April 12, 1938. C. SEAMAN 2,113,948

SCALLOPING DEVICE

Filed Oct. 11, 1935 2 Sheets-Sheet 1

Fig. 1.

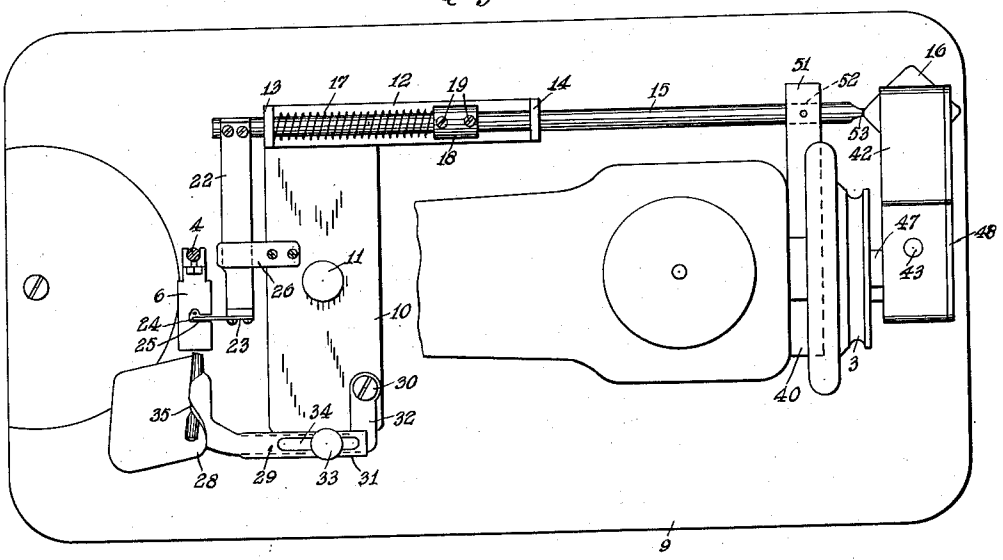
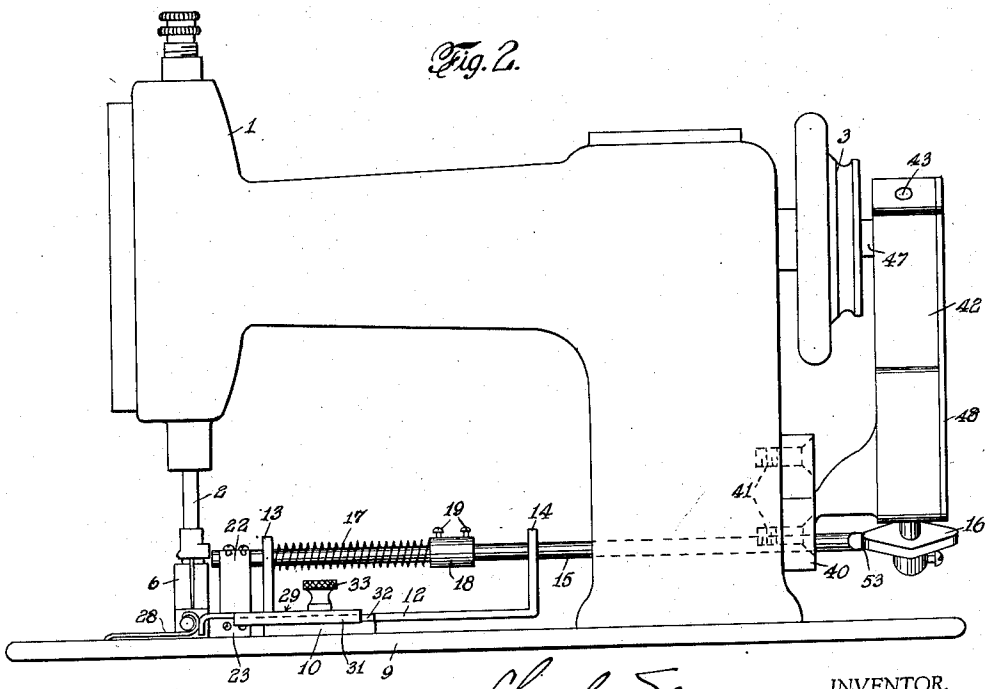


Fig. 2.



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Fig. 3.

