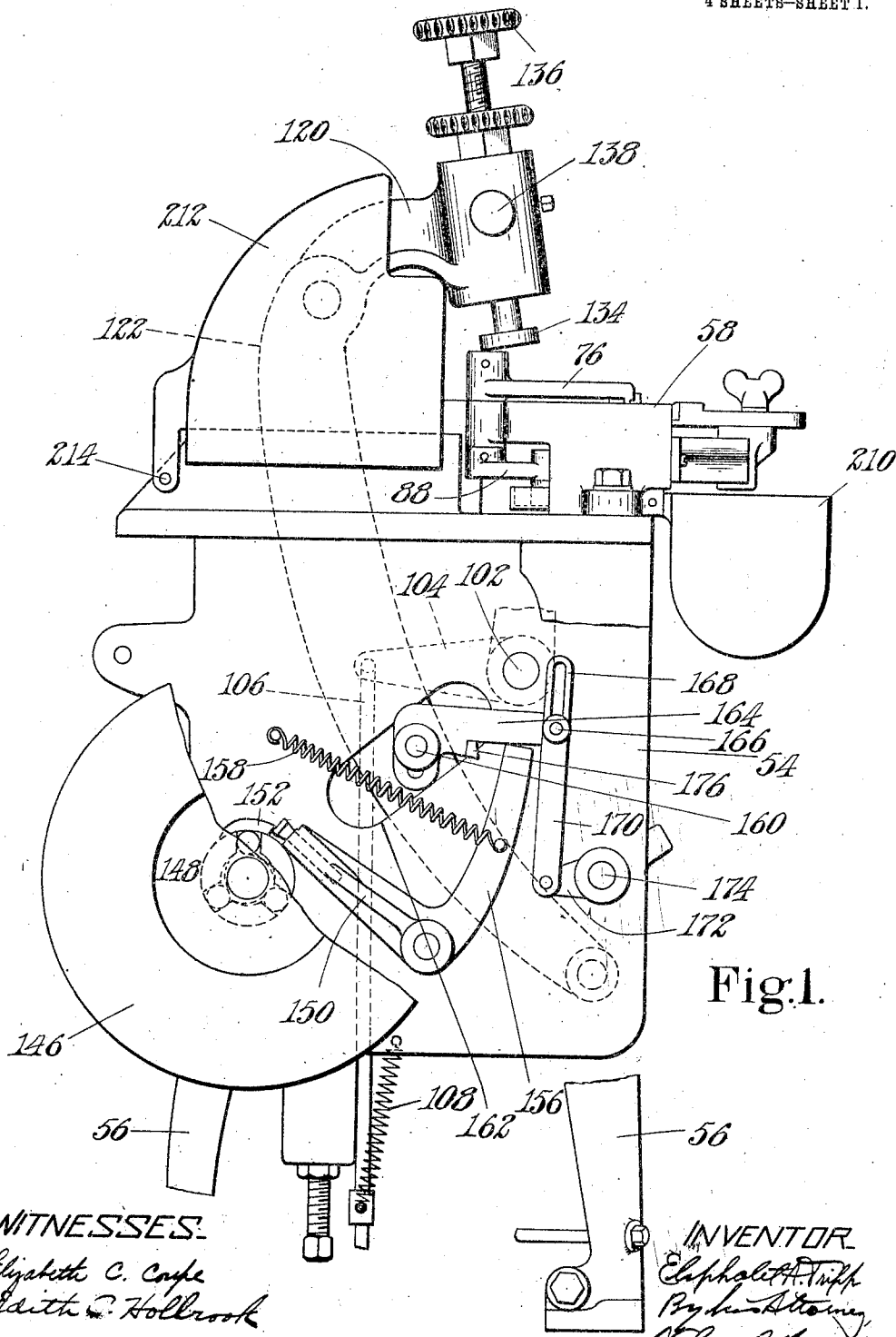


E. A. TRIPP.
HEEL BUILDING MACHINE.
APPLICATION FILED JUNE 9, 1908.

1,056,720.

Patented Mar. 18, 1913.

4 SHEETS—SHEET 1.



WITNESSES:

Elizabeth C. Coyle
Edith C. Hollbrook

INVENTOR

Elphail A. Tripp
By *[Signature]*
Nelson M. Wood

1,056,720.

