April 1, 1958 V. J. SIGODA 2,828,703

ATTACHMENT FOR SEWING MACHINES

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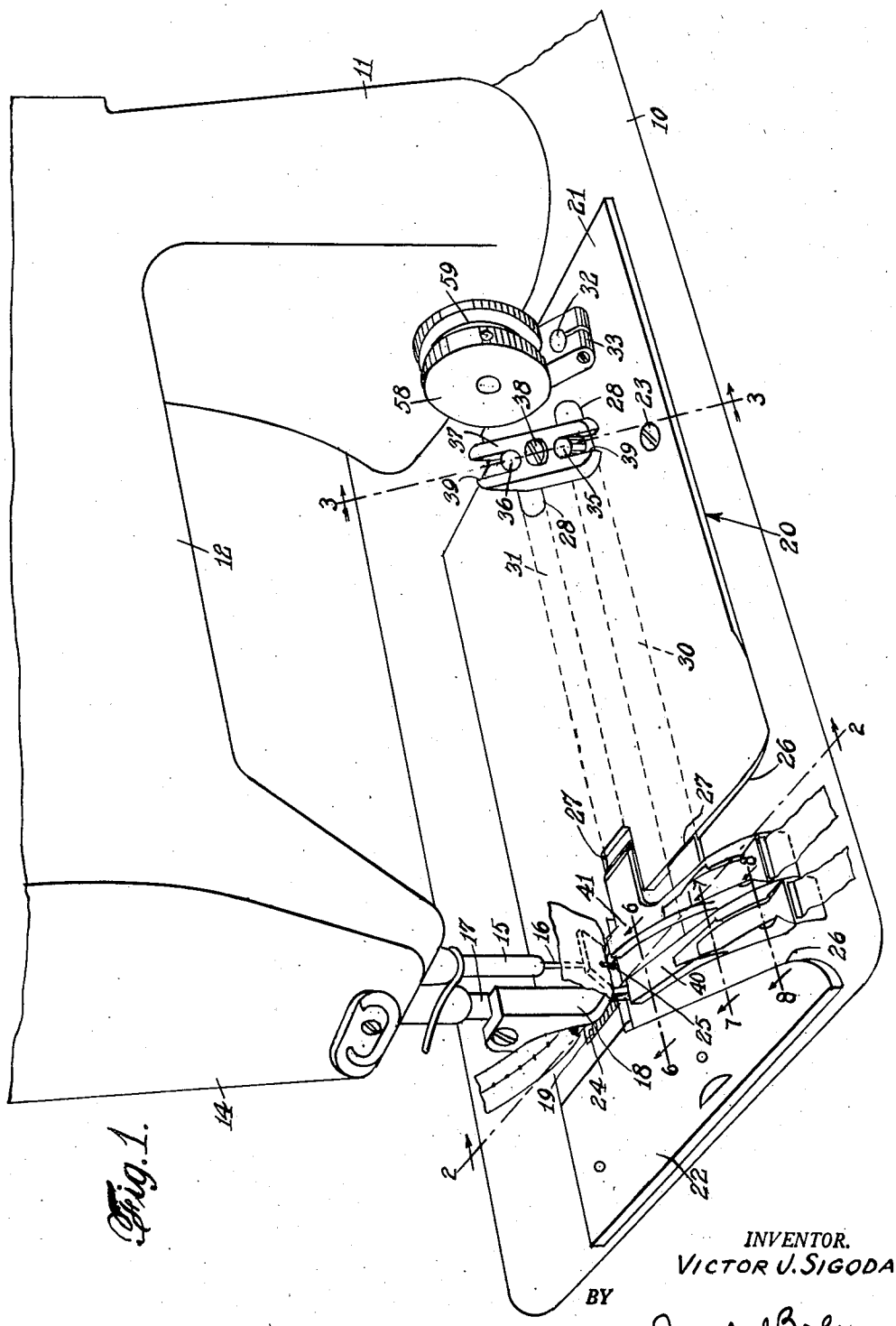

Fig. 1.

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Fig. 2.

