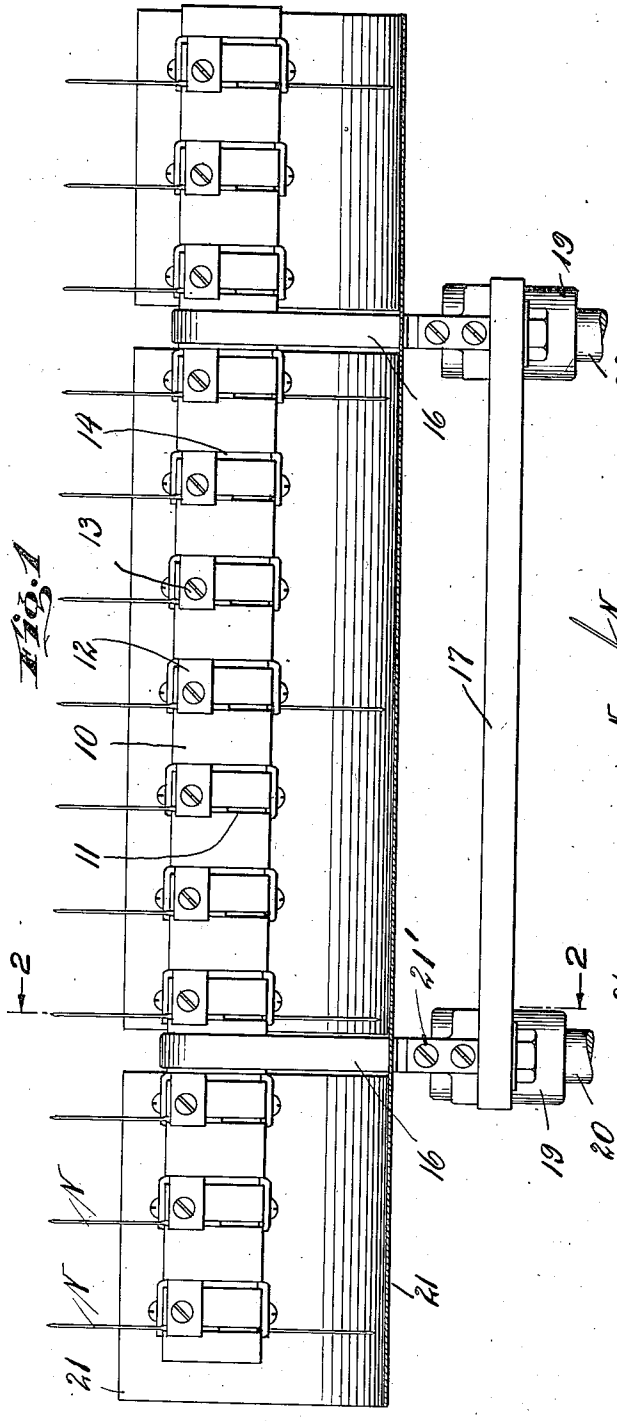
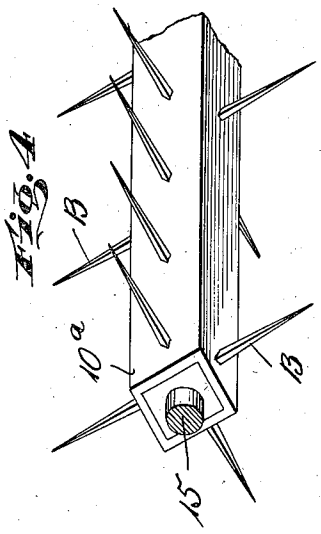
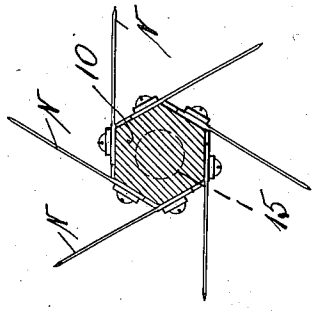
May 18, 1937. M. P. NEUBERT ET AL 2,080,735

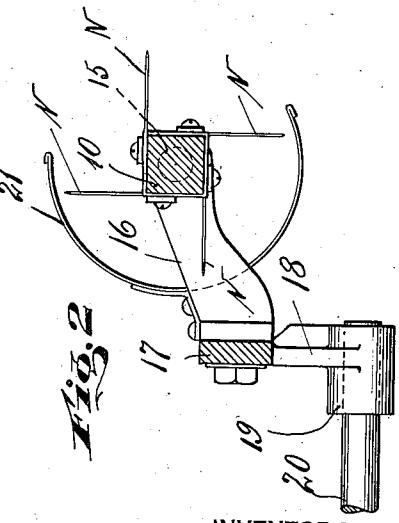
IMPLEMENT BAR FOR EMBROIDERING MACHINES

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IMPLEMENT BAR FOR EMBROIDERING MACHINES

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1 Claim. (Cl. 112—83)

This invention relates to embroidering machines or the like and more particularly to the implement bars such as needle bars, borer bars or stupfel bars.

As hitherto constructed such bar carries a single row of implements and is so mounted in the machine frame as to be capable merely of a horizontal reciprocity motion, whereby the implements are caused to perform their embroidering operation. According to the embroidery design to be produced on the fabric these implements, as stitching needles, borers or stupfels are spaced apart for the particular repeat determined by the design, for instance, 4/4, 8/4, 12/4, etc. At 4/4 repeat all implements on the bar, i. e. all needles or all borers, etc., are in use. If the design to be embroidered is such that first one repeat, then another repeat or perhaps a third are used, then when a change is to be made from one repeat to another, it is necessary to remove from the bar alternate needles or borers or alternate groups of needles or borers according to the particular repeat. With modern embroidering machines which are from 10 to 14 yards long, each bar carries hundreds of such implements and it is quite a tedious work consuming sometimes days to remove or replace the implements in a bar in order to change the repeat. It is of course, obvious that during such period the machine remains idle. Moreover, when a two or multi-colored design is to be produced, the change from one color to another also consumes considerable time as the threads of one color have to be cut off and removed from the stitching needles and threads of a different color rethreaded.

