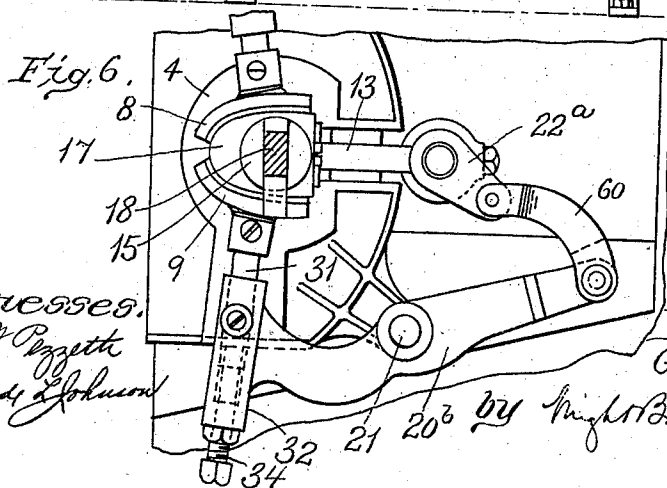
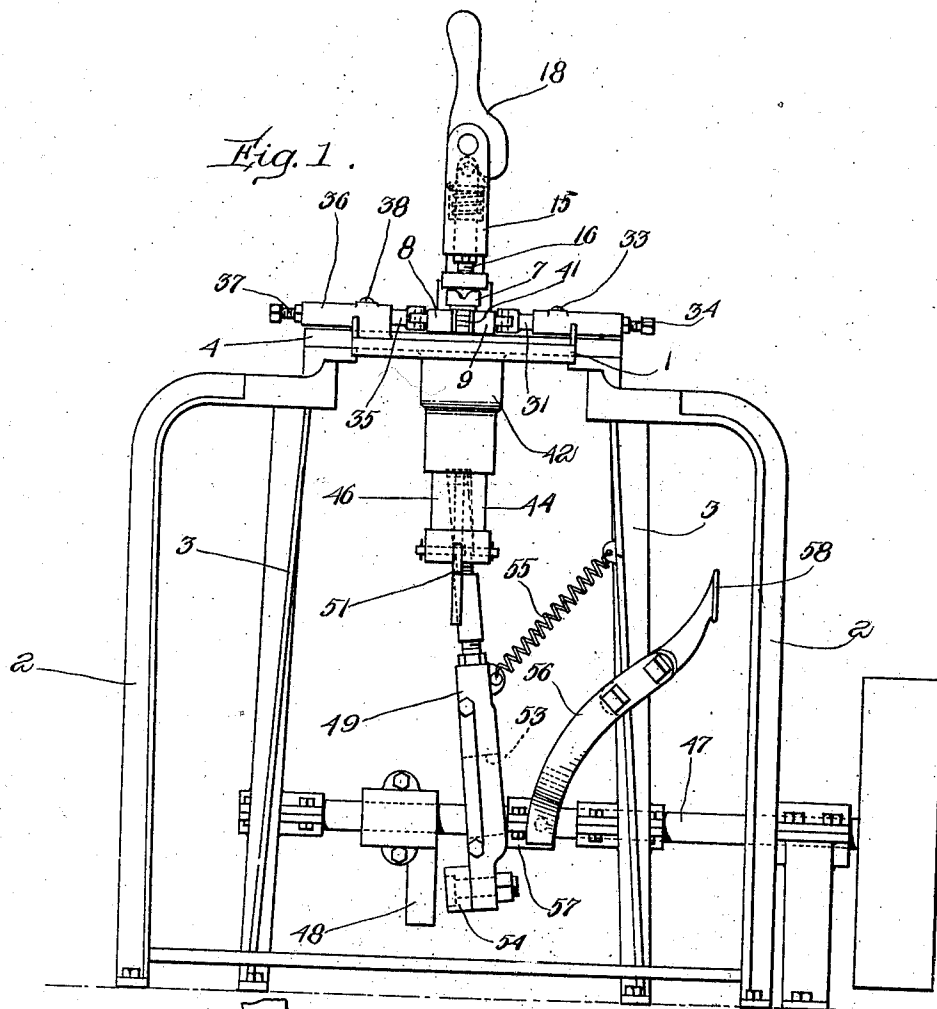


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G. B. GROVER.
HEEL BUILDING MACHINE.
APPLICATION FILED FEB. 16, 1910.