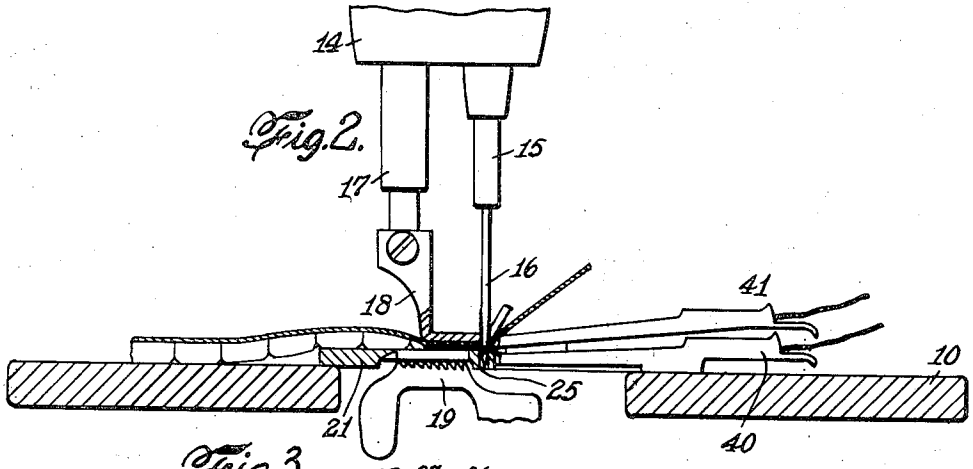

Fig. 3.

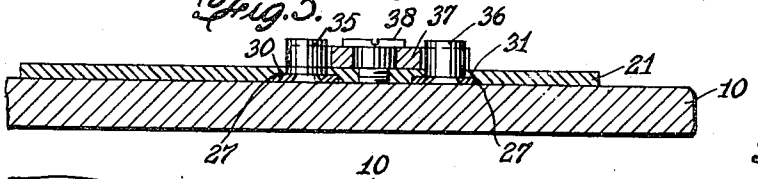

Fig. 4.

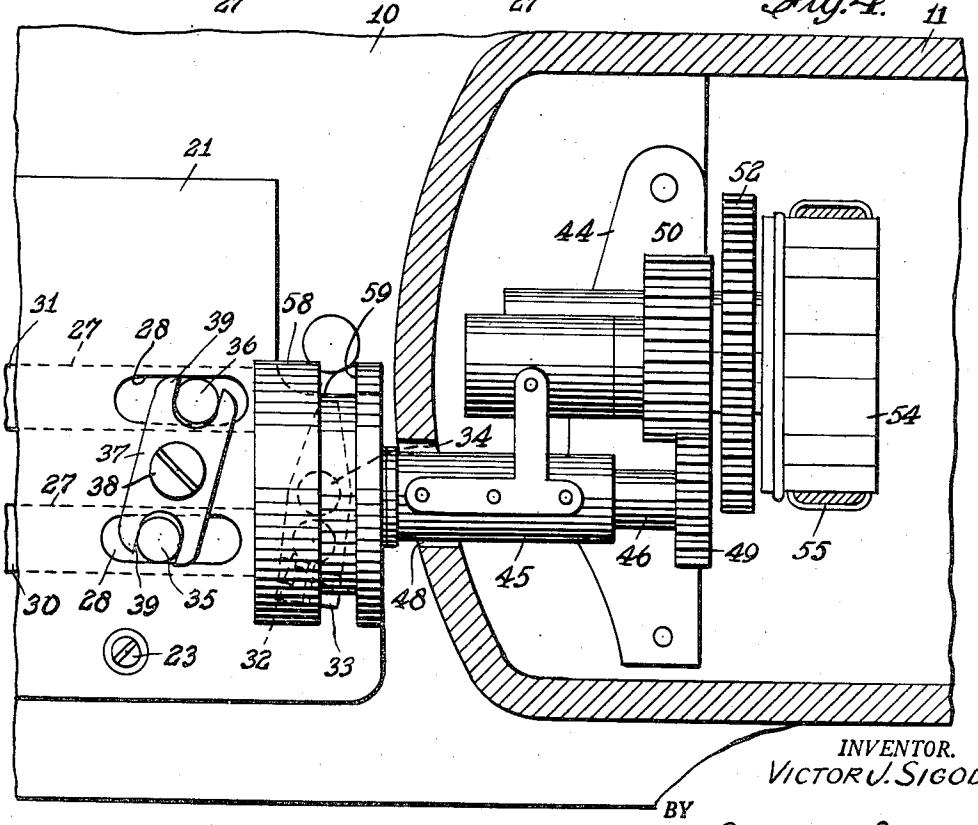

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Fig. 5.

