

Jan. 8, 1946.

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2,392,730

AUXILIARY PRESSER-FOOT LIFTING DEVICES

Filed Jan. 5, 1945

2 Sheets-Sheet 1

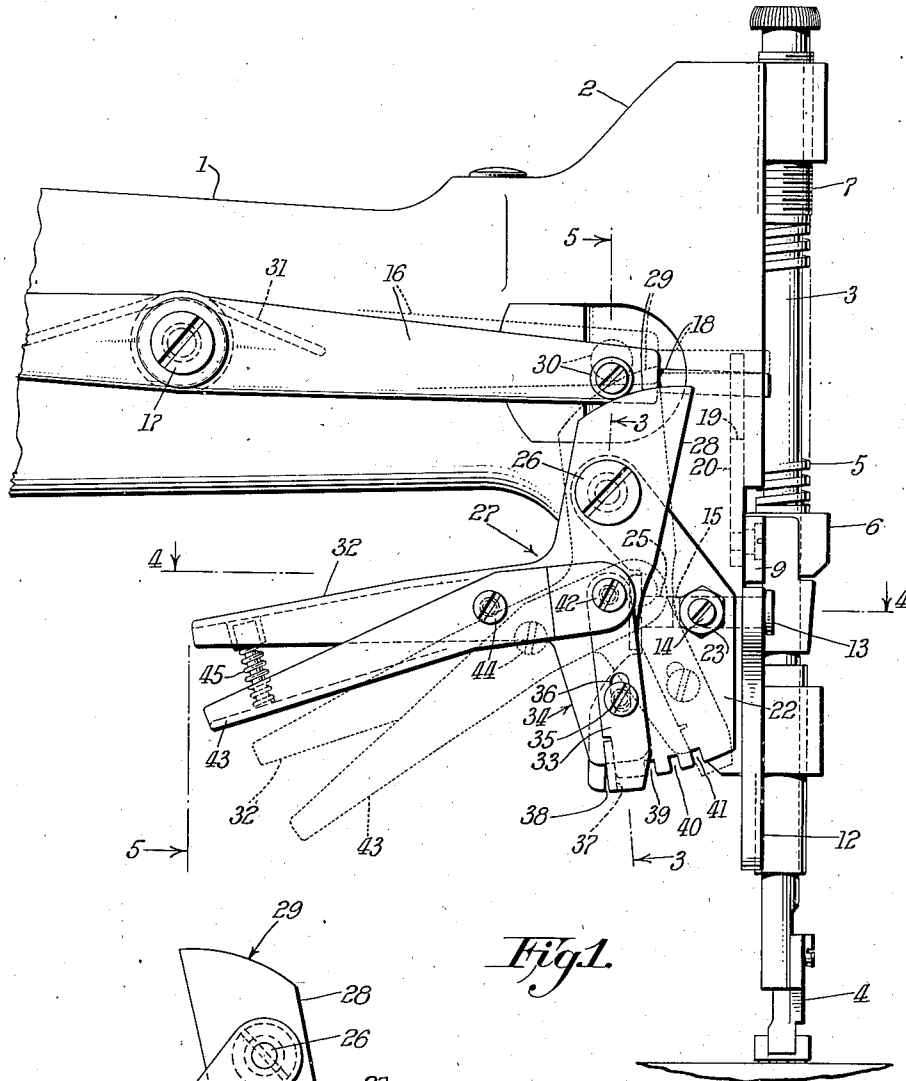


Fig. 1.