Patented Mar. 18, 1913

4 SHEETS-SHEET 2.

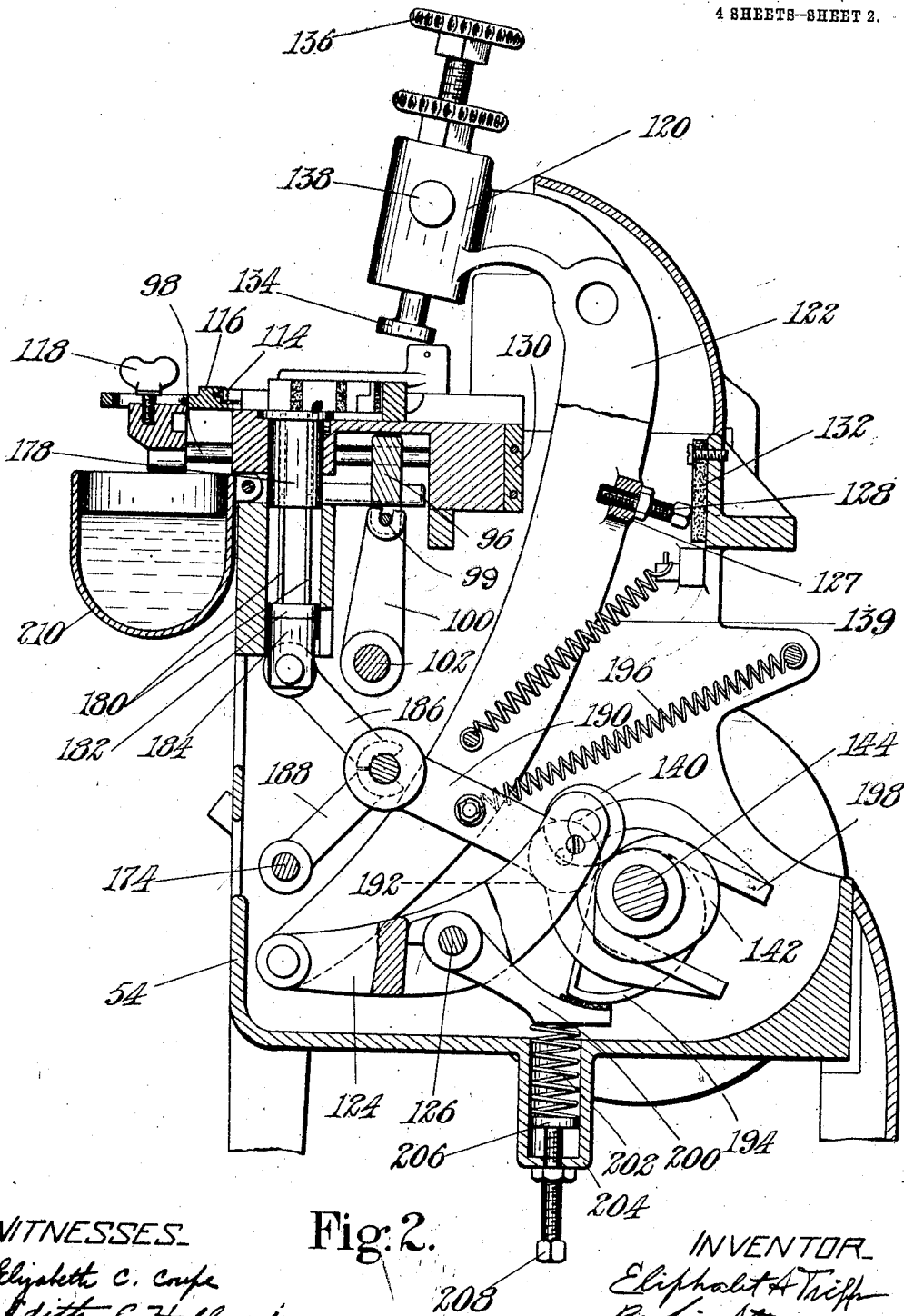


Fig. 2.

WITNESSES.

