

June 28, 1949.

R. J. SAILER
TOP FEED AND ALTERNATING PRESSER
ATTACHMENT FOR SEWING MACHINES

2,474,282

Filed Nov. 7, 1947

2 Sheets-Sheet 1

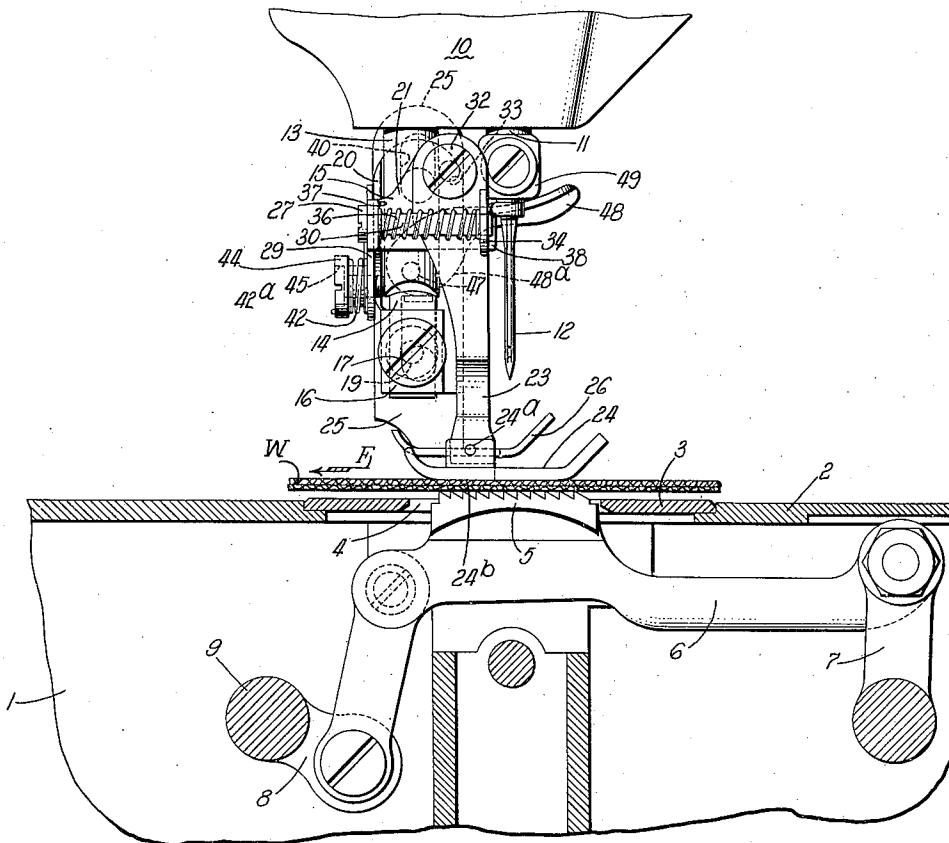


Fig. 1.

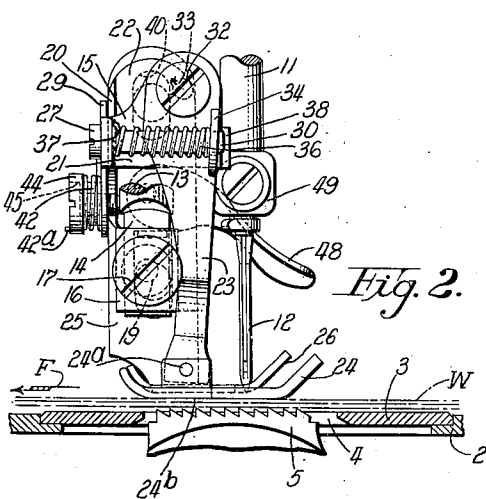


Fig. 2.