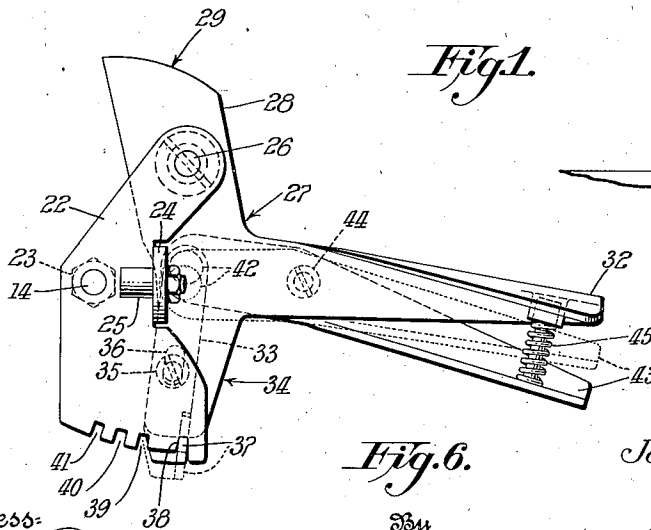


Fig. 6.

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2 Sheets-Sheet 2

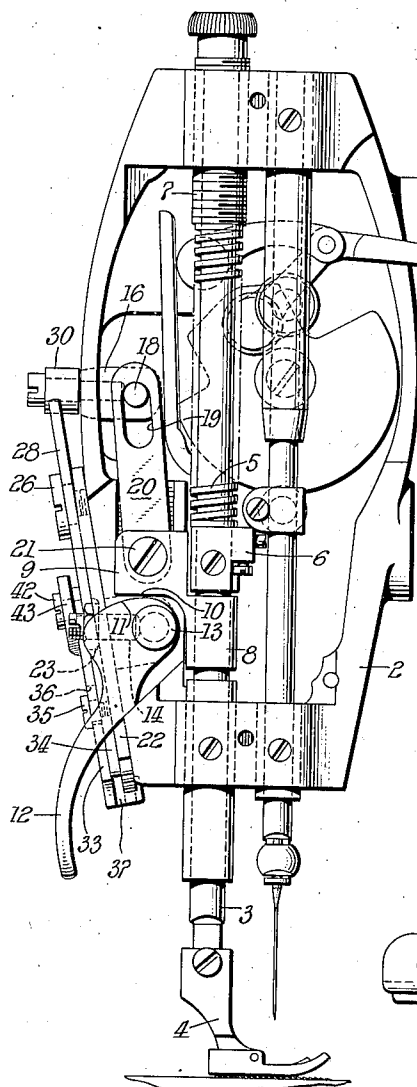


Fig. 2.

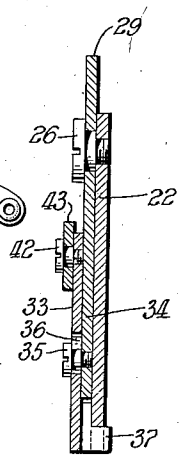


Fig. 3.

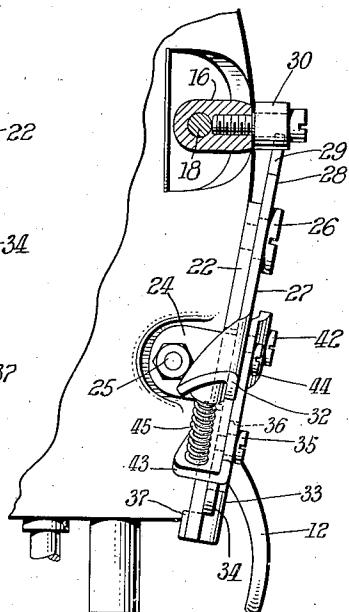


Fig. 5.

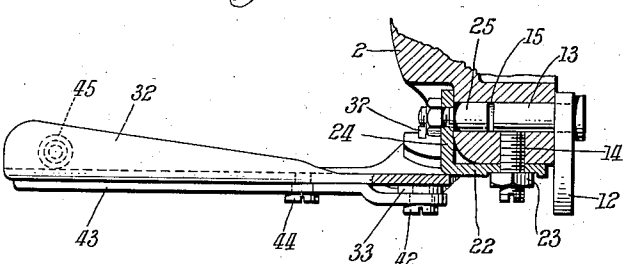


Fig. 4.

