Feb. 13, 1962 TOSHIO FUJITA 3,020,866

NEEDLE BAR FOR SEWING MACHINE

Filed Oct. 15, 1959

Fig. 1.

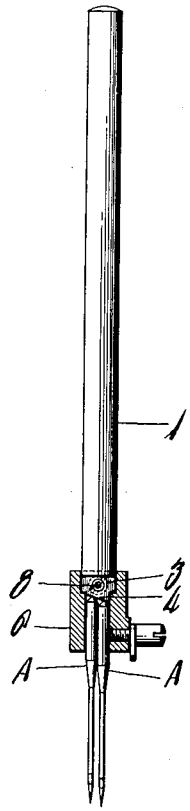


Fig. 2.

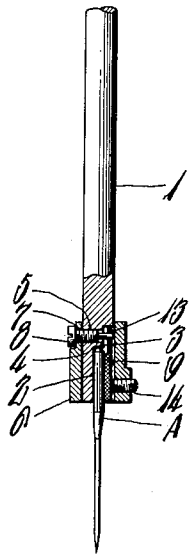


Fig. 3.

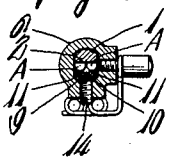


Fig. 4.

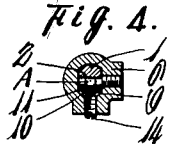
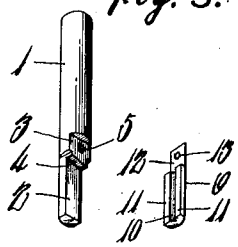


Fig. 5.



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NEEDLE BAR FOR SEWING MACHINE

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1 Claim. (Cl. 112—226)

This invention relates to an improvement on the needle bar for two-needle sewing machine, and, more specifically, this invention has for an object to provide a sewing machine with an improved needle bar means whereby it can be made to utilize 2 needles of exactly the same length and shape for two-needle sewing operation.

With this improved means, the points of two needles which are inserted into the needle-receiving portion of the needle bar are held in different heights above the sewing machine bed plate, thereby necessarily permitting a rotary shuttle to hook the threads of both needles in suitable timed relationship.

This invention has also for an object to provide an improved needle bar means which serves not only as a two-needle bar but also a single-needle bar without causing any difficulty when fitted with one needle.

An additional advantage of the improved needle bar means of this invention is the simplicity of structure and consequent ease of manufacture.

Detailed explanation shall be made of the arrangements and functions of the improved means as shown in the accompanying drawings.

In the drawings:

FIGURE 1 represents a front elevation, partly in section, of the structure of the improved needle bar means.

FIGURE 2 represents a side elevation, partly in section, of the structure of the improved needle bar means.

FIGURE 3 represents a cross sectional view of the structure of that part, as seen from the top, illustrating the arrangement of component parts in two-needle sewing operation.

FIGURE 4 represents a cross sectional view of the structure corresponding to FIGURE 3, illustrating the arrangement of component parts in single-needle sewing operation.

FIGURE 5 represents an exploded view in perspective, illustrating the structure of the improved needle bar and a certain component part dismantled.

Now, the lower end portion of the main bar **1** is partly cut so as to form two planes **2** and **3** in tiers and a beveled edge **4** is provided on the boundary line of the two planes, namely, on the upper edge of the lower plane **2**.

The width of the plane **2** is so predetermined as to correspond exactly the combined width of two needles A, A closely placed side by side.

On the plane **3** is provided a threaded hole **5** which penetrates the main bar **1** and a socket means **6** is mounted about the lower end portion of the main bar which is constructed as hereinbefore described and the said socket means **6** carries a hole **7** on its upper portion and a setscrew **14** on its lower portion.

After the socket means **6** is mounted about the said lower end portion of the main bar **1**, it is securely tightened about the main bar by means of a screw member **8** driven through the hole **7** of the socket means into the threaded hole **5** of the main bar and the socket means

can be tightened or loosened freely by means of turning of the screw member **8**.

A presser piece **9** carrying a longitudinal groove **10** in its middle, raised flat portions **11**, **11** on both sides of the groove and a hole **13** on a recessed flat surface **12** provided at its upper part, is interposed in an opening formed between the socket means **6** and the main bar **1**.

In interposing the presser piece **9** between the socket means and the main bar, its longitudinal groove **10** is faced inward so as to permit its recessed flat surface **12** to lie upon the plane **3** of the main bar **1** and after needles are inserted up into the main bar as far as they will go, the upper portion of the presser piece **9** is secured to the main bar by means of the screw member **8** driven through the hole **13** provided on the former with its lower portion being pressed hard against the main bar from behind by means of turning of the setscrew **14** provided on the socket means.

As the needle bar under the present invention is made up as explained above, in cases where two needles (made under the same condition in length and in all other points) are to be set and used, they will only be inserted into the socket means **6**, which is removably mounted about the lower end portion of the main bar **1**, as far as their heads will abut against the beveled edge **4** of the main bar **1**, whereupon they will naturally be held in position by the main bar with the point of one needle slightly outreaching that of the other by means of the beveled edge, as illustrated in FIG. 1. This difference in the heights of needle-points between two inserted needles causes the hooking operation of the rotary shuttle to be in timed relation to the motion of each of the two needles. Thus, setting of two needles which conforms to the hooking operation of the rotary shuttle can be obtained with ease.

While the screw member **8** tightens up the socket means **6**, the main bar **1** and the presser piece **9** together, driving through each of them, the setscrew **14** provided on the socket means **6** presses the presser piece **9** strongly from behind. In this way, the needles are held firmly by the needle bar.

As the presser piece **9** carries a longitudinal groove in its middle, when a single needle is set in the needle bar, the needle is held firmly in position as it engages with the longitudinal groove, as illustrated in FIG. 4. Thus, this needle bar has also an advantage in that it can be used for both single-needle setting and two-needle setting.

Having described hereinbefore the nature of my invention, what I claim herein is:

A combined sewing machine needle bar and needle holder comprising an elongated bar terminating at the lower end in a reduced needle receiving portion having a flat needle engaging inner surface, the width of said surface being equal to the sum of the diameters of the base portions of two needles engaging said surface, said surface terminating at the upper end in an inclined shoulder, a recess in said bar above said shoulder, socket means comprising a sleeve received on the lower end of said bar and enclosing said surface and said recess, a screw threaded member securing said sleeve to said bar and having a reduced non-threaded end projecting into said recess, a needle engaging presser piece received in the space between said sleeve and said surface, said presser piece projecting into said recess and having an aperture slidably receiving said non-threaded end, the width of

said presser piece being equal to the width of said surface, a longitudinal groove in the center of said presser piece in alignment with the axis of said bar, parallel needle engaging flat surfaces on opposite sides of said groove and a clamping screw threadedly received in said sleeve and engaging said presser piece, whereby two needles may be clamped against said inner surface by said presser piece with the upper ends of said needles in engagement with said inclined shoulder to dispose the lower ends of said needles at different elevations, said groove serving to receive and clamp a single needle in alignment with the axis of said bar.

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