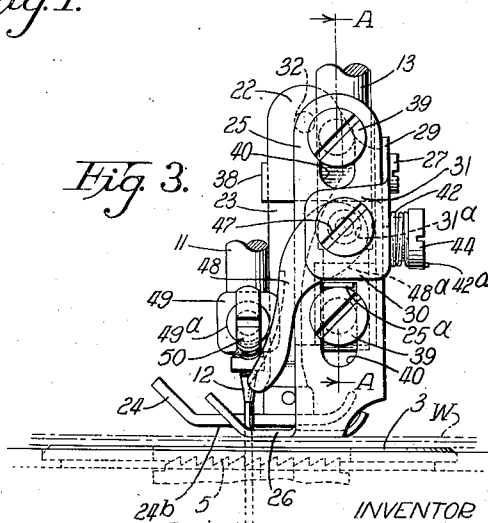


Fig. 3.

WITNESS

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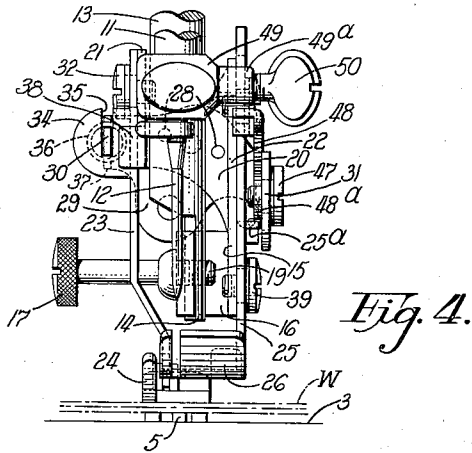


Fig. 4.

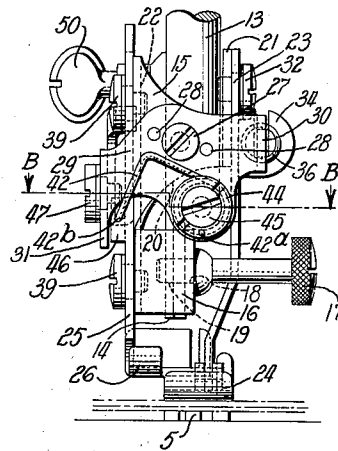


Fig. 5.

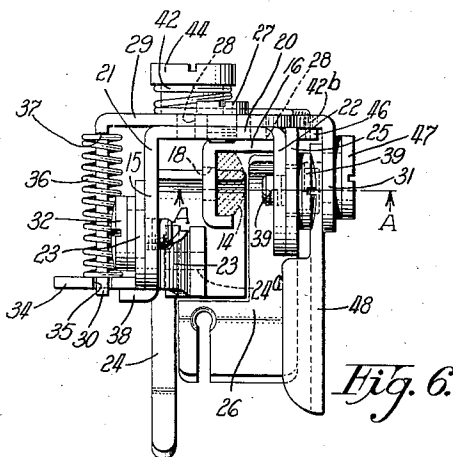


Fig. 6.

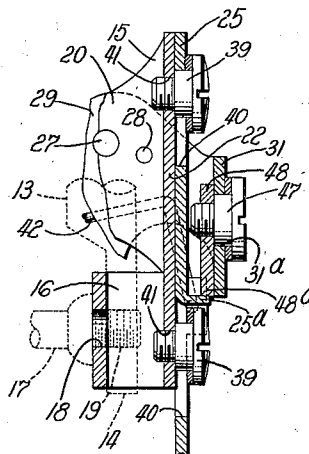


Fig. 7.

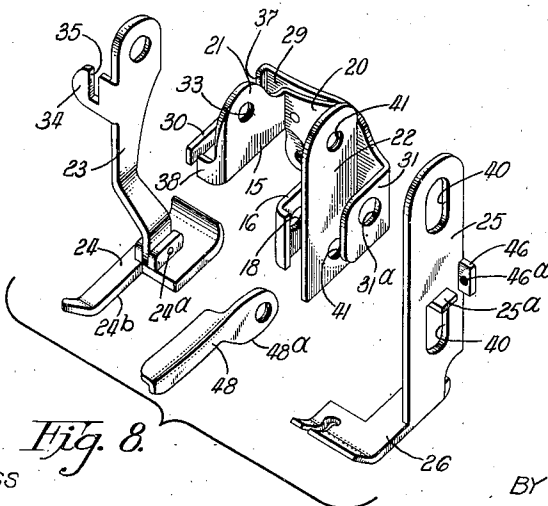


Fig. 8.

