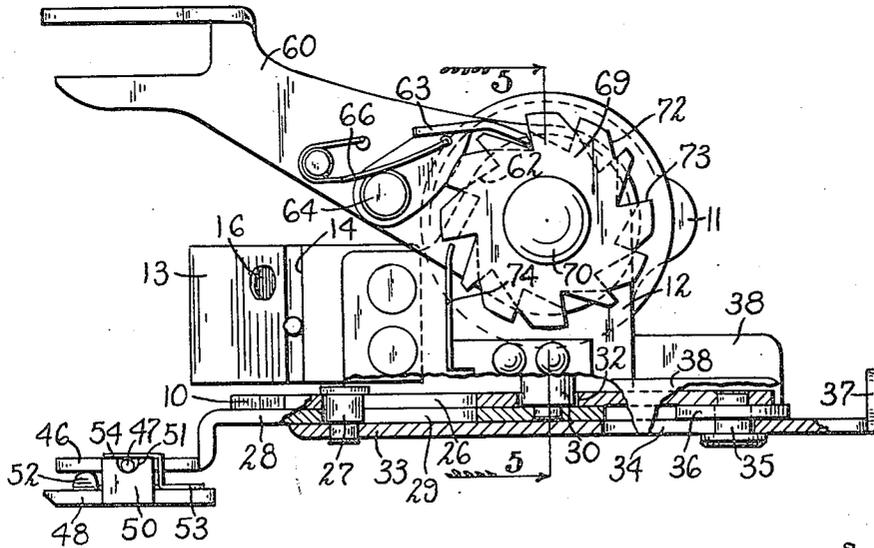


Fig. 2.



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Fig. 3.

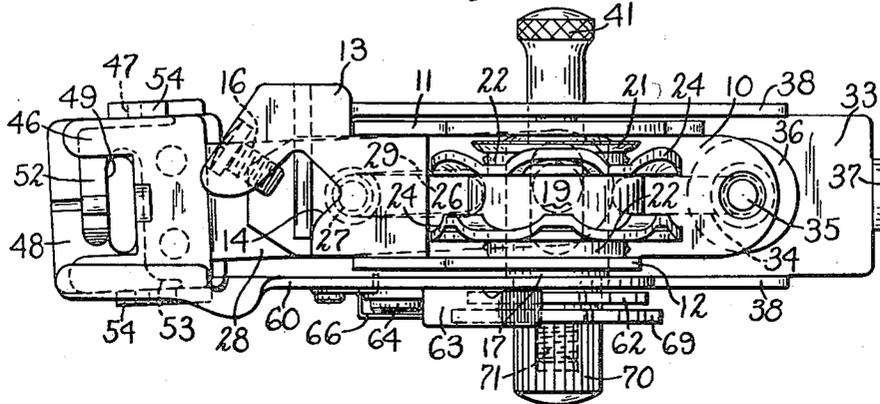


Fig. 4.

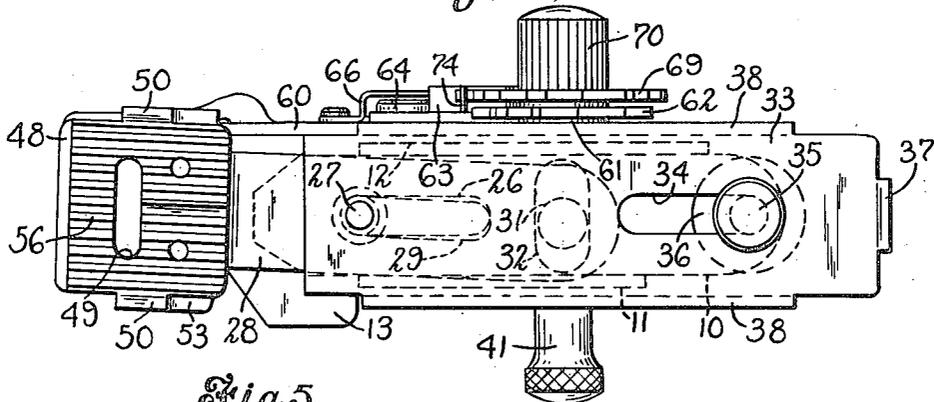


Fig. 5.

