Sept. 26, 1939. F. F. MAX 2,174,290

PRESSER DEVICE FOR SEWING MACHINES

Filed April 13, 1937 2 Sheets-Sheet 1

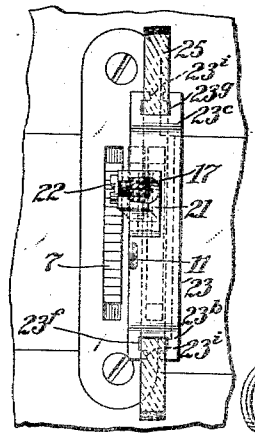


Fig. 3.

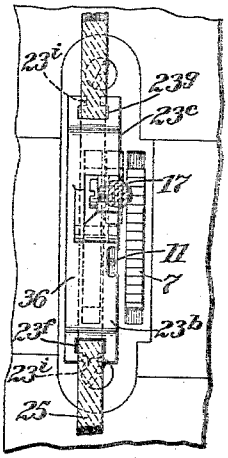


Fig. 4.

Fig. 1.

Witness:

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PRESSER DEVICE FOR SEWING MACHINES

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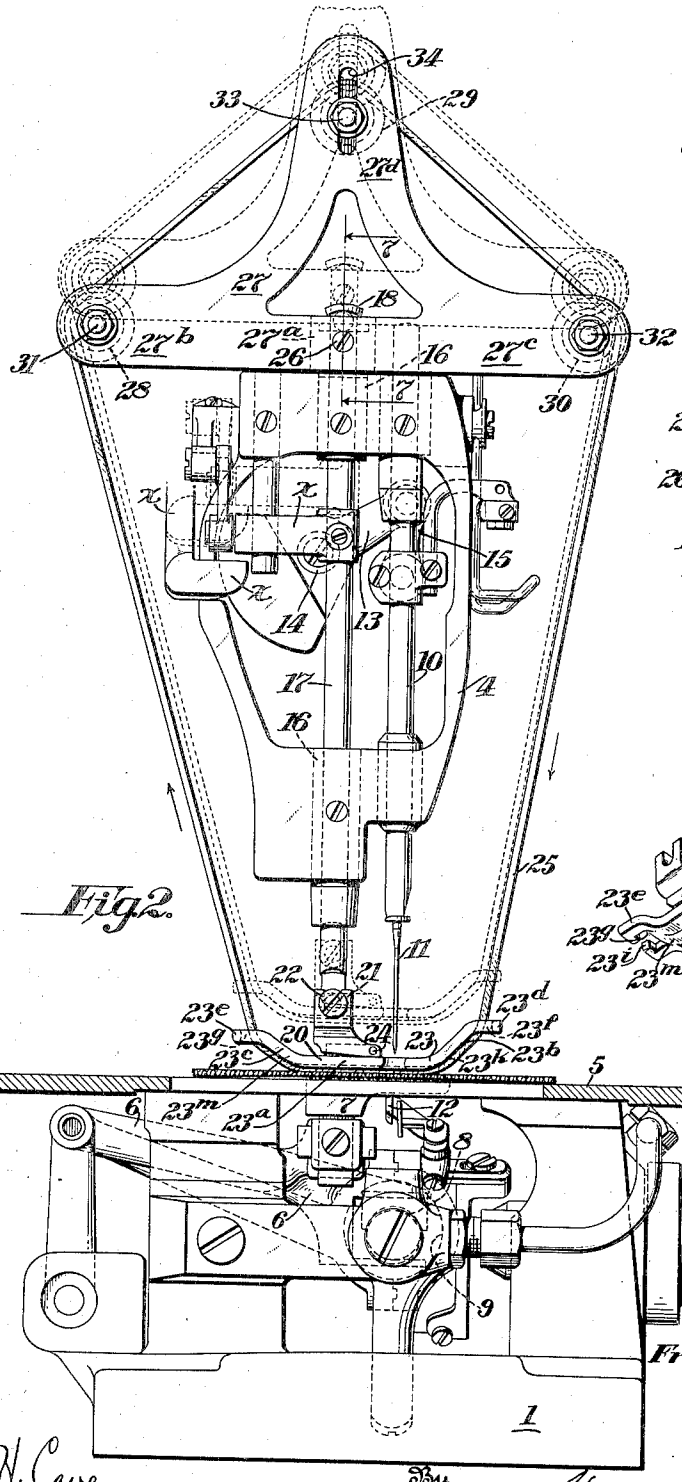


Fig. 2.

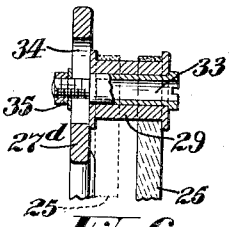


Fig. 6.