WITNESS

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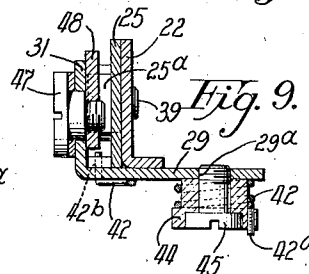


Fig. 9.

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2,474,282

TOP FEED AND ALTERNATING PRESSER
ATTACHMENT FOR SEWING MACHINES

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Application November 7, 1947, Serial No. 784,596

6 Claims. (Cl. 112—212)

1

This invention relates to top feed and alternating presser attachments for sewing machines.

Certain materials, such, for example, as rubberized fabrics, imitation leather and the various thermoplastic sheet materials more or less recently developed, have adherent characteristics. Therefore, when two plies of such material are passed through a conventional sewing machine, to be united, the upper ply tends to adhere to the underside of the presser-foot and to drag, while the lower ply is positively advanced by the underlying feeding mechanism. This results in distortion and puckering of the material and consequently in the production of uneven and imperfect work.

Specially designed machines embodying top feed and alternating presser mechanisms heretofore have been provided for the manufacturing trades for handling materials of this nature and also for handling extra heavy materials in the sewing of which, on conventional sewing machines, the upper ply tends to lag behind the positively fed lower ply. However, insofar as I am aware, no satisfactory and commercially practicable device heretofore has been provided for ready attachment to regular family sewing machines to overcome the difficulties encountered when attempting to sew materials having adherent characteristics, or work which is unusually thick and heavy. Thereover, in many instances, it has heretofore been necessary to initially baste the plies together before they could be united by a regular family sewing machine.

This invention has as a primary object to provide an improved device adapted to be removably attached to family sewing machines, in place of the usual presser-foot, to facilitate the feeding of the work through the machine and thereby obviate the necessity of initially basting the plies together and to prevent drawing or puckering of the work.

With the above and other objects in view, as will hereinafter appear, the invention comprises the devices, combinations and arrangements of parts hereinafter set forth and illustrated in the accompanying drawings of a preferred embodiment of the invention, from which the several features of the invention and the advantages attained thereby will be readily understood by those skilled in the art.

In the drawings,

Fig. 1 is a fragmentary end view of a portion of a family sewing machine, partly in section, showing the improved attachment secured to the presser-bar thereof, with the needle-bar in its

2

uppermost position, with the presser-foot raised, and with the lower feeding mechanism and an upper feeding foot in position to start their work-feeding movements.

Fig. 2 is a view similar to Fig. 1 but with still further portions of the machine omitted, with the needle-bar partially down and with the feed-dog and upper feeding foot at the end of their feeding movements.

Fig. 3 is a view similar to Fig. 2, but taken from the opposite side, with the needle-bar in its lowermost position with the presser-foot bearing upon the work, the feeding foot raised and spring returned to its forwardmost position, as in Fig. 1.

Fig. 4 is a front view of the attachment and portions of the sewing machines, with the parts in the position shown in Fig. 1.

Fig. 5 is rear view of Fig. 4.

Fig. 6 is an enlarged plan view of the improved attachment apart from the sewing machine.

Fig. 7 is an enlarged vertical sectional view taken substantially on the line A—A of Figs. 3 and 6.

Fig. 8 is a disassembled perspective view of the principal elements of the improved attachment.

Fig. 9 is an enlarged detail sectional view taken substantially on the line B—B of Fig. 5.