Patented Jan. 3, 1911.

2 SHEETS—SHEET 1.



Witnesses.

P. W. Pezzetta

Gertrude Johnson

Inventor:
George B. Grover

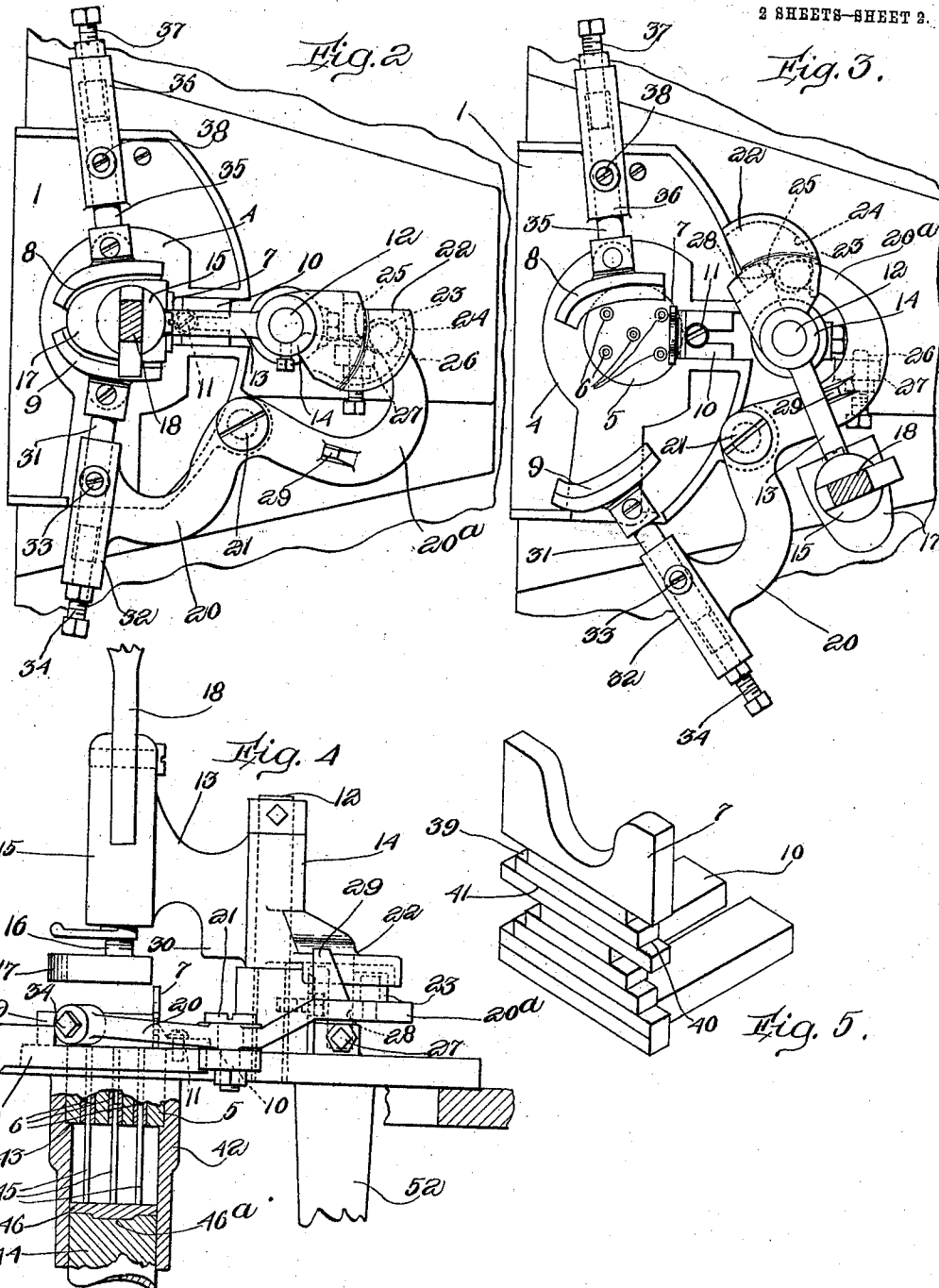
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Witnesses:
P. N. Pizzetti
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Inventor:
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UNITED STATES PATENT OFFICE.

