April 17, 1951 J. M. WASHBURN 2,549,269

SEWING MACHINE PRESSER-FOOT MECHANISM

Filed Feb. 14, 1950

Fig. 1.

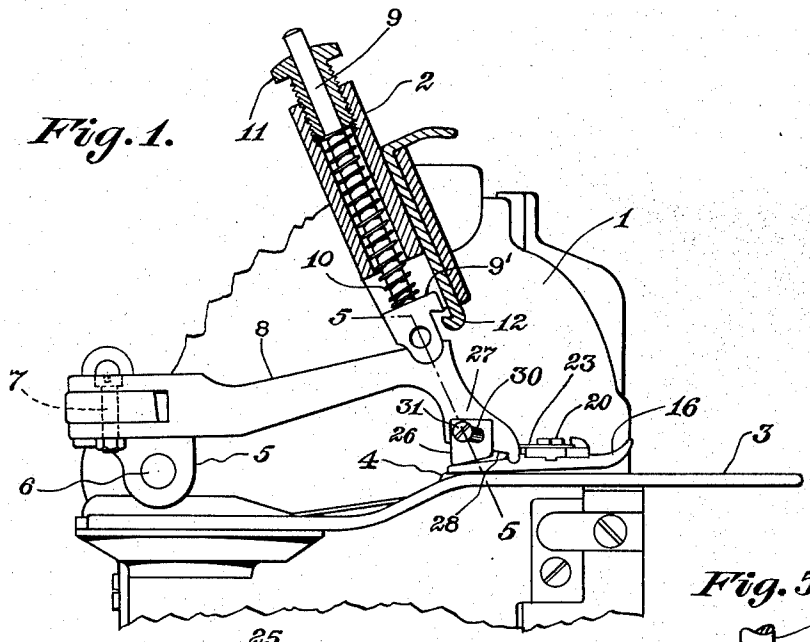


Fig. 2.

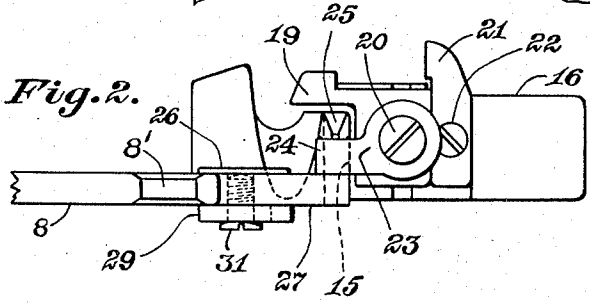


Fig. 5.

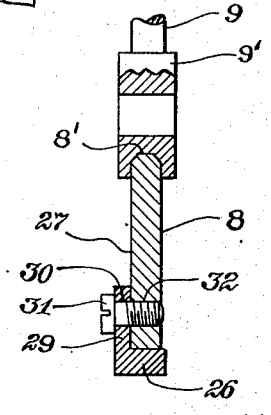


Fig. 3.

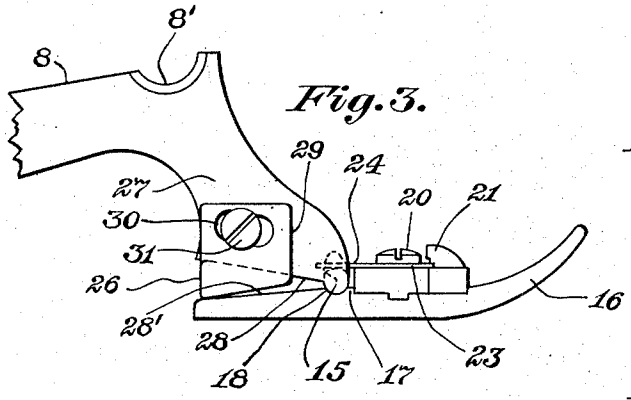
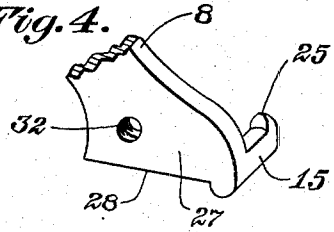


Fig. 4.



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SEWING-MACHINE PRESSER-FOOT MECHANISM

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8 Claims. (Cl. 112—235)

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This invention relates to sewing machine presser-foot mechanism and more particularly to a stop for use with a presser-foot of the type commonly known as "center-hinged" for the reason that the foot proper has a pivotal connection, at or near its fore and aft center, with its supporting arm to permit of tilting the foot relative to a cooperating work support or needle plate. A rocking movement of the presser-foot permitted by its hinged relation to the arm enables the bearing surface of the foot to better engage and ease passage thereunder of irregularities in the thickness of work engaged thereby. When an extra thickness of work such as a cross seam is, by feeding means, advanced across the length of the foot, first the toe and then the heel of the foot is elevated relative to the needle plate. Beyond certain limits, elevation of the heel of the foot is objectionable, and the object of this invention is to provide means whereby the range of movement of the heel of a center hinged presser-foot away from the needle plate may be held to a definite limit which may be varied to suit in this respect especial requirements of different types of material comprising the work.

