Dec. 22, 1953 G. C. SPORNEY 2,663,274

THREAD GUIDE AND NEEDLE CLAMPING MEMBER FOR SEWING MACHINES

Filed Feb. 28, 1950 2 Sheets-Sheet 1

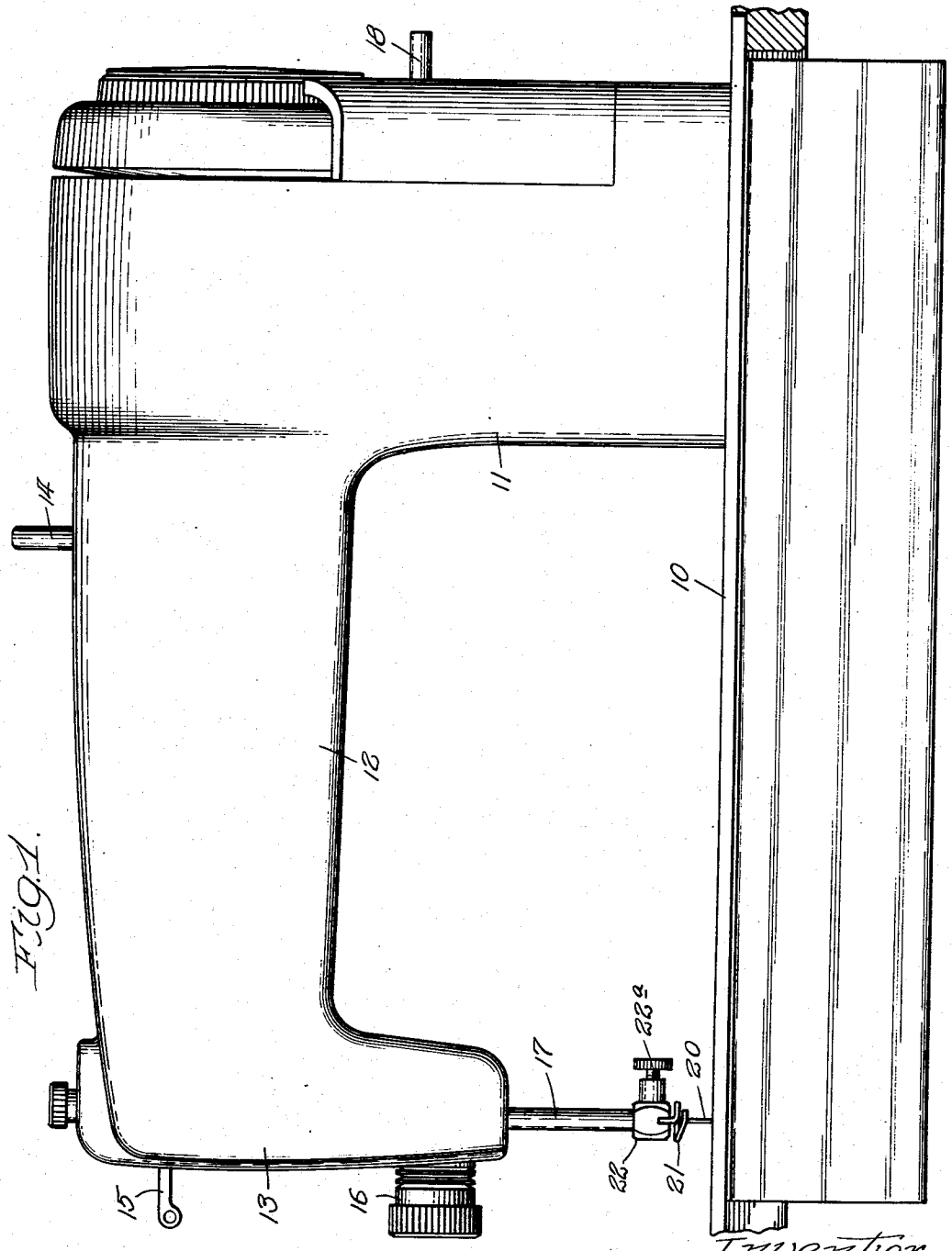


Fig. 1.

Inventor:
George A. Sporney,
By Schroeder, Merriam,
Hofgren & Brady, Attys.

Dec. 22, 1953 G. C. SPORNEY 2,663,274

THREAD GUIDE AND NEEDLE CLAMPING MEMBER FOR SEWING MACHINES

Filed Feb. 28, 1950 2 Sheets-Sheet 2

Fig. 4.

