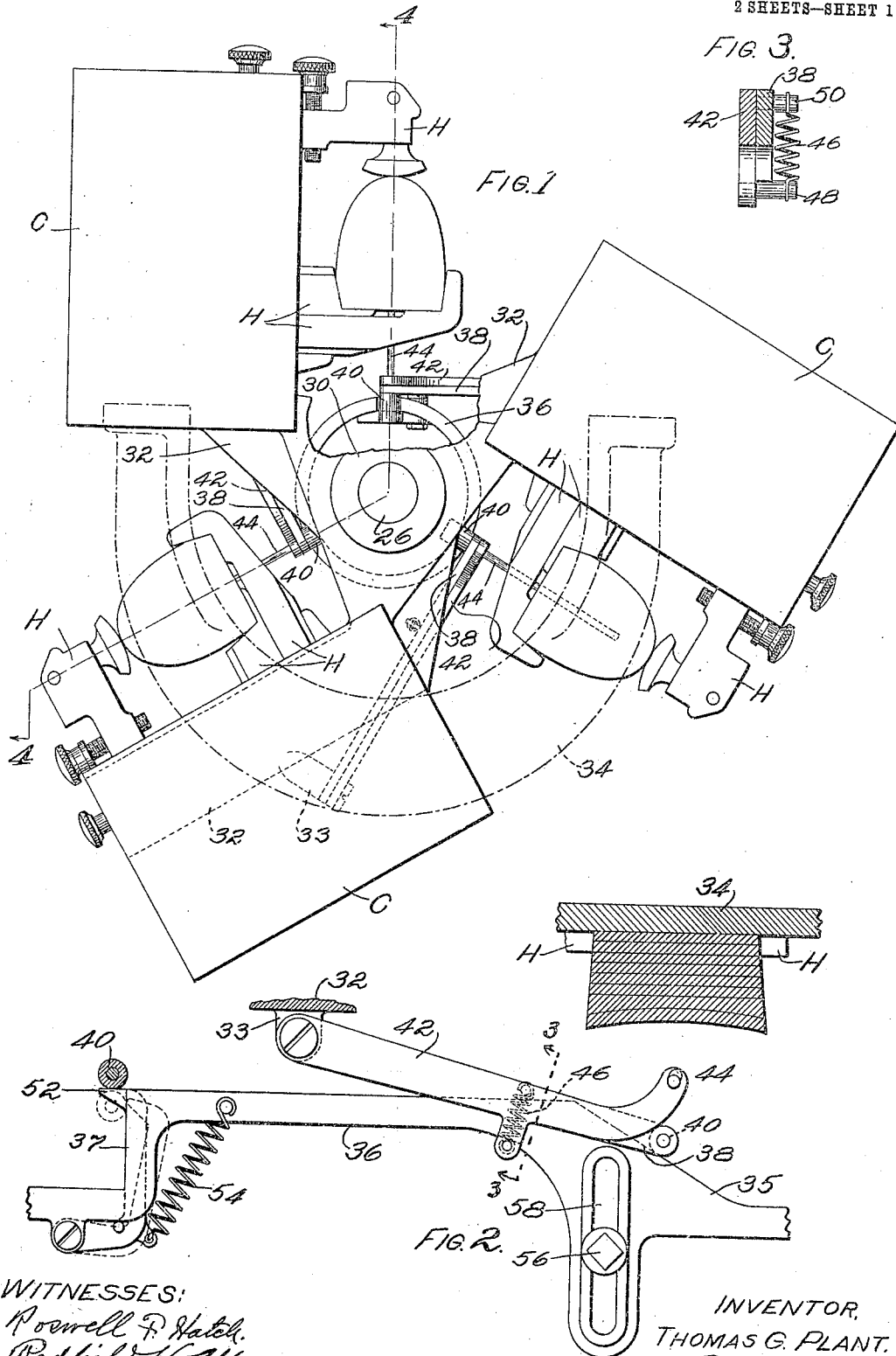


T. G. PLANT.
 WORK HOLDER FOR HEELING MACHINES.
 APPLICATION FILED FEB. 27, 1908. RENEWED MAR. 11, 1910.

958,305.