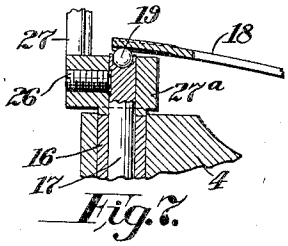


Fig. 7.

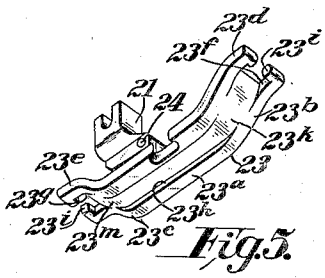


Fig. 5.

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UNITED STATES PATENT OFFICE

2,174,290

PRESSER DEVICE FOR SEWING MACHINES

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Application April 13, 1937, Serial No. 136,535

10 Claims. (Cl. 112—235)

This invention relates to sewing machines and more particularly to presser-devices for sewing machines which will facilitate the passage of the work through the machine by the feeding mechanism.

Certain materials, such, for example, as rubberized fabrics, imitation leather and patent leather, have surfaces which are more or less tacky and which, therefore, during their passage through a sewing machine, tend to adhere to the work-engaging surface of a conventional presser-foot. This both interferes with the manipulation of the work and places an additional and objectionable drag on the work.

This invention has as an object to overcome that difficulty, and to that end it proposes the provision of a presser-device having a movable work-engaging surface adapted to travel with the work as it passes through the machine. Furthermore this invention proposes novel means for breaking the adhesive contact between the work and the movable contact surface of the presser-device as the successive portions of the work pass from beneath the presser-device.

Preferably the movable contact surface of the presser-device comprises a continuous belt-like member passing beneath the under surface of a presser-foot secured upon the lower end of the usual presser-bar, thence upwardly behind the bracket-arm head and over guide-rollers carried by a bracket secured upon the upper end of the presser-bar, and thence downwardly in front of the bracket-arm head and again beneath the presser-foot. This construction avoids all sharp bends in the belt which would interfere with its free movement and it also insures that the belt will be lifted bodily with the presser-foot and will remain taut when the foot is lifted.

With the above and other objects in view, as will hereinafter appear, the invention comprises the devices, combinations and arrangement 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 obtained thereby will be readily understood by those skilled in the art.

In the accompanying drawings, Figure 1 is a perspective view of a portion of a conventional sewing machine fitted with the present invention.

Fig. 2 is a left end elevation, partly in section, of the machine illustrated in Fig. 1 and showing the improved presser mechanism cooperating with a conventional four-motioned feeding mechanism.

Fig. 3 is a detail horizontal sectional view taken substantially on the line 3—3 of Fig. 1, and illustrating the use of a so-called right-hand presser-foot, i. e., a presser-foot located at the right-hand side of the needle.

Fig. 4 is a view similar to Fig. 3, but showing the use of a so-called left-hand presser-foot, it being understood that the right- and left-hand presser-feet shown in Figs. 3 and 4 may be used interchangeably for different sewing conditions.

Fig. 5 is a detail perspective view of the right-hand presser-foot shown in Figs. 1, 2 and 3.

Fig. 6 is a detail horizontal sectional view taken substantially on the line 6—6 of Fig. 1, illustrating the adjustable mounting of one of the belt-supporting and -guiding rollers later to be described.

Fig. 7 is a detail vertical sectional view taken substantially on the line 7—7 of Fig. 2.

Referring more specifically to the drawings, the invention is disclosed as embodied in a sewing machine comprising a frame including a bed 1, standard 2, overhanging bracket-arm 3, bracket-arm head 4 and a work-supporting plate 5. Located beneath the work-supporting plate and actuated from a suitable drive shaft (not shown) is a conventional four-motioned feeding mechanism comprising a feed-bar 6 and a feed-dog 7 carried thereby. The feed-bar and the feed-dog are adapted to be given vertical movements from an eccentric 8, and horizontal backward and forward movements by an eccentric 9, both carried by the drive shaft. Mounted within the head 4 is a vertically reciprocating needle-bar 10, carrying an eye-pointed needle 11 which cooperates with complemental loop-taking mechanism located beneath the work-plate and illustrated as a conventional chain-stitch looper 12 adapted to be actuated by any suitable mechanism. The needle-bar may be actuated by any suitable driving mechanism, such for example as by a crank-arm 13 secured upon a rock-shaft 14 and connected with the needle-bar by a link 15.

Mounted to move vertically in bearings 16, carried by the head 4, is a presser-bar 17 which normally is pressed downwardly by a leaf-spring 18 which bears upon the presser-bar, either directly or through the medium of a ball 19 as shown in Fig. 7. Means, designated generally as *x*, is provided for raising the presser-bar and parts carried thereby from the position shown in full lines in Fig. 2 to the position indicated by dotted lines.