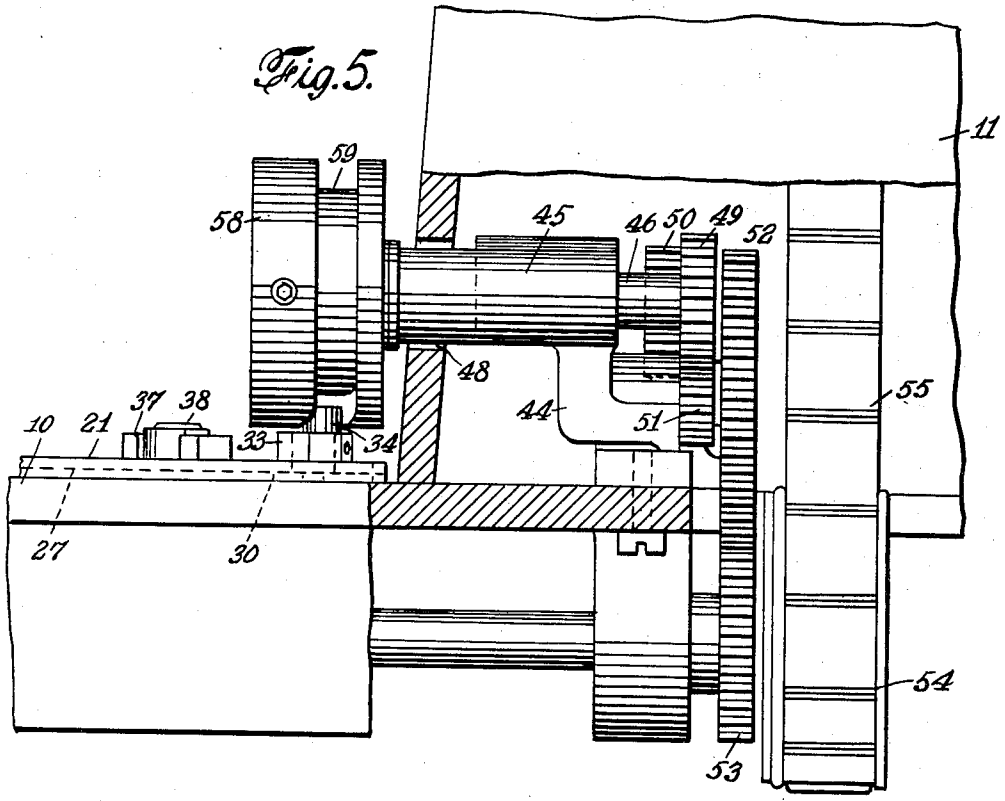


Fig. 6.

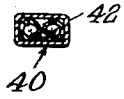


Fig. 7.

Fig. 8.

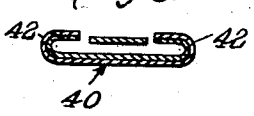
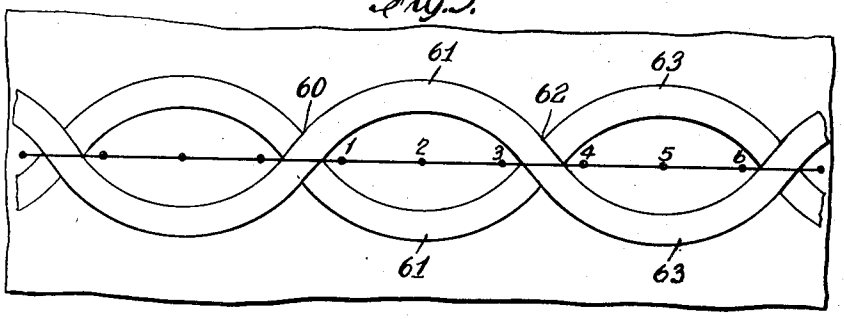


Fig. 9.



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ATTACHMENT FOR SEWING MACHINES

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Application September 13, 1952, Serial No. 309,411

10 Claims. (Cl. 112—102)

This invention relates to attachments for sewing machines for producing ornamental effects suitable for embellishment of articles of feminine wearing apparel. More particularly, it relates to an attachment which in conjunction with the stitchforming and feeding mechanisms of the sewing machine to which it is applied, produces an ornamentation which resembles the links of a chain. This is effected by shifting two pipings across the line of stitching in an opposed, undulating or sinusoidal pattern, each piping being shifted 180 degrees out of phase with the other. Thus at certain intervals the pipings will cross and at others the pipings will be separated. The resulting linked ornamentation may be used separately as a trimming, or alternately, may be applied to a carrier or base fabric at the time the pipings are stitched together.