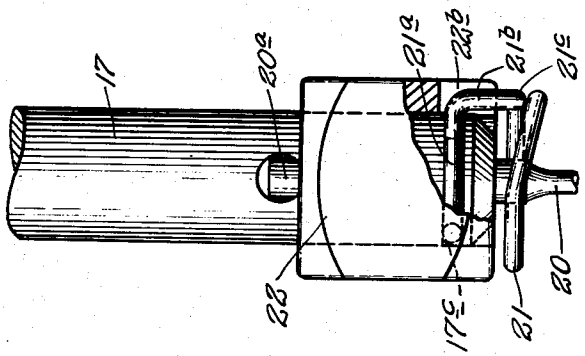


Fig. 3.

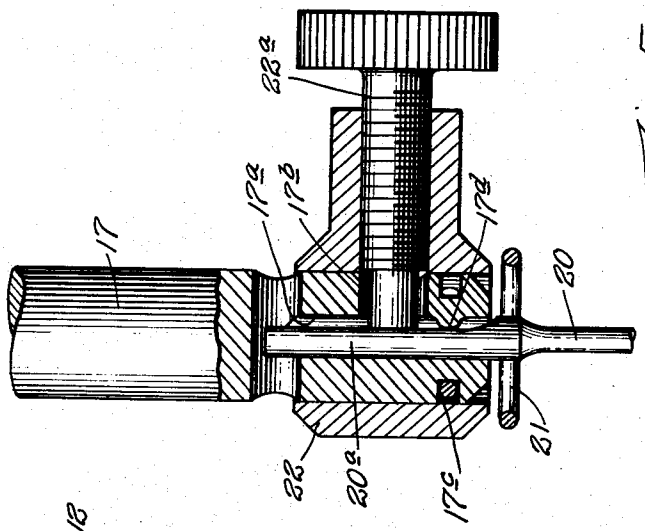


Fig. 5.

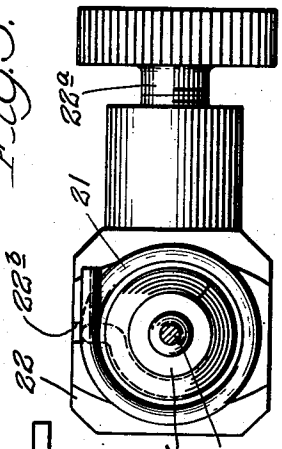
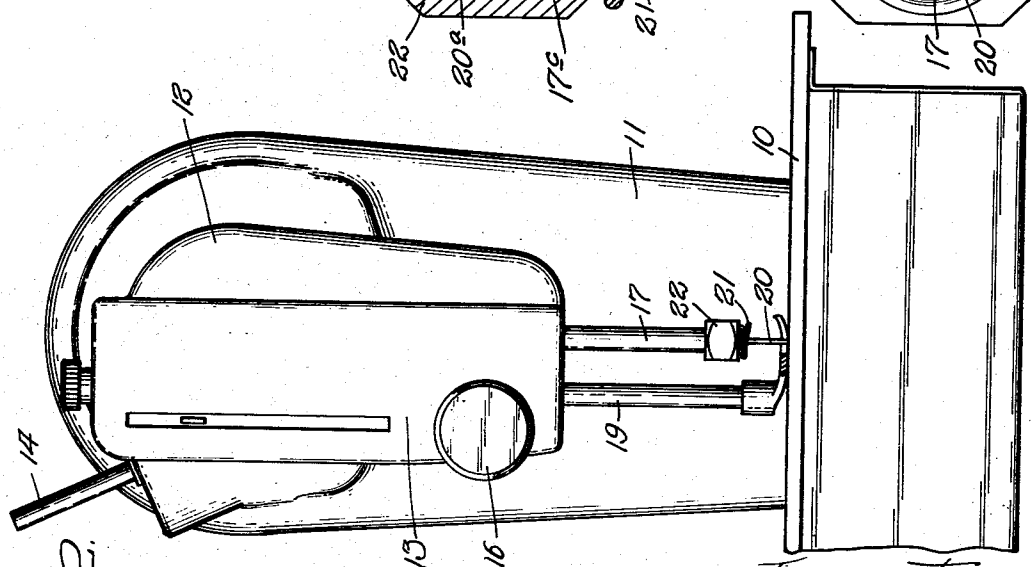


Fig. 2.



Inventor:
George A. Sporney,
By Schroeder, Merriam,
Hofgren & Brady, Attys.

