

Dec. 12, 1950

R. H. WARMACK
NEEDLE PUNCH MACHINE

2,533,540

Filed Jan. 22, 1948

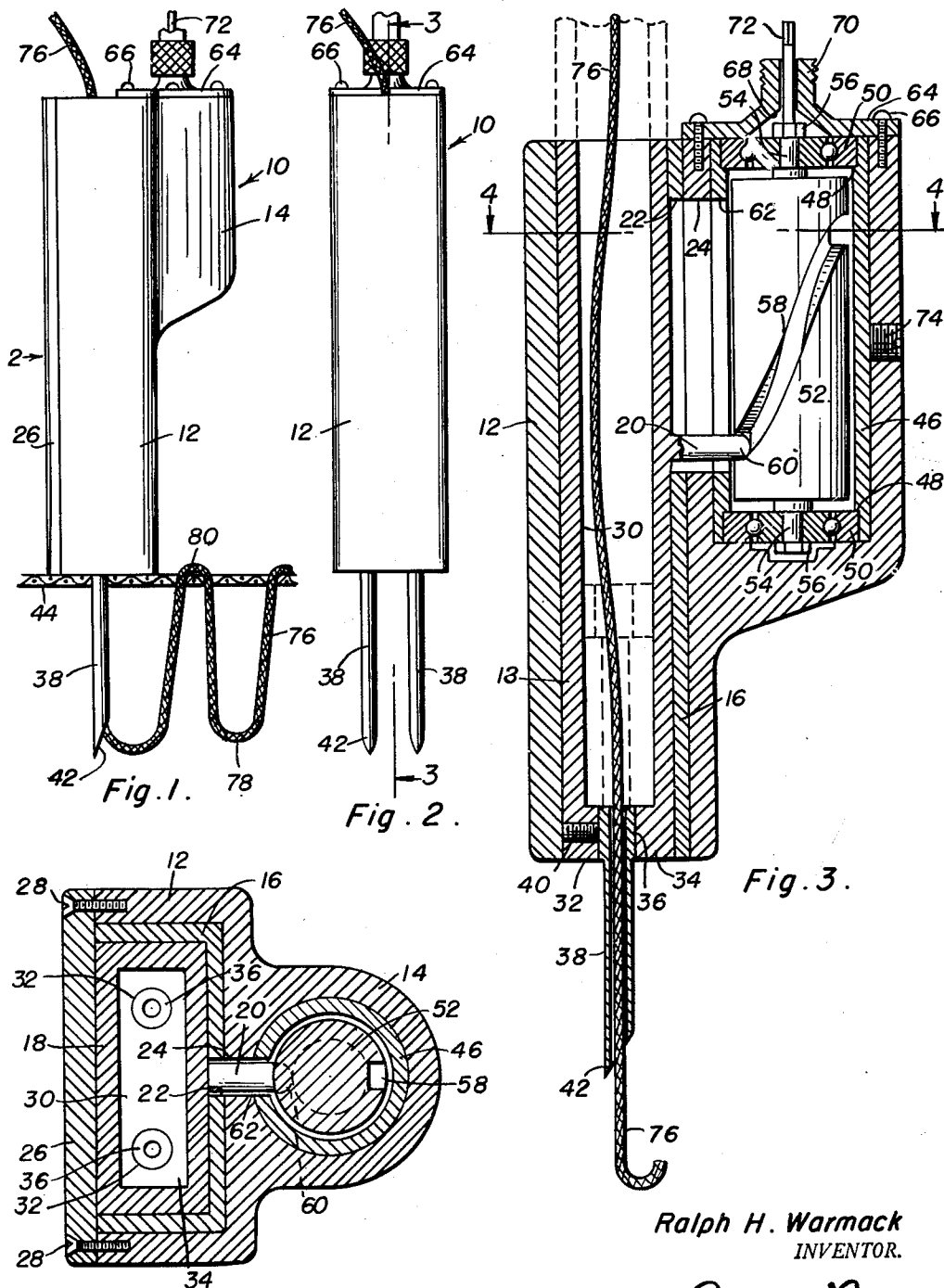


Fig. 4.