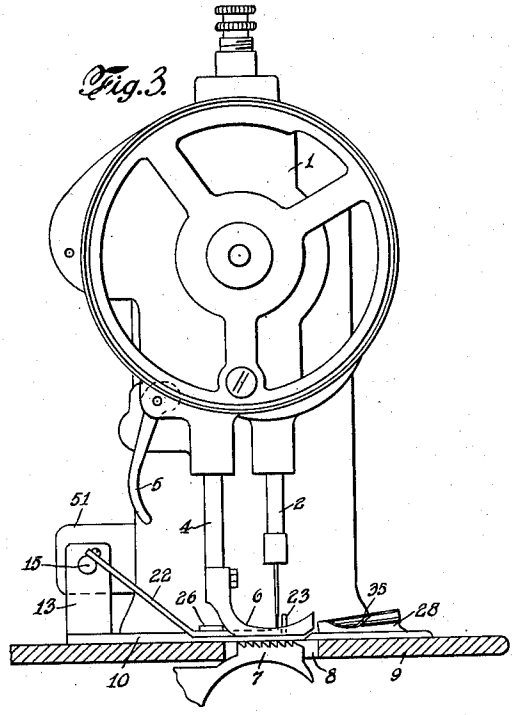


Fig. 4.

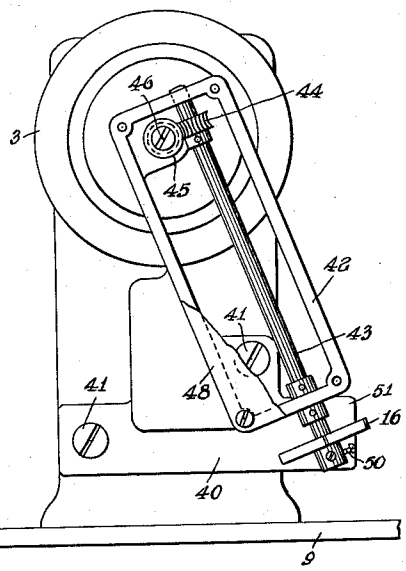


Fig. 5.

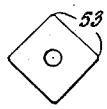


Fig. 9.

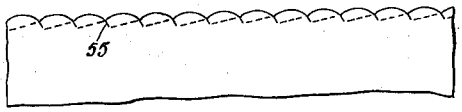


Fig. 6.

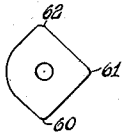


Fig. 10.

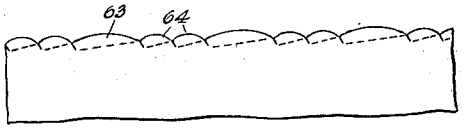


Fig. 7.

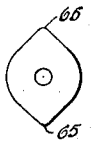


Fig. 11.

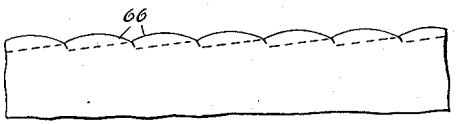


Fig. 8.

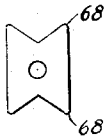
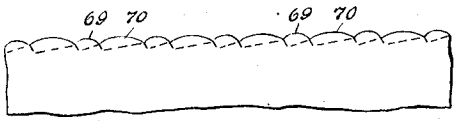


Fig. 12.



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Patented Apr. 12, 1938 2,113,948

UNITED STATES PATENT OFFICE

2,113,948

SCALLOPING DEVICE

Charles Seaman, Jamaica Estates, N. Y.

Application October 11, 1935, Serial No. 44,498

7 Claims. (Cl. 112—160)

This invention relates to sewing machines and more particularly to a device or attachment for making scalloped hems or the like.

An object of the invention is to provide a device for automatically making hems having attractive designs.

Another object is to provide a simple, convenient and dependable device of the above type which may be readily applied to a standard sewing machine.

Various other objects and advantages will be apparent as the nature of the invention is more fully disclosed.

Although the novel features which are characteristic of this invention will be pointed out more particularly in the claims appended hereto, the broader aspects of the invention will be better understood by referring to the following description taken in connection with the accompanying drawings in which a specific embodiment is set forth.

In the drawings, Figure 1 is a top plan view of a portion of a sewing machine head embodying the present invention.

Figure 2 is a front elevation thereof.