Referring more specifically to the drawings, Figs. 1 to 5, inclusive, show the improved attachment as applied to a conventional family sewing machine comprising a base 1 having a horizontally disposed work-supporting plate 2 which includes the usual throat-plate 3 slotted, at 4, to accommodate a feed-dog 5 secured upon a horizontally disposed feed-bar 6. The feed-bar and the feed-dog carried thereby are given feed and return movement by an oscillating feed rocker 7 and rising and falling movements by a rock-arm 8 carried by an oscillatory feed-lift rock shaft 9.

Located above the work-supporting plate 2, and spaced therefrom, is the usual bracket-arm head 10 in which is mounted, for endwise reciprocation, a needle-bar 11 carrying, at its lower end, an eye-pointed thread-carrying needle 12 which co-operates with a suitable loop-taker, not shown, in the formation of stitches. Also mounted in the head 10 is a spring-depressed presser-bar 13, having a flattened lower end portion 14, to which, in conventional family sewing machines, there is usually clamped a presser-foot generally similar to that shown in United States Patent No. 2,031,562, Feb. 18, 1936, of H. J. Goosman.

The present invention contemplates the removal of the conventional presser-foot and the bodily substitution therefor of an improved alter-

3

nating presser attachment having both a presser-foot and a feeding foot.

The improved attachment preferably comprises a sheet metal supporting frame 15, substantially U-shaped in plan view, having, at its lower end, a horizontal L-shaped portion 16 (Fig. 6) adapted to be fitted to the flattened lower end portion 14 of the presser-bar and to be secured thereto by a knurled and slotted screw 17, the threaded end of which passes through an aperture 18 in the portion 16 and is threaded into the usual presser-foot screw hole 19 in the presser-bar.

The frame 15 is formed with a back wall 20 and two laterally spaced and vertically disposed side walls 21 and 22 adapted to support, respectively, a feeding element, comprising a shank 23 and a feeding foot 24 pivotally connected thereto, at 24^a, and a presser-member including a shank 25 and a rigidly connected presser-foot 26. Secured to the back wall 20 of the frame 15, as by screw 27 and pins 28, is a bracket 29, which is substantially U-shaped in plan view and has, at one side, a forwardly projecting arm 30 and, at the opposite side, a vertically disposed wall 31. The shank 23 of the feeding foot 24 is pivotally mounted, at its upper end, on a shoulder screw 32 threaded into an aperture 33 in the wall 21 of the frame 15. Below its pivot, the shank 23 is formed with an off-set ear 34, slotted at 35, to afford clearance for the forward end of the arm 30 which projects therethrough. A coil spring 36, surrounding the arm 30, has its rear end bearing against a shoulder 37 provided by the bracket 29 and its forward end bearing against the rear surface of the ear 34. Thus the spring normally biases the shank 23 and the feeding foot 24 forwardly to the position shown in Figs. 1, 3 and 6 in which the shank 23 bears against an abutment, preferably in the form of a laterally offset stop lug 38 provided by the wall 21 of the frame 15.

The shank 25 of the presser-foot 26 is slidably mounted, for vertical movements, on the outer face of the wall 22 of the frame 15, by means of shoulder screws 39, passing through slots 40 in said shank and threaded into apertures 41 in said wall. The shank 25 and the foot 26 are normally urged upwardly, to a position in which the lower walls of the slots 40 engage the undersides of the screws 39, by a spring 42 located at the rear side of the attachment. This spring has a coiled portion which surrounds an adjustable collar 44 adapted to be held in adjusted position by a clamp screw 45 threaded into an aperture 29^a in the bracket 29 (Fig. 9). The spring 42 has one offset leg 42^a which enters an aperture in the collar 44 and another offset leg 42^b which enters an aperture 46^a formed in an ear 46 on the shank 25. The tension of the spring 42 may be varied by loosening the clamp screw 45, turning the collar 44 until the desired tension is obtained and again tightening the clamp screw.

Pivotally mounted at the inner face of the wall 31 of the bracket 29, by a shoulder screw 47, passing through an aperture 31^a in said wall 31, is an actuating arm 48 having a cam surface 48^a adapted to engage the upper side of a tang 25^a struck outwardly from the shank 25.