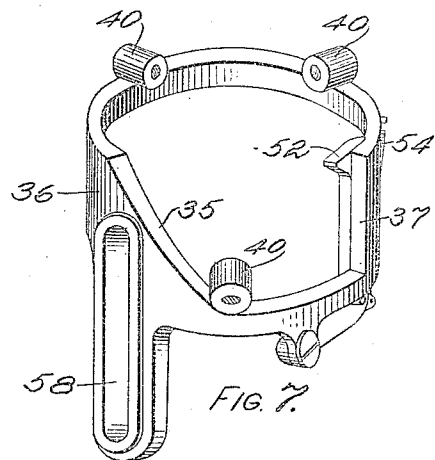
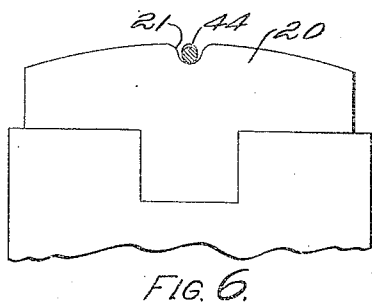
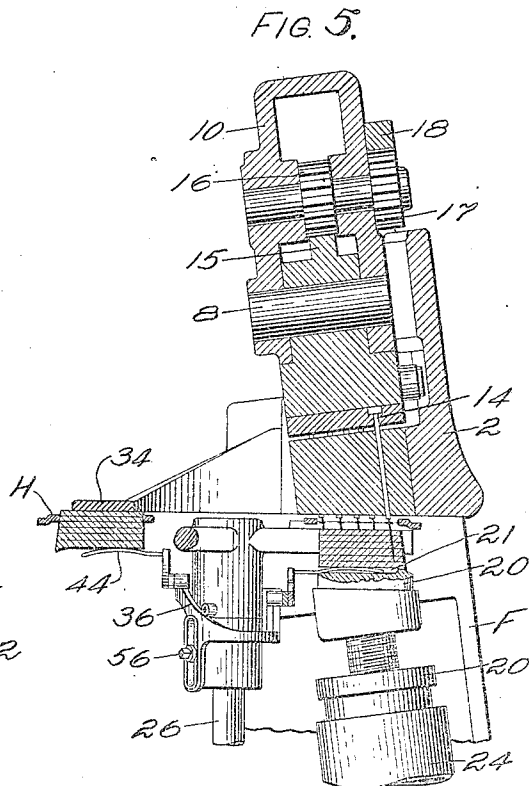
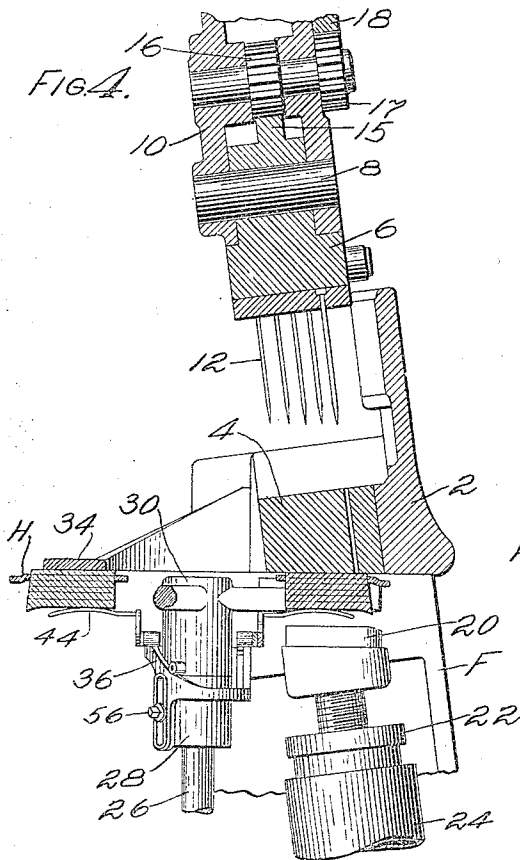
Patented May 17, 1910.