Patented Dec. 22, 1953

2,663,274

UNITED STATES PATENT OFFICE

2,663,274

THREAD GUIDE AND NEEDLE CLAMPING MEMBER FOR SEWING MACHINES

George C. Sporney, Chicago, Ill., assignor to Birtman Electric Company, a corporation of Illinois

Application February 28, 1950, Serial No. 146,787

3 Claims. (Cl. 112—226)

1

This invention relates to a sewing machine, and particularly to a thread guide and needle clamping member for the reciprocable needle bar.

In the ordinary sewing machine there is customarily provided a reciprocable needle bar movably held in the head of the sewing machine, with this needle bar having an opening in its lower end for removably receiving a needle. Means are provided on this bar for clamping the needle in place and there is also provided a thread guide for guiding the thread in the reach between the thread tensioner and the eye of the needle. As can be readily understood, the available space at the lower end of the needle bar is somewhat limited as there must be no obstruction to the view of the sewing machine operator and there must be little projection of the parts from the needle bar so as to prevent these parts striking the hand of the operator. It is also necessary that the thread guide be readily removable so that tangled fibers of thread can be removed from the guide. The needle clamping member must also be easily and quickly accessible so as to permit changing the needles.

In the present invention I have provided a removable thread guide together with a single clamping member serving the dual function of holding the thread guide in place and clamping the needle in its needle bar opening. By employing such a combination, the parts at the lower end of the needle bar may be kept small to avoid obstructing the view and avoid striking the hand of the operator, and the thread guide is readily removable for clearing it of thread fibers. The thread guide and dual function clamping member forms a compact unit that positively locks the needle and thread guide in place but permits ready removal of either or both. In the preferred construction, the clamping member which clamps the needle in place and holds the thread guide is removable from the end of the needle bar. Thus, the clamping member, needle and thread guide can be easily removed for cleaning, yet when they are in place they are firmly held on the needle bar and form a compact unit occupying a minimum of space.

In the structure of this invention the reciprocable needle bar is provided with an opening at the lower end thereof for receiving a needle and a transverse opening communicating with this needle opening. A removable clamping member is slidably mounted on this needle bar, with this clamp having a portion extending through this transverse opening for holding the needle in position. With this arrangement the needle is positively locked in its position but both can be easily removed from the bar. A removable thread guide is provided on the lower end of the needle bar and the removable clamping member may be so positioned to hold the guide in its proper location. In the preferred construction, the removable thread guide is held in an annular groove located adjacent the lower end of the needle bar. The portion of the bar between the needle opening and the bottom of the groove is preferably depressed at one point so that the needle opening will receive in substantially one position only a needle having a flat side. When the needle, thread guide and clamping member are in place the thread guide includes a portion held in the groove and a portion extending beyond the end of the needle bar, while the clamping member completely covers the groove to hold the thread guide in position.

2

The invention will be described as related to the embodiments shown in the accompanying drawings. Of the drawings: Fig. 1 is a side elevation of a sewing machine embodying the invention; Fig. 2 is a fragmentary end elevation thereof taken from the left hand side of Fig. 1; Fig. 3 is an enlarged fragmentary vertical section through the lower end of the needle bar of the sewing machine of Figs. 1 and 2; Fig. 4 is a side elevation of the structure of Fig. 3 taken from the left hand side thereof, with a portion broken away for clarity of illustration; and Fig. 5 is a bottom view of the structure of Fig. 3, with the needle being shown in cross section.

The sewing machine shown in the accompanying drawings comprises the usual base 10, standard 11, overhanging arm 12 attached to the standard and head 13. The sewing machine is provided with a spool holder 14 and the usual thread control arm 15, thread tensioner 16 and reciprocating needle bar 17. The sewing machine is also provided with a projecting bobbin holding shaft 18 for use in winding the bobbin as disclosed and claimed in Addison Ballard Bradley, Jr., application Serial No. 155,319, filed April 11, 1950. The sewing machine shown in the drawings also includes the usual presser foot bar 19 for aid in guiding the work.