This effect is produced by feeding two flat fabric strips through individual folders which roll up the longitudinal edges of each strip so that two tubings or, as they are better known in the trade, pipings issue from the respective outlets of the folders to the stitchforming mechanism. By mounting these folders on bars which are reciprocated across the line of stitching, the pipings may be sewn together in a decorative pattern which will be determined by the mechanism used to shift the folders across the line of stitching. The instant device makes use of a cam having a pattern track which causes one folder-carrying bar to shift back and forth across the line of stitching. By a relatively simple and effective means this reciprocation is transmitted to a second folder-carrying bar so that each of the bars shifts, but in opposite directions.

It is therefore the object of this invention to provide means for the production of such ornamental effects consisting of an attachment of relatively simple and rugged mechanical design, reliable and effective in operation, simple to apply to existing types of sewing machines and economical to manufacture.

In the drawings:

Fig. 1 is a view in perspective illustrating the attachment as it would be applied to a well known sewing machine of conventional lockstitch type and showing the fabric strips and the carrier fabric being fed to the stitchforming mechanism and the finished product as it emerges face side down from the machine;

Fig. 2 is a cross-sectional detail view taken on line 2—2 of Fig. 1 showing as much of the stitchforming and feed mechanisms as is necessary for comprehension of the invention;

Fig. 3 is a cross-sectional detail of the parts for producing the out of phase shifting of the folders, the view being taken on line 3—3 of Fig. 1;

Fig. 4 is a plan view of a portion of the attachment showing the gear train which connects the attachment with a power operated portion of the sewing machine, the cam, the folder shifting bars, and their interlinkage;

Fig. 5 is a front elevation corresponding to Fig. 4;

Figs. 6, 7 and 8 are cross-sectional details of one of the folders taken on lines 6—6, 7—7 and 8—8 respectively of Fig. 1, showing how the fabric strips are progressively formed into tubings, and

Fig. 9 is an enlarged plan view of a fragment of an ornamented carrier fabric to which two pipings have been applied in link form by the attachment and the sewing machine.

The attachment is shown in Fig. 1 applied to the base 10 of the sewing machine having a pedestal 11, an overhanging arm 12, and a depending needle head 14, in which are mounted the usual needle bar 15 carrying the needle 16 and the presser foot bar 17 and the presser foot 18. The usual feed dog 19 and its operating mechanism (not shown) are mounted in base 10 and cooperate with the needle and presser foot in the well known manner to produce, in the instance of the machine illustrated, a conventional lockstitch. The effect produced by the attachment however is not dependent upon the type of stitch employed and could also be produced on chainstitch or zig-zag stitch machines.

The attachment 20 comprises a main plate 21 and an extension plate 22 mounted adjacent to each other on the base 10 with their inner edges contiguous to form a platform over which the finished work passes as it emerges from the machine. Main plate 21 is secured to the base 10 by screws 23 and as it lies over the usual throat or needle plate, it is provided with slots 24 through which the feed dog 19 may cooperate with the presser foot 18, and a needle hole 25. Extension plate 22 is secured to the top of the usual slide plate covering the access hatch for bobbin removal. Portions of plates 21 and 22 are cut away as indicated at 26 to provide clearance for the countershifting folders 40 and 41.

The under surface of main plate 21 is provided with two parallel, longitudinal slots 27, in which folder-shifting bars 30 and 31 may be reciprocated to and from the line of stitching. At their ends closest to the needle, bars 30 and 31 carry folders 40 and 41 respectively. The end of bar 31 is offset so that folder 41 is raised above folder 40. This permits the folders to cross without interference.

At its other end, bar 30 carries a stud 32 to which lever 33 is clamped. Lever 33 carries a cam follower 34. Spaced somewhat from stud 32, bar 30 carries a second stud 35. A similar stud 36 is mounted on bar 31. Clearances 28 are provided in main plate 21 for the lateral reciprocation of these studs.

Lever 37 is pivotally mounted on screw 38 which is threaded into main plate 21. Lever 37 has a pair of yoked ends 39 which fit over studs 35 and 36, thus linking bars 30 and 31.