With this and other objects in view one feature of the invention resides in the arrangement of a stop interposed between opposed surfaces of the presser arm and heel of the foot and adjustable to different positions along those surfaces. Another feature of the invention resides in the relative inclination of the opposed surfaces on the presser arm and heel of the foot to provide a wedge shaped gap in which the stop is interposed and along which it may be adjusted to choose the limit of movement of the heel of the center-hinged presser-foot.

In the accompanying drawings.

Figure 1 is an end view of part of a sewing machine including therewith presser-foot mechanism embodying my invention in its preferred form.

Figure 2 is a plan view of the presser-foot and associated parts shown in Fig. 1 together with part of the arm to which the presser-foot is hinged.

Figure 3 is a side view of assembled parts shown in Fig. 2.

Figure 4 is a perspective view of the free end of a presser arm.

Figure 5 is a sectional view on line 5—5 of Fig. 1.

In accordance with the preferred form of the invention, a stop is slidably adjustable to different selected positions along opposed surfaces of the presser-foot arm and the presser-foot where it is secured to limit pivotal movement of the presser-foot. To form a wedge shaped gap the opposed surfaces are inclined

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relative to each other in a direction normal to the axis of the pivot for the presser-foot. At one end of the stop, a shank extends along a lateral side of the presser-foot arm, which shank is provided with an elongated slot arranged parallel to the inclined surface of the arm so a bolt through the slot permits the stop to slide along the gap to a selected position where it may be secured by tightening the bolt.

Referring to the drawings, the sewing machine illustrated includes frame 1, head 2, work plate 3, needle plate 4 and a rocker 5, the latter being fulcrumed on a shaft 6. Pivoted on rocker 5, as at 7, for lateral swinging movement, is a presser-arm 8, engageable when in its normal operating position by presser-bar 9, the latter terminating in a bifurcated head 9' which straddles arm 8 at the arcuate seat 8'. Presser-bar 9 is urged toward the presser-arm by a spring 10 housed within the tubular head 2 and opposed by a nut 11 which provides for adjustment to vary tension of spring 10. For releasing the presser-bar 9 from engagement with arm 8, a latch 12 is slidably mounted on the head. When arm 8 is thus disengaged, it may be swung laterally from its normal position to provide convenient accessibility thereto and to various other parts. From the free end of arm 8 a stud 15 projects at right angles to the adjacent face of the arm and at right angles to the direction of the feed of the machine when the arm is in operative position. The stud 15 may be termed an axial stud, inasmuch as it provides a support upon which a presser-foot 16 is secured for rocking or tilting movement thereon. An arm shaped substantially as shown and described is especially desirable when the foot is carried at the end of a pivotal element such as the arm 8 but it will be understood that when the foot is otherwise supported, as for example by a vertically movable bar, the equivalent of arm 8 may be constructed to meet required conditions and to properly position the stud 15 for support of presser-foot 16. As shown the presser-foot, approximately midway of its length, is preferably increased somewhat in thickness as at 17, and across its upper face at right angles to its length is extended a channel 18 which forms a bearing to receive the lower edge of arm stud 15 which is semicircular in cross-section. The channel or bearing 18 is similarly shaped in cross-section but is of somewhat less depth than the radius of the lower edge of the stud 15 in order that the foot may rock upon the stud as indicated. The edge of the stud opposite the semicircular edge is slightly rounded for a purpose that will presently appear. As commonly applied to a presser-foot of the type shown, are a stitch finger 19, secured by a screw 20, and an uncurling block 21, secured by a screw 22. Means

for holding presser-foot 16 to arm 8 with a yieldable pressure comprises a flat spring 23 which is held in place by screw 20, above mentioned, with the resilient arm 24 bearing upon stud 15, the latter being held snugly in its seat in channel 18, but not so tightly clamped as to prevent rocking or tilting of the foot upon the stud. To prevent side play of the foot relatively to the arm, stud 15 is provided with a head 25 to thereby form a confining channel to receive therein the spring arm 24.