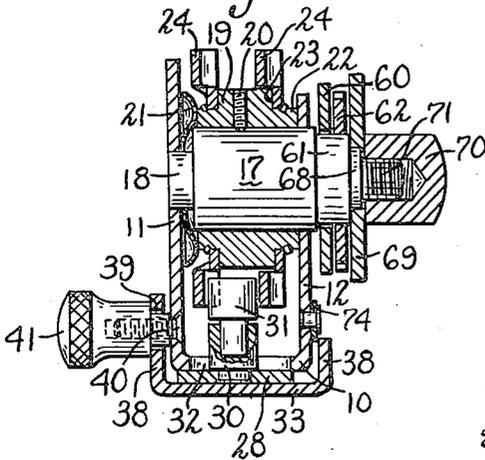
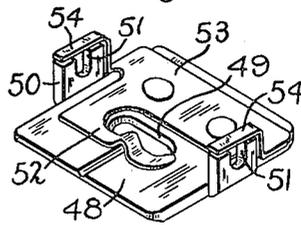


Fig. 6.



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Fig. 7.

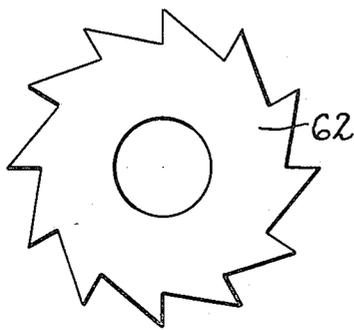


Fig. 8.

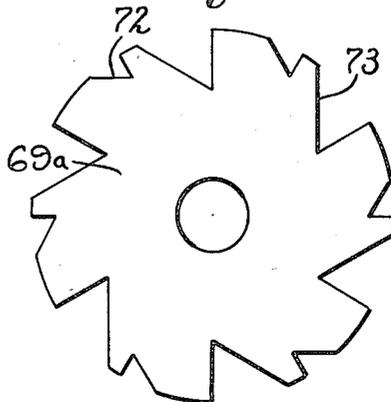


Fig. 9.

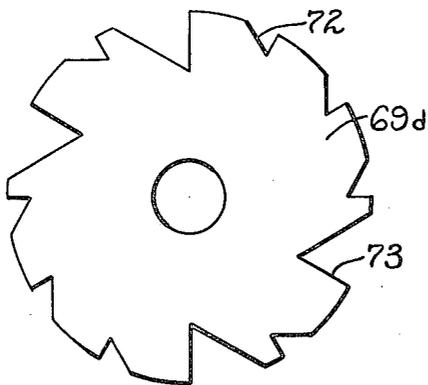


Fig. 10.

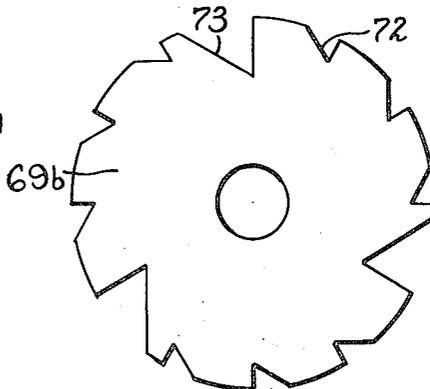
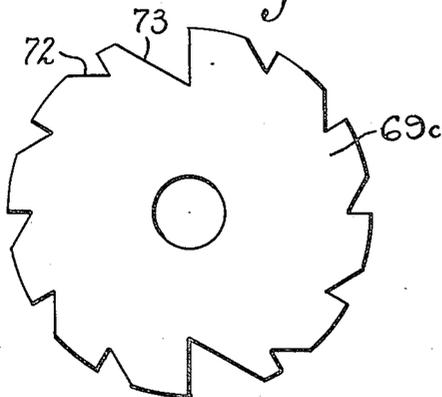


Fig. 11.