Figure 3 is an end elevation of the sewing machine head showing the stitching mechanism.

Figure 4 is an end elevation of the sewing machine head showing the driving mechanism.

Figures 5, 6, 7 and 8 are detail views showing various types of cams which may be used in this device; and

Figures 9, 10, 11 and 12 are detail views showing the material produced by the use of the respective cams shown in Figures 5 to 8.

In the specification and in the claims certain specific terms have been used for convenience in referring to various details of the invention. These terms, however, are to be given as broad an interpretation as the state of the art will permit.

Referring to the drawings more in detail, the invention is shown as embodied in a sewing machine comprising a head 1, having a needle bar 2 which is reciprocated by a suitable driving means, such as a driving shaft (not shown) driven by a pulley 3 and a presser foot bar 4 actuated by a lever 5 and carrying a presser foot 6 which is adapted to maintain the material in engagement with feed dogs 7 extending through an aperture 8 in a base 9.

It is to be understood that the elements thus far referred to are of standard construction and operate in the usual manner for feeding and stitching a material.

In the embodiment shown, a base plate 10 is provided, which is adapted to be secured to the base 9 of the machine in any convenient manner, as by a set screw 11, which extends through the base plate 10 into a tapped hole in said base 9. The base plate 10 is provided with a rear bracket 12 having upstanding ears 13 and 14 through which a rod 15 extends. The rod 15 is normally held against a cam 16, to be described, by means of a coil spring 17 which is positioned between the ear 13 and a collar 18 which may be secured on the rod 15 in the desired position, as by screws 19. The tension of the spring 17 may be adjusted by varying the position of said collar 18.

The rod 15 carries at its free end an arm 22 to which is secured a transverse member 23 having an edge 24 adapted to enter a slot 25 in the presser foot 6 for the purpose to be described. The arm 22 is adapted to slide transversely under a guide 26 which is secured to the base plate 10.

A folder 28 is provided with an extensible arm 29 which is secured to the base plate 10 by a screw 30. The extensible arm 29 comprises slidable members 31 and 32 which are adjustably secured together by a set screw 33 extending through an elongated slot 34 in the member 31 and threaded into the member 32. The folder 28 is designed to fold a longitudinal edge of the material being stitched to form a plurality of plies and to guide the same to the needle for stitching to form the finished hem. The folder 28 may be provided with a slot 35 through which the edge of the material passes and which is adapted to limit the amount of material which is folded over, whereby a hem of uniform width may be produced.

The driving mechanism for the cam 16 comprises a bracket 40 which is secured to the end of the sewing machine head 1 by means of screws 41. The bracket 40 carries a housing 42 in which a shaft 43 is journaled, carrying the cam 16 and a worm gear 44. A cooperating worm gear 45 is secured by suitable means in driving relationship to the driving shaft of the machine. In one embodiment, the worm gear 45 is secured by a screw 46 to a bushing (not shown) which extends through a suitable opening in the housing 42 and is secured in the hub 47 of the pulley 3 in driving relationship to said driving shaft. A cover plate 48 may be secured to the housing 42, if desired, to conceal the above-described driving mechanism.

The cam 16 may be secured to the shaft 43 by means of a set screw 50. The bracket 40 is

also provided with an extension 51 having an aperture 52 through which the rod 15 extends and which is adapted to hold the end of said rod in alignment with the cam 16.

In the operation of this device the material is folded over by the folder 28 to form a plurality of plies and is discharged in a position for receiving a row of stitches in the usual manner. The rotation of the driving pulley 3, however, causes the cam 16 to be rotated at a speed which is determined by the ratio of the gears 44 and 45. As a point 53 of this cam engages the end of the rod 15, the rod is shifted axially, thereby causing the arm 22 and the transverse member 23 to be shifted transversely. The edge 24 of the member 23 then enters the slot 25 in the presser foot 6 and reaches a position closely adjacent, but in back of, the path of travel of the needle. When a low part of the cam 16 has turned toward the end of the rod 15, the rod is permitted to move in the reverse direction under the influence of the spring 17, whereby the edge 24 of the member 23 is retracted from the slot 25.

