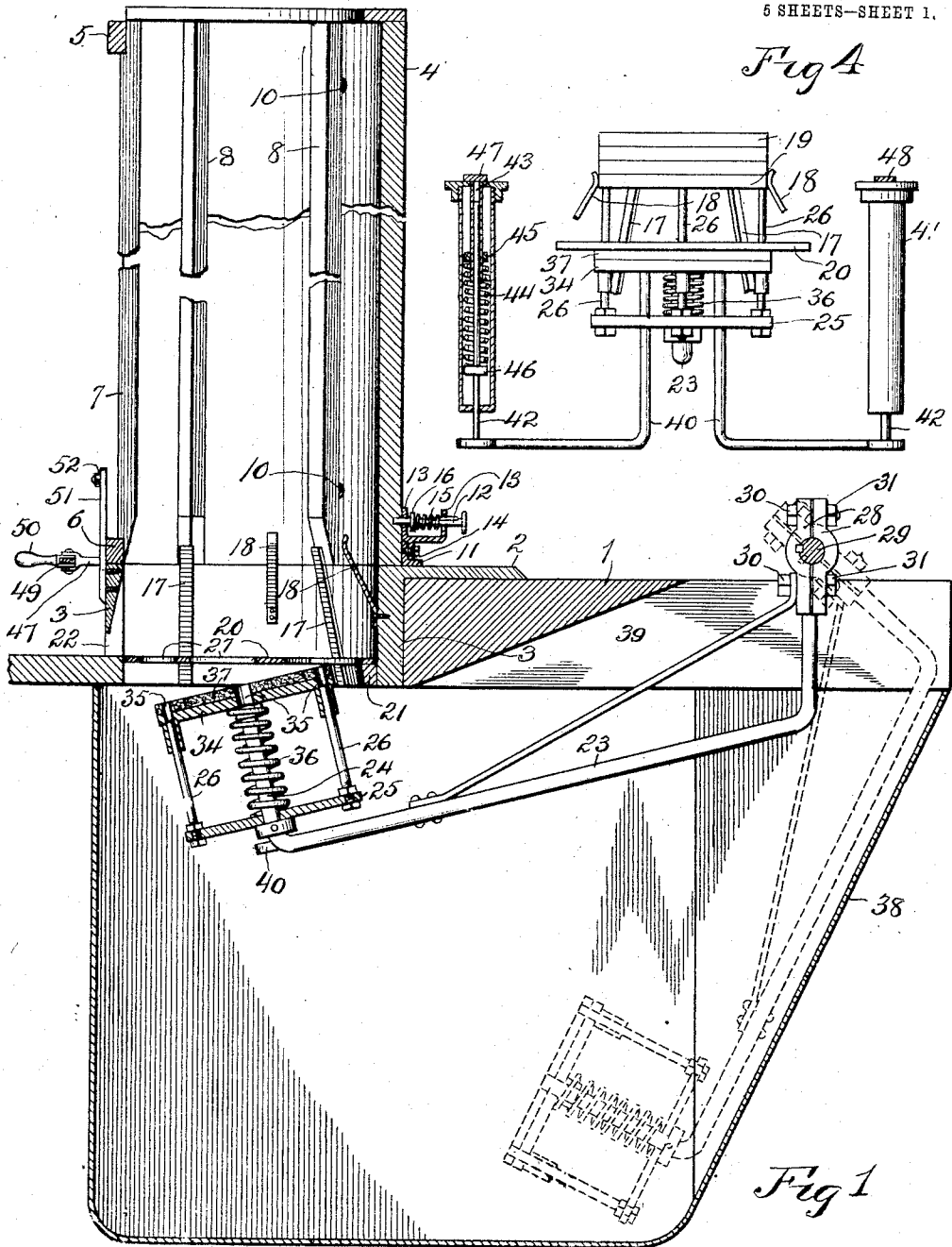


J. L. RAKERD.
HEEL MAKING MACHINE.
APPLICATION FILED JULY 15, 1907.

898,680.

Patented Sept. 15, 1908.