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SEWING MACHINE ATTACHMENT

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1 Claim. (Cl. 112—235)

This invention relates to a sewing machine attachment and more particularly to an attachment designed to perform decorative or zig-zag stitching operations wherein the material is moved laterally and one or more stitches made in the material after such movements. In many attachments for making zig-zag stitching operations, the cloth is moved laterally each time a stitch is made in the material, but it is desirable in making many decorative patterns to be able to make a number of stitches between lateral movements of the cloth. For example, the material may be moved laterally after every alternate stitch or after every third, fourth, or fifth stitch and the construction herein illustrated may be readily adjusted to perform any one of a number of decorative stitches.

It is also desirable that the device be easily adjustable so that the lateral movement imparted to the material may be varied over a relatively wide range so that, with the same attachment, a very fine or very coarse zig-zag stitch may be effected and also any stitch in between these two extremes.

One object of the present invention is to provide a sewing machine attachment with which a wide variety of decorative stitches may be made.

Another object of the invention is to provide a zig-zag or decorative stitch sewing machine attachment which will be relatively simple in construction and which will at the same time be capable of a relatively wide range of adjustment for various types of work.

A still further object of the invention is to provide a sewing machine attachment of the character described which may be adjusted to make a zig-zag stitch between each of the stitching operations of the sewing machine or to make a zig-zag stitch only between a plurality of stitching operations, as desired.

Still another object of the invention is to provide a sewing machine attachment for decorative stitching which may be relatively economical to manufacture and of simple construction but which will at the same time be efficient in operation and capable of use to effect a wide variety of stitching operations.

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 sewing-machine attachment embodying our invention;

Fig. 2 is a side elevational view of the attachment with the cover removed, some parts being shown in section;

Fig. 3 is a top plan view of the attachment with the cover removed;

Fig. 4 is a bottom plan view thereof;

Fig. 5 is a sectional view on line 5—5 of Fig. 2;

Fig. 6 is a perspective view of the swivel presser foot;

Fig. 7 is an elevational view of the ratchet wheel employed to drive the cam from the fork arm of the attachment; and

Figs. 8, 9, 10 and 11 are side elevational views of

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masking wheels or cams which may be employed interchangeably upon the attachment to effect various types of decorative stitching.

To illustrate a preferred embodiment of our invention, we have shown a sewing machine attachment comprising a frame member of substantially U-shaped form, this member comprising a base 10 and spaced upstanding side members 11 and 12. Secured between these side members adjacent their front ends is an adapter 13 provided with a recess 14 adapted to receive the presser bar of the sewing machine with which the attachment is to be used. A set screw 16 is threaded in the adapter 13 to engage the presser bar and hold the attachment securely in place.

A shaft 17 is provided with a reduced end 18 rotatably mounted in the frame member 11, while the body of the shaft is positioned rotatably in an opening in the opposite frame member 12. A hub 19 is secured to the shaft by the set screw 20 and a spring washer 21, disposed between this hub and the frame member 11, urges the hub toward the member 12 and thus holds the shaft and hub in position in the frame.

The hub 19 is provided with reduced end portions 22 separated from the main portion of the hub by shoulders 23 and against these shoulders cam plates 24 are staked securely upon the hub. These cam members are substantially circular in form and the metal thereof is displaced inwardly and outwardly alternately along the periphery of each so as to be of sinuous shape and thus form between the cam plates a sinuous cam track.

Referring particularly to Fig. 2, the base 10 of the frame member is provided with a longitudinally extending slot 26 within which is slidably mounted a pivot pin 27 upon which is pivoted a lever 28 disposed below the base of the frame. The lever 28 is also provided with a longitudinal slot 29 within which the pivot pin 27 lies so that the latter may be adjusted relatively to the base 10 and lever 28 so as to adjust the pivotal connection of the latter with the former as will be hereinafter explained.

As shown more particularly in Figs. 2 and 5, a pin 30 is secured to the lever 28 and upon this pin is mounted a roller 31 which extends upwardly into the cam track formed by the cam members 24. The pin 30 extends upwardly through a transversely elongated slot 32 in the base 10 and it will be apparent that as the cam is rotated the pin 30 and, therefore, the rear end of the lever 28 will be oscillated transversely of the frame, this movement being permitted by the slot 32. The pivotal movement of the lever 28 takes place about the pin 27 and as the range of movement of the rear end of the lever is determined by the throw of the roller 31 by the cam 24 the scope of the lateral movement of the forward end of the lever may be varied by adjustment of the pivot pin 27 in the slots 26 and 29 so that the fulcrum of the lever will be adjusted relatively to the length thereof.

