

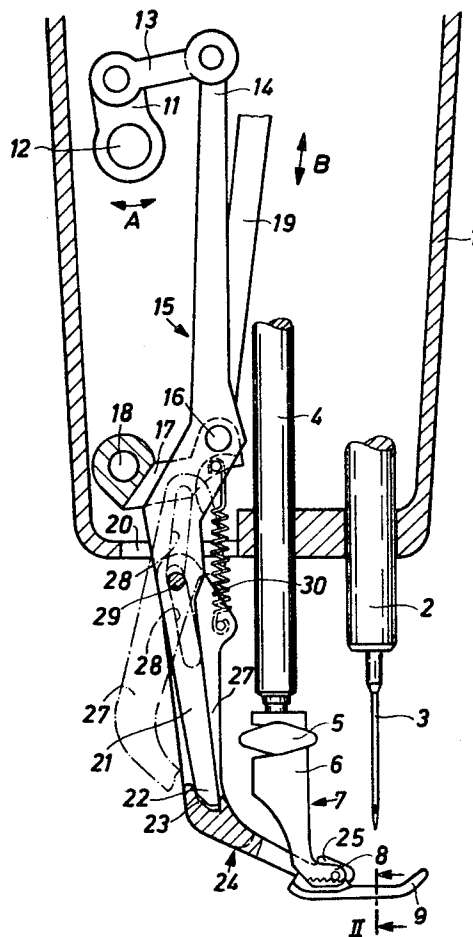
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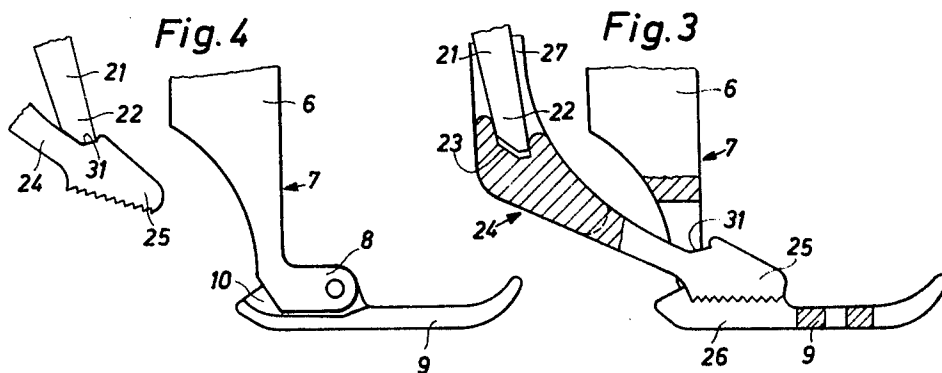
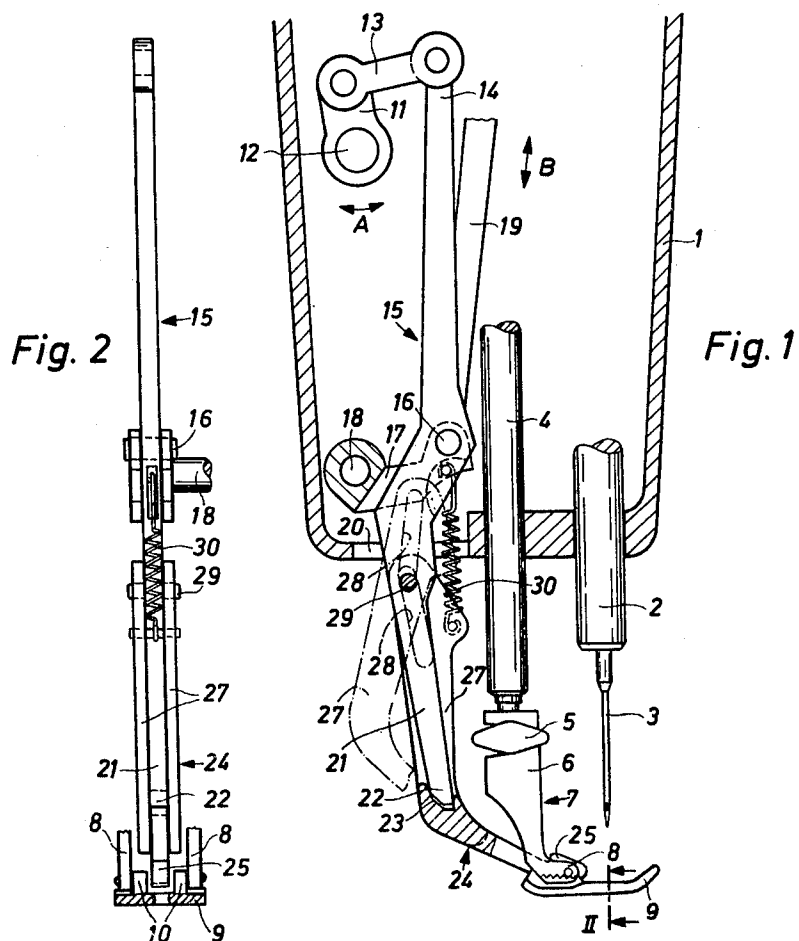
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[54] **SEWING MACHINE WITH TOP FEED MEANS**
5 Claims, 4 Drawing Figs.