5 SHEETS—SHEET 1.



WITNESSES:
R. H. Hamill
E. B. House

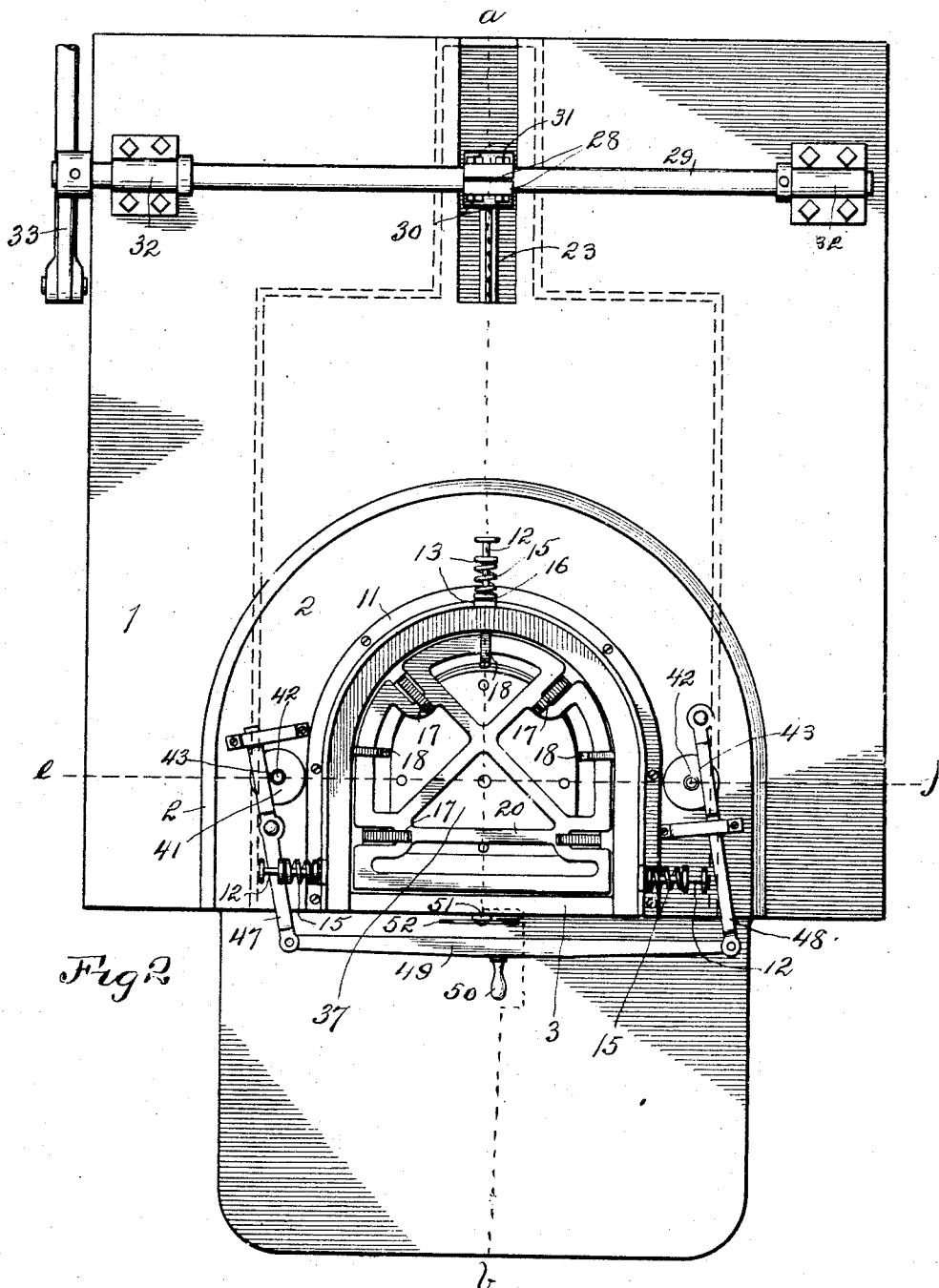
INVENTOR.
James L. Rakerd
BY
Warren O. House
His ATTORNEY.

J. L. RAKERD.
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898,680.

Patented Sept. 15, 1908.

6 SHEETS—SHEET 2.



WITNESSES:

R. Hamilton.
C. B. House

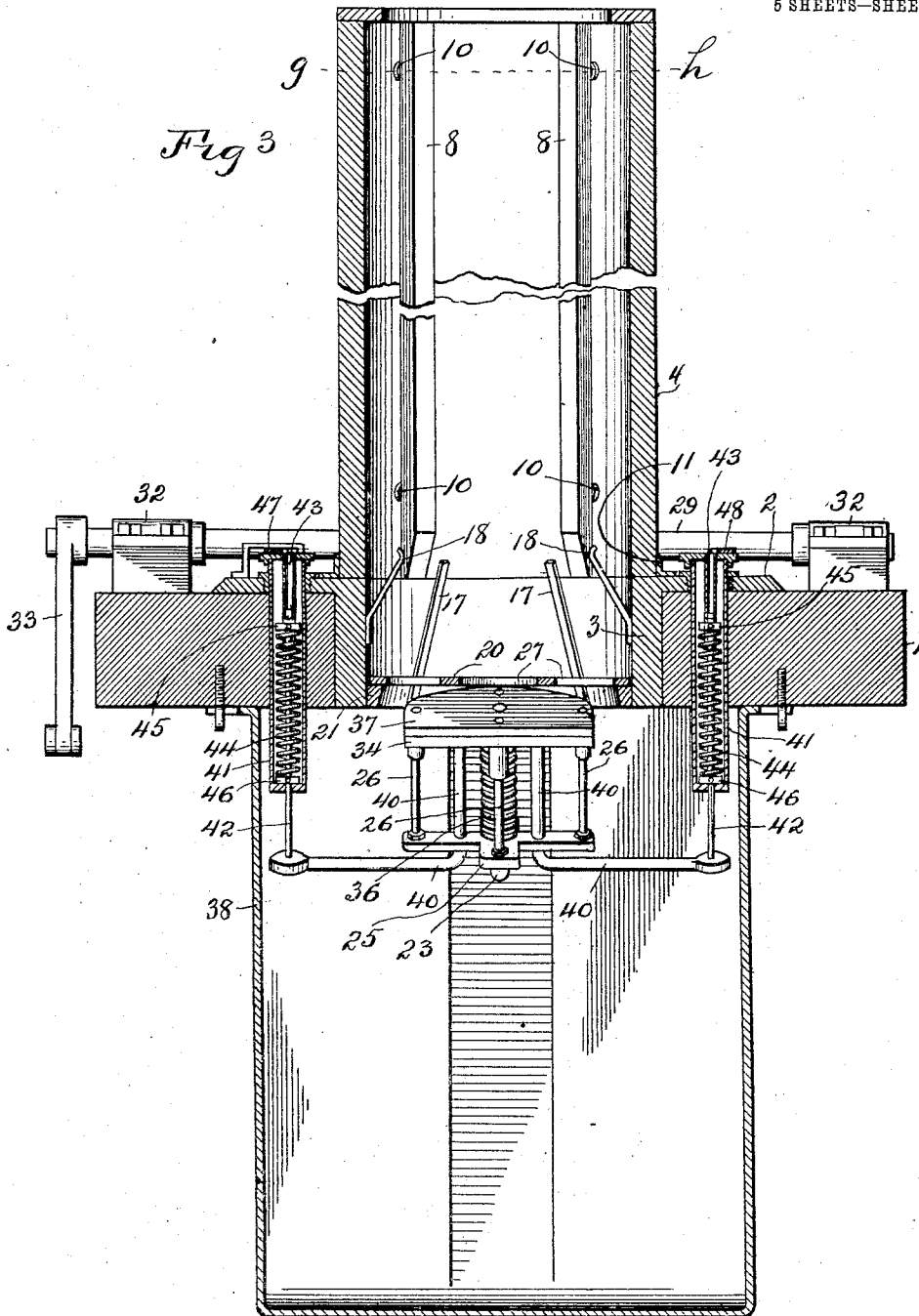
INVENTOR.
James L. Rakerd
BY
Warren D. House
HIS ATTORNEY.

J. L. RAKERD.
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5 SHEETS—SHEET 3.



WITNESSES

R. Hamilton
E. B. House

INVENTOR.

James L. Rakerd
BY
Warren D. House
His ATTORNEY

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5 SHEETS—SHEET 4.