Bar 30 is reciprocated from the armshaft of the sewing machine. A bracket member 44 is fixed to the bed 10 within the pedestal 11. This bracket member is formed at its upper end with an elongated bearing 45 for the drive shaft 46, both of which extend through an opening 48 in the wall of the pedestal. To the end of drive shaft 46 within the pedestal, gear 49 is fixed and in mesh with a relatively wide gear 50 journalled on a stud shaft fixed in bracket 44. Pinion 51 in mesh with gear 50, is carried on the shaft journalled in bracket 44 below gear 50. The relatively large gear 52 is also carried by this same shaft. Gear 52 engages gear 53 which is carried on a lower shaft which also carries the cogged pulley 54 which is engaged by the drive belt 55 which in turn is driven from the armshaft of the sewing machine.

Shaft 46 carries barrel cam 58 which has a pattern track 59 arranged to reciprocate bar 30 to and from the needle through the agency of cam follower 34 and lever 33. Rotation of cam 58 will also cause lateral shifting

of bar 31 through the linkage of lever 37. However, by virtue of the pivotal mounting of this linkage, when bar 30 moves toward the needle, bar 31 moves away from the needle and vice versa, producing the desired countershifting of folders 40 and 41.

Folders 40 and 41 are provided with suitable bends 42 as indicated in Figs. 6, 7 and 8 through which fabric strips may be drawn by the feed action of the machine into folded tubings or pipings. The formation of these pipings and the making of suitable folders are well known in the art and are no part of this invention.

The pipings emerge from the outlets of each folder and in the case of the cam illustrated, will be in a position crossing each other so that a stitch may secure the crossed piping sections together twice in each cam cycle. This is so because by choice, the gearing has been selected to rotate the cam at one sixth the rate of the armshaft. Thus six stitches will be produced for each cam cycle. By suitable cam design, bar 30 is shifted twice across the line of stitching during each cam cycle.

Accordingly, as the feed action draws the work rearwardly past the stitchforming mechanism, the first stich made will secure the crossed pipings together at point 60 (see Fig. 9) and the second and third stitches will miss the pipings as they separate at point 61. As the pipings cross again at point 62, the fourth stitch will again secure them together, while the fifth and sixth stitches will miss the pipings as they again separate at point 63.

If a base or carrier fabric is to be decorated, it is fed beneath foot 18 on top of both pipings. In that case, while all six stitches of each cam cycle will penetrate the base fabric, only the first and fourth stitches will secure the crossed pipings together and to the base fabric. The finished decorated base fabric will emerge from the rear of the machine with the ornamented face underneath.

By suitable design of the cam pattern track, it is possible to secure both pipings together by all the stitches of each cam cycle. This is accomplished by limiting the extent of throw of bars 30 and 31. The number of stitches used for any cam cycle depends upon the gearing selected for rotation of the cam. The links may be elongated or widened somewhat by adjusting the feed rate or stitch length of the machine. By lengthening the stitch, the distance between points 60 and 62 will be increased and vice versa.

By varying the colors or textures of either the piping materials or the base fabric many novel and interesting decorative effects may be achieved.

Various other modifications will readily suggest themselves to those skilled in the art. Accordingly, the scope of the invention is to be limited only by the prior art and the spirit of the claims which follow.

What is claimed is:

1. In a sewing machine having stitchforming and feed mechanisms and a pair of laterally reciprocable fabric folders having their outlets adjacent the stitchforming and feed mechanisms, means for countershifting said folders comprising a pair of bars supporting said folders, said bars being horizontally journalled on the cloth plate of said machine, a rotating pattern cam operatively connected with a power source in said machine for directly and laterally reciprocating one of said bars with respect to the line of stitching, and a lever-pivoted intermediate its ends to the cloth plate connecting the first bar with the second bar for imparting an equal and opposite reciprocation thereto with respect to the line of stitching.

2. In a sewing machine having stitchforming and feed mechanisms and a pair of laterally reciprocable fabric folders having their outlets adjacent the stitchforming and feed mechanisms, means for countershifting said folders comprising a pair of bars supporting said folders, said bars being horizontally journalled on the cloth plate of said machine, a rotating pattern cam operatively connected with a power source in said machine for directly and laterally reciprocating one of said bars with respect to the line of stitching, and means for imparting an equal and opposite lateral movement to the second bar from the first bar comprising a member having a yoke at each end pivotally mounted intermediate said ends to the cloth plate connected with each of said bars.

