

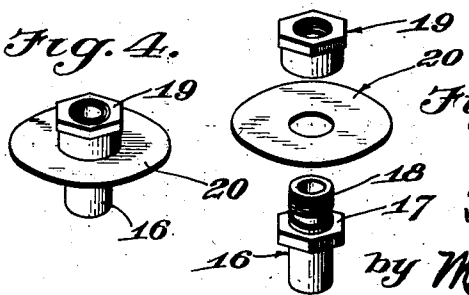
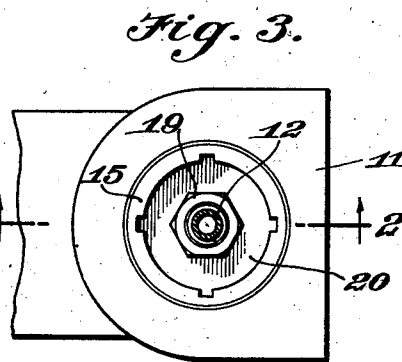
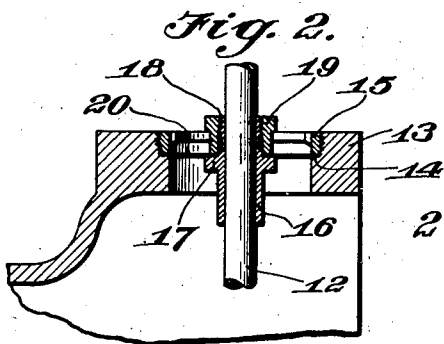
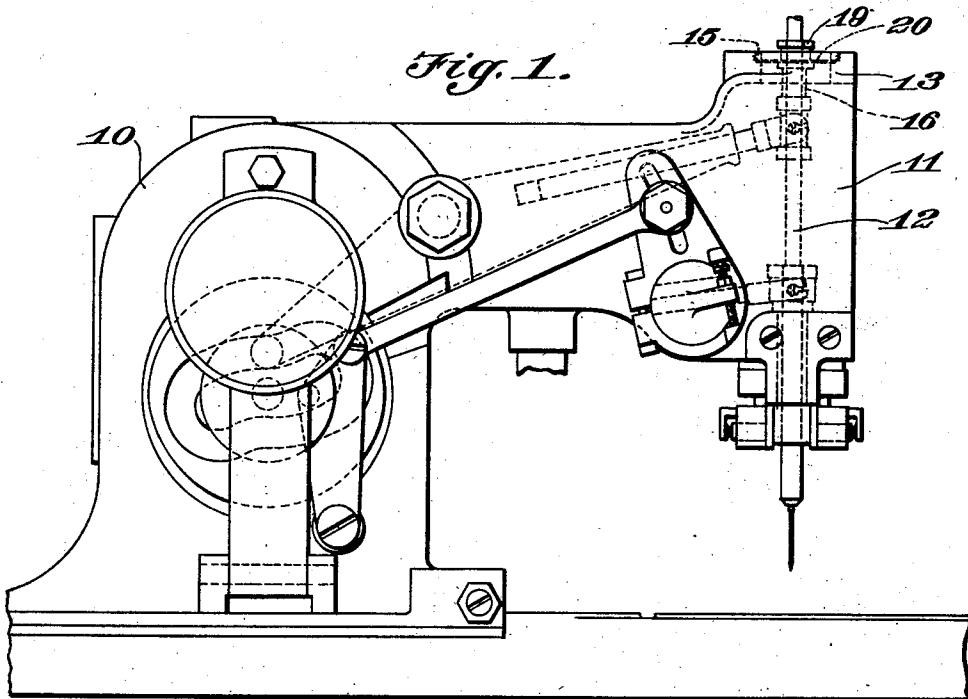
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NEEDLE BAR BEARING MECHANISM

Filed Aug. 21, 1933



*Fig. 5.*

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## UNITED STATES PATENT OFFICE

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## NEEDLE BAR BEARING MECHANISM

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4 Claims. (Cl. 112-259)

This invention relates to button hole stitching machines and more particularly to an improved needle bar bearing mechanism.

In button hole sewing machines the needle bar has a number of movements. It reciprocates axially, rotates on its axis, and oscillates from side to side. To permit this motion, the needle bar at its upper end is supported in a universal joint, such as a ball and socket, or in gimbals permitting universal movement. Such a bearing mechanism is disclosed in Dunnell Patent No. 1,914,943, issued June 20, 1933.