2 SHEETS—SHEET 1.



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UNITED STATES PATENT OFFICE.

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WORK-HOLDER FOR HEELING-MACHINES.

958,305.

Specification of Letters Patent.

Patented May 17, 1910.

Application filed February 27, 1908, Serial No. 418,023. Renewed March 11, 1910. Serial No. 548,720.

To all whom it may concern:

Be it known that I, THOMAS G. PLANT, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented an Improvement in Work-Holders for Heeling-Machines, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention relates to a work holder for use in boot and shoe machines, and more particularly to a heel detainer for use in what are known generally as "heeling machines."

One object of the invention is to improve the construction of the work holding devices of machines of the general character named so that the work may invariably be held in the desired location, both when in operating position relative to the nailing devices and while being brought into such operating position if the machine contemplates the use of a movable heel carrier.

For purposes of illustration the invention has been shown as applied to the heel loading machine shown and described in the co-pending application for United States Letters Patent of Thomas G. Plant, Serial No. 412,727, filed January 27, 1908. In the machine of such application a heel carrier is used which moves a heel from heel receiving to operating position beneath the nailing devices. The heel holding devices in that machine are so arranged that the heel is free to drop out from them, during the passage of the carrier from heel receiving position to operating position, if for any reason such devices should become loosened, or not hold the heel with sufficient force to prevent a heel being disengaged therefrom by reason of the jarring of the machine. In its illustrative embodiment the present invention comprehends the provision of a detaining device for retaining a heel upon a carrier of the general character shown in the co-pending application referred to.

To the accomplishment of these objects and such others as may hereinafter appear, as will be readily understood by those skilled in the art, the invention comprises the general features and combinations of parts hereinafter described and particularly pointed out in the appended claims.

The various features of the invention will

be best understood from a description of one embodiment thereof, such, for instance, as shown in the accompanying drawings in which the invention is applied to the machine of the co-pending application above referred to, and in which,

Figure 1 is a plan view of the heel carrier of the machine shown in said application having the improvement herein comprehended applied thereto. Cover plates are shown over the adjusting mechanisms of the heel holders and the top guide plate is shown in dot and dash lines. Fig. 2 is a development of the cam for operating the heel detainer, and also shows the relation of said detainer to a heel which has just been placed upon the heel carrier. Fig. 3 is a detail in section, on a line 3—3 of Fig. 2. Fig. 4 is an elevation in section, on the line 4—4 of Fig. 1, showing also the heel pricking and heel clamping devices of said co-pending application. Fig. 5 is a view similar to Fig. 4, showing, however, the tool turret of said co-pending application revolved so as to bring its drivers into operation, the parts being shown in the relation assumed after the heel has been loaded and has been stripped from its carrier. Fig. 6 is a front elevation of the anvil for clamping the heel in operating position showing the recess formed therein for the reception of the heel detainer, and Fig. 7 is a perspective of the cam for operating the heel detainer and showing thereon the relative positions assumed by the three cam rolls carried by the three detainers used with the particular form of heel carrier shown in said co-pending application.