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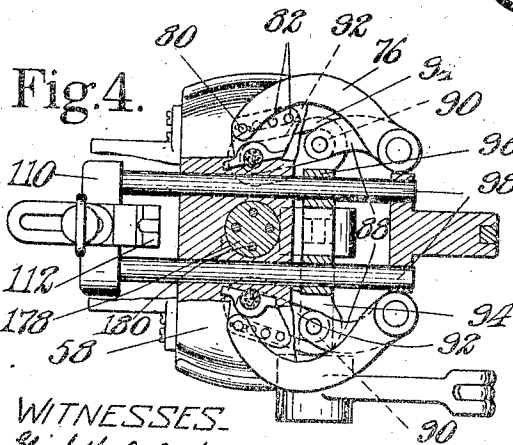
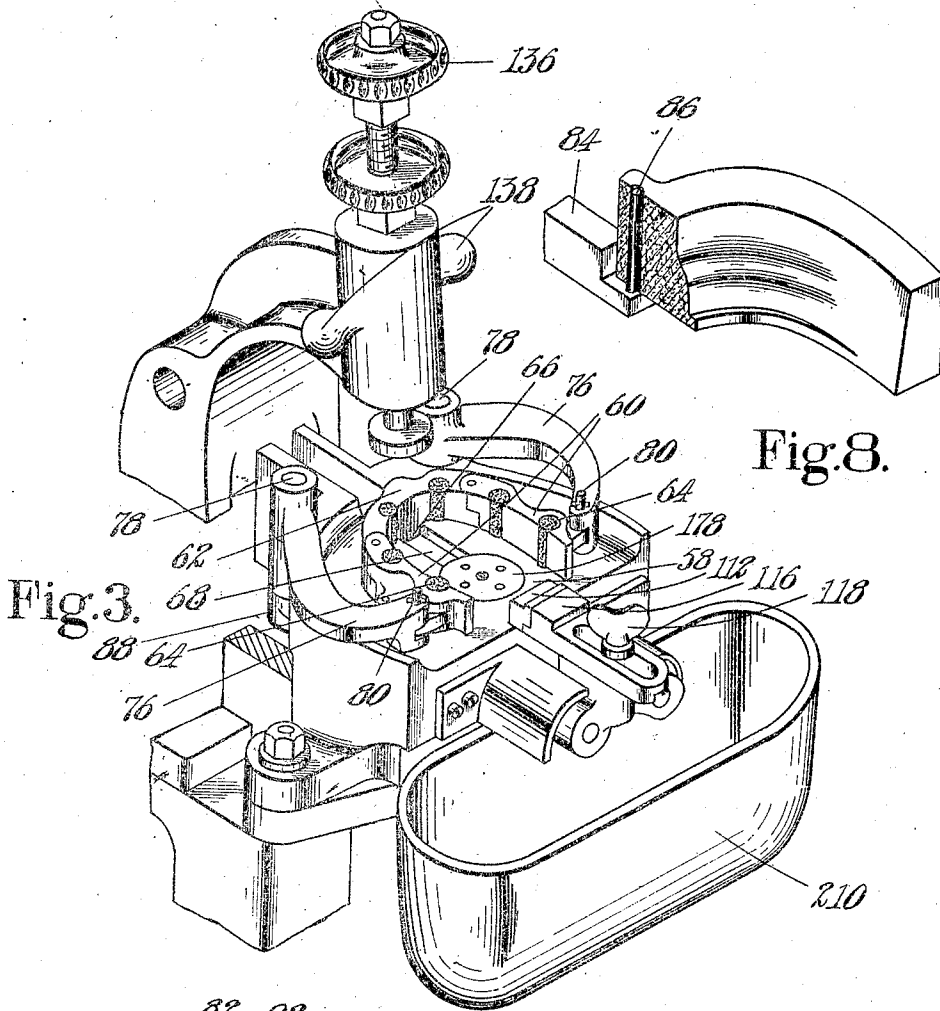
Eliphabet A. Tripp
By his Attorney,
Nelson Howard

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HEEL BUILDING MACHINE.
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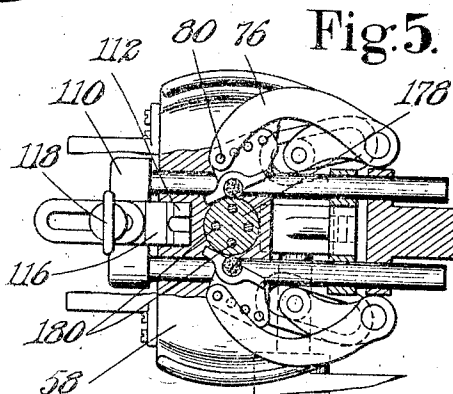
1,056,720.

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4 SHEETS—SHEET 3.