GEORGE B. GROVER, OF LYNN, MASSACHUSETTS.

HEEL-BUILDING MACHINE.

980,512.

Specification of Letters Patent.

Patented Jan. 3, 1911.

Application filed February 16, 1910. Serial No. 544,237.

To all whom it may concern:

Be it known that I, GEORGE B. GROVER, of Lynn, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Heel-Building Machines, of which the following is a specification.

This invention relates to machines for building heel blanks and belongs to the type of machine by which complete blanks may be formed from a number of superposed complete lifts of leather or from leather scraps, which, when fitted together, form lifts composed of two or more pieces.

The present machine belongs to that class in which the lifts or pieces are assembled upon a support between side clamps, which are brought toward each other for alining the lifts and bringing the parts thereof (when the lifts are made of two or more separate pieces) together, and in which a top clamp is provided for holding the blank down on the support while a nail or nails are driven through the blank to secure the parts thereof together.

My principal object in devising this machine has been to provide a machine by which high heels, especially, whether made of whole or pieced lifts, may be easily, quickly and accurately built up. In order to build high heels, it is, of course, necessary that the clamps and gage which embrace the breast and edges of the heel should be at least as high as, and generally higher than, the heel to be built. Such high clamps make it difficult for the operator to insert the pieces and lifts in the space between the clamps and to remove the finished heel from such space unless the clamps are widely separated while the building up and removal of the heel take place. If, however, the clamps on opposite sides of the space are both moved away to enlarge such space, it is difficult to build up the heel accurately, and impossible to build it both accurately and rapidly on account of the fact that no side support for positioning the pieces is provided.

Accordingly it has been my object to provide in such a machine a stationary side clamp which, in connection with a breast gage, forms a pocket and support for the breast and one side of the heel blank, whereby pieces may be quickly and accurately laid side by side and alined in forming pieced lifts and in building up such lifts into a complete heel blank, together with means

for adjusting the clamp and gage for heels of different sizes, and a cooperating side clamp operated by the laterally swinging top clamp for enlarging the heel-containing space when the top clamp is swung aside, and for pressing against the heel blank when the top clamp is swung over the blank.

Another object has been to provide a convenient means by which the nailing mechanism which forms a part of the machine may be readily put into operation.

A machine by which the above objects are given effect, and in which the principles of the present invention are embodied is illustrated in the accompanying drawings, in which,

Figure 1 represents a front elevation of the machine. Fig. 2 is a plan view of the operating parts of the machine showing them closed upon the heel blank. Fig. 3 is a similar view of the same parts, showing them in open position. Fig. 4 is an elevation of the same parts showing in section means for driving nails through the blank. Fig. 5 is a perspective view of the breast gage which forms a feature of this invention. Fig. 6 is a plan view similar to Fig. 2, showing a modification in the construction of the means by which the side clamp is actuated from the top clamp.

The same reference characters indicate the same parts in all the figures.

The machine comprises a table 1, supported by legs 2 and 3, and upon which the parts of the heel are placed in being assembled. The part in the approximate center of the table is somewhat raised, as shown at 4 in Figs. 2 and 3, and in the center of this raised portion is set a block 5 having a number of nailing passages 6. The surface of this nail-guiding block is flush with the raised part 4, and together with the latter, forms a support for the parts of the heel blank. The space for receiving the parts of the blank is defined above this support by a breast gage 7 and side clamps 8 and 9 respectively. The breast gage has a slotted base portion 10, and is secured by a screw 11, passing through the slot thereof into the table, this connection serving to permit adjustment of the breast gage for heels of different lengths. Rising from the table in rear of the space for the blank is a post 12, on which is mounted a swinging arm 13. This arm has a hub portion 14, embracing the post 12, and on its outer end

carries a head 15 in which is contained the shank 16 of a top clamp 17. The head 15 carrying the top clamp is adapted to swing with the arm 13 respectively over and aside from the support and receiving space for the blank. When above the blank-receiving space, the top clamp may be forced down upon the blank to hold the parts thereof together while a nail or nails are driven, by a cam lever 18 engaged with the shank of the clamp. The construction of the top clamp and operating means therefor forms no part of the present invention, as the same is an earlier invention of mine and is shown in my prior Patents 749,788, granted July 19, 1904, and 920,457, granted May 4, 1909, respectively.