Upward movement of the shank 25 under the influence of the spring 42 acts, through the pressure of the tang 25^a on the arm 48, to shift the lever to its uppermost position.

The needle 12 is secured to the lower end of the needle-bar 11 by means of a conventional needle-

4

clamp similar to that shown in United States patent of A. Grieb, No. 1,896,047, Jan. 31, 1933, and comprising a clamping band 49 having a neck portion 49^a, and a clamp screw 50 threaded through said neck portion. The needle-clamp is, in effect, a portion of the needle-bar. As shown most clearly in Figs. 3 and 4 the neck portion of the needle-clamp overlies the arm 48. Therefore, at each down stroke of the needle-bar, the neck portion 49^a swings the arm 48 downwardly to the position shown in Fig. 3. During this downward movement of the lever the cam portion 48^a thereof acts on the upper side of the tang 25^a and forces the shank 25, and the presser-foot 26 carried thereby, downwardly in opposition to the spring 42.

With the parts in the position shown in Fig. 1, i. e. with the needle-bar in its uppermost position, the feed-dog 5 has risen through the slot 4 in the throat-plate and has engaged the under ply of the work W. The presser-foot 26 is lifted above the work and the feeding foot 24 is bearing down on the upper ply of the work, under the pressure of the conventional presser-bar spring, not shown. Thus, both plies of the work are clamped between the upper and lower feeding elements so that there is substantially no possibility of relative movement between the plies. During the downward movement of the needle-bar to the position illustrated in Fig. 2, the feed-dog 5 advances the work one stitch length in the direction indicated by the arrow F. The downwardly depressed feeding foot 24 moves with the work, holding the two plies together and therefore assists in the feeding of the work. The pivotal connection 24^a between the foot 24 and the shank 23 permits the sole portion 24^b of the foot to maintain complete surface contact with the work during the entire feed movement. As the foot 24 moves rearwardly, in opposition to the spring 36, the shank 23 thereof swings about the pivot screw 32. During the downward movement of the needle-bar and movement of the feed elements from the position shown in Fig. 1 to that shown in Fig. 2, the needle-bar swings the arm 48 downwardly which, in turn, depresses the shank 25 of the presser-foot 26, in opposition to the spring 42, as above described, until the bottom surface of the presser-foot is only slightly above the upper surface of the work. A slight further downward movement of the needle-bar causes the arm 48 to force the presser-foot into pressure contact with the work to clamp the work stationary on the throat-plate. As the presser-foot is lowered into contact with the work, the feed-dog 5 is dropped below the surface of the throat-plate preparatory to its return movement. During further downward movement of the needle-bar, i. e. to the position shown in Fig. 3, the arm 48 is forced still further down, but as further downward movement of the presser-foot is prevented, by its contact with the work, action of the cam 48^a on the then stationary tang 25^a causes the lever to react and exert an upward thrust on the screw 47 which lifts the bracket 29, carrying with it the frame 20 and the presser-bar 11 to which it is secured. Upward movement of the frame 20 lifts the feeding foot 24 clear of the work whereupon the spring 36 swings the shank 23 forwardly and into contact with the stop lug 38, thereby returning the feeding foot to the position shown in Fig. 3. As the needle-bar is moved upwardly from the position shown in Fig. 3 the spring 42, acting on the shank 25, lifts the presser-foot 26 and the arm 48 thereby

5

permitting the presser-bar spring, not shown, to lower the feeding foot 24 onto the work, thus returning the parts to the starting position shown in Fig. 1.

Having thus set forth the nature of the invention, what I claim herein is:

1. An attachment of the class described, comprising a supporting frame adapted to be secured to the presser-bar of a sewing machine and having spaced vertically disposed walls; a feeding member horizontally pivoted on one of said walls; a presser-member slidably mounted on the other of said walls for vertical movement; a bracket secured to said frame; a spring mounted on said bracket and engaging said presser-member and urging it upwardly; a needle-bar-actuated arm pivoted to said bracket and engaging a portion of said presser-member to force it downwardly in opposition to said spring; and a second spring interposed between said bracket and said feeding member and normally urging said feeding member forwardly.