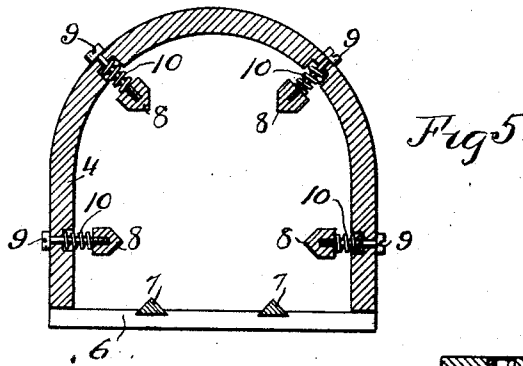


Fig 5

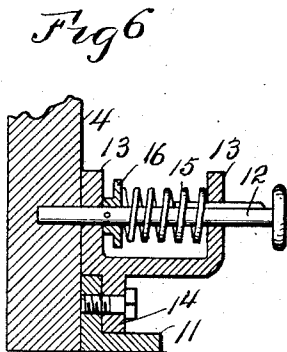


Fig 6

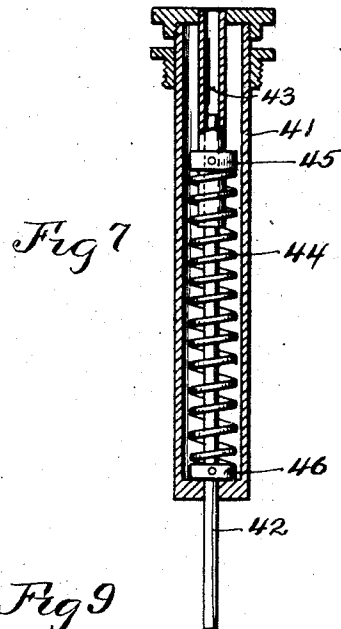


Fig 7

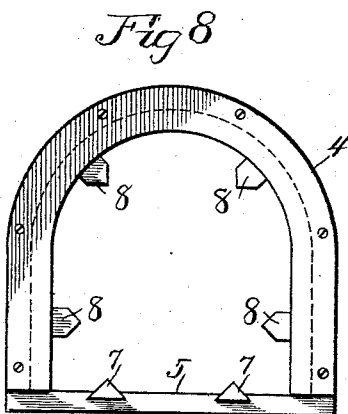


Fig 8

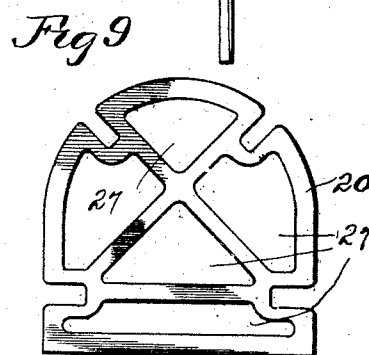


Fig 9

WITNESSES:

R. Hamilton.
C. B. House

James L. Rakerd. INVENTOR.
BY
Warren D. House
His ATTORNEY.

J. L. RAKERD.
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5 SHEETS—SHEET 5.

Fig 10

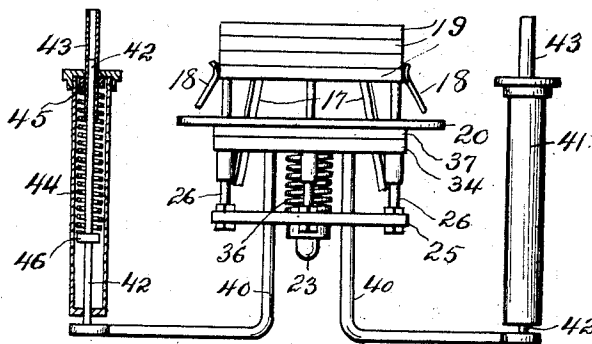


Fig 12

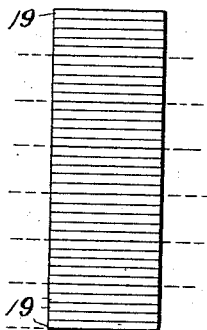


Fig 13

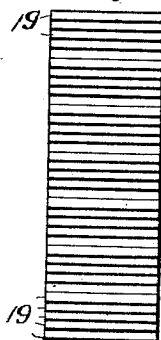


Fig 14

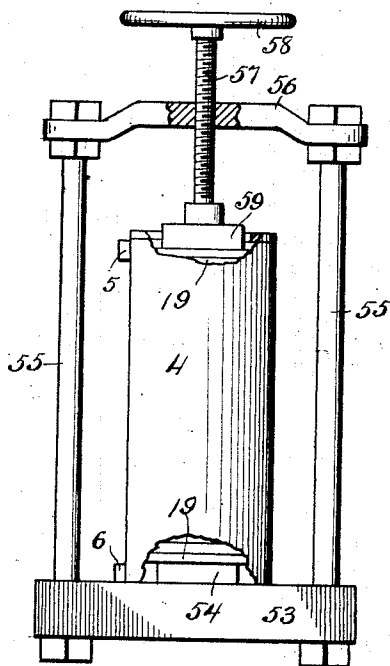
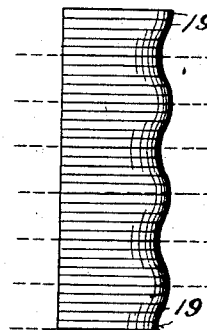


Fig 11

WITNESSES:

R. Hamilton
E. B. House

INVENTOR.

