Jan. 1, 1929. 1,697,424

C. H. GREENWOOD

NEEDLE BAR

Filed June 9, 1923

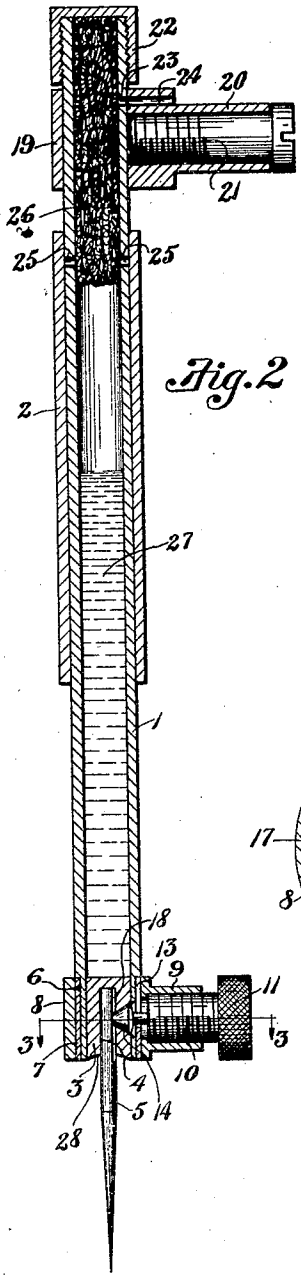


Fig. 2

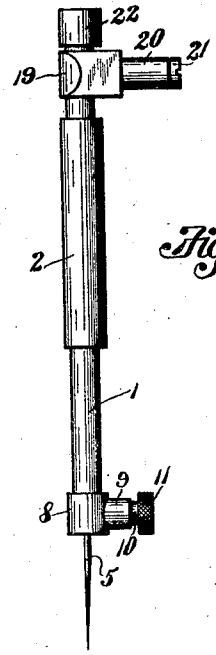
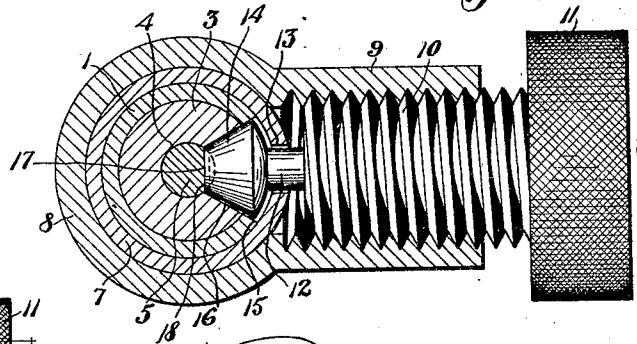


Fig. 1

Fig. 3



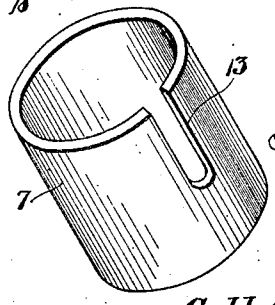


Fig. 4

Inventor

C. H. Greenwood

By Frease and Bond

Attorneys

Patented Jan. 1, 1929. 1,697,424

UNITED STATES PATENT OFFICE.

CHARLES H. GREENWOOD, OF CANTON, OHIO.

NEEDLE BAR.

Application filed June 9, 1923. Serial No. 644,396.

This invention relates to needle bars for sewing machines and has for its objects to provide a self lubricating needle bar provided with a simple and easily operated needle clamp having means for quickly directing the needle into position and clamping means for instantly tightening or loosening the needle within the clamp.

The above and other objects may be attained by constructing the needle bar in the manner illustrated in the accompanying drawing, in which—

Figure 1 is a side elevation of a needle bar embodying the invention;

Fig. 2, a longitudinal sectional view through the needle bar upon a larger scale;

Fig. 3, a section on the line 3—3, Fig. 2, upon an enlarged scale; and

Fig. 4, a detached perspective view of the shim.

Similar numerals refer to similar parts throughout the drawing.

The needle bar 1 is preferably tubular and is slidably mounted for vertical reciprocation within a bearing or bushing indicated at 2. A plug 3 is fixed in the lower end of the needle bar and provided with a circular bore 4 to receive the needle 5.

The lower end of the needle bar is preferably reduced in diameter as at 6 to accommodate the cylindrical shim plate 7. The clamp comprises the collar portion 8 which surrounds the needle bar and shim and the internally threaded boss 9 which contains the clamping screw 10 having the knurled head 11.

The screw is provided with the reduced shank 12 which is located through the longitudinal slot 13 in the shim. A frusto-conical head 14 is provided upon the inner end of the shank 12 and extended through the aperture 15 in the needle bar, and into the frusto-conical aperture 16 in the plug 3, the flat, inner end 17 thereof being arranged to engage the flat side 18 of the needle.

In assembling the clamp upon the lower end of the needle bar, the plug 3 is first driven into place after which the needle clamp is placed around the lower end of the needle bar and the screw 10 inserted into engagement with the conical aperture 16 of the plug. The shim 7 is then driven into place over the lower end of the needle bar, frictionally engaging the needle bar and the collar portion of the clamp, the slot 13 receiving the reduced shank 12 of the clamping screw.

The movement of the clamping screw is thus limited, the flat side of the needle being engaged by the end of the conical head 14, limiting the inward or clamping movement of the screw, while the shim will be engaged by the conical head 14 when the screw is loosened, limiting the outward movement of the screw.

A collar 19 is provided around the upper portion of the needle bar and provided with the boss 20 which is internally threaded to receive the set screw 21, said boss forming a journal for a link which provides reciprocatory motion to the needle bar. A threaded cap 22 is provided for closing the upper end of the needle bar.

An aperture 23 is provided near the upper end of the needle bar and registers with the bore 24 and the collar 19 and similar apertures 25 may be provided intermediate the ends of the needle bar, a felt plug 26 being located in the upper end of the needle bar and covering said apertures.

The hollow needle bar thus forms an oil well as shown at 27, suitable lubricating oil being carried therein. Thus as the needle bar is reciprocated, the oil will be splashed upon the felt pad 26 and allowed to pass outward through the apertures 23 and 25, lubricating the journal 20 and the bearing 2.

It will be noted that the lower end of the needle bar and clamp and block 3 are concaved as shown at 28, in order to assist in guiding the needle into the central bore 4. When the screw 10 is in the loosened position, the extremity of the conical head 14 thereof will still project into the central bore 4 of the block, as shown in Fig. 3, thus preventing the needle from being entered into the bore 4 in any excepting the proper position.

I claim:—

1. A needle bar having a bore in its lower end to receive a flat sided needle, a clamp comprising a collar portion surrounding the bar, a clamping screw in the collar provided with a reduced shank and a head extended into the bore and having a flat end for engagement with the needle and a cylindrical plate between the bar and collar provided with a narrow slot to accommodate the reduced shank of the screw and to prevent the head

from being withdrawn entirely from the bore.

2. A needle bar having a bore in its lower end to receive a flat sided needle, a clamp comprising a collar portion surrounding the bar, a threaded boss upon the collar, a clamping screw in the threaded boss provided with a reduced shank, and a head extended into the bore and having a flat end for engagement with the needle, and a shim between the bar and collar provided with a narrow slot to accommodate the reduced shank of the screw and to prevent the head from being withdrawn entirely from the bore.

In testimony that I claim the above, I have hereunto subscribed my name.

CHARLES H. GREENWOOD.