As shown in Figs. 1, 2, 3 and 5 of the drawings,

the improved right-hand presser-device comprises a presser-foot **20** consisting of a shank portion **21**, secured to the presser-bar by a screw **22**, and a sole-portion **23** hinged to the shank portion, as by a pivot-pin **24**. The sole-portion **23** is formed with a substantially horizontal part **23a**, an upturned toe **23b** and an upturned heel **23c**. The toe and heel portions terminate in horizontally disposed free ends **23d** and **23e**, respectively. These ends are formed with transverse guide-slots **23f** and **23g**, respectively, and the sole-portion is provided, at its under side, with a longitudinal guide-channel **23h** aligned with the slots **23f** and **23g**. These guide-slots and the guide-channel are adapted to receive and guide a continuous belt-like member **25** adapted to pass beneath the presser-foot between the foot and the work and which serves as a movable work-engaging surface of the presser-device. The outer ends of the portions **23d** and **23e** are slotted as at **23i** to permit insertion of the member **25** into the guide-slots **23f** and **23g**. The toe portion **23b** is inclined upwardly from the sole-portion at an angle of approximately 45 degrees and the two are connected together by a gradually curved portion **23k**. The heel portion **23c** extends upwardly from the sole-portion at an angle of approximately 30 degrees and is connected thereto by a gradually curved portion **23m**. This construction affords a slideway for the belt **25** which is devoid of sharp turns and which effectively breaks any adhesive contact, which might be made between the under side of the belt and the upper side of the work, as the work passes from beneath the presser-device.

Secured to the upper end of the presser-bar **17**, as by screw **26**, is a bracket **27** comprising a hub **27a**, horizontal arms **27b**, **27c** and an upright arm **27d**. The belt **25** travels upwardly and rearwardly from the heel-portion of the presser-foot **20** and passes over a roller **28** rotatably supported by the arm **27b**, thence upwardly and forwardly over a roller **29** carried by the arm **27d** and thence downwardly and forwardy over a roller **30** carried by the arm **27c**, from whence it passes downwardly and under the presser-foot. The rollers **28** and **30** are journaled on fixed studs **31** and **32**, respectively, while the roller **29** is journaled upon a stud **33** adjustably mounted in a vertical slot **34** formed in the arm **27d** and held in adjusted position by a clamp nut **35**. The adjustment of the roller **29** serves as means to tighten the belt **25** when initially assembling the device and later to take up any looseness therein due to stretch in the belt.

Inasmuch as the presser-foot **23** and the rollers **28**, **29** and **30** are rigidly connected with the presser-bar **17** the entire presser-device, including the belt **25**, may be lifted as a unit from the position shown in full lines in Fig. 2 to the position indicated by dotted lines, without slackening the belt **25**.

Another important feature of this invention is the path of travel of the belt **25** whereby all sharp turns and bends are avoided and the belt therefore is maintained freely movable by the work under the influence of the feeding mechanism.

For certain classes of work it is desirable to have the presser-device located at the right of the needle as shown in Figs. 1, 2 and 3. For other work it may be advantageous to have the presser-device located at the left of the needle, as shown in Fig. 4. Therefore, there is provided, in addition to the right foot **23**, a left foot **36** shown in Fig. 4.

Aside from the fact that, in the foot **36**, the shank, which is adapted to be secured to the presser-bar **17**, is located at the right side of the foot instead of at the left side thereof, as in the foot **23**, and the needle-aperture is located adjacent the opposite edge of the sole-portion, the two feet are similar in construction. Like reference numerals therefore have been applied to the corresponding parts of the two feet. The feet **23** and **36** may be selectively and alternatively secured to the presser-bar and caused to cooperate with the movable contact member **25** without making any other changes in the presser mechanism. This interchangeability is facilitated by the construction of the rollers **28**, **29** and **30** which, as shown most clearly in Fig. 6, have traction surfaces materially wider than the belt **25** and which therefore permit the belt to move laterally thereon from the position shown in Fig. 3 and in full lines in Fig. 6 to the position shown in Fig. 4 and indicated in dotted lines in Fig. 6, and conversely.

If desired, a combined right and left presser-foot may be provided having belt-guiding slots and a belt-guiding channel at each side of the needle as shown separately in Figs. 3 and 4. Likewise, if desired, two belts **25** may be used simultaneously with the combined right and left presser-foot.

From the foregoing it will be apparent that this invention affords an improved presser-device for sewing machines which will effectively prevent tackly work from adhering to a fixed portion of a contact surface by providing a circulatory work-engaging element which is freely movable with the work and which is so guided that it will automatically break whatever adhesion may have been made between the work and the belt, as the work passes from beneath the presser-foot.