James L. Rakerd
BY
Warren D. House
His ATTORNEY.

UNITED STATES PATENT OFFICE.

JAMES L. RAKERD, OF KANSAS CITY, MISSOURI.

HEEL-MAKING MACHINE.

No. 898,680.

Specification of Letters Patent.

Patented Sept. 15, 1908.

Application filed July 15, 1907. Serial No. 383,851.

To all whom it may concern:

Be it known that I, JAMES L. RAKERD, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Heel-Making Machines, of which the following is a specification.

My invention relates to improvements in heel making machines.

It relates to an apparatus for carrying into effect a new method of my invention for making heels for shoes, said method and product resulting therefrom, also of my invention, being described but not claimed hereinafter.

The object of my invention is to provide a machine or apparatus by which heels for shoes may be rapidly and economically made.

My invention provides a machine in which the lifts for a plurality of heels may be quickly assembled in a pile cemented together.

It provides further means by which the pile so assembled may be compressed and held compressed until the cementing material has hardened. By omitting the layers of cementing material between sections of the pile intended to form the heels, the sections may after compression be readily separated. If layers of cementing material alternate between all of the layers of lifts, after compression the pile is transversely cut into sections to form the separate heels.

This invention provides a holder for receiving the lifts, a vessel for containing the cementing material, preferably paste, a plunger carrying a pad arranged to enter the said vessel, and means for reciprocating the plunger, so that the lifts may be fed into the holder in a pile of alternate layers of lifts and cementing material.

Means are provided further by which the cementing material applying means may be rendered inoperative when desired, whereby the lifts of adjacent sections will not have between them a layer of the cementing material.

The invention provides further a holder having means by which the lifts are assembled in a pile with one set of edges in alignment with each other.

Other novel features of my invention are hereinafter fully described and claimed.

In the accompanying drawings illustrative of my invention, Figure 1 is a vertical sectional view taken on the dotted line *a-b* of Fig. 2, a transverse portion of the lift holder being broken away. Fig. 2 is a plan view of the assembling and cementing machine, the

lift holder being removed. Fig. 3 is a vertical sectional view, taken on a plane corresponding to the dotted line *e-f* of Fig. 2. Fig. 4 is a detail view partly in front elevation and partly in vertical section, of a portion of the mechanism for feeding and cementing the lifts. Fig. 5 is a horizontal sectional view of the lift holder, taken on the dotted line *g-h* of Fig. 3. Fig. 6 is a vertical sectional view of a portion of the lift holder and one of the releasable locking devices by which the holder is held in position on its support. Fig. 7 is a vertical sectional view of a portion of the mechanism which limits the movement of the paste pad. Fig. 8 is a top view of the lift holder. Fig. 9 is a plan view of the plate which supports the lifts prior to their being forced by the plunger into the holder. Fig. 10 is a view similar to Fig. 4, excepting that in Fig. 4 the mechanism for rendering the cementing device inoperative is shown disposed so as to accomplish this effect, while in Fig. 10 the parts are shown with the plunger at its highest position and the cement pad and parts connected with it in operative position. Fig. 11 is a view partly in elevation and partly in section, and partly broken away, of the compressing mechanism. In this view the holder is shown mounted on the base of the compressor, the casing of the holder being partly broken away to disclose the pile of lifts held therein. Fig. 12 is a side elevation of a pile of heel lifts, all of the lifts being cemented together, the transverse dotted lines denoting the places where the pile is to be severed to form the several heel sections. Fig. 13 represents in side elevation a pile of lifts consisting of a plurality of sections of alternate layers of lifts and cementing material, the narrow black transverse lines denoting the line of division between the sections and between which no cementing material is employed. Fig. 14 is a side elevation of a pile of the character shown in Fig. 12, after the said pile has been subjected to the shaping operation following the compressing and hardening of the pile.

Similar characters of reference denote similar parts.

The apparatus comprises a holder for receiving in a pile the cemented lifts, the mechanism by which the lifts are cemented and fed into the holder, and the compressing device by means of which the pile is compressed and retained in a compressed condition until

the paste or other cementing material has become hard or set.