To this end an adjusting slide 33 is mounted below the base and is secured at its forward end to the pin 27. Adjacent its rear end, it is provided with a slot 34 which slidably receives a pin 35 secured to the base 10, the slide being spaced from the base by a spacing washer 36. The rear end of the slide is turned upwardly at 37 so that it may be grasped by the fingers and moved forwardly or rearwardly so as to adjust the position of the pivot pin and, therefore, vary the throw of the forward end of the lever 28. The slide 33 is, as shown in Fig. 5, of substantially U-shaped form in cross section and one of the upstanding sides 38 is provided with a slot 39 to receive a pin 40 secured to the frame member 11. A nut 41 is threadedly received on this pin so as to clamp the slide in

any adjusted position. At the upper edge of the side member 38 of the slide 33 is provided an indicating marker 42 which may cooperate with indicia 43 provided on the cover 44 of the attachment to indicate the position of the slide and, therefore, indicate the amount of throw which will be imparted to the forward end of the lever 28 by the rotation of the cam.

The forward end of the lever 28 is provided with a downwardly stepped portion 46 provided with laterally extending trunnions 47 upon which is pivoted a presser foot 48 having a laterally elongated needle opening 49 (Fig. 6). As shown, this presser foot is provided with an upstanding lug 50 at each side edge, each lug being provided with an upwardly opening recess 51 to receive one of the trunnions 47. A cord guide 52 is provided with a base portion 53 riveted to the upper surface of the presser foot and, at each side edge, this base member is provided with an upwardly spaced and forwardly extending finger 54 which stands over the corresponding recess 51. As the cord guide is made of relatively light spring metal, the members 54 may be sprung upwardly to permit the insertion of the trunnions 47 in the recesses 51 and thus conveniently attach the presser foot to the forward portion 26 of the lever 28 for pivotal movement. As shown at 56 in Fig. 4, the presser foot may be roughened on its lower surface so as to properly grip the material with which the attachment is used.

A fork arm 60, of more or less usual form and which is adapted to be connected with the needle bar of a sewing machine in the usual way, is rockably mounted upon an extended end 61 of the shaft 17. Adjacent the fork arm, a ratchet wheel 62 is secured to the shaft part 61, so that the rotation of this ratchet wheel will effect rotation of the shaft 17 and the operating cam carried thereby. A pawl member 63 is pivoted at 64 to the fork arm 60, this pawl member being urged by a spring 66 into engagement with the teeth of the ratchet wheel 62. It will be apparent, therefore, to those skilled in the art that upon reciprocation of the needle bar the fork arm 60 will be rocked about the shaft portion 61 and as the pawl engages the teeth of the ratchet wheel 62 to move the latter in a clockwise direction, as shown in Fig. 2, the operating cam will be rotated in a step-by-step manner in the same direction.

It will be apparent that with the above construction the operating cam will be advanced rotatably but one step each time the needle bar is reciprocated and, therefore, a plain zig-zag stitch would be effected. That is, the material would be moved laterally each time a stitch is effected by the needle bar. It is, however, desirable in effecting decorative stitching that the needle bar make a number of reciprocations between successive lateral movements of the material, so that various types of decorative stitching may be effected. For example, it may be desired that the needle bar effect 2, 3, 4 or 6 stitches between successive lateral movements of the material or between successive zig-zag stitches, and it may in some cases also be desirable that the number of stitches effected by the needle bar upon one side of a median line through the stitching be different from that upon the other side. That is, it may be desired to make four stitches, for example, at one side of each zig-zag stitch and two stitches at the other side of each zig-zag stitch. According to the present invention, means are provided to effect these results.