WITNESSES:
Elizabeth C. Conner
Edith C. Hollbrook



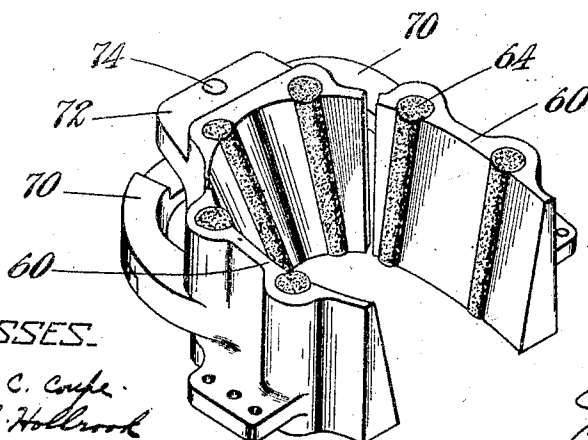
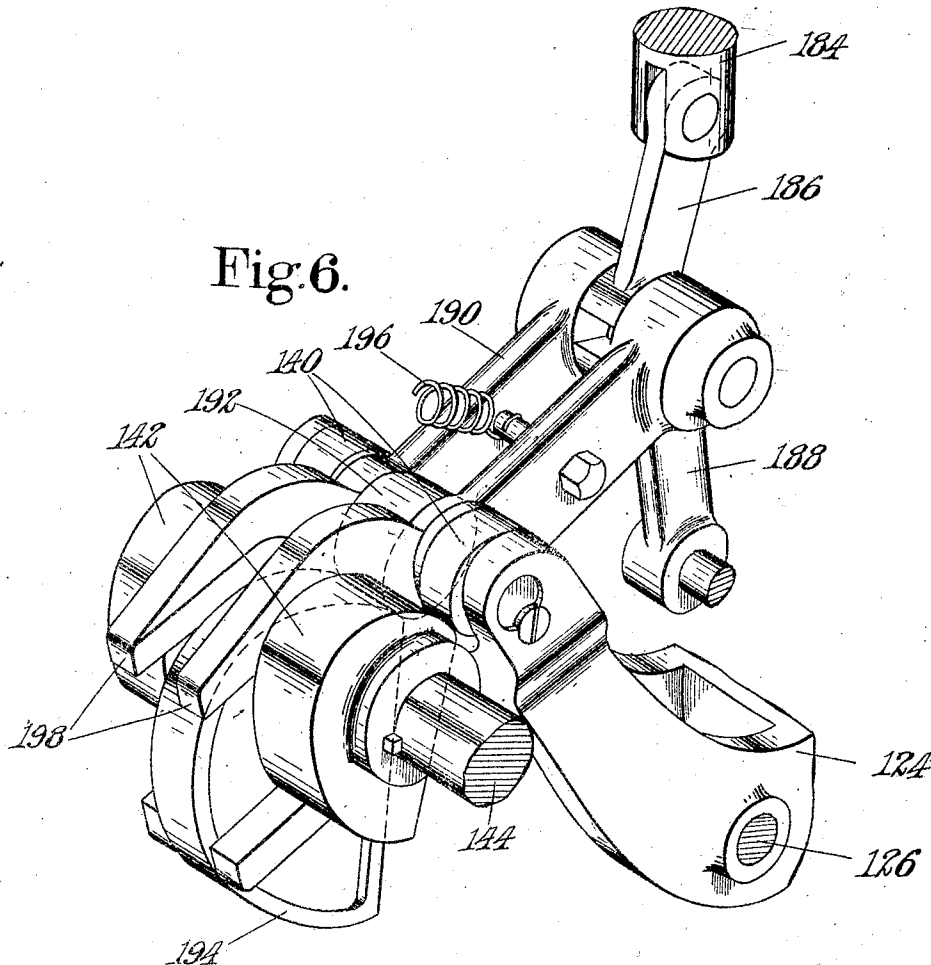
INVENTOR:
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4 SHEETS—SHEET 4.



WITNESSES.

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INVENTOR.

Elephant H. Tripp
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UNITED STATES PATENT OFFICE.

ELIPHALET A. TRIPP, OF BEVERLY, MASSACHUSETTS, ASSIGNOR TO UNITED SHOE MACHINERY COMPANY, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

HEEL-BUILDING MACHINE.

1,056,720.

Specification of Letters Patent.

Patented Mar. 18, 1913.

Application filed June 9, 1909. Serial No. 501,005.

To all whom it may concern:

Be it known that I, ELIPHALET A. TRIPP, a citizen of the United States, residing at Beverly, in the county of Essex and State of Massachusetts, have invented certain Improvements in Heel-Building Machines, of which the following description, in connection with the accompanying drawings, is a specification, like reference characters on the drawings indicating like parts in the several figures.

This invention relates to heel building machines and more particularly to a machine of the type in which the lifts to form the heel are assembled within a suitable mold and thereafter attached together by fastenings automatically driven into the lifts. Certain features of the invention, however, are not limited for use in machines having an automatic nail driving mechanism but may be employed with advantage in machines in which the lifts are secured together by nails manually driven or in other ways.

An object of the present invention is to provide a heel building machine by the use of which heels may be built with speed and accuracy and with a minimum amount of effort upon the part of the operator.

Another object of the invention is to improve generally the construction and arrangement of heel building machines of the type above mentioned.

With these objects in view a feature of the present invention contemplates the provision in a heel building machine of a presser head mounted for movement into and out of a position above the lifts assembled upon the lift support and automatic means for driving one or more attaching nails into the lifts arranged to be rendered operative by the movement of the presser head. By controlling the operation of the nail driving mechanism through the movement of the presser head any liability of nails being driven while said head is in its inoperative position is effectively prevented. In accordance with a convenient construction the presser head may be swung over the heel lifts by the operator and there is provided automatic means for effecting a relative approaching movement of the presser head and lift support to apply pressure to the lifts which is arranged to be rendered operative by the movement of the presser head over the lift support. The nail driving mechanism is

preferably arranged to be thrown into operation after the pressure has been applied to the heel lifts.