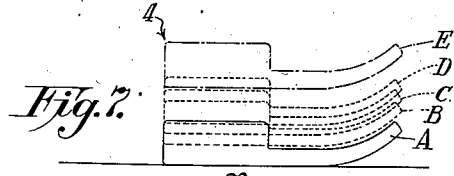


Fig. 7.

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UNITED STATES PATENT OFFICE

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AUXILIARY PRESSER-FOOT LIFTING
DEVICE

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13 Claims. (Cl. 112—237)

This invention relates to sewing machine presser-foot lifting means and particularly to the provision of a special control auxiliary to the usual means by which the presser-foot is manually movable from its fully lowered or normal operating position on the throat plate to its extreme elevated or inoperative position.

In order to perform darning operations on sewing machines, it is desirable to have the usual presser-foot disposed so as to provide for the requisite shifting of the work while insuring that the work is stripped from and prevented from rising with the needle.

The primary object of the invention is to provide a conveniently located and readily operable auxiliary control by which the presser-foot can be elevated to and locked in any one of several positions intermediate the indicated extremes, in order to adapt the machine to perform darning operations on materials of various thicknesses.

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 rear elevational view of the head-end of a sewing machine bracket-arm having the invention applied thereto, the end cover of the head being removed;

Fig. 2 is an end elevational view, also with the head cover removed;

Figs. 3, 4 and 5 are sectional views on the lines 3—3, 4—4 and 5—5, respectively, of Fig. 1;

Fig. 6 is an elevational view of the control unit detached from the machine and viewed from the reverse side from that shown in Fig. 1; and

Fig. 7 is a diagrammatic view indicating the several positions of adjustment of the presser-foot available in a machine equipped with the illustrated control.

Referring now to the drawings in greater detail, the overhanging bracket-arm 1 of the machine terminates in a head 2, in which is mounted a presser-bar 3, to the lower end of which is secured the presser-foot 4. As usual, the presser-bar is normally held in its lowered or operative position (Figs. 1 and 2) by a spring 5, the lower end of the spring engaging the upper surface of a collar 6 secured to the presser-bar and the upper end of the spring abutting a pressure-ad-

justing sleeve 7 threaded into the upper part of the head 2. Slightly below the collar 6, a second collar 8 is slidably mounted upon the presser-bar 3 to engage the collar 6; the collar 8 having a rearwardly projecting extension 9, the undersurface 10 of which overlies the cam surface 11 of the customary hand-lifter lever 12. The lever 12 is pivoted on a stud 13 secured, by a set-screw 14, in a hole 15 in the head (Fig. 4), and operates in the usual manner to elevate the presser-foot from the normal operating or full-line position A, of Fig. 7, to the dash-and-dot-line position E.

In the particular machine illustrated, a second means is provided for lifting the presser-foot from its A position to its E position; this second means being so arranged that it can be coupled, for example, to a treadle for foot operation. To the extent necessary to an understanding of the present invention this second means is indicated as including a lifting lever 16 pivoted at 17 on the rear of the bracket-arm 1 (Fig. 1) and carrying a pin 18 projecting into the head 2 for engagement in a slot 19 in a link 20 connected by a screw 21 with the rearward extension 9 of collar 8. As will be apparent, upward movement of the forward end of lifting lever 16 raises the presser-bar and presser-foot, the lost-motion slot 19 permitting the presser-bar to be raised by this means or alternatively by hand-lifting lever 12, as convenient.

In the form of the invention shown for purposes of illustration, the auxiliary control, now to be described, is in the form of a unit suitable for attachment to a machine of the kind above indicated. It comprises a mounting plate 22 secured to the bracket-arm head 2 by a nut 23 on the set-screw 14, and by a tab 24 to which is secured a stud 25 located in the hole 15. Pivotaly mounted at 26 on the upper end of plate 22 is a substantially T-shaped or three-armed lever, generally designated as 27. The upwardly directed arm 28 of the lever, by which the lever is pivoted to plate 22, is formed with a cam surface 29 across its upper edge on which rides a roller 30 mounted on the lifting lever 16. The roller is held in engagement with the cam surface 29 by a spring 31 acting on the lever 16 and tending to turn it clockwise, as seen in Fig. 1. As will be apparent, movement of the lever 27 about its pivot causes the cam surface 29 to vary the position of lifting lever 16 and, through it, the position of the presser-foot. The arm 32 of the lever 27, which extends away from the head 2 in a direction more or less parallel to the lifting

lever 16, constitutes an actuating handle for the cam. Being located below and spaced from the bracket-arm 1, the arm 32, or actuating handle, is conveniently located for ready access from the front of the machine.