2. An attachment of the class described, comprising a supporting frame, substantially U-shaped in plan view, adapted to be removably secured to the presser-bar of a sewing machine and having spaced vertically disposed walls, one of which is formed at its forward edge with a stop lug; a feeding member horizontally pivoted on one of said walls; a presser-member slidably mounted on the other of said walls for vertical movement; a bracket secured to said frame; a spring mounted on said bracket and engaging said presser-member and urging it upwardly; a needle-bar-actuated arm pivoted to said bracket and engaging a portion of said presser-member to force it downwardly in opposition to said spring; and a second spring interposed between said bracket and said feeding member and normally urging said feeding member forwardly into contact with said stop lug.

3. An attachment of the class described, comprising a supporting frame adapted to be removably secured to the presser-bar of a sewing machine and having a back wall and spaced vertically disposed side walls, one of which carries an abutment; a feeding member horizontally pivoted on one of said side walls; a presser-member slidably mounted on the other of said side walls for vertical movement; a bracket secured to the back wall of said frame and having a forwardly projecting arm at one side of said frame and an upright wall at the opposite side thereof; a spring mounted on said bracket and engaging said presser-member and urging it upwardly; a needle-bar-actuated arm pivoted to said bracket and engaging a portion of said presser-member to force it downwardly in opposition to said spring; and a second spring mounted on the arm of said bracket and normally urging said feeding member forwardly into contact with said abutment.

4. An attachment of the class described, comprising a supporting frame adapted to be secured to the spring depressed presser-bar of a sewing machine and having spaced vertically disposed walls one of which carries an abutment;

6

a feeding member having a shank horizontally pivoted on said one of said walls and provided with a slotted offset ear; a feeding foot pivoted to the lower end of said shank, said feeding foot normally being depressed upon a workpiece by the presser-bar; a spring-lifted presser-member slidably mounted on the other of said walls for vertical movement; a bracket secured to said frame and having an arm, the forward end of which projects through the slot in said ear; a spring mounted on said arm and having one end bearing against said bracket and its other end bearing against said ear and normally urging said shank into contact with said abutment; and a needle-bar-actuated arm pivoted to said bracket and engaging a portion of said presser-member to force it downwardly into pressure contact with a workpiece beneath the feeding foot and to lift said feeding foot out of contact with the workpiece.

5. An attachment of the class described, comprising a supporting frame adapted to be secured to the presser-bar of a sewing machine and having spaced vertically disposed walls; a feeding member horizontally pivoted on one of said walls; a presser-member slidably mounted on the other of said walls for vertical movement; a bracket secured to said frame; a collar adjustably mounted on said bracket; a spring secured to and carried by said collar and having an offset leg engaging said presser-member and urging it upwardly; means for adjusting said collar on said bracket and maintaining it in its adjusted positions, to vary the tension of said spring; a needle-bar-actuated arm pivoted to said bracket and engaging a portion of said presser-member to force it downwardly in opposition to said spring; and a second spring interposed between said bracket and said feeding member and normally urging said feeding member forwardly.

6. The combination with a sewing machine having a work-support provided with a feed slot, a reciprocating needle-bar, a spring-depressed presser-bar and a lower feeding mechanism located mainly below said work-support and having a feed-dog operating through said feed slot and engaging the underside of a workpiece on said work-support; of a top feed and alternating presser device secured to said presser-bar and cooperating with said lower feeding mechanism to effect feeding of said workpiece, said attachment comprising a supporting frame; an upper work-feeding member including a shank pivotally supported on said frame and carrying, at its lower end, a pivotally supported feeding foot having a sole portion which bears flatwise upon the upper side of the workpiece above said feed-dog during the entire feed movement of the work by said feed-dog; a presser-member slidably mounted on said frame; a spring means normally urging said presser-member upwardly; and a member supported by said frame and actuated by said needle-bar to effect alternate raising and lowering of said feeding foot and presser-member.

RUDOLPH J. SAILER.

No references cited.