In the illustrative embodiment of the invention, and referring more particularly to Figs. 4 and 5, 2 is a cross beam of the machine frame F in which is sustained a nail block 4 provided with the usual nail receiving apertures. Above the nail block is provided a tool turret 6 fulcrumed upon a stud 8, journaled in a reciprocatory cross head 10. The tool turret carries a gang of awls 12 and a gang of drivers 14, and is rotated to bring either the awls or the drivers in operative position over the nail block 4 by suitable mechanism indicated in part by the segment 15, the pinions 16 and 17, and the rack 18. Below the nail block is an anvil 20 supported by suitable adjusting devices 22 within a sleeve 24, which is

moved by suitable operating devices toward
 and from the nail block, to clamp a heel be-
 tween the anvil and nail block. Extending
 vertically in front of, but below the nail
 5 block 4, is a spindle 26 suitably journaled
 in a bracket 28 extending from the machine
 frame F, and provided at its upper end
 with a heel carrier 30. The heel carrier 30
 is provided with a plurality of spider arms
 10 32 extending outwardly from the spindle
 26. Three such arms are shown and they
 are indicated in the Fig. 1 by the characters
 32. Each of the spider arms 32 carries res-
 15 pectively suitable heel holding devices for
 engaging the lateral surface of a heel indi-
 cated in Fig. 1 by H. These devices may
 be adjusted by suitable adjusting means be-
 20 neath the cover plates C. The spindle 26 is
 rotated, by suitable means, so as to move the
 carrier and its heel holding devices and there-
 by convey a heel from receiving position (on
 the right Fig. 1), to operating position (at
 the rear Fig. 1). When the heel has been
 25 brought to operating position it is in a posi-
 tion relative to the nail block and anvil 20
 shown in Fig. 4. In order to guide the heel
 in its movement from heel receiving posi-
 tion to operating position a top guide plate
 34 is provided which maintains the face of
 30 the heel, held thereagainst, in the proper
 plane for correctly placing it beneath the
 nail block during its movement into oper-
 ating position.

The parts heretofore described, and the
 35 means for operating them, all may be, and
 preferably are, substantially similar to those
 shown and described in the co-pending ap-
 plication of Thomas G. Plant, Serial No.
 412,727, filed January 27, 1908, heretofore
 40 referred to.

It is obvious that when the heel is placed
 within one of the holders H and against the
 under surface of the guide plate 34, there is
 45 great danger of its dropping out of said
 holder during its passage to operating posi-
 tion, by reason of the constant jarring of
 the machine incident to pricking the heel
 and driving the nails. Also the heel hold-
 50 ing devices may in some instances become
 loosened and the heel would then be liable
 to drop therefrom for this reason. It is
 desirable, therefore, that some means be pro-
 vided for retaining the heels within their
 55 holders, thus insuring proper carriage of the
 heels to operating position. This may be
 achieved very simply and effectively by pro-
 viding a detainer which will engage the ex-
 posed face of the heel and hold it securely
 60 against the guide plate 34 during its move-
 ment into operating position. It is also
 desirable that the detainer remain in de-
 taining position against the heel until the
 heel has been firmly clamped between the
 65 nail block 4 and the anvil 20, or such other
 clamping means as may be employed, to en-

tirely eliminate any danger of the heel being
 removed from its desired location before it
 is operated upon.

In the present embodiment of the inven-
 70 tion there has been employed a detainer
 which is preferably arranged to engage the
 exposed face of the heel just after it has
 been placed within the holder H, of Fig. 1,
 and the preferred means employed for oper-
 ating such detainer will now be described. 75

Surrounding the bracket 28 which sup-
 ports the heel carrier spindle 26 is a cam
 surface 36 extending around the spindle and
 therefore in the direction of movement of
 the heels. On the spider arm 32 (see dotted
 80 lines Fig. 1), there is loosely fulcrumed by
 one end, an arm 38 which extends in a direc-
 tion so that its free end, carrying a cam roll
 40, engages the cam 36 at a point about op-
 85 posite a heel placed in heel holder H. The
 fulcrum for this arm is shown in dotted
 lines at 33 (Fig. 1). Similarly the other
 spider arms are provided respectively with
 loosely fulcrumed lever arms carrying rolls
 90 which rest upon the cam 36, opposite heels
 held in the heel holders H. Fulcrumed on
 the same pins 33 which sustain lever arms
 38 are parallelly arranged lever arms 42.
 The ends of the lever arms 42, which may
 95 be turned upwardly slightly, as shown in
 Fig. 2, have extending therefrom heel de-
 taining fingers shown as small rods 44,
 which project radially from the spindle 26
 to a position beneath the heels held in the
 100 holders H. The two arms 38 and 42, in
 each instance, are connected so that they
 will move together, by means of springs 46,
 extending between a pin 48 on each of the
 arms 42 and a pin 50 on each of the arms 38.
 The arm 38, in each instance, is held in con-
 105 tact with the pin 48 on its cooperating arm
 42 by the force of the spring 46. With this
 connection, a movement of an arm 38 down-
 ward will always carry its cooperating arm
 42 with it, but the arm 38 may be moved
 110 yieldingly upward relatively to the arm 42.
 The purpose for this yielding connection for
 upward movement of the arms 38 and 42
 will appear hereinafter.