Means are provided for locking the lever 27 relatively to the mounting plate 22 in any one of several positions of adjustment or settings of the cam surface 29, such settings representing the intermediate presser-foot positions B, C and D indicated in Fig. 7. In the preferred form illustrated, the locking means, also mounted wholly on the plate 22, includes a latch member 33 mounted to slide on the downwardly projecting or third arm 34 of lever 27, as by means of the stud and slot connection 35, 36. The lower end of the latch member 33 is bent over to form a locking piece 37 engageable with any one of a series of appropriately spaced notches 38, 39, 40 and 41 formed in the lower edge of the mounting plate 22. The end notch 38 with which the locking piece is shown engaged in Figs. 1 and 6 represents the inactive position of the cam surface 29, that is, the position in which the presser-foot is in its normal or lowest operating position, whereas the notches 39, 40 and 41 represent cam surface positions corresponding to the presser-foot positions B, C and D, respectively, of Fig. 7.

The latch member 33 is coupled at its upper end by a screw 42 to the adjacent end of a control lever 43, the latter being pivotally mounted at 44 on the actuating handle 32 and so positioned with respect to the handle as to be readily grasped simultaneously with it. A spring 45 serves to keep the handle 32 and control lever 43 normally spread apart and hence the locking piece 37 of the latch member 33 in its notch-engaging or cam-locking position.

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

1. In a sewing machine including a bracket-arm having a head, a presser-bar mounted in the head, and a presser-bar lifting lever pivoted on and extending lengthwise of the bracket-arm, the combination therewith of a roller on said lever, a cam mounted for rotation relatively to the head with its cam surface in engagement with the roller, an actuating arm for said cam extending generally parallel to said lifting lever and below and spaced from the under side of the bracket-arm, a notched stop plate secured to the head, a cam latch movable with the cam and engageable with the stop plate notches to lock the cam in any one of a number of positions, a latch release member pivotally mounted on said actuating arm and located to be grasped simultaneously therewith, and a spring normally holding the latch in a cam-locking position.

2. In a sewing machine including a bracket-arm having a head, a presser-bar mounted in the head, and a presser-bar lifting lever pivoted on and extending lengthwise of the bracket-arm, the combination therewith of a cam mounted for rotation relatively to the head with its cam surface in cooperative engagement with the lifting lever, an actuating arm for said cam extending generally parallel to said lifting lever and below and spaced from the under side of the bracket-arm, a notched plate member, a cam latch member engageable with the stop plate notches, one of said members being movable with the cam and the other being secured to the head to lock the cam in any one of a number of positions, a lock release member pivotally mounted on said actuating arm and located to be grasped simulta-

neously therewith, and a spring normally holding the said members in cam-locking engagement.

3. In a sewing machine including a bracket-arm having a head, a presser-bar mounted in the head, and a presser-bar lifting lever pivoted on and extending lengthwise of the bracket-arm, the combination therewith of a cam mounted for rotation relatively to the head with its cam surface in cooperative engagement with the lifting lever, an actuating arm for said cam extending generally parallel to said lifting lever and below and spaced from the under side of the bracket-arm, cam locking means adapted to lock the cam in any one of a number of positions, and a lock release member mounted adjacent said actuating arm in a position to be grasped simultaneously therewith.