The object of my invention is to provide an improved bearing mechanism for the needle bar, which will permit the necessary movement of the bar, and which will be simple, practical and efficient. I have, therefore, devised a bearing mechanism consisting of a thin flexible metallic disk mounted in a sleeve slidable on the needle bar and securely clamped in the frame of the button hole machine. Such a device functions as a universal joint, permits entire freedom and accuracy of movement of the needle bar, is economical to manufacture, practically never requires repair, and presents no problem of lubrication.

In the accompanying drawing I have shown my invention applied to a button hole sewing machine, with only such parts of the machine itself shown as will serve to illustrate the invention.

In the drawing:

Fig. 1 is a side elevational view of a part of a button hole sewing machine head showing the needle bar arranged therein, together with my improved bearing mechanism;

Fig. 2 is an enlarged vertical sectional view of the frame and needle bar mechanism upon line 2-2 of Fig. 3;

Fig. 3 is a plan view of the needle bar mechanism.

Fig. 4 is a perspective view of the bearing mechanism assembled, and

Fig. 5 is a perspective view of the parts comprising the bearing mechanism in disassembled relation.

Before explaining in detail the present invention it is to be understood that the invention is not limited in its application to the details of construction and arrangement of parts illustrated in the accompanying drawing, since the invention is capable of other embodiments and of being practiced or carried out in various ways. Also it is to be understood that the phraseology or terminology employed herein is for the pur-

pose of description and not of limitation, and it is not intended to limit the invention claimed herein beyond the requirements of the prior art.

In the drawing 10 represents the frame of the stitching machine and 11 is the forwardly extending arm, which accommodates the needle bar 12 and its supporting, guiding and operating mechanism. As the operating mechanism for reciprocating, rotating and oscillating the needle bar is well known, and forms no part of this invention, its specific description is omitted.

The bearing mechanism constituting my invention for supporting and guiding the needle bar is mounted at the upper end of the arm 11 and constitutes an annular flanged supporting member 13, threaded on its inner surface above the flange 14 to receive the locking nut 15. The bearing mechanism consists of a sleeve member 16 slidable upon the needle bar 12, and having the flange 17 and being screw threaded on the inner surface of its upper end 18 to accommodate the locking nut 19. A thin round flexible metallic disk 20 fits over the upper end 18 of the sleeve member 16, and when the locking nut 19 is in place, the disk 20 is securely held through its center between the flange 17 and the lower edge of the locking nut 19. The rim or periphery of the disk 20 is in turn securely held between the flange 14 of the supporting member 13, and the lower surface of the locking nut 15.

Being thus supported it is obvious that the flexible disk 20 permits free and accurate movement of the needle bar. The needle bar is free to reciprocate axially and to rotate by sliding and turning in the sleeve member 16, and is free to oscillate because of the flexibility of the disk 20. It will thus be seen that complete freedom of movement for the needle bar is provided, without the necessity of using a complicated universal joint which is continually getting out of order and needing repair and requiring careful lubrication. The bearing mechanism is extremely simple and cheap to manufacture and performs efficiently in operation.

I claim:

1. In a button hole sewing machine, the combination of a frame, a needle bar, a bearing mechanism for said bar for permitting longitudinal reciprocation, lateral oscillation, and rotation of said needle bar, comprising a sleeve member slidable on said bar, and a flexible disk secured to said sleeve member and to the frame.

2. In a button hole sewing machine, the combination of a frame, a needle bar, a bearing mechanism for said bar for permitting longitu-

dinal reciprocation, lateral oscillation, and rotation of said needle bar, comprising a sleeve member slidable on said bar, and a flexible disk secured at its center to the sleeve member and at its periphery in the frame.

- 5 3. In a button hole sewing machine, the combination of a frame, a needle bar, a bearing mechanism for said bar for permitting longitudinal reciprocation, lateral oscillation, and rotation of said needle bar, comprising a flanged sleeve member slidable on said bar, a flexible disk, means for securing said flexible disk at its center to said sleeve member, and means in said frame for securing the periphery of said disk.
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4. In a button hole sewing machine, the combination of a frame, a needle bar, a bearing mechanism for said bar for permitting longitudinal reciprocation, lateral oscillation, and rotation of said needle bar, comprising a flanged sleeve member slidable on said bar, a flexible disk, a locking nut for securing said flexible disk at its center to said sleeve member, a flanged pocket in said frame to receive the periphery of said disk and a locking nut for securing said disk in said pocket.

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