It is obvious that if the heel detainers 115
 were always maintained at a proper height
 to retain the heels within their respective
 holders it would be difficult to insert the
 heels within said holders. Therefore the
 cam is so designed that at the time each
 120 empty heel holder is brought into position
 to receive a heel, the heel detainer which
 will thereafter engage the heel is in a posi-
 tion somewhat below the lower or exposed
 face of the heel, as shown in Fig. 2. As the
 125 heel carrier is rotated to place the heel in
 operating position the detainer is raised ver-
 tically toward the heel by the operation of
 the cam and is thus brought into engage-
 130 ment with the exposed face of the heel.

The cam 36 is so designed that after the heel has been engaged by its detainer the roll 40, in each instance, thereafter enters a dwell of the cam and the detainer is thus maintained in engagement with the heel until the heel is placed in operating position beneath the nail block 4. The reason for the yielding connection between the arms 38 and 42 will now be clear. The cam 36, of course, has a constant throw. In loading heels although it is presumed that all heels in a single barrel are of substantially the same height, it is frequently found that they vary in height as much as one-eighth of an inch. If the detainer were not constructed so that it could bear yieldingly upon the heel there would be liability of the parts breaking when the heels of too great a height for the particular construction of the cam 36 were placed within the holders. The yielding connection, therefore, takes up any excess throw of the cam over what is necessary to bring the detainer into proper heel-retaining position against the exposed face of the heel.

In order that the heel may be operatively, *i. e.*, firmly and immovably, clamped between the anvil and nail block while the detainer is still in engagement with its under face the anvil 20 is provided with a recess 21 (Fig. 6) within which the finger 44 rests at the time the anvil is brought into clamping engagement with the heel. This construction permits the anvil to engage the under face of the heel substantially as if there were no detainer in heel retaining position.

As stated, the present heel detainer is shown as applied to the co-pending application heretofore named, and in the machine of such application after a heel has been loaded it is stripped from the nail block and from the heel carrier by the downward movement of the drivers, the anvil retreating before the drivers during this stripping movement, but at the same time holding the heel firmly clamped. In applying the invention, therefore, to a machine where the heel is stripped from its holder in this manner it is desirable that means be provided for permitting a downward movement of the detainer with the heel as it is stripped from the carrier. To this end the cam 36 is provided with an abrupt drop shown at 37 (Figs. 2 and 7), and adjacent to this drop there is pivotally mounted a latch 52 which is normally held in the full line position shown in Fig. 2 by means of a suitably connected spring 54. The cam drop 37 is so placed that when a heel has reached operating position beneath the nail block the cam roll 40, for the detainer then in engagement with the heel, has just reached a position, shown at the left in Fig. 2, resting on the latch 52. The fulcrum of

the latch 52 is so placed that as the heel moves down with the anvil in the stripping operation the latch is allowed to retreat, by reason of the pressure thereon from the roll 40, into the dotted line position shown in Fig. 2, and thus permit the roll to be brought down into the cam drop 37 to the position shown in Fig. 5. As described in said co-pending application, after the heel has been stripped from its holder the heel carrier is rotated to place another heel in operating position and the rotating spider arm at the rear of the loaded heel operates to eject said heel from the machine. Of course, as the carrier rotates, the heel detainer is also moved and after clearing the anvil 20 the connected arms 38 and 42 drop by gravity upon the surface of the cam 36 at the base of the cam drop 37. Thereafter the detainer is raised by the cam rise 35 to the position shown in Fig. 2, ready to engage a new heel inserted in the empty holder which has been brought into heel receiving position.