While features of the present invention may be employed in a heel building machine having a mold the parts of which are stationary in use, a mold is preferably employed which is adapted to be opened and closed upon the edges of the lifts in order that the lifts may be shifted into proper relation to each other as the heel is being built. In accordance with a feature of the present invention the lifts are assembled within a flexible form which is shaped to embrace the lifts at their sides and curved ends and comprises a plurality of rigid sections pivotally connected together to give the desired flexibility to the mold. By employing a form composed of rigid sections pivotally connected together a strong and durable construction is obtained and the form may be made sufficiently flexible to allow it to conform to the heel lifts. Preferably the flexible form is provided with lift engaging surfaces of yielding elastic material in order that the inner walls of the mold may conform to slight irregularities in the transverse contour of the surface formed by the edges of the lifts so that the presence of such irregularities does not preclude an accurate arrangement of the lifts in a symmetrical relation. The opening and closing movement of the sides of the form in the heel building operation is preferably effected by members connected to said sides adjacent to the breast ends of the form. In accordance with a convenient construction the actuating members are arranged for movement in fixed paths and the sides of the form are adjustably connected with said members so that the form may be adjusted in the direction of its length along the lift support. With this construction the form may be adjusted relatively to the nail driving mechanism so that heels of different lengths may be built up on the lift support in proper position with relation to the nail conduits of said mechanism to insure the proper positioning of the nails in the heel. To press the heel lifts rearwardly of the form a breast gage is provided which is arranged for movement simultaneously with the sides of the form.

The invention further consists in certain features of construction and arrangement

of parts which will be hereinafter described in the specification and pointed out in the claims.

In the drawings,—Figure 1 is a view in side elevation of a machine embodying the present invention; Fig. 2 is a vertical sectional view of the machine shown in Fig. 1; Fig. 3 is a perspective view of the upper portion of the machine shown in Fig. 1; Figs. 4 and 5 are plan views of the lift centering mechanism with parts broken away to show the construction; Fig. 6 is a perspective view of the mechanism for lowering the presser head and the mechanism for actuating the nail driving mechanism; Fig. 7 is a perspective view of a modified form of mold embodying features of the present invention; Fig. 8 is a perspective view of a block adapted to slide in the guideway in the lift support to guide the rounded end of a mold.

Referring to the drawings the machine shown has a frame 54 which may be supported in any suitable way as by means of legs 56. The frame is provided upon its upper front portion with a lift support 58 which is adapted to carry a flexible U-shaped form for receiving heel lifts. In Fig. 3 is shown a U-shaped form having continuous walls consisting of a plurality of rigid sections which are pivotally connected together and provided with lift engaging surfaces formed of yielding elastic material. As shown in this figure the form consists of two side sections 60 for engaging opposite sides of the lifts and a rear connecting section 62 formed to engage the rounded ends of the lifts and said sections carry cylinders 64 of rubber which are received in vertical perforations opening inwardly from the walls of the sections so that the rubber cylinders project inwardly beyond the inner surfaces of the rigid sections. With this construction it will be seen that the rubber sections are firmly held in operative position and when worn out may be readily replaced by new sections. The rearmost section 62 is provided upon its bottom surface with a lug 66 which is arranged at the center of the section and constructed to slide in a guideway 68 formed in the lift support in a direction longitudinally of the mold cavity so that lateral displacement of the rounded end of the form is prevented in the heel building operation. By increasing the number of sections which comprise the walls of the form the flexibility of the form may be increased, and if desired may be made substantially equal to that of the rubber form described in my United States Letters Patent, No. 1,025,551, granted May 7, 1912.

In Fig. 7 is shown a modified form of mold in which the side sections 60 are respectively provided with rearwardly extending arms 70 which are curved to extend

beneath a flange 72 projecting from the rearmost section 62 and are pivotally connected to said flange at its central portion by a pin 74. By connecting the sections in this way the path of the side sections in the opening and closing movements of the form is such that a greater number of different sized heels may be built up in a single form than would otherwise be the case. The two sides of the U-shaped form have their free ends respectively articulated with the front ends of arms 76 which have their rear ends respectively secured upon vertical rock-shafts 78 mounted in bearings arranged upon opposite sides of the guideway 68. In the construction herein shown each of the side sections is connected to the end of one of the arms 76 by means of a detachable pin 80 carried by the arm and extending through one of a series of openings 82 in a flange carried by the corresponding section. With this construction the form may be adjusted in the direction of its length along the lift support and relatively to the nail driving mechanism so that heels of different lengths may be built up in proper position upon the lift support to insure the proper positioning of the nails in the heel.

