Oct. 22, 1946. W. A. BLANCHARD 2,409,972

VIBRATOR LEVER FOR PATTERN MECHANISM

Filed Sept. 8, 1945

FIG. 1

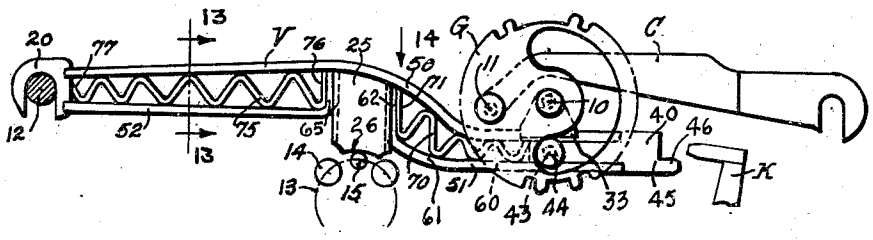


FIG. 2

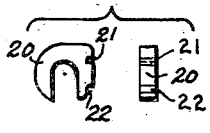


FIG. 3

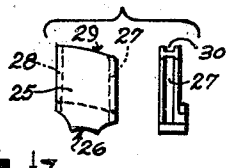


FIG. 4

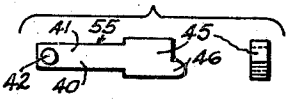


FIG. 5

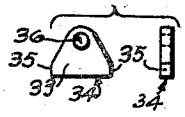


FIG. 6

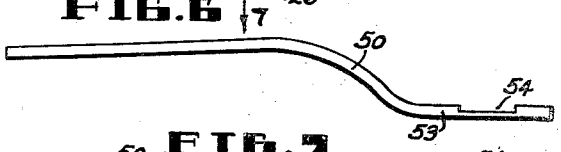


FIG. 7



FIG. 12



FIG. 8

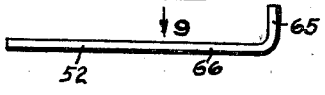


FIG. 10



FIG. 13



FIG. 9

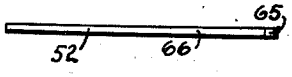


FIG. 11

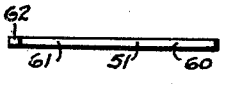
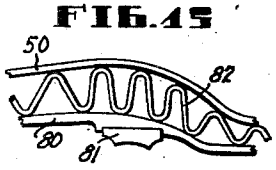


FIG. 14



FIG. 15



INVENTOR.

BY William A. Blanchard

Chas. T. Hawley

ATTORNEY

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UNITED STATES PATENT OFFICE

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VIBRATOR LEVER FOR PATTERN MECHANISM

William A. Blanchard, Worcester, Mass., assignor to Crompton & Knowles Loom Works, Worcester, Mass., a corporation of Massachusetts

Application September 8, 1945, Serial No. 615,123

10 Claims. (Cl. 139—77)

1

This invention relates to improvements in pattern mechanism levers for looms and more particularly to the vibrator levers used in the well-known Knowles head and it is the general object of the invention to provide a cheap and light but strong lever built up of structural parts some of which are made of rods or wires.

The Knowles head vibrator lever is lifted by a pattern chain and has rotatably mounted thereon a vibrator gear attached to a connector which rocks the harness lever. Heretofore the vibrator levers have been solid and made of sheet material, either malleable iron or sheet steel. As thus made the vibrator lever has been quite heavy with resultant wear on the rolls of the pattern chain. It is an important object of my present invention to make the vibrator lever of elongated top and bottom rails or rods connected by a reinforcing wire which zigzags between the rails and is welded or otherwise secured to them.

The vibrator lever comprises certain essential members, such as a heel pin bearing, a pattern chain run, a bearing for the vibratory gear, and a boss for the lock knife which holds it either in raised or lowered position during the harness lifting operation. It is another object of my present invention to provide these parts or members in the form of stampings or punchings and connect them by the rails and reinforcing wires to form an organized lever.

With these and other objects in view which will appear as the description proceeds, my invention resides in the combination and arrangement of parts hereinafter described and set forth.