In operating a machine of the character described in said co-pending application, it is obvious that during a day's work heels for many different sizes and styles of shoes will be loaded. As heels vary in height for different sizes and styles of shoes as much as one-half of an inch, it is obvious that this large discrepancy could not conveniently be taken up by means of springs 46 connecting each pair of lever arms 38 and 42. It is, therefore, desirable to mount the cam 36 so that it may be moved bodily vertically, toward and from the plane of movement of the heels supported on the heel carrier. The cam may by this means be adjusted to allow the heel detainer to engage heels, of whatever height being operated upon, with a safe pressure placed upon the spring 46. In the present embodiment of the invention this adjustment is secured by means of a clamp screw 56 screwed into the support 28 for the carrier spindle 26 and passing through a slot 58 formed in the cam 36. By loosening the screw 56 the cam 36 may be readily moved toward and from the exposed face of the heels held in the heel carrier.

In the following claims the term "heel" is not to be understood as limiting the scope of the claim, where the context otherwise permits, to a machine for operating upon heel blanks alone, such, for instance, as shown in the co-pending application heretofore referred to.

While the particulars of construction herein set forth are well suited to one form of the invention it is not to be understood that these particulars are essential since they may be variously modified within the skill of the artisan without departing from the true scope of the actual invention as defined by the following claims.

What is claimed as new is:

1. In a machine of the character described, the combination of heel treating tools, a support upon which the heel rests during the action of the tools, a heel carrier for transferring a heel from receiving position to the said support, a heel detainer, and means to move the detainer into contact with the heel face as the carrier transfers the heel to said support and maintains it in said position during the action of said tools.

2. In a machine of the character described, a heel support, tools for acting on the heel sustained by said support, heel holding and transferring devices for engaging the lateral surface of the heel and transferring the heel to the action of said tools, a heel detainer for engaging a face of the heel, means to move said detainer into engagement with the heel face and maintain such relation of the detainer and heel during the action of the tools, and devices for varying the path of movement of said detainer to accommodate heels of different heights.

3. In a machine of the character described, the combination of heel nailing devices, a heel support on which the heel is placed and by which it is sustained during the action of said devices, a carrier for transferring a heel to said support, a heel detainer to engage the under face of the heel, and means operative as the carrier transfers the heel to said support to operate the detainer and maintain it in contact with the heel when the latter rests upon said support.

4. In a machine of the character described, the combination of heel nailing devices, a heel support on which the heel is placed and by which it is sustained during the action of said devices, a carrier for transferring a heel to said support, a heel detainer to engage the under face of the heel, means operative as the carrier transfers the heel to said support to operate the detainer and maintain it in contact with the heel when the latter rests upon said support, and means to subsequently separate the detainer from contact with the heel.

5. In a heel loading machine, devices for positioning a heel relative to the loading mechanism, means for detaining the heel in engagement with its positioning devices, means for clamping the heel in operating position, and provision for causing said detaining means to engage a face of the heel before it is clamped and to maintain such engagement during the loading operation.

6. In a heel loading machine, loading mechanism, a heel support for sustaining a heel for the action of said loading mechanism, a heel holder for transferring a heel to the heel support, a heel detainer for engaging a face of the heel, means to maintain said detainer in engagement with the heel during transfer of the heel to the heel sup-

port and during the loading operation, means for stripping the heel from its holder after being loaded, and means to permit movement of the detainer with the heel as it is stripped from its holder.