When the edge 24 is out of engagement with the material being stitched, the machine operates in the usual manner to form a hem on the edge of said material. However, when the edge 24 has been brought into engagement with said material due to the action of the cam 16, it presses the edge of the material transversely an amount such that one or more stitches, such as a stitch 55 (Figure 9), extends over said edge. The stitch 55 prevents the adjacent material from returning to its original position when the member 23 is disengaged therefrom, whereby a scalloped effect is produced in the finished material.

The cam 16 is so designed and so timed, as by suitable adjustment on the shaft 43, that the edge 24 of the member 23 is caused to engage the edge of the material being stitched and to hold the same in displaced position at the time of the penetrating thrust of the needle and to release the material as soon as the stitch has been formed, so that the stitching can progress normally until the member 23 again engages the material.

Obviously, the length of the scallop and the general arrangement can be varied by varying the shape of the cam 16. In Figures 1 to 5 the cam is illustrated as of generally square contour and is adapted to produce four strokes of the rod 15 for each revolution of the cam. The number of stitches intervening between the successive strokes is dependent upon the gear ratio of the driving gears 44 and 45 and of the mechanism driving the reciprocating needle. The scallop can be lengthened by lengthening the stitch of the machine so that a greater amount of material is fed between successive strokes of the rod 15.

It is obvious that various other types of cams can be used to produce different effects as, for example, the cams illustrated in Figures 6, 7 and 8. The cam in Figure 6 is provided with three points 60, 61 and 62 which are irregularly spaced so as to provide a long scallop 63 (Figure 10) and two intermediate shorter scallops 64. The cam illustrated in Figure 7 is provided with a pair of points 65 which are adapted to actuate the rod 15 twice during each revolution of the cam so as to produce a scallop 66 (Figure 11) which is double the length of the scallop shown in Figure 9 and produced by the four-pointed cam of Figure 5.

The cam of Figure 8 is provided with points 68 which are irregularly spaced around the periphery so as to actuate the rod twice and in rapid succession to produce the shorter scallops 69 (Figure 12) and to provide a somewhat longer interval between such actuations so as to produce longer scallops 70 of Figure 12. This form of cam accordingly produces alternate long and short scallops.

It is obvious that various other arrangements can be obtained by varying the shape of the cam and the timing thereof with respect to the needle. Certain specific forms have been shown for purposes of illustration only.

It is to be noted that the above-described device can be attached to any standard type of sewing machine with a minimum amount of labor. This is accomplished by first attaching the bracket 40 containing the driving mechanism and connecting the gear 45 to the driving shaft of the machine. Thereafter, the base plate 10 may be positioned by first inserting the end of the rod 15 in the aperture 52 of the extension 51 of the bracket 40. The proper timing is obtained by moving the pulley 3 until the needle is in the lowest position and then setting the cam 16 with one of its points 53 against the rod 15. Thereafter, the proper timing is assured inasmuch as the various points of the cam 16 are designed to actuate the rod 15 in synchronism with the needle.

If it is desired to use the machine for ordinary sewing, it is only necessary to remove the set screw 11 and to remove the base plate 10, together with the folder 28, the rod 15 and associated mechanism, from the machine. The cam 16 and the associated driving mechanism need not be removed inasmuch as they will not interfere with the normal operation of the machine.

While it has been assumed from the above description that the member 23 shifts the edge of the material transversely a sufficient distance to cause the stitch to extend over the edge, it is obvious that the throw of the rod 15 and the transverse movement of the member 23 may be varied somewhat so as to vary the position of the stitch and still maintain the salient characteristic of the finished product.

Various other changes and adaptations will be apparent to a person skilled in the art. Although a specific embodiment of the invention has been described for purposes of illustration, it is to be understood that the invention is not to be limited thereto, but is only to be limited in accordance with the following claims when interpreted in view of the prior art.

I claim:

1. In a sewing machine having a head, a reciprocating needle in one end thereof, means to reciprocate said needle including a driving shaft and a pulley in driving relationship to said driving shaft, said pulley and needle being at opposite ends of said head, and means to feed material to said needle for stitching, an attachment comprising a removably mounted cam, driving means for said cam secured to the end of the head adjacent said pulley and one end of said driving shaft and in driving relationship to said driving shaft, a rod actuated by said cam, a member controlled by said rod to vary the lateral position of the material being stitched so as to vary the position of the stitches for producing an irregular effect, and means removably mounting said rod whereby it may be removed from the machine to permit the machine to stitch in the normal manner.