4. In a sewing machine including a bracket-arm having a head, a presser-bar mounted in the head, and a presser-bar lifting lever pivoted on and extending lengthwise of the bracket-arm, the combination therewith of a cam mounted for rotation relatively to the head with its cam surface in cooperative engagement with the lifting lever, an actuating arm for said cam, cam locking means adapted to lock the cam in any one of a number of positions, and a lock release member mounted adjacent said actuating arm in a position to be grasped simultaneously therewith.

5. In a sewing machine including a bracket-arm having a head, a presser-bar mounted in the head, and a presser-bar lifting member, the combination therewith of a roller on said member, a cam rotatably supported on the head with its cam surface in engagement with the roller, an actuating arm for said cam extending below and spaced from the under side of the bracket-arm, a notched stop plate secured to the head, a cam latch movable with the cam and engageable with the stop plate notches to lock the cam in any one of a number of positions, a latch release member pivotally mounted on said actuating arm and located to be grasped simultaneously therewith, and a spring normally holding the latch in a cam-locking position.

6. In a sewing machine including a bracket-arm having a head, a presser-bar mounted in the head, and presser-bar lifting means, the combination therewith of a cam rotatably supported on the head with its cam surface in cooperative engagement with the lifting means, an actuating arm for said cam extending below and spaced from the under side of the bracket-arm, a notched plate member, a cam latch member engageable with the stop plate notches, one of said members being movable with the cam and the other being secured to the head to lock the cam in any one of a number of positions, and a lock release member pivotally mounted on said actuating arm and located to be grasped simultaneously therewith.

7. In a sewing machine including a bracket-arm having a head, a presser-bar mounted in the head, and a presser-bar lifting member, the combination therewith of a cam rotatably supported on the head with its cam surface in cooperative engagement with the lifting member, an actuating arm for said cam, cam-locking means adapted to lock the cam in any one of a number of positions, and a lock release member mounted adjacent said actuating arm in a position to be grasped simultaneously therewith.

8. In a sewing machine including a bracket-arm having a head, a presser-bar mounted in the head, and a presser-bar lifting member, the combination therewith of a mounting plate se-

cured to the head, a lever pivotally mounted on the plate, a cam surface on the lever in cooperative engagement with the lifting member, said lever having an arm constituting an actuating handle, and means mounted on the lever with freedom for movement relatively thereto into and out of locking engagement with the said plate.

9. In a sewing machine including a bracket-arm having a head, a presser-bar mounted in the head, and a presser-bar lifting member, the combination therewith of a lever pivotally supported adjacent the head, a second lever pivotally mounted on the first lever and located to be grasped simultaneously therewith, a cam associated with the first lever and arranged in cooperative engagement with said lifting member, and lever locking means controlled by said second lever.

10. A presser-foot lifting unit comprising a mounting plate having notches in one edge thereof, a substantially T-shaped lever pivotally mounted on the plate, a cam surface formed on one arm of the lever, a latch mounted on another arm of the lever with freedom for movement into and out of engagement with said notches, the third arm of the lever forming an actuating handle therefor, and a latch controlling member mounted on said third arm.

11. A presser-foot lifting unit comprising a

5 mounting plate, a substantially T-shaped lever pivotally mounted on the plate, a cam surface formed on one arm of the lever, a member mounted on another arm of the lever with freedom for movement into and out of locking engagement with the mounting plate, the third arm of the lever forming an actuating handle therefor, and manual control means for said member also mounted on the lever and located to be grasped simultaneously with the actuating handle.

12. A presser-foot lifting unit comprising a mounting plate, a substantially T-shaped lever pivotally mounted on the plate, a cam surface formed on one arm of the lever, and spring-controlled means for locking the lever to the plate mounted on second and third arms of the lever, the third arm of the lever forming a lever actuating handle.

13. A presser-foot lifting unit comprising a mounting plate, a lever pivotally mounted on the plate and incorporating an actuating handle and a cam, a member mounted on the lever with freedom for movement into and out of locking engagement with the mounting plate, and manual control means for said member also mounted on the lever and located to be grasped simultaneously with the actuating handle.

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