Ralph H. Warmack
INVENTOR.

BY *Alvanice A. O'Brien*
and *Harvey B. Jacobson*
Attorneys

UNITED STATES PATENT OFFICE

2,533,540

NEEDLE PUNCH MACHINE

Ralph H. Warmack, Dalton, Ga.

Application January 22, 1948, Serial No. 3,761

3 Claims. (Cl. 112—80)

1

This invention relates to new and useful improvements in sewing apparatus and the primary object of the present invention is to provide a needle punch machine including a needle supporting member and embodying novel and improved means for imparting a reciprocable movement to said needle supporting member.

Another important object of the present invention is to provide a needle punch machine including a novel and improved thread receiving needle so designed as to facilitate the same to receive a length of thread in a convenient manner and which may be extended into cloth or the like in such a manner as to offer less tension on the thread thereby improving sewing operations.

A further object of the present invention is to provide a needle punch machine all parts of which are quickly and readily assembled or disassembled facilitating the convenient inspection or the placement of parts.

A still further aim of the present invention is to provide a needle punch machine that is simple and practical in construction, small and compact in structure, strong and reliable in use, efficient in operation, neat and attractive in appearance, relatively inexpensive to manufacture, and otherwise well adapted for the purposes for which the same is intended.

Other objects and advantages reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is a side elevational view of the present invention in use;

Figure 2 is a front elevational view of the present needle punch machine taken substantially in the direction of arrow number 2 in Figure 1;

Figure 3 is an enlarged longitudinal vertical sectional view taken substantially on the plane of section line 3—3 of Figure 2; and,

Figure 4 is a transverse horizontal sectional view taken substantially on the plane of section line 4—4 of Figure 3.

Referring now to the drawings in detail, wherein for the purpose of illustration, there is disclosed a preferred embodiment of the present invention, the numeral 10 represents the case portion or frame of the present needle punch machine generally, comprising an elongated channel shaped guide member 12 and a substantially cylindrical housing 14 integrally formed with said guide member at one end thereof.

2

Frictionally positioned in the guide member 10, is a removable channel shaped bearing and wearing insert 16 that slidably engages a substantially rectangular needle supporting block or needle bar 18 which is provided with a guide and stop pin or lug 20 that slidably engages opposed longitudinal slots 22 and 24 provided in the bearing and wearing insert 16. In order to retain the bearing and wearing insert 16 and the needle supporting block 18 relative to the guide member 12 there is provided a closure plate 26 that is removably secured to the side walls of the guide member 12 by a plurality of fasteners or the like 28.

The needle supporting block 18 is provided with a thread receiving chamber 30 which is opened at its upper end and which communicates with a pair of spaced, annular openings or seats 32 provided in the closed lower end 34 of the supporting block 18. The enlarged end portions 36 of a pair of tubular needles 38 are positioned in the openings 32 and are retained relative thereto by said screws or the like 40 adjustably mounted in threaded apertures formed in the lower closed end of the support block 18. The outer extremities 42 of the needles 38 are inclined to facilitate the same to be extended into and through a cloth material or the like 44.

Frictionally positioned in the housing 14, is a tubular or sleeve-like bearing support 46 having annular shoulders or recesses 48 adjacent each of its ends that frictionally engage annular bearings 50 positioned in each end of the tubular support 46.

The numeral 52 represents a cylindrical cam having reduced end portions 54 that are removably secured to the bearings 50 by nuts 56 receivably engaged on said reduced end portions 54. This cylindrical cam 52 is provided with a cam track or elliptical guide groove 58 that frictionally engages the free end 60 of the lug 20 which extends through the slots 22 and 24 and a further slot 62 provided in the tubular bearing support 46.