In the accompanying drawing, wherein two forms of the vibrator lever are shown,

Fig. 1 is a front elevation of a vibrator lever made according to the preferred form of my present invention, together with associated parts, of which the supporting heel pin is shown in section,

Fig. 2 sets forth front and end elevations of the heel pin bearing member,

Fig. 3 shows front and end elevations of the pattern chain run member,

Fig. 4 shows front and end elevations of the lock knife boss member,

Fig. 5 shows front and end elevations of the vibrator gear bearing member,

Fig. 6 is a front elevation of the top rail of the vibrator lever,

Fig. 7 is a plan view looking in the direction of arrow 7, Fig. 6,

Fig. 8 is a front elevation of one of the bottom rails used in the preferred form of the invention

2

and extending between the heel pin bearing and the pattern chain run members,

Fig. 9 is a plan view looking in the direction of arrow 9, Fig. 8,

Fig. 10 is a front elevation of the other bottom rail used in the preferred form of the invention extending between the pattern chain run and the lock knife boss members,

Fig. 11 is a plan view looking in the direction of arrow 11, Fig. 10,

Fig. 12 shows front and side elevations, respectively, of the stop stud carried by the lock knife boss and received by the circular slot of the vibrator gear,

Fig. 13 is an enlarged vertical section on line 13—13 of Fig. 1,

Fig. 14 shows a plan view of the assembled vibrator lever looking in the direction of arrow 14, Fig. 1, and

Fig. 15 is a view showing the intermediate part of a vibrator lever made according to a modified form of my invention.

Referring particularly to Fig. 1, the vibrator lever unit comprises a vibrator lever V, a vibrator gear G pivoted thereto as at 10, and a connector C pivoted to the gear at 11 and having a hooked end for cooperation with a harness lifting jack or lever not shown. The unit shown in Fig. 1 has the left end thereof supported by a heel pin 12 forming part of the well-known Knowles head, and the intermediate part of the lever cooperates with a pattern chain 13 indicated diagrammatically in Fig. 1 and comprising high and low rolls 14 and 15, respectively. The lever unit also cooperates with a lock knife K which is cam controlled to move into and out of locking position to restrain vertical movement of the lever V at certain times in the operation of the loom.

In making the vibrator lever V I provide a heel pin bearing member 20 having upper and lower notches 21 and 22 in the right edge thereof as viewed in Figs. 1 and 2. There is also provided a pattern chain run member 25 having an arcuate bottom surface 26 for cooperation with the elements of the pattern chain 13 and having right and left vertical slots 27 and 28 in the side edges thereof. The top of the vibrator run indicated at 29 is provided with an arcuate slot 30 for a purpose to be described.

A vibrator gear bearing member 33 has a bottom edge 34 which may preferably be straight and has short side walls 35. A perforation or bearing 36 in the upper part of the bearing 33 receives the previously described pivot 10 for the vibrator gear.

The lock knife boss member 40 has a left hand shank 41 as viewed in Figs. 1 and 4 provided with the perforation 42 which receives the shank 43 of the stop stud 44 shown in Fig. 12. The right end of the lock knife boss is provided with a head 45 from which projects a lock finger 46 for cooperation with the lock knife K.

The preferred form of the invention is provided with one top rail or rod 50 and right and left bottom rails or rods 51 and 52, respectively. The top rail has the left end thereof inserted into the notch 21 and then extends to the right as viewed in Fig. 1 into the slot 30 on the top of the pattern chain run. The rail then curves downwardly and straightens out into a horizontal right end 53 in the upper surface of which is a notch 54 proportioned to receive the bottom 34 and side walls 35 of the vibrator gear bearing member. This straight part 53 at the right end of the rail 50 extends along the top surface 55 of the shank 41 of the lock knife boss and abuts the head 45.

The right hand bottom rail has the right end thereof substantially straight as at 60 and extends along the bottom of shank 41, abutting the head 45 as does the right end of the top rail 50. The left part of the bottom rail 51 is curved upwardly as at 61 and then vertically as at 62 and enters the side groove 27 of the pattern chain run. The upper end of the part 62 of the rail 51 may also abut the top rail 50 as shown in Fig. 1.