The object of this invention is to provide a construction whereby these drawbacks will be obviated and whereby it is possible to change the arrangement of the implements for the different desired repeats or colors within but a few minutes, and thereby considerably increase the efficiency of the machine and reduce the expense of operation.

The novel construction comprises a polygonal bar either of triangular, square, pentagonal, hexagonal, octagonal or any other cross section, with means for removably attaching to each face of said bar a row of implements, so that the implements on each face of the bar may in advance be spaced according to the repeats or the colors desired. Thus, the implements projecting from one face of the bar may be spaced for 4/4 repeats, those projecting from another face may be spaced for 8/4 repeats, etc. Only the implements which project from the face directed toward and parallel to the vertically extending fabric are in operative position while the implements projecting from the other faces are in inoperative position at that time. This polygonal bar is so mounted in the machine frame that in addition to its horizontal reciprocating movement toward and away from the fabric which it carries out in its performance of the embroidering operation, it also is capable of being turned on its longitudinal axis in order to change the implements of one face to that of another of said polygonal bars. It will be seen that the change of the implements for a different repeat or different color can thus be accomplished very easily and quickly by a mere rotation of the bar.

Our invention also consists in the novel combination and arrangement of parts as will be hereinafter more fully described and defined in the appended claim.

In the accompanying drawing which constitutes part of this specification and in which similar reference characters denote corresponding parts:

Fig. 1 is a top plan view of our novel needle bar of square cross section;

Fig. 2 is a cross section on line 2—2 of Fig.1;

Fig. 3 is a cross section of a modified form of needle bar of hexagonal cross section and;

Fig. 4 is a perspective view of a borer bar of square cross section.

Referring to the drawing more specifically 10 denotes a bar which, as shown in Figs. 1 and 2, is of square cross section and as shown in Fig. 3 is of hexagonal cross section. Each face of the bar is provided with a row of sockets which in Fig. 1 are shown in form of grooves or channels 11 extending transversely of the bar and spaced equidistantly for the smallest number of repeats customary with embroidery designs, such as 4/4. These sockets form bearings in which the tail ends of the stitching or embroidering needles N are lodged, so that the pointed and eyeletted ends thereof project laterally from the bar parallel to the corresponding face. The needles are removably secured in their position by suitable means such as clamping plates 12 and screws 13, the clamping plates being each provided at one side with a depending tongue or flange (not shown) engaging a groove 14 extending parallel to and intermediate the needle bearing channels 11.

At suitable places, either at its ends or intermediate its ends, as shown, the polygonal bar is formed with cylindrical journals 15 which are rotatively borne in arms 16 extending laterally

and transversely of the bar and which are adapted to be rigidly secured to a cross piece 17 formed with downwardly extending arms 18, the lower ends of which are formed as sleeves 19. These sleeves are slidably mounted on rods 20 fixed to the machine frame (not shown) forming part of the embroidering machine, so that the needle bar can be reciprocated horizontally toward and away from the fabric frame which in well known manner is mounted in a vertical position parallel to the longitudinal axis of the needle bar. It will be understood that with the construction of the needle bar as described, only the row of needles which project from the bar horizontally toward the fabric frame will be operative, while the needles projecting from the other faces of the bar will be temporarily inoperative.

To protect the attendant against possible injury from the non-operative needles, a guard 21 in the form of a cylindrically curved hood of sheet metal or the like is suitably fixed to the arms 16 as at 21^1 (Figs. 1 and 2) to shield the non-operative needles.

The new needle bar enables the arrangement and rearrangement of the needles on the different faces thereof to conform with the desired repeats or colors of thread to be used. Thus, if the designs to be embroidered have different repeats, the needles on the different faces prior to operation are so arranged that the needles projecting from one face conform with one repeat, those projecting from another face conform with another repeat, etc. Thus, a single needle bar may have the needles arranged for different repeats or colors and the change from one to the other requires but a mere turn of the bar on its longitudinal axis. If different colors are used for the design the different colored threads from the corresponding spools (not shown) are threaded through the needles of the different faces of the bar, and when a change is to be made, the threads of the operative needles are cut off and upon a turn of the bar on its axis the needles carrying another colored thread are brought into operative position. Thus, considerable time is saved, as a re-threading or re-spacing of the needles is dispensed with.

The borer and stupfel bars may be constructed similar to the needle bar, except that these implements may as usual be threaded in the bar instead of being clamped thereto.

In Fig. 4, a borer bar 10*a* is shown with borers B threaded in the different faces of said bar, the threaded holes receiving these borers being spaced to conform with different repeats.

Since various changes may be made in the construction of our device without departing from the principle of our invention we do not wish to restrict ourselves to the details described and shown.

We claim:

An adjustable polygonal implement bar of the character described provided on each face with a longitudinal row of equidistantly spaced transversely extending channels for removably bearing the tail ends of the implements and an equal number of equidistantly spaced guide grooves extending parallel to and intermediate said channels and a number of clamping plates, one for each implement, each plate formed with a depending flange for engagement within a corresponding guide groove, and means for securing said plates in position on said bar.

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