The main feature of the present invention is the construction and arrangement of parts by which the machine is particularly adapted for the accurate and rapid building of high heels. In order to accomplish this purpose, the side clamps 8 and 9 are necessarily comparatively high, and the space between them correspondingly deep. In order therefore, that the pieces for building up the heels may be easily inserted, and the completed blank easily removed, it is necessary that this space should be opened widely during the building of the heel and removal thereof. It is also necessary that one of the side clamps shall remain stationary in order to afford a guide and support for alining the lifts of the heel, and more particularly for enabling the parts of the pieced lifts to be correctly placed side by side. If both side clamps were moved apart for enlarging the space during the building up process, there would be no guide for the pieces except the breast gage, which alone is not sufficient. With no means for locating one side at least of the heel, there is danger that the pieces of a pieced lift will be so inaccurately placed that when the side clamps are brought together some of the pieces may ride over each other or be separated so far as to leave cracks. It is also necessary that this stationary clamp should be adjustable according to the size and character of the heel, in order that the nails may be driven at the desired points in the blank. Consequently, only one of the clamps may be made movable to open the space in which the heel is built up and to press against the uncovered side or edge of the heel when completed. This single movable clamp, however, may be and is given as great a range of movement as necessary to afford the most convenient access to the heel containing space. The most convenient mode of moving the side clamp is by means operated by or with the swinging top clamp so that whenever the latter is swung aside or over the blank, the side clamp will be correspondingly moved away from or against the side

of the blank. In order to get the necessary extent of upward movement of the movable side clamp, for with a machine designed for the above purpose springs are not suitable to this end, I provide a positive connection between the top clamp and movable side clamp by which the latter is positively actuated in both directions to the desired extent. For this purpose, one of the side clamps, as 9, is carried by a lever 20 pivoted upon a stud 21 in the table. An arm 20^a of the lever is carried back of the post 12 and is engaged by a cam 22, attached to the hub of the top clamp arm. This cam is formed as a plate projecting from the hub 14 and having a groove in one surface, in which is contained a roll 23 carried upon a stud on the end of the arm 20^a of the side-clamp-carrying lever. This roll is contained between the walls of the cam groove which form oppositely-acting cam surfaces 24 and 25, shown in dotted lines in Figs. 2 and 3. These surfaces are eccentric to the post 12 and in consequence thereof, the side clamp 9 is positively moved away to open the heel blank space when the top clamp is swung aside, the surface 24 acting for this purpose, and the clamp is closed in against the heel blank by the pressure of the surface 25 when the top clamp is swung over the blank. It will be noted that the outer part of the cam surface 25 is approximately concentric with the post 12. This permits of a limited amount of movement of the top clamp over the blank after the side clamp has been brought against the blank, whereby the top clamp may be centrally located without moving, or being hindered by, the side clamp.

The top clamp is arrested when in central position over the blank by a stop screw 26 threaded through a lug 27 on the table, being thereby adjustable, against which abuts a lug 28 projecting from the cam arm 22, as shown in dotted lines in Figs. 2, 3 and 4. The movement of the clamps away from the blank-receiving space is limited by a stop 29 on the lever arm 20^a, with which a shoulder 30 on the top clamp-carrying arm 13 engages. As shown in Fig. 3, engagement of this projection with the stop limits the movement of either clamp away from the blank, but when in this position the space between the side clamps is opened so widely that the heel blank can be very easily removed.

Adjustment of the side clamp so that the same may fit heels of various sizes is permitted by the manner in which the clamp is connected to the lever 20. As here shown, the clamp is attached to the end of a rod 31 which is contained in a sleeve or socket 32 formed upon the end of lever 20, and is secured therein by a set screw 33. An adjustable stop screw 34 in the end of the

socket 32 bears against the end of the shank 31 and serves to adjust the amount by which the latter projects from the socket.