3. In a sewing machine having stitchforming and feed mechanisms and a pair of laterally reciprocable fabric folders having their outlets adjacent the stitchforming and feed mechanisms, means for countershifting said folders comprising a pair of bars supporting said folders, said bars being horizontally journalled on the cloth plate of said machine, and each of said bars carrying a projecting stud, a rotating pattern cam operatively connected with a power source in said machine for directly and laterally reciprocating one of said bars with respect to the line of stitching, and means for imparting an equal and opposite lateral movement to the second bar from the first bar comprising a link pivotally mounted intermediate its ends to the cloth plate engaging each of said studs.

4. An attachment for use with a sewing machine having stitchforming and feed mechanisms and a rotating pattern cam, comprising a base plate adapted for mounting on the cloth plate of the machine, a pair of bars reciprocably journalled in said plate, a strip fabric folder respectively supported on one end of each of said bars, means on one bar directly connecting with said cam for lateral reciprocation of said bar with respect to the line of stitching, and a pivotal connection mounted intermediate its ends to the cloth plate between said bar and the second bar for imparting an equal and opposite lateral reciprocation to the latter.

5. An attachment for use with a sewing machine having stitchforming and feed mechanisms and a rotating pattern cam, comprising a base plate adapted for mounting on the cloth plate of the machine, a pair of bars reciprocably journalled in said plate, a strip fabric folder respectively supported on one end of each of said bars, means on one bar directly connecting with said cam for lateral reciprocation of said bar with respect to the line of stitching, and means for imparting an equal and opposite lateral movement to the second bar from the first bar comprising a member pivotally mounted intermediate its ends on said base plate having yoked ends connected with each of said bars.

6. An attachment for use with a sewing machine having stitchforming and feed mechanisms and a rotating pattern cam, comprising a base plate adapted for mounting on the cloth plate of the machine, a pair of bars reciprocably journalled in said plate, and each of said bars carrying a projecting stud, a strip fabric folder respectively supported on one end of each of said bars, means on one bar directly connecting with said cam for lateral reciprocation of said bar with respect to the line of stitching, and means for imparting an equal and opposite lateral movement to the second bar from the first bar comprising a link pivotally mounted intermediate its ends on said base plate having yoked ends engaging each of said studs.

7. An attachment for use with a sewing machine having stitchforming and feed mechanisms and a rotating pattern cam, comprising a base plate adapted for mounting on the cloth plate of the machine, said plate being provided with a pair of parallel slots longitudinally disposed on a line normal to the line of feed, a folder carrying bar disposed in each of said slots for reciprocation to and from the line of feed, means for reciprocating one bar directly from said cam and means for reciprocating the second bar from the first bar, but in opposite sense thereto, said means comprising a lever centrally and pivotally mounted on said base plate between said bars, each of the opposite ends of said lever being connected with one of said bars.

8. An attachment for use with a sewing machine having stitchforming and feed mechanisms and a rotating pattern cam, comprising a base plate adapted for mounting on the cloth plate of the machine, parallel slots longitudinally disposed in said plate on a line normal to the line of feed, a folder carrying bar disposed in one slot for reciprocation to and from the line of feed, means for reciprocating said bar directly from said cam comprising a follower mounted on said bar in position to mate with the pattern groove of said cam, a second folder carrying bar disposed in the other slot for reciprocation to and from the line of feed, said bar being provided with an offset portion at one end, a folder mounted on said offset portion with sufficient clearance to prevent interference with a folder mounted on the first named bar when said bars are reciprocated, and means for countershifting the second named bar from the first named bar comprising a member centrally and pivotally mounted on said base plate and disposed so that each of its opposite ends is connected with one of said bars.

9. An attachment for use in conjunction with the stitchforming and feed mechanisms of a sewing machine comprising a plate adapted for mounting on the sewing machine cloth plate, a strip fabric folder having its outlet adjacent the stitchforming and feeding mechanisms, means journalled in said plate for lateral reciprocatory

movement in a plane parallel to the cloth plate supporting said folder for shifting across the line of stitching, and means for connecting said reciprocating means with a power source in said machine.

10. An attachment for use in conjunction with the stitchforming and feed mechanisms of a sewing machine, comprising a plate adapted for mounting on the sewing machine cloth plate, a strip fabric folder having its outlet adjacent the stitchforming and feeding mechanisms, a bar journalled in said plate for lateral reciprocatory movement in a plane parallel to the cloth plate to and from the line of stitching supporting said folder at one end of said bar, a cam follower directly carried by said bar at its other end, a cam having a pattern track for actuating said cam follower, and means for operating said cam in timed relation to the stitch formation.

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