I will first describe the holder and the support on which it is placed when the lifts are being fed into it:—On a table 1, or similar supporting device, is mounted a flat plate 2 provided with a central hole encircled by a tubular projection 3, extending downward through an opening provided therefor in the table 1. The lift holder comprises a vertical body 4 of horse shoe shape in cross section, two horizontal bars 5 and 6 being secured across the open front of the holder of the body 4 adjacent its upper and lower ends. Two vertical guides 7 have their upper and lower ends rigidly secured to the bars 5 and 6 respectively. Four vertical guides 8 are disposed within the tubular body 4, each guide 8 being mounted upon the inner ends of two radially movable screws 9 which extend through the walls of the body. Upon each screw 9 is mounted a coil spring 10, one end of which bears against the adjacent guide 8, the other end bearing against the inner side of the casing or body 4. The parts just described are clearly shown in Figs. 3, 5 and 8. The disposition of the guides 8 is such that the heel lifts, when forced upward through the holder casing or body 4, as described hereinafter, the forward edges of the lifts will be forced against the rigid guides 7, thus retaining the forward edges of the lifts in alinement. The inner sides of the lower ends of the guides 7 and 8 are beveled so that the lifts may be easily forced from below between said guides.

By means of the following described mechanism, the casing 4 of the lift holder is releasably secured to the base plate 2. A U shaped angle bar 11 has its horizontal flange secured to the top of plate 2 and encircling the opening through said plate. The lower end of the casing 4 is fitted in the vertical flange of the plate 11 and rests upon the upper side of plate 2 with the inner wall of the casing 4 in alinement with the inner wall of the tubular projection 3 of plate 2. In the outer wall of casing 4 are provided horizontal holes adapted each to receive a horizontal pin 12 slidably mounted in holes provided in two vertical arms 13 of a bracket having a downwardly extending projection 14 secured to the vertical flange of the angle bar 11. Each pin 12 is encircled by a coil spring 15, one end of which bears against one of the arms 13, the other end bearing against a collar 16 secured to the pin 12 between the arms 13. The outer end of each pin 12 is provided with a head by which the pin is grasped and withdrawn from the hole in casing 4 against the pressure of spring 15, when it is desired to remove the holder from the plate 2.

Four upwardly and inwardly inclined spring plates 17 are secured at their lower

ends to the inner periphery of the tubular projection 3 in alinement respectively with the guides 8. Extending above and intermediate the spring plates 17 are three similar spring plates 18. The plates 17 serve to retain the lifts, denoted by 19, after the plunger has pushed them above the spring plates 17. The spring plates 18 force the lifts 19 against the forward guides 7 of the holder.

To support each lift prior to its being moved upward by the plunger, a horizontal thin plate 20 fitting the periphery of the projection 3 is mounted on the upper side of a U shaped plate 21 secured to the inner periphery of the tubular projection 3. The upper side of plate 20 is flush with the lower side of an opening 22 provided in the forward side of projection 3 and through which the lifts are fed one at a time.

A reciprocative plunger is provided for forcing the lifts one at a time flatwise upward to a position between the spring plates 17 and 18 and between the guides 7 and 8. The preferable plunger mechanism comprises the following described parts. The plunger comprises a rod 23 having at one end an upwardly extending right angled central stem 24 which extends through a central opening in a cross shaped plate 25 to the respective arms of which are secured the lower ends of four pins 26. Holes 27 are provided in the plate 20 to receive the stem 24 and pins 26 of the plunger. The other end of the rod 23 is split longitudinally, the two arms thereof denoted by 28 being clamped upon opposite sides of a horizontal rock shaft 29 by bolts 30 having nuts 31, the bolts extending through transverse holes in the arms 28 above and below the rock shaft 29, the nuts 31 bearing against one arm and the heads of the bolts against the other arm 28. The rock shaft 29 is mounted in bearings 32 secured to the upper side of the table 1, and has secured to it at one end a crank 33 by which the shaft may be rocked when it is desired to reciprocate the plunger.

For applying cementing material, such as paste, to the lifts 19, the following described parts are employed. A slidable plate 34 is provided with five holes 35 through which extend the stem 24 and pins 26 of the plunger. A coil spring 36 encircles the stem 24 and has its lower end bearing upon the plate 25 and its opposite end bearing against the plate 34, said spring normally holding the plate 34 in the upper position shown in Fig. 3 and Fig. 1. Upon the plate 34 is mounted a cementing device comprising preferably a pad of felt 37 also provided with holes through which the stem 24 and pins 26 may pass during the operation of feeding a lift.