I have designed the side clamp 8 to be fixed except for a sufficient extent of adjustment to accommodate heels of various sizes. Accordingly the shank 35, to which the side clamp 8 is connected, is held in a sleeve or guide 36, which is fixed to the table 1. An adjustable screw 37 in the end of the sleeve 36 serves as the abutment for determining the adjustment of the clamp 8, while a set screw 38 secures the latter in its various positions of adjustment.

The breast gage 7 is shown in detail in Fig. 5 and is provided with notches 39, 40 of varying depths in one or both of its side edges. The thickness of the metal between each two adjacent notches is the same as the thickness of a standard lift. In addition to the notches the face of the gage which comes next to the heel is provided with lines 41 at the same distance apart as the notches. Thus by reference either to the notches or the lines, the thickness of the heel, whether a standard, two, three, four or more lift heels, may be gaged.

As shown in Fig. 4, the nail-guiding block 5 is contained in a sleeve 42 projecting downward from the table 1, the block resting on a shoulder 43 inside said sleeve. Arranged to reciprocate in the sleeve is a plunger 44, upon which rest the lower ends of separate nail-driving rods or pins 45. Between the end of the plunger and the nail drivers is a hardened plate 46 to relieve the plunger of wear by the ends of the drivers. This plate has a central boss 46^a, which is contained in a recess in the end of the plunger. The plunger is driven by power from a power shaft 47 through a cam 48 on said shaft, a cam rod 49 and a lever 51 (Fig. 1). The lever is connected at its forward end to the plunger 44 and at its rear end to the reciprocating rod 49, being pivoted between its ends on a bracket 52. The rod or link 49 is formed with a slot 53, shown in dotted lines in Fig. 1, through which the shaft 47 passes, and on its lower end it carries a roll 54 adapted to be engaged by the cam 48. A spring 55 normally holds the rod at one side of the cam so that it is inoperative, but when nails are to be driven, the roll 54 is brought into engagement with the cam by a lever 56 pivoted to one of the legs of the machine and engaged with a sleeve 57 which slides on the shaft 47 and bears against the rod 49 on the opposite side thereof from the cam. The lever 56 has a web 58 adapted to be pressed upon by the hand or knee of the operator, whereby the sleeve 57 may be brought against the connecting rod and the latter thrown into engagement with the cam whenever nails are to be driven. This engagement consists in

placing the roll 54 beneath the cam 48 so that the latter draws down upon the connecting rod and acts through the rocker 51 upwardly upon the nail-driving plunger. The rod 49 is made in two parts, one of which is in threaded engagement with the other, so that the length thereof may be extended or contracted to accommodate heels of varying thickness. Nails being dropped head downward into the passages 6 in the nail guiding block 5 before the heel is assembled, are in position to be forced up through the heel when the latter is completed, the top clamp being then in position over the heel and pressing the latter against the block.

Although in the foregoing specification I have described a preferred mode of carrying the invention hereinafter claimed into effect, I desire it to be understood that I do not limit myself to any particular constructions or arrangements shown, but include within the scope of my invention all variations from the form of the machine here illustrated, and all modifications thereof in which the essential principles as set forth in the following claims are preserved.

In the construction shown in Fig. 6 the cam 22 is dispensed with and its place is taken by a lever arm and link. The lever arm is represented at 22^a and is attached to or formed upon the hub of the top clamp-carrying arm in the same or a similar manner to that in which the cam 22 is attached. The lever which carries the side clamp is represented at 20^b and is connected with the arm 22^a by the link 60. Preferably the rearwardly extending arm of this form of lever is straight and the link is curved, as this construction best enables the necessary range of movement to be given to the side clamp, and enables the latter to be pressed against the side of the heel blank.

The parts are preferably so proportioned that when the top clamp is central over the heel blank, the pivoted ends of the link 60 are in line with the axis of oscillation of the top clamp-carrying arm. Thus a toggle is formed which causes the side clamp to press forcibly against the sides of the heel blank, and at the same time enables the latter part of the movement of the top clamp to be effected without appreciably moving the side clamp. The curvature of the link enables the top clamp and side clamp to be swung as far away from the space for the heel blank as is illustrated in Fig. 3. Thereby equivalent effects are produced by the construction of Fig. 6, as by that illustrated in the other figures, with a somewhat simpler construction.