The left hand bottom rail 52 has a vertical part 65 located in the left vertical notch 28 of the vibrator run 25 and then extends horizontally as at 66 to enter the notch 22.

Extending between the top rail 50 and the bottom rail 51 is a reinforcing element which may be a wire 70 bent in sinuous form so that its bends alternately engage the top and bottom rails. The left end of this wire 70 may if desired be extended as at 71 along the vertical section 62 of the right hand bottom rail, while the right end of the wire 70 may abut both the lock knife boss and the top rail. In similar manner, a second sinuous reinforcing element or wire 75 extends between the top rail and the left hand bottom rail 52 and has a right vertical end 76 which may extend along the vertical section 65 of the bottom rail 52 and if desired abut the top rail. The reinforcing wire 75 has the left end thereof in abutting relation with the heel pin bearing 20 as at 77. The bends of the wire 75 are alternately connected to the top rail and bottom rail 52.

By means of an appropriate jig the parts are assembled in the relative positions shown in Fig. 1 with the top and bottom rails, the members 20, 25, 33 and 40 held in proper position, and with the serpentine or sinuous reinforcing wires 70 and 75 inserted between the top and bottom rails and in abutting relation with respect to their associated parts as already described. These reinforcing wires preferably fit snugly between the top and bottom rails so that their various bends are pressed firmly against the rails. The entire assembly is then subjected either to a welding or brazing operation which may conveniently be accomplished either in a furnace or by torch by the use of copper, silver, or other welding metal which will be deposited at the joints between the several parts of the vibrator lever. During the heating operation the brazing metal melts and forms a tight bond between each part of the vibrator lever and the part which it abuts.

I do not wish to be limited to the specific type of welding described, but it is a convenient means by which all the several parts of the vibrator lever can be united to form a rigid but light weight vibrator lever.

Fig. 15 shows a modification of the invention wherein the two bottom rails 51 and 52 are eliminated and in their place is used a single bottom rail 80 to which is welded a pattern chain run 81. In this modified form the reinforcing sinuous wire 82 is continuous from the heel pin bearing 20 to the lock knife boss 40 and its bends are attached at frequent points to the top and bottom rails.

From the foregoing it will be seen that I have provided a form of vibrator lever light in weight so that it subjects the pattern chain rolls 14 and 15 to minimum pressure and wearing. It will further be seen that the lever has at least one elongated rail extending substantially for the length of the lever and connecting the end members 20 and 40. In the modified form of the invention there are two of these rails, the bottom rail 80 being connected at its left end to the bearing 20 and at its right end to the boss 40. In both forms of the invention a zigzag reinforcing wire is interposed between the top and bottom rails and is welded or brazed to them at several different points to provide a rigid structural or truss-like lever. The members 20, 25 and 40 are formed so that they either receive parts of the top and bottom rails or have close extended engagement with them. While the detailed description sets forth a vibrator lever for the Knowles head it is not necessarily limited to this type of pattern mechanism lever.

The subject matter with respect to Fig. 15 of the drawing is not specifically claimed herein, but is claimed in a continuation-in-part application Serial No. 674,810 filed by me on June 6, 1946.

Having thus described my invention it will be seen that changes and modifications may be made therein by those skilled in the art without departing from the spirit and scope of the invention and I do not wish to be limited to the details herein disclosed, but what I claim is:

1. In a vibrator lever for a loom pattern mechanism, said lever having a heel pin bearing member, a pattern chain run member, a lock knife boss member, a vibrator gear bearing member, elongated tie rods extending lengthwise of the lever, one of said rods extending along the top of the lever and secured to said members, the remainder of the rods extending along the bottom of the lever and secured to the heel pin, chain run, and boss members, and reinforcing wire means of sinuous form extending between the top rod and the remainder of said rods and secured to said tie rods.