7. In a machine of the character described, the combination of heel nailing devices, a heel support upon which the heel is placed and on which it rests during the action of the nailing devices, a heel carrier for transferring a heel from the receiving position to a position between the nailing devices and said support, and a heel detainer to engage the exposed face of a heel and hold it in the carrier during movement of the heel to a position between the nailing devices and said support and during the action of the nailing devices.

8. In a machine of the character described, the combination of nailing devices and an opposed heel support movable toward and from the nailing devices, a heel carrier for transferring a heel from a receiving station to a position between the nailing devices and said support, a heel detainer for engaging the exposed face of a heel, and means for causing said detainer to engage the heel and hold the heel in the carrier as it is transferred to a position between the nailing devices and said support, and remain in said holding relation with the heel during the nailing operation.

9. In a heel loading machine, a heel face guide plate and a nail block arranged to receive heels on its lower face, a device to engage the exposed face of the heel to prevent its falling away from said heel face guide plate and nail block, and means for operatively clamping the heel against said nail block while engaged by said device.

10. In a machine of the character described, a heel face guide plate, a heel carrier arranged below said plate, a device for engaging the under face of the heel to hold it against said guide plate, and means to move said device vertically into engagement with the heel and cause it to travel with the heel as the latter moves over the face of the heel face guide plate.

11. In a machine of the character described, a heel face guide plate, a heel carrier arranged below said plate, a device for engaging the under face of the heel to hold it against said guide plate, and means to move said device vertically into engagement with the heel, said device being constructed and arranged to bear yieldingly upon said heel and move with the heel as it travels over the face of the guide plate into nailing position.

12. In a machine of the character described, the combination of heel nailing devices, a heel support for engaging and sustaining a heel during the action of the nailing devices, a heel carrier for transferring a

heel from the receiving position to a position between the nailing devices and said support, a heel detainer to engage the exposed face of a heel and hold it in the carrier as the latter moves the heel to a position between the nailing devices and said support and during the action of the nailing devices, and a cam for actuating said detainer.

13. In a heel nailing machine, the combination of nailing devices, a movable heel support to sustain the heel during the nailing operation, a heel carrier for transferring a heel to operative position for the action of the nailing devices, a heel detainer for engaging the exposed heel face during transfer to operative position and during the action of the nailing devices, and means for permitting movement of said heel detainer with the heel support.

14. In a machine of the character described, a heel detainer, a cam for moving said detainer into heel engaging position, a latch on said cam by which said detainer is sustained in heel engaging position, and means for causing withdrawal of said latch to permit said detainer to move out of heel engaging position.

15. In a heel nailing machine, the combination of nailing devices, a heel support having a recess in its supporting surface, a heel carrier for transferring a heel to the heel support, a heel detainer, and means to cause said detainer to engage a heel face during movement of the heel to operative position and remain in such engagement during the action of the nailing devices.

16. In a machine of the character described, the combination of a heel support, tools for acting on a heel sustained by said support, a heel carrier, a heel detainer for

engaging the face of a heel on said carrier, means for actuating said detainer, and yielding connections between said actuator and detainer.

17. In a machine of the character described, the combination of nailing means, a nail block, a heel support opposed thereto and movable toward and from the nail block, a heel carrier movable from heel receiving position to a position between said nail block and heel support, a heel detaining finger to engage the face of a heel supported by the carrier, and means for causing the detaining finger to engage and hold the heel in the carrier as the latter transfers the heel between the nail block and heel support and to remain in said holding relation with the heel during the nailing operation.

18. In a machine of the character described, the combination of heel nailing devices, a heel support for engaging and sustaining a heel during the action of the nailing devices, a heel carrier for transferring a heel from the receiving position to a position between the nailing devices and said support, and a yielding heel detainer to yieldingly engage the exposed face of a heel and hold it in the carrier as the latter moves to a position between the nailing devices and said support and during the action of the nailing devices.

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

THOMAS G. PLANT.

Witnesses:

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AMELIA M. ROSS.