[52] U.S. Cl. 112/212
[51] Int. Cl. D05b 27/04
[50] Field of Search 112/212,
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ABSTRACT: A top feed device for a sewing machine which has a feed bar supporting a top feed foot driven in synchronism with the feed dog of the machine and with a toothed end, provided with means for moving the top foot into operative and inoperative positions which includes a slidable pivot joint between the feed foot and the feed bar that permits movement of the feed foot into operative and inoperative positions where the feed bar has a wedge-shaped portion and the feed foot a corresponding wedge-shaped recess for engagement with the feed foot in the operative position.





SEWING MACHINE WITH TOP FEED MEANS

BACKGROUND OF THE INVENTION

The present invention relates to sewing machines provided with top feed means. More in particular, the invention concerns top feed means for sewing machines having a top feed foot that is driven by way of a top feed bar in synchronism with the material feed device, such as a feed dog.

Normally, only industrial sewing machines are provided with top feed devices. Generally, these machines are designed as sole purpose machines where the necessity hardly arises to disconnect the built-in top feed device.

In contrast to this, there frequently arises the desire in household sewing machines equipped with top feed means to operate without the top feeding device. With certain known arrangements it is possible to unscrew the top feed foot. However, this was found to be very disadvantageous because it frequently happens that the foot is misplaced or lost, and is not available at the time it is needed.

SUMMARY OF THE INVENTION

It is an object of the invention to provide a simple and reliable possibility for disconnecting the top feed means in household sewing machines.

In accordance with the invention, this is accomplished in that the top feed foot is pivotally linked to the top feed bar and can be fixed in operating position, for example, by means of a wedge.

A particularly suitable structural design resides in that the top feed foot is connected with the feed bar by means of a sliding joint, provided remote from the stitch-forming location and has a wedge-shaped recess which is engageable by the wedge-shaped end of the top feed bar that faces the stitch-forming location.

In this manner the top feed foot can on the one hand swing out enough into its disconnected position, while on the other hand it is held without play in its operating position by the wedge connection that is disposed in the proximity of the stitch-forming location.

BRIEF DESCRIPTION OF THE DRAWINGS

The drawings illustrate one embodiment of the subject of the invention which is described hereinafter and with reference to the various FIGS. in which

FIG. 1 is a section of a part of the head of a household sewing machine, including the arrangement of the transmitting gear of the new top feed device which receives the top feed foot,

FIG. 2 shows the transporting gear with the top feed foot in front view,

FIG. 3 is an enlarged illustration, partially in section of the presser foot, and of a part of the top feed foot, and

FIG. 4 is a view corresponding to FIG. 3 with the top feed foot swung out of position.

DESCRIPTION OF THE INVENTION

FIG. 1 shows the head 1 of a sewing machine where the needle bar 2 with the needle 3 and the presser foot bar 4 are merely illustrated to indicate their positions. The illustration of the drive means for the needle bar 2, as well as the operating means for the presser foot bar 4, is omitted since they are known.

The shank 6 of the presser foot 7 is secured to the presser foot bar 4 by means of a screw 5. The shank 6 terminates in a bifurcated member 8 to which the sole 9 is journaled at two lugs 10 (FIG. 2).