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

1. A presser-device for sewing machines comprising a presser-bar, a presser-foot secured to one end thereof, a bracket secured to the other end of said presser-bar, guide means carried by said bracket, and a continuous work-engaging element passing beneath said presser-foot and over said guide means.

2. A presser-device for sewing machines comprising a presser-bar, a presser-foot secured to one end thereof and having heel and toe portions provided with aligned guide-slots, a bracket secured to the other end of said presser-bar, guide means carried by said bracket, and a continuous circulatory work-engaging element passing through said guide-slots, beneath said presser-foot and over said guide means.

3. A presser-device for sewing machines comprising a presser-bar, a presser-foot secured to one end thereof, a bracket secured to the other end of said presser-bar, spaced guide-rollers carried by said bracket, one of said guide-rollers being adjustably mounted on said bracket, and a continuous work-engaging element passing beneath said presser-foot and over said guide-rollers.

4. A presser-device for sewing machines comprising a presser-bar, a presser-foot secured to one end thereof and having heel and toe portions provided with guide-slots, a bracket secured to the other end of said presser-bar, triangularly arranged guide-rollers carried by said bracket, and

a continuous belt-like work-engaging element passing through said guide-slots and beneath said pressure-foot and over said guide-rollers, one of said rollers being adjustably mounted on said bracket and shiftable to tighten said belt-like element.

5. A presser mechanism for sewing machines including a presser-bar, a roller carried by the upper end of said presser-bar, a presser-foot secured to the lower end of said presser-bar, said presser-foot including a sole portion having upturned toe and heel portions each provided with a guide-slot, and a continuous circulatory work-engaging member passing through said guide-slots and beneath said sole-portion and over the roller carried by the presser-bar.

6. A presser mechanism for sewing machines including a presser-bar, a presser-foot secured to the lower end thereof, said presser-foot comprising a sole-portion, a toe portion extending upwardly and forwardly from said sole-portion at an angle of approximately forty-five degrees and a heel portion extending upwardly and rearwardly from said sole-portion at an angle of approximately thirty degrees, said toe and heel portions each being provided with a guide-slot, and a continuous circulatory work-engaging member passing through said guide-slots and beneath said sole-portion.

7. In a sewing machine having a head, stitch-forming mechanism and work-feeding mechanism; a presser-bar mounted in said head, a presser-foot secured to the lower end of said presser-bar, a bracket secured to the upper end of said presser-bar, guide-rollers carried by said bracket, one roller being located rearwardly of said head and another forwardly thereof, and a continuous belt-like member encircling said head and passing over said guide-rollers and beneath said presser-foot, said member serving as a movable work-engaging surface between said presser-foot and the work advanced by said feeding mechanism.

8. In a sewing machine having a head, stitch-forming mechanism including a needle and work-feeding mechanism; a presser-bar mounted in said head, a presser-foot removably secured to the lower end of said presser-bar, and provided with a guideway, a bracket secured to the upper end of said presser-bar, spaced guide rollers carried by said bracket, and a continuous belt-like work-engaging member encircling said head and passing over said guide-rollers and beneath said presser-foot through the guideway thereon and at one side of said needle, said member serving as a movable work-engaging surface between said presser-foot and the work advanced by said feeding mechanism, said guide-rollers permitting said belt-like member to run to the opposite side of said needle when said presser-foot is replaced by another presser-foot having a similar guideway at the opposite side of the needle.

9. In a sewing machine having a head, stitch-forming mechanism including a needle and work-feeding mechanism; a presser-bar mounted in said head, and adapted alternatively to receive either of two interchangeable presser-feet provided with guideways, respectively, at opposite sides of said needle, a bracket secured to the upper end of said presser-bar, spaced guide-rollers carried by said bracket, a continuous circulatory work-engaging member encircling said head and passing over said guide-rollers and beneath the attached presser-foot and through the guideway therein, said member serving as a movable work-engaging surface between the attached presser-foot and the work advanced by said feeding mechanism, said guide-rollers permitting said circulatory work-engaging member to enter the guideway in the attached presser-foot.

10. In a sewing machine for stitching work having an adhesive surface, comprising a head, stitch-forming mechanism and work-feeding mechanism; a presser-bar mounted in said head, a presser-foot secured to the lower end of said presser-bar, roller means carried by the upper end of said presser-bar, a continuous belt-like member encircling said head and passing over said roller means and beneath said presser-foot, said member serving as a movable work-engaging surface to prevent contact between the adhesive surface of the work and the presser-foot, and means for simultaneously raising said presser-bar, presser-foot, roller means and belt-like member without changing their relative positions.

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