I claim,—

1. A heel building machine, comprising a support for the elements of the heel, a side clamp, a breast gage, both the side clamp

and breast gage being stationary to guide the building of a heel, a top clamp arranged to swing to and from a position above said support, a second side clamp oppositely arranged relatively to the first side clamp, and connections between said clamps through which the top clamp in moving aside positively forces the second side clamp away from the first-named clamp.

2. A heel building machine comprising a support upon which the elements of a heel blank may be placed in building a heel, a breast gage, side clamps for engaging the opposite sides of the blank, said clamps and gage inclosing a heel-receiving space upon said support, one of said clamps and the breast gage being normally stationary to provide guides for properly positioning the parts of the heel blank, and the other clamp being movable to enlarge and restrict the heel-receiving space, a top clamp arranged to swing over and aside from the heel-receiving space, and means connected with said top clamp and movable side clamp through which the former actuates the latter in a positive manner to enlarge the heel-receiving space when swung aside from such space, and to restrict the space when swung thereover.

3. In a heel-building machine, a support on which the elements of the heel may be assembled, side clamps and a breast gage inclosing a heel-receiving space upon said support, one of said side clamps being stationary to guide the building of the heel, and the other being movable to permit placing of the parts of the heel in such space and removal of the completed heel therefrom, a top clamp, a swinging holder by which said top clamp is carried and with which it is movable over and aside from the heel-receiving space, an arm by which the movable side clamp is carried, and a connection between said arm and the top clamp holder, whereby movement of the latter in either direction is communicated to the side clamp positively.

4. In a heel-building machine a support for the parts of a heel blank, a normally stationary clamp above such support adapted to be engaged by and to guide one side of the blank in the course of assembling the parts thereof, a gage for positioning the breast of the blank, means permitting adjustment of said clamp according to the character of the heel under construction, a side clamp arranged to engage the side of the blank opposite to that engaged by the first clamp, and movable away from the latter to permit easy placing of the parts of the blank and removal of the blank, a top clamp movable over and aside from the blank, and connecting means between the top clamp and second side clamp by which the latter is moved away from the blank whenever the top clamp is moved away therefrom.

5. In a heel building machine, in combination with a support for the parts of a heel blank, a clamp arranged to bear on the side of the blank, a lever by which said clamp is carried, a top clamp for pressing the lifts of the blank flatwise together, a holder for said top clamp movable in one direction to place said clamp over the blank, and in the opposite direction to uncover the blank, a cam element connected with said holder arranged to act upon said lever and move said side clamp toward the blank when the top clamp is moved over the latter, said cam element being constructed to permit movement of the top clamp holder after the movement of the side clamp has ceased.

6. In a heel building machine, in combination with a support for the parts of a heel blank a clamp arranged to bear on the side of the blank, a lever by which said clamp is carried, a top clamp for pressing the lifts of the blank flatwise together, a holder for said top clamp movable in one direction to place said clamp over the blank, and in the opposite direction to uncover the blank, and means connected with said top clamp-holder and movable therewith, said means being arranged to act upon said lever, whereby to move the side clamp toward the heel when the top clamp is brought over the same, said means being constructed so as to permit a further movement of the top clamp over the heel after the side clamp has reached the end of its movement toward the heel.

7. In a heel-building machine a support for the elements of a heel blank, a nail-driver arranged to drive nails through said support into a heel blank placed thereon, a rotating cam or eccentric for operating said nail-driver, a rod pivotally connected with said nail-driver at its upper end and having means on its lower end adapted to engage said cam, its pivotal connection permitting its lower end to be moved aside from the plane of rotation of the cam, means normally holding the lower end of the rod at one side of the cam, and a lever having one arm engaging the lower portion of said rod and movable in a direction permitting it to put said rod in engagement with the cam, said lever having a second arm extending approximately to the height of the knee of the operator and movable in a right and left direction with respect to the operator when facing the machine, whereby the operator is enabled by a sidewise movement of his knee to actuate said lever and put the rod and nail-driver in operative relation with the cam.

In testimony whereof I have affixed my signature, in presence of two witnesses.

GEORGE B. GROVER.

Witnesses:

ARTHUR H. BROWN,
P. W. PEZZETTI.