A rocking shaft 12 which supports a crank arm 11 is supported in the head 1 where it is rocked back and forth in the direction of the arrows A by means of the driving gear, not illustrated. The rocking arm 11 is connected to the end 14 of a top feed bar 15 by way of a link 13. It is journaled by means of

a pin 16 in a bifurcated member 17 which is pivotally supported by a bolt 18 that is secured in the machine head 1.

A link 19 engages the pin 16 and is connected in a known manner with transmission gearing in order to be reciprocally moved in the direction of the arrows B as the machine is driven.

The arm 21 of the top feed bar 15 which projects through a slot 20 in the housing is provided with a wedge-shaped free end 22 (FIG. 4) which is slidably received in a corresponding wedge-shaped recess 23 of the top feed foot 24 in order to retain it in its operating position. The top feed foot 24 supports a toothed member 25 which can act on the material being sewn through a slot 26 (FIG. 3) in the sole 9 of the material presser foot 7.

In addition, the top feed foot 24 has upwardly extending arms 27 which slidably engage the double lever 15 on both sides. They are provided with guide slots 28 into which extends a guide pin 29 that is secured to the top feed bar 15 below the journal pin 16 but is relatively far removed from the end 22.

A spring 30 hooked at one of its ends to the top feed foot 24, and at its other end to the top feed bar 15, pulls the top feed foot 24 upwardly in order to secure the engagement between the recess 23 and end 22.

In order to disconnect the top feed foot 24, it is manually lifted off in raised position of the pressure foot device against the effect of the spring 30 from the end 22 of the top feed bar 15 and is swung rearwardly and upwardly. In this connection, the guide slots 28 in the arms 27 slide relative to the guide pin 29 and the end 22 engages resiliently a second-wedge-shaped recess 31 provided above the toothed member 25 as shown in FIG. 4. As a result, the top feed foot 24 assumes the position indicated in dots and dashes in FIG. 1 (disconnected position).

As the machine is operated the shaft 12 and link 19 reciprocate in the directions indicated by the arrows. The rocking movement of the shaft 12 thus is transmitted to the top feed bar 15 by way of the crank arm 11 and link 19, and the end 22 of the bar 15 imparts a pivotal movement to the top feed foot 24 about the stud 16. The link 19 which engages the stud 16 swings the latter by way of forked member 17 about the stud 18 and imparts to the top feed bar 15 and thereby to the top feed foot 24 a vertically oriented rocking movement. The two rocking movements superimpose one another to constitute an elliptical feed movement to the top feed foot 24 whose toothed member 25 in position of operation can through slot 26 in the sole 9 of the presser foot 7 intermittently move the material being sewn.

In the inoperative position of the top feed foot 24, the latter is still driven, but then operates in a position that is sufficiently remote from the material and concealed by the shaft 6 of the presser foot 7 with respect to the machine operator so that its movements do not interfere.

Due to the wedge-shaped connection between the end 22 of the top feed bar 15 and the recess 23 of the top feed foot 24 and the large distance between the end 22 and the sliding joint existing between the guide pin 29 and the guide slots 28, there results in spite of the simple and rapidly operable connecting and disconnecting means for the top feed foot 24, an effective operative position that is considerably free of play and relatively rigid.

Having now described our invention with reference to the embodiment illustrated in the drawings, what we desire to protect by letters patent of the United States is set forth in the appended claims.

We claim:

1. In a sewing machine having a top feed device including a top feed foot, a feed bar supporting said top feed foot, means adapted to drive said top feed foot in synchronism with the feed dog of the machine said feed foot having a toothed end, means for locating said feed foot in operative and inoperative positions including a pivot joint intermediate said feed foot and said feed bar permitting movement of said feed foot into

3

operative and inoperative positions, said feed bar having a wedge shaped portion and said feed foot having a corresponding portion for engagement with said feed bar in operative position.

2. Top feed device in accordance with claim 1, where said pivot joint is a sliding joint including a slot and a pin remote from the toothed end of said feed foot, said wedge shaped portion is defined at the lower end of said feed bar and said corresponding portion is a wedge shaped recess in said feed foot remote from said toothed end.

4

3. Top feed device in accordance with claim 2, including a further wedge shaped recess in said feed foot proximate said toothed end for engagement by said wedge shaped portion in the inoperative position of said feed foot.

4. Top feed device in accordance with claim 1, including a spring intermediate said top feed foot and said top feed bar.

5. Top feed device in accordance with claim 3, including a spring intermediate said top feed foot and said top feed bar.

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