2. In a vibrator lever for a loom pattern mechanism, said lever having a heel pin bearing member, a pattern chain run member, a lock knife boss member, a vibrator gear bearing member, an upper elongated tie rod extending along the top of the lever and secured to all of said members, a lower tie rod extending along the bottom of the lever and secured to the heel pin bearing and pattern run members, a second lower tie rod extending along the bottom of the lever and secured to the pattern run and boss members, and sinuous wire means secured to the top tie rod and extending between the latter and the lower tie rods and secured to said lower tie rods to reinforce said upper and lower rods.

3. In a loom pattern mechanism vibrator lever having a lock knife boss at one end thereof and

a vibrator gear bearing adjacent thereto, said lever having a heel pin bearing member at the other end thereof, a pattern chain run member intermediate the ends of the lever, spaced top and bottom tie rods secured to and extending between said members, and a reinforcing wire of sinuous form extending between and secured to said tie rods.

4. In a loom pattern mechanism vibrator lever, a pattern chain run extending transversely of the lever, a lock knife boss at one end of the lever, vertically spaced tie rods, one extending along the top of the lever and secured to the upper part of the chain run and the boss, and the other tie rod extending along the bottom of the lever and secured to the lower part of the chain run and boss, and a reinforcing wire of sinuous form extending between and secured to said tie rods.

5. In a loom pattern mechanism vibrator lever, a pattern chain run extending transversely of the lever, a lock knife boss at one end of the lever, spaced tie rods extending between and secured to the run and the boss, one of said tie rods extending along the top of the lever, a vibrator gear bearing secured to said one tie rod, and a reinforcing wire of sinuous form extending between and secured to said tie rods.

6. In a loom pattern chain vibrator lever, a pattern chain run extending transversely of the lever, a heel pin bearing at one end of the lever, vertically spaced tie rods, one extending along the top of the lever and securing the upper part of the chain run to said bearing, and the other tie rod extending along the bottom of the lever and securing the lower part of said chain run to said bearing, and a reinforcing wire of sinuous form extending between and secured to said tie rods.

7. In a pattern mechanism vibrator lever, a pattern chain run member extending transversely of the lever and having vertical sides with grooves therein, top and bottom vertically spaced tie rods extending lengthwise of the lever, certain of said tie rods entering said grooves and being secured therein to the chain run, the remainder of the tie rods extending along and secured to the top of the chain run, and a reinforcing wire of

sinuous form extending between and secured to said tie rods.

8. In a loom pattern mechanism vibrator lever, a pattern chain run extending transversely of the lever and having a groove extending along the top thereof, spaced top and bottom tie rods extending lengthwise of and forming parts of the lever, one of said tie rods being secured to said run in said groove, and the remainder of said tie rods having the adjacent ends thereof bent toward said one tie rod and secured to said chain run, and reinforcing wires of sinuous form secured at a plurality of points to said one tie rod and secured also to said remainder of the tie rods, one reinforcing wire for each rod in said remainder of rods.

9. In a loom pattern mechanism vibrator lever, a pattern chain run extending transversely of the lever and having a concave surface on the under side thereof for engagement with a pattern chain, said chain run having vertical sides and a top extending between said sides, said sides and top having grooves therein, a top tie rod forming part of the lever and located in the groove on the top of the run and secured to the latter, two bottom tie rods, one on each side of said run, each of said bottom tie rods having an end bent toward said one tie rod and located in a side groove of said run and secured to the latter, and a reinforcing wire of sinuous form for each of said bottom tie rods, one located on each side of said run, said reinforcing wires having their upper parts secured to said one tie rod and having their lower parts secured to the corresponding bottom tie rod.

10. In a vibrator lever for a loom pattern mechanism, a bearing member at one end of the lever, a pattern chain run member, elongated tie rods extending lengthwise of the lever, one of said tie rods extending along the top of the lever and secured to the bearing member, the remainder of said tie rods extending along the bottom of the lever and secured to said bearing and chain run members, and reinforcing wire means of sinuous form extending between the top tie rod and the remainder of said tie rods and secured to at least one of said tie rods.

WILLIAM A. BLANCHARD.