To this end, the shaft 17 is provided with a further reduced portion 68 beyond the part 61 and upon the portion 68 may be rotatably mounted a masking cam 69, the latter being held in place by a removable nut 70 threaded on to the end portion 71 of the shaft 17. As shown in Fig. 2, this masking cam or wheel 69 has an outside diameter slightly greater than that of the ratchet wheel 62 and the periphery of the masking cam 69 is provided with relatively shallow notches 72 and relatively deep notches 73. The shallow notches 72 extend inwardly only to the outer ends of the teeth of the ratchet wheel 62, while the deep notches 73 extend inwardly to the bottom of the notches between the teeth of the ratchet wheel 62.

The pawl 63 carried by the fork arm 60 is of sufficient width to engage both the ratchet wheel 62 and the masking cam 69. As the latter is of the greater diameter, the position of the pawl will be determined by the periphery of the masking cam or by the depth of the notch of the masking cam with which the pawl is engaged. When the pawl is engaged in one of the shallow notches 72 of the masking cam, it will be held out of engagement with the ratchet wheel 62 and, therefore, the latter will not be moved and no rotation will be imparted to the operating cam 24. However, when the pawl enters one of the deep notches or recesses 73 of the masking wheel 69, it will be permitted to engage the teeth of the ratchet wheel 62 and, therefore, rotate this ratchet wheel and the operating cam. As a lateral movement of the material will take place at each movement of the operating cam and will take place only upon such movement, it will be seen that the number of stitches effected in the material between each lateral movement of the material will be determined by the number of shallow notches or recesses 72 provided in the periphery of the masking cam between successive deep notches 73. A spring member 74 secured upon the side member 12 of the frame in an upstanding position engages the teeth of the masking cam 69 and prevents rearward rotation thereof.

It will be apparent that the masking cam 69 is readily removed from the attachment so that it may be replaced by another, and, by providing a number of these cams having the deep and shallow notches arranged differently about their peripheries, any desired decorative stitching within limits may be readily effected. It will be seen that the masking wheel 69 shown in Fig. 2 of the drawings is provided with two shallow notches 72 between successive deep notches 73. The pawl 63 will, therefore, drop into a deep notch and effect lateral movement of the material at every third reciprocation of the needle bar, or at every third stitch performed by the machine. There will, therefore, be three stitches effected between each zig-zag stitch. It may here be stated that as shown there are twelve ratchet teeth upon the wheel 62 and, therefore, twelve deep and shallow notches upon the periphery of the masking cam 69. This number, of course, may be varied as desired.

In Figs. 8 to 11 of the drawings, we have shown masking wheels having different arrangements of deep and shallow notches to effect various types of decorative stitching. For example, the masking wheel 69^a shown in Fig. 8 of the drawings has one shallow notch 72 between each of the deep notches 73, and would thus effect two stitches between each zig-zag stitch or lateral movement of the material. The masking wheel 69^b shown in Fig. 10 is provided with three shallow notches between each deep notch and, therefore, will effect four stitches between each zig-zag stitch or lateral movement of the cloth, while the masking wheel 69^c shown in Fig. 11 is provided with five shallow notches between each deep notch and will, therefore, effect a lateral movement of the cloth every sixth reciprocation of the needle bar, or between every sixth stitch effected by the machine.

It is also possible to effect more stitches upon one side of a median line than upon the other side, and a masking cam 69^d, which will effect such a result, is shown in Fig. 9. It will be apparent that while three shallow notches 72 are provided between two successive deep notches 73 only one shallow notch 72 is provided between the next successive deep notches, so that, as the masking wheel is rotated, it will alternately effect a lateral movement of the goods every fourth stitch and second stitch, thus alternately effecting four stitches upon one side of the center line of the stitching and two stitches upon the other side.

While we have shown and described a preferred embodiment of our 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 claim.

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What we claim is:

A decorative-stitch attachment for a sewing machine comprising a frame member, a lever pivoted to the frame member and having a forwardly extending end portion, said portion being provided with laterally extending trunnions, one upon each side thereof, a presser foot having an upstanding lug at each side edge thereof, each lug being provided with an upwardly facing recess within which one of said trunnions is received, and spring members secured to the presser foot and extending over said trunnions to hold the latter in said recesses and releasably secure the presser foot to the lever.

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