If desired a U-shaped form, consisting of a continuous piece of yielding, elastic material, such as shown in Fig. 8, may be employed in the present machine in place of the mold shown in Fig. 3. To enable the rounded end of a form of the above character to be guided longitudinally of the mold cavity, there is provided a block 84 (Fig. 8) which is formed to slide in the guideway 68 and carries a vertical pin 86 adapted to enter an opening in the center of the rounded end of the rubber form when the latter is placed in operative position upon the lift support.

Each of the vertical rock-shafts 78 carries at its lower end an arm 88 which is provided with a cam roller 90. The cam rollers 90 are respectively received in cam slots 92 formed in plates 94 carried by opposite ends of a bar 96 secured transversely upon two rods 98 which are mounted to slide in the frame of the machine in a direction longitudinal of the mold cavity. The bar 96 carries a pin 99 which is received within a slot formed in the upper end of a lever 100 secured to a horizontal shaft 102 journaled in the frame of the machine. The shaft 102 may be connected by means of a crank arm 104 and a rod 106 with a suitable treadle whereby the operator may contract the sides of the U-shaped form in building a heel. The U-shaped form is normally held in open position by means of a suitable spring 108. A cross-bar 110 supported upon the front ends of the rods 98 carries a breast gage 112 which is arranged for independent adjustment upon said cross bar in a direction lon-

gitudinal of the mold cavity. In the present construction the breast gage is removably secured by a machine screw 114 to a slotted shank 116 which is adapted to be clamped in adjusted position upon the cross bar 110 by means of a thumb-screw 118, as shown in Fig. 3. In the heel building operation the breast gage is employed to indicate the proper height to which the heel shall be built. By removably securing the breast gage to its shank it is possible to employ a number of breast gages of different heights adapted to be used for heels of different heights. It will be seen in the construction shown that as the sides of the form are moved together by the operator the breast gage will be simultaneously moved toward the rear of the mold cavity and when the sides of the form open the breast gage will be moved outwardly.

A presser head 120 is formed upon the upper end of a beam 122 which is pivotally supported upon the front end of an arm 124 pivotally mounted intermediate its ends upon a horizontal shaft 126 secured in the frame of the machine. The beam 122 and arm 124 are so formed and arranged that the presser head may be swung over the lift support and thereafter lowered to press the lifts upon the support. A vertical slot extends centrally through the middle and lower portion of the beam 122, and in a cross-bar 127 extending across the back of the slot a bolt 128 is adjustably mounted in such manner that its front end is adapted to engage a stop surface 130 on the frame of the machine to limit movement of the presser head toward the lift support. The rear end of the bolt is adapted to engage a leather pad 132 carried by the frame of the machine to limit rearward movement of the presser head. The presser head carries a top clamp 134 for engaging the heel lifts which is arranged to be vertically adjusted to suit heels of different heights by means of a suitable hand wheel 136. In the present machine the presser head is provided with handles 138 which are adapted to be grasped by the operator to swing the presser head over the lift support. A spring 139 serves to return the presser head to its inoperative position when released by the operator. There is provided automatic mechanism for lowering the presser head to press the heel lifts against the lift support which is controlled by the movement of the presser head into its position over the lift support, the arrangement being such that after the operator moves the presser head over the heel lifts it is automatically lowered to press them against their support. According to a convenient construction the arm 124 is forked at its rear end and the two members of the fork carry cam rollers 140 which are respectively engaged by cams 142 car-

ried by the main shaft 144 of the machine. The cams 142 are identical in shape and are so formed that upon the rotation of the main shaft the front end of the arm 124 will be lowered so that the presser head, if held over the lift support, will be forced into engagement with the lifts.

The main shaft 144 is driven from a pulley 146 which may be operatively connected therewith by means of a one revolution clutch 148. The clutch is controlled by a stop lever 150 which is adapted to be moved into and out of the pathway of a dog 152 carried by one of the movable parts of the clutch, the arrangement being such that when the stop lever is moved out of the pathway of the dog the shaft starts and rotates until the dog again engages the stop lever as is well understood in this art. In the present machine the stop lever 150 forms one arm of a bell-crank lever which is pivoted upon the frame of the machine and has its other arm 156 connected by a spring 158 with said frame, so that a yielding pressure is exerted upon the stop lever tending to move it toward the clutch. A stud 160 secured in the side of the beam 122 projects outwardly through an inclined slot 162 formed in the frame of the machine, and has its outer end received in a vertical slot formed in one end of a link 164 carrying a pin 166 upon its other end which is received in a slot 168 in the upper end of a link 170. The lower end of the link 170 is pivotally connected with a crank arm 172 which is carried by a horizontal shaft 174 journaled in the frame of the machine. The link 164 is adapted to rest upon the upper end of the arm 156 of the bell-crank lever and is provided with a shoulder 176 adapted to engage said arm when the presser head is swung over the lift support and move the stop lever 150 out of the path of the dog 152 so that the clutch will be tripped to cause the main shaft to be rotated by the pulley 146. The cams 142 engage the cam rollers 140 as the main shaft rotates and force the presser head downwardly toward the lift support, it being understood that the operator holds the presser head over the lift support during the operation of the machine.