2. In a sewing machine having a head, a reciprocating needle in one end thereof, means to reciprocate said needle including a driving shaft and a pulley in driving relationship to said driving shaft, said pulley and needle being at opposite ends of said head, and means to feed material to said needle for stitching, an attachment comprising a removably mounted cam, driving means for said cam secured to the end of the head adjacent said pulley and one end of said driving shaft and in driving relationship to said driving shaft, a plate adapted to be removably secured to the sewing machine, said plate carrying a rod adapted to be actuated by said cam, and a member controlled by said rod to vary the lateral position of the material being stitched so as to vary the position of the stitches for producing an irregular effect.

3. In a sewing machine having a head, a reciprocating needle in one end thereof, means to reciprocate said needle including a driving shaft and a pulley in driving relationship to said driving shaft, said pulley and needle being at opposite ends of said head, and means to feed material to said needle for stitching, an attachment comprising a removably mounted cam, driving means for said cam secured to the end of the head adjacent said pulley and one end of said driving shaft and in driving relationship to said driving shaft, a plate adapted to be removably secured to the base of the sewing machine, said plate carrying a reciprocating rod having one end adapted to engage said cam for actuation thereby, spring means normally holding said rod against said cam and a member actuated by said rod to vary the position of the material being stitched for producing an irregular effect.

4. In a sewing machine having a head, a reciprocating needle in one end thereof, means to reciprocate said needle including a driving shaft and a pulley in driving relationship to said driving shaft, said pulley and needle being at opposite ends of said head, and means to feed material to said needle for stitching, an attachment comprising a removably mounted cam, driving means for said cam secured to the end of the head adjacent said pulley and one end of said driving shaft and in driving relationship to said driving shaft, a rod actuated by said cam, and means associated with said rod to engage and press the edge of the material being stitched transversely toward the needle on each actuation of said rod so as to vary the position of the stitch.

5. In a sewing machine having a head, a reciprocating needle in one end thereof, means to reciprocate said needle including a driving shaft and a pulley in driving relationship to said driving shaft, said pulley and needle being at opposite ends of said head, and means to feed material to said needle for stitching, an attachment comprising a removably mounted cam, driving means for said cam secured to the end of the head adjacent said pulley and one end of said driving shaft and in driving relationship to said driving shaft, a plate adapted to be removably secured to the sewing machine, said plate carrying a reciprocating rod bearing against said cam at one end for actuation thereby, and a transverse member actuated by said rod to engage the edge of the material being stitched at a point closely adjacent the path of the needle and to press said edge transversely at each actuation of said rod for varying the position of the stitch with respect thereto.

6. In a sewing machine having a head, a reciprocating needle in one end thereof, means to reciprocate said needle including a driving shaft and a pulley in driving relationship to said driving shaft, said pulley and needle being at opposite ends of said head, and means to feed material to said needle for stitching, an attachment comprising a removably mounted cam, driving means for said cam secured to the end of the head adjacent said pulley and one end of said driving shaft and in driving relationship to said driving shaft, a plate to be removably secured to the sewing machine, said plate carrying a rod bearing against and actuated by said cam and a finger actuated by said rod to engage and shift the edge of the material being stitched transversely of the needle path on each actuation of said rod, so as to vary the position of the stitch and produce a scalloped effect, said plate, rod and finger being removable as a unit to permit the machine to be used for normal stitching operation without necessitating removal of said cam and driving mechanism.

7. In a sewing machine having a head, a reciprocating needle in one end thereof, means to reciprocate said needle including a driving shaft and a pulley in driving relationship to said driving shaft, said pulley and needle being at opposite ends of said head, and means to feed material to said needle for stitching, an attachment comprising a removably mounted cam, driving means for said cam secured to the end of the head adjacent said pulley and one end of said driving shaft and in driving relationship to said driving shaft, a plate to be removably secured to the sewing machine, said plate carrying a rod bearing against and actuated by said cam, a folder to fold the edge of a material adjustably mounted on said plate to feed the folded edge of the material to the path of the needle for stitching, said plate also carrying a finger which is actuated by said rod to engage and shift the folded edge of the material transversely of the path of the needle on each actuation of said rod, so as to vary the position of the stitch and to produce a scalloped effect, said plate, rod, finger and folder being removable as a unit to permit the machine to be used for normal stitching without requiring removal of said cam and driving mechanism.

CHARLES SEAMAN.