The presser-foot mechanism thus far described is similar to that disclosed in United States Letters Patent No. 1,002,380, granted September 5, 1911, upon application of William H. Stedman. The present invention as already stated is directed to an adjustable stop whereby the range of movement of the heel of a hinged presser-foot away from the needle plate or work support may be held to a definite limit, which limit may be varied to suit different requirements. For this purpose a stop 26, is mounted to the rear of stud 15, on arm 8, where the latter has a flat side 27 substantially normal to the plane of the flat surface 28' on the heel of the presser-foot, and a flat edge surface 28 opposed to said flat surface 28' and over the heel of the foot. As illustrated in Fig. 3, flat surfaces 28 and 28' are relatively inclined so they diverge rearwardly from the stud 15 to form a wedge shaped gap between the presser-foot arm 8 and the presser-foot 16. Stop 26 is slidable on flat surface 28 to different selected positions in the gap. Extended at right angles to, and from one side of stop 26, is a shank 29 having an elongated slot 30 therein to receive a screw 31 which is threaded into arm 8 at 32. Slot 30 is formed substantially parallel to flat edge surface 28 so stop 26 slides forwardly on flat surface 28 toward flat surface 28' on the presser-foot. Therefore adjustment of the stop to or from the axis of stud 15 provides for movement of the stop more or less into the wedge shaped gap between opposed surfaces of arm 8 and the heel of the presser-foot so that the amount of movement of the heel of the presser-foot away from the work support may be varied to suit requirements. By tightening screw 31 in the elongated slot 30, shank 29 and stop 26 may be secured in any desired position along the inclined edge surface 28 of arm 8. Any turning of stop 26 about the axis of its securing screw 31 would be objectionable but any tendency in this respect is overcome by making on the stop a flat surface of ample extent for contact with the opposed surface 28 of arm 8.

In Fig. 1 stop 26 is shown at the extreme forward end of its range of adjustment and in this position it limits movement of the presser-foot heel toward the opposed surface of arm 8 to the maximum amount available, or in other words, the toe of the foot is prevented from tilting downwardly more than the amount indicated in this view. Obviously this amount may be reduced as desired by adjusting stop 26 rearwardly.

As is apparent from the foregoing description, stop 26 is easily adjustable to any desired position with a minimum effort and in a very short time. The operator need only loosen screw 31, slide the stop to the desired position and then tighten the screw. This adjustment is facilitated by the arrangement of screw 31 on the side of the presser-foot arm where the screw is readily accessible and easily turned.

Having thus described my invention, what I claim is:

1. A sewing machine presser-foot mechanism comprising a presser-foot arm member, a presser-foot member pivotally connected to said arm member, said members having opposed surfaces movable toward each other by relative pivotal movement of said members, and a stop slidably adjustable on one of said members and interposed between said surfaces.

2. A sewing machine presser-foot mechanism comprising a presser-foot arm member, a presser-foot member pivotally connected to said arm member, said members having relatively inclined opposed surfaces forming a wedge shaped gap therebetween, and a stop within said gap and slidably adjustable on one of said members along said surface thereof in the direction of inclination of said surfaces to different positions in said gap.

3. A sewing machine presser-foot mechanism comprising a presser-foot arm member, a presser-foot member pivotally connected to said arm member, said members having opposed surfaces relatively inclined in a direction normal to the axis of said pivotal connection, and a stop interposed between said surfaces and slidably adjustable along said surface thereof in said direction.

4. A sewing machine presser-foot mechanism comprising a presser-foot arm, a presser-foot pivotally connected to said arm, said arm and presser-foot having opposed surfaces movable toward each other, and a stop interposed between said surfaces and slidably adjustable along said surface on said arm.

5. A sewing machine presser-foot mechanism comprising a presser-foot arm, a presser-foot pivotally connected to said arm, said arm and presser-foot having relatively inclined opposed surfaces forming a wedge shaped gap therebetween, and a stop within said gap slidably adjustable on said arm along said inclined surface thereof in the direction of inclination.

6. A sewing machine presser-foot mechanism comprising a presser-foot arm, a presser-foot pivotally connected to said arm, said arm and presser-foot having opposed surfaces relatively inclined in a direction normal to the axis of said pivotal connection, and a stop interposed between said surfaces and slidably adjustable on said arm along said surface thereof in said direction.

7. A sewing machine presser-foot mechanism comprising a presser-foot arm, a presser-foot pivotally connected to said arm, said presser-foot having a flat surface, said arm having an opposed flat surface inclined relative to said surface on said presser-foot, a stop slidable along said opposed flat surface on said arm, and means securing said stop on said arm with said stop in different selected positions along said opposed surfaces.

8. A sewing machine presser-foot mechanism comprising a presser-foot having a flat surface, a presser-foot arm having a flat surface, means pivotally connecting said presser-foot on said arm with said flat surfaces opposed and inclined relative to each other, a stop slidable along said flat surface on said arm, a shank on said stop extending along a lateral side of said wall, said shank being formed with an elongated slot parallel to said flat surface on said arm, and means in said slot slidably supporting said shank and stop on said arm for securing said shank to said lateral surface with said stop in different selected positions along said surface.

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No references cited.