There is provided automatic means for driving attaching nails into the lifts which is arranged to be thrown into operation after the presser head has been lowered to compress the lifts upon the lift support. The nail driving mechanism is provided with a nail block 178, removably secured in the lift support, having the usual nail conduits and drivers 180 working in said conduits. The lower ends of the drivers are fastened to a driver plate 182 which is secured to the upper end of a plunger 184, working in a cylindrical opening formed in the frame of the

machine in axial alinement with the nail block. The end of one arm 186 of a toggle is pivotally connected with the lower end of the plunger 184 and the end of the other arm 188 of the toggle is secured to the shaft 174 before mentioned so that said shaft rotates upon actuation of the toggle. The toggle is actuated by a thrust link 190 which carries a cam roller 192 that is engaged by a cam 194 arranged on the main shaft 144 between the two cams 142. A spring 196 serves to hold the cam roller 192 in engagement with its cam. The thrust link carries two forks 198 which are respectively arranged to partially surround the main shaft upon opposite sides of the cam 194 as shown in Fig. 6, so that lateral displacement of the thrust link is prevented. The cam 194 is so formed that after the presser head has been lowered by the cams 142 the toggle is actuated so that the drivers 180 are raised to drive the nails into the lifts upon the lift support, it being understood that the operator has previously supplied the nail block with nails in the usual manner.

It will be seen in the construction described that upon the actuation of the nail driving mechanism the crank 172 will raise the link 164 so that the shoulder 176 will be moved out of the path of the arm 156 and thus allow the spring 158 to return the stop lever 150 to its operative position in which it is adapted to be engaged by the dog 152 so that the main shaft will be stopped after it has rotated through one revolution. In order to insure that the main shaft 144 will stop promptly after it has made one revolution, there is provided a brake 200 which is formed to engage the periphery of the cam 194. The brake 200 has one end pivoted upon the shaft 126 and its acting surface is pressed against the face of the cam 194 by a spring 202 which is received within a closed tube 204 carried by the frame of the machine. The spring is supported in the tube by means of a disk 206 carried by a vertical rod 208 which is adjustably secured in the end of the tube by threaded engagement therewith so that the tension of the spring may be properly adjusted.

A tank 210 for holding the paste employed in the heel building operation is preferably attached to the upper front portion of the machine. The upper portion of the beam 122 is partially surrounded by a hood 212 which is pivotally connected to the frame of the machine at 214 as shown in Fig. 1.

Preliminary to the use of the machine shown the mold is adjusted along the lift support into such relation to the conduits of the nail driving mechanism that the nails will be properly positioned in the heels. In

the use of the machine a series of lifts of suitable sizes to form a heel of the desired pitch and height are successively placed within the mold cavity from above, and at the same time are given an application of paste so that their contacting surfaces may be closely united. The mold is contracted from time to time or as each lift is introduced and the lifts are thereby shifted into symmetrical relation. In the opening and closing movement of the sides of the form the curved end of the form moves longitudinally and is guided in such movement by the guideway in the face of the lift support. After the heel has been built up to the desired height the operator grasps one or both of the handles 138 and imparts a forward movement to the presser head so that the top clamp 134 is positioned over the heel lifts, the extent of this movement being limited by the bolt 128 striking the stop surface 130. In the forward movement of the presser head the link 164 also moves forwardly and its shoulder 176 engages the arm 156 of the bell-crank lever so that the stop lever 150 is moved out of the path of the dog 152 and motion is imparted to the main shaft by the pulley 146. Upon the rotation of the main shaft the presser head is lowered to press the lifts against the lift support by the mechanism previously described. As the beam 122 which carries the presser head is connected with the link 164 by a pin and slot connection and as the other end of the link 164 is connected with the upper end of the link 170 by a similar connection, the downward movement of the presser head may take place without forcing the link 164 against the arm 156 so that liability of injuring the parts of the machine is prevented. After the presser head is engaged by the lifts the toggle is actuated by the mechanism previously described to elevate the drivers 180 so that nails are driven into the heel lifts. In the actuation of the toggle the shaft 174 turns and the crank arm 172 raises the link 170 which causes the link 164 to be raised so that its shoulder is clear of the path of the arm 156. The spring 158 then moves the arm 156 so that the stop lever 150 is returned to its original position in which it is adapted to be engaged by the dog 152 so that the machine is stopped after the main shaft has rotated through one revolution. Upon the completion of the nail driving operation the operator releases the presser head which is then swung back to its original position by the spring 139.