It should be noted, that one end of the housing 14 is opened to facilitate the placement of the tubular support 46, the bearings 50, and a cylindrical cam 52 in the said housing, and that the open end of the housing 14 is closed by an end plate 64 removably secured to the housing 14 by fasteners or the like 66. This end plate 64 is provided with a central recess 68 to accommodate one of the nuts 56 and a bearing sleeve 70 that rotatably supports a driving shaft 72 which is removably secured to one of the reduced

end portions of the cylindrical cam 52 for rotation of said cylindrical cam by the driving shaft. To further retain the tubular support 46 within the housing 14, there is provided a set screw 74 adjustably carried by the housing which frictionally engages the outer periphery of the tubular support 46.

In practical use of the present invention, threads or thread 76 is extended into the chamber 30 and through the needles 38. The driving shaft 72 is operatively connected in any suitable manner to the drive shaft of a usual motor (not shown) so the cylindrical cam 52 will be rotated as the motor is actuated. Upon rotation of the cylindrical cam 52, the lug 20 will guide in the cam groove 53 to impart a reciprocating motion to the support block 18 and hence the needles 38. The present needle punching machine is then held by one hand of the operator and given a forward movement with the needle or needles 38 perpendicular to the cloth 44. The needle or needles 38 pierce the cloth 44, taking yarn or thread 76 through to the underside of the cloth on the down stroke of the support block 18. On the upstroke of the support block 18, yarn or thread 76 remains to form a loop 78 on the underside of cloth 44. The support block 18 moves upwardly into the guide 12 until the needle or needles 38 are within the guide 12, at which time the operator moves the entire machine forward to make the next stitch. This forward movement by the operator forms a closed loop 80 on the top side of the cloth 44.

Obviously, the present needle punch machine may be used in conjunction with one of the needles 38 as well as employing both of said needles for use in stitching cloth or the like.

In view of the foregoing description taken in conjunction with the accompanying drawings it is believed that a clear understanding of the device will be quite apparent to those skilled in this art. A more detailed description is accordingly deemed unnecessary.

It is to be understood, however, that even though there is herein shown and described a preferred embodiment of the invention the same is susceptible to certain changes fully comprehended by the spirit of the invention as herein described and the scope of the appended claims.

Having described the invention, what is claimed as new is:

1. A needle punch machine comprising a substantially cylindrical housing, a channel shaped

guide fixed at its web portion to said housing, a longitudinal slot communicating with said housing and said guide, a closure plate removably secured to said guide, a hollow needle bar slidably mounted in said guide and having an open upper end, a needle carried by the lower end of said needle bar, a lug projecting laterally from said needle bar and received in said slot for reciprocal movement, and means mounted in said housing and engaging said lug for imparting reciprocal motion to said needle bar.

2. The combination of claim 1 and a channel shaped bearing mounted in said guide and embracing said needle bar, the web portion of said bearing having a longitudinal opening in registry with said slot.

3. A needle punch machine comprising a substantially cylindrical housing, a channel shaped guide fixed at its web portion to said housing, a longitudinal slot communicating with said housing and said guide, a closure plate removably secured to said guide, a hollow needle bar slidably mounted in said guide and having an open upper end, a needle carried by the lower end of said needle bar, a lug projecting laterally from said needle bar and received in said slot for reciprocal movement, a channeled bearing embracing said needle bar, the web portion of said channeled bearing having an opening in registry with said slot, a bearing sleeve inserted in said housing and having an opening in registry with said slot, bearings carried by said sleeve at the ends thereof, a rotary cylinder mounted in said sleeve and having a cam track receiving said lug, said housing having an open end and a closure plate for the open end of said housing, said cylinder having reduced end portions engaging the bearings carried by said sleeve.

RALPH H. WARMACK.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,671,957	Kottler	May 29, 1928
1,888,941	Van Dyke	Nov. 22, 1932
1,892,592	Westcott	Dec. 27, 1932
1,917,162	Smith	July 4, 1933
2,112,186	Williams	Mar. 22, 1938
2,216,990	Taylor, Jr.	Oct. 8, 1940
2,436,692	Greene	Feb. 24, 1948