The thread guide and clamping member of the present invention are located at the lower end of the reciprocable needle bar 17. As shown in the drawings, the lower end of the bar 17 is provided with a longitudinal opening 17a for receiving a needle 20. This lower end of the bar 17 is also provided with a transverse opening 17b extending

from the outer surface of the bar 17 to the longitudinal opening 17a. Beneath this transverse opening 17b and adjacent the lower end of the bar 17, there is provided an annular groove 17c of substantial depth. As shown in Fig. 3, the portion between the opening 17a and the bottom of the groove 17c is depressed at one point to provide an inwardly projecting section 17d. This inwardly projecting section restricts the needle opening 17a so that a needle having a shank provided with a flat side will be received in the opening 17a in substantially one position only. The needle 20 has such a shank 20a and thus can only be received in the opening 17a with the flat side being toward the transverse opening 17b. By providing the depressed portion 17d to restrict the opening 17a, the manufacturing cost can be kept to a minimum as the needle opening 17a can first be drilled as an ordinary circular opening and then the portion of the needle bar between the opening 17a and the groove 17c flattened at one point to insure proper positioning of the needle.

The annular groove 17c normally holds a thread guide 21 which is in the shape of a coil of wire. This thread guide is provided with a substantially circular upper portion 21a held in the annular groove 17c, a downwardly projecting stem portion 21b extending beyond the end of the needle bar 17 and a guide portion 21c of larger diameter than the upper portion 21a and positioned below the bottom end of the needle bar 17.

In order to lock the needle 20 and the thread guide 21 in position, there is provided a clamping member 22 that is slidable on the needle bar 17. This clamping member, as shown in Fig. 3, includes a screw portion 22a normally extending into the transverse opening 17a in the needle bar 17 and bearing against the shank 20a of the needle to lock the needle in place. The clamping member 22 normally covers the annular groove 17c to lock the thread guide 21 in position on the needle bar. As is shown in Fig. 4, the bottom of the clamping member 22 is cut away at one side, as indicated at 22b, to provide space for the stem portion 21b of the thread guide 21. This cut away part of the clamping member also prevents rotation of the thread guide and holds it firmly in place.

When it is necessary to remove the needle 20 from the needle bar 17, the screw 22a is loosened and the needle withdrawn from the opening 17a. When the thread guide 21 is to be removed from the bar, the screw 22a is again loosened until the inner end thereof is beyond the outer surface of the needle bar and the clamping member moved upwardly along the needle bar until the annular groove 17c is exposed. The circular upper portion 21a of the thread guide may then be snapped from the groove 17c and the guide removed from the bar. The thread guide 21 is preferably made of a springy, tough wire shaped as shown in the drawings. The thread is held by the thread guide between adjacent portions of the wire in the guide portion 21c of the thread guide and from here is directed downwardly through the eye in the needle point.

As can be seen from the above description of the illustrated embodiment of the invention, the needle, thread guide and clamping member form a compact unit with each part of the unit being readily removable from the needle bar of the sewing machine. The construction of the unit is quite simple but it is sturdy in that the clamping member, needle and thread guide are each locked firmly in place.

Having described my invention as related to the embodiment set out herein, it is my intention that the invention be not limited by any of the details of description unless otherwise specified, but rather be construed broadly within its spirit and scope as set out in the accompanying claims.

I claim:

1. In a sewing machine, a reciprocable needle bar having an opening in one end thereof to receive a needle and an annular groove around said end, the needle bar between said opening and the bottom of the groove being depressed at one point so that said opening will receive in substantially one position only a needle having a flat side, and a removable thread guide comprising a wire coil having a portion received in said groove.

2. In a sewing machine, a reciprocable needle bar having a longitudinal opening in one end thereof to receive a needle, an annular groove adjacent this end and a transverse opening extending into said longitudinal opening, a removable thread guide comprising a wire coil including one portion located in said groove and a guide portion extending beyond said needle bar, and a clamping member slidable on said needle bar and including a clamping screw normally extending into said transverse opening and bearing against said needle to lock it in place, said clamping member normally covering said groove to hold said one portion of the thread guide therein and having a channel through which said guide portion of the thread guide extends.

3. In a sewing machine, a reciprocable needle bar having a longitudinal opening in one end thereof to receive a needle and a transverse opening extending into said longitudinal opening, a removable thread guide on the needle bar, and a clamping member slidable on the needle bar and including a screw movable into the transverse opening for bearing against the needle and locking it in place, said clamping member normally engaging said thread guide to lock it in place when the screw is in engagement with said needle, the needle bar including an annular groove adjacent the longitudinal needle opening and the thread guide comprising a wire coil having one portion held in the groove.

GEORGE C. SPORNEY.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
452,395	Staples	May 19, 1891
1,268,012	Jirouch	May 28, 1918
1,896,047	Grieb	Jan. 31, 1933