Having described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:—

1. A machine of the class described, having in combination, a lift support, a presser head mounted for movement to and from a

position over the lifts sustained upon the support and power actuated means for relatively moving the presser head and lift support to apply pressure to the lifts arranged to be rendered operative by the movement of the presser head.

2. A machine of the class described, having in combination, a lift support, a presser head mounted for movement into and out of a position opposite the lifts assembled upon said support and power actuated means for forcing the presser head into pressing engagement with said lifts arranged to be controlled by said presser head.

3. A machine of the class described having, in combination, a lift support, a presser head mounted for movement into and out of a position opposite the lifts assembled upon said support, and means under the control of the presser head for relatively moving the presser head and lift support to apply pressure to the lifts.

4. A heel building machine, having in combination, a support for sustaining heel lifts, a clamp mounted for movement into and out of a position over the lifts sustained by said support, power-actuated means for actuating the clamp to apply pressure to said lifts arranged to be rendered operative by the movement of the clamp and automatic means for driving nails into said lifts while subjected to said pressure.

5. A machine of the class described, having in combination, a lift support, a presser head arranged for movement to and from a position over the lifts sustained upon the support, power actuated means for effecting a relative approaching movement of the presser head and lift support to apply pressure to the lifts arranged to be rendered operative by the movement of the presser head over the lift support and automatic means for driving nails into the lifts arranged to be rendered operative after the lifts have been subjected to pressure.

6. A heel building machine, having in combination, a flat support for a plurality of superposed lifts, a presser head mounted for movement in a vertical plane to and from a position over the lifts assembled upon said support and power-actuated means for forcing the presser head into pressing engagement with the heel lifts arranged to be rendered operative by the movement of said head over the lifts.

7. A machine of the class described having, in combination, a lift support, a presser mounted for movement into and out of a position opposite the lifts assembled upon said support, and mechanism rendered operative by movement of the presser into said position for forcing the presser into engagement with the lifts.

8. A heel building machine, having in combination, a flat support for a plurality

of superposed lifts, having a guideway formed therein, means for shifting the lifts into assembled relation upon the support including a flexible form composed of a plurality of sections pivotally connected together and arranged to engage the edges of the lifts upon the sides and curved end of the heel, one of said sections adjacent to the curved end of the heel being loosely supported and having a lug projecting within said guideway arranged to guide said curved end longitudinally of the lift receiving space, and means connected to the sides of the form for moving relatively the sides of the form to press them against the edges of the heel lifts arranged therein.

9. A heel building machine, having in combination, a flat support for a plurality of superposed lifts, means for shifting the lifts upon said support into assembled relation including a flexible form arranged to engage the edges of the lifts upon their sides and curved ends, nail driving mechanism for driving nails into the assembled lifts and means for moving relatively the sides of the form to press them against the edges of the heel lifts arranged therein constructed to permit said form to be bodily adjusted relatively to the last mentioned means along the lift support in the direction of its length and relatively to said nail driving mechanism.

10. A heel building machine, having in combination, a support for receiving superposed lifts, a flexible form for shifting the lifts into assembled relation upon the support including a loosely supported rear section formed to engage the lifts at their curved ends and sections for engaging the edges of the lifts upon opposite sides pivotally connected thereto, means for guiding said rearmost section for movement in the direction of the lift receiving space and means connected to the side sections for contracting said form laterally to shift relatively the lifts into symmetrical lateral relation.

11. A heel building machine, having in combination, a flat support for a plurality of superposed lifts, a flexible U-shaped form for shifting the lifts into assembled relation upon the support, a pair of pivotally mounted arms having their front ends respectively articulated with opposite sides of the form, a breast gage for pressing the lifts rearwardly into engagement with said form, a slide for sustaining said breast gage mounted for movement longitudinally of the form, means for imparting movement to said levers to contract said form arranged to be actuated by a rearward movement of said slide and means under the control of the operator for actuating said slide.

12. In a heel building machine, the combination of a form having a rear section

movable longitudinally of the form, side sections pivoted to said rear section, and operating means connected to said side sections to expand and contract the form laterally, the connections between said operating means and side sections being adjustable longitudinally of the form to permit variation in the length thereof.

13. A machine of the class described having, in combination, a lift support, a presser mounted for movement into and out of a position over the lifts assembled upon said support, and automatic means under the control of the presser for forcing the presser into engagement with the lifts.

14. A machine of the class described hav-

ing, in combination, a lift support, a presser mounted for movement into and out of a position over the lifts assembled upon said support, automatic means under the control of the presser for forcing the presser into engagement with the lifts, and automatic means for driving nails into the lifts while they are under pressure.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ELIPHALET A. TRIPP.

Witnesses:

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BERNARD BARROWS.