To the under side of table 1 is secured a vessel 38 adapted to contain the cementing material, such as paste. A vertical slot 39 is provided in the table 1 to receive the rod

23 of the plunger. When the plunger is moved to the position shown in dotted lines in Fig. 1 the pad 37 is immersed in the paste. As the crank 33 is moved to rock the shaft 29 in the proper direction the pad 37 is carried upward by the plunger and strikes against the under side of the thin plate 20, which is shown exaggerated in thickness in Figs. 3 and 1, but which in practice is thin enough so that the paste carried on the upper side of the pad 37 will be forced through the perforated plate openings and against the under side of the lift, which prior to this operation has been placed by hand through the opening 22 and upon the thin plate 20. If now the movement of the plunger is continued in the same direction, the plate 20 and the lift that at the time is carried thereon will be forced upward between the spring plates 17 and 18 until the upward movement of the plate 34 and pad 37 is arrested as will be described later. The movement of the plate 34 and pad 37 being stopped, and the plunger still having an upward movement, the plate 25 will carry the pins 26 through the holes in the plate 34 and pad 37 and the lift will be detached from the pad and will be carried by the stem 24 and pins 26 to a position in which the lift will be above the upper ends of the spring plates 17 and between the spring plates 18, the latter by their pressure forcing the lift 19 forward against the inner sides of the rigid guides 7 of the lift holder. At this time the crank 33 will be swung in the opposite direction, thus rocking the shaft 29 so as to swing the rod 23 downward, thus swinging the plunger and the pad 37 and plate 34 into the position shown in dotted lines in Fig. 1, in which position the pad 37 will be immersed in the paste.

The mechanism for arresting the upward movement of plate 34 and pad 37 is composed of the following described parts. Two right angled bars 40 have their vertical arms slidable in holes provided in the plate 25, the upper ends of said rods being secured to the plate 34. At opposite sides of the projection 3 in plate 2 and table 1 are provided two holes through which extend two hollow cylinders 41, said cylinders being supported by the plate 2. In the closed lower end of each cylinder 41 is provided a vertical hole in which is slidably mounted a rod 42, the upper end of which is vertically slidable in a vertical tube 43 slidable vertically in a hole provided in the closed upper end of the cylinder 41. In each cylinder 41 is a coil spring 44 which encircles the rod 42 and has its upper end bearing upon a collar 45 encircling and secured to the adjacent tube 43, the lower end of the spring bearing upon a collar 46 secured to the adjacent rod 42. The two rods 42 are positioned so that when the plunger is swung upward the horizontal arms of the right angled bars 40 will strike

the projecting ends of said rods 42 and will force said rods and the tubes 43 and springs 44 upward to the position shown in Fig. 10. The collars 45 will now strike the closed upper ends of the cylinders 41, thus arresting the upward movement of the tubes 43 and causing the coil springs 44 to push against the collars 46, thereby resisting the upward movement of the rods 42 and rods 40. The two springs 44 are strong enough to overcome the coil spring 36 on the stem 24 and the upward movement of the plate 34 and pad 37 will be arrested as before stated, the pad, however, having by this time applied the paste to the under flat side of the lift 19 which is being fed.

It is desirable, when the different sections which are to form heel sections in the pile of lifts are not to be cemented together, to arrest the upward movement of the pad 37 before it arrives at a position in which it can apply paste to the lift which forms the lower end of a section in the pile. To do this it is necessary to arrest the upward movement of the tubes 43 before the collars 45 strike the closed upper ends of the cylinders. To effect this the following mechanism is provided. Referring particularly to Figs. 2 and 3, 47 and 48 denote respectively two horizontal bars pivoted before and to the rear respectively of the cylinders 41 to the upper side of plate 2. A horizontal bar 49 is pivotally connected at its ends to the forward ends of the bars 47 and 48, and at its forward edge is provided with a handle 50 by which the bar 49 may be moved lengthwise to swing the bars 47 and 48 to and from positions in which they will be immediately above the tubes 43. By swinging the bars 47 and 48 to the position shown in Fig. 4, the said bars will obstruct the upward movement of the tubes 43 and the collars 45 will oppose the upward movement of the springs 44, thus arresting the upward movement of rods 42, 40, and plate 34 and pad 37 before the pad 37 has reached a position in which it can apply the paste to the lift 19 which is in position on plate 20 for being fed. The plunger plate 25, pins 26 and stem 24 however will continue the upward movement and the lift will be forced into position upon the upper ends of spring plates 17.

In operating the invention the lifts 19 are fed one at a time through opening 22 upon plate 20, and after each insertion of a lift upon the plate 20, the crank 33 is rocked and the pins 26 and stem 24 forces the lift into position upon the upper ends of the spring plates 17 and between the spring plates 18 which force the lift against the forward guides 7. On the forward side of the projection 3 is secured the lower end of a vertical indicator bar 51 which has attached to it adjacent its upper end a cross bar 52. When the lifts are fed, the bar 49 is positioned as shown in

Fig. 2, thus permitting the tubes 43 to pass through the closed ends of the cylinders 41 to the position shown in Fig. 10 at each reciprocation of the plunger. Paste is thus applied to each lift 19 until a lift appears opposite the bar 52. The bar 49 is then swung so as to position the bars 47 and 48 over the tubes 43, as shown in Fig. 4. The tubes 43 are thereby arrested in their upward movement, thus arresting the pad 37, as already described, and preventing the pad applying paste to the lift now to be fed. After this last lift has been fed, the bar 49 is shifted again to the position shown in Fig. 2 and the operations repeated until the lift which was not pasted arrives opposite the bar 52, at which time the bar 49 is again shifted so as to arrest the pasting operation.

The operation above described is repeated until the holder casing 4 is nearly full of lifts 19 formed in a pile composed of heel sections having alternate layers of lifts and cementing material, there being no paste between the adjacent lifts of each two sections. The holder is then removed with the pile of lifts from the base plate 2 by withdrawing the pins 12 from the holes in the casing or body 4 of the holder. The holder is then placed on the horizontal base 53 of the compressor, said base having a boss 54 on its upper side adapted to bear upon the lowest lift 19 in the holder. Secured to the base 53 at their lower ends are two vertical bars 55, the upper ends of which are secured to a cross bar 56 having a vertical central threaded opening in which is fitted a vertical rotary screw 57, the upper end of which has secured to it a horizontal hand wheel 58, and the lower end having secured pivotally to it a plate 59 adapted to rest upon the uppermost lift 19. With the parts so positioned, the screw 57 is turned so that the lifts 19 are tightly compressed. The screw is then left in this position until the paste has set or hardened, after which the holder is removed from the compressor, the cemented lifts removed from the holder, and the holder is replaced in position on plate 2 in the position shown in Fig. 1.

The cemented pile, made as described, is shown in Fig. 13. The sections not being cemented to each other, they will be readily separated from each other.

If it is desired to cement all the lifts together, as shown in Fig. 12, the bars 47 and 48 are left in the position shown in Fig. 2, in which position each lift will have paste applied to it during the feeding operation. After the pile has been formed in the holder and compressed, as already described, the pile may be severed, as indicated by the transverse dotted lines in Fig. 12, by any suitable cutting means.

If it is desired to shape the sides of the heels, this may be done before the sections are separated from each other by employing

any suitable cutting apparatus which will form the heel sections, as indicated by the wave lines in Fig. 14. The sections may then be separated by any suitable means where the dotted lines appear in Fig. 14.

My invention may be modified in many ways within the scope of the appended claims without departing from its spirit.

Having thus described my invention, what I claim and desire to secure by Letters Patent, is:—

1. In a heel making machine, the combination with a holder, of a plunger for successively forcing the lifts flatwise against each other in said holder, means for reciprocating said plunger, and means carried by said plunger for applying cementing material to one side of each lift.

2. In a heel making machine, the combination with a holder, of a plunger for feeding the lifts successively into said holder, and a cementing pad movable by said plunger into position for applying cementing material to the flat side of each lift.

3. In a heel making machine, the combination with a holder, of means for feeding the lifts one at a time flatwise against each other into said holder, means normally actuated at each operation of the said feeding means for applying cementing material to the flat side of the lift which is being fed, and means by which said cementing means may have its operation suspended.

4. In a heel making machine, the combination with a holder, of a plunger for feeding the lifts one at a time flatwise against each other into said holder, means normally actuated at each operation of the plunger for applying cementing material to one flat side of the lift which is being fed, and means by which the operation of the cementing means may be prevented when the plunger is operated.

5. In a heel making machine, the combination with a holder, of a reciprocative plunger for feeding the lifts one at a time flatwise against each other into said holder, means for reciprocating said plunger, means normally actuated at each reciprocation of the plunger for applying cementing material to one flat side of the lift which is being fed, and means by which the operation of the cementing means may be prevented when the plunger is reciprocated.

6. In a heel making machine the combination with a holder, of a reciprocative plunger for feeding the lifts one at a time flatwise against each other into said holder, cementing means carried by said plunger and normally actuated when the plunger is reciprocated to apply cementing material to one flat side of the lift which is being fed, and means for preventing the operation of said cementing means when the plunger is reciprocated.

7. In a heel making machine, the combina-

tion with a holder, of a reciprocative plunger for feeding the lifts one at a time flatwise against each other into said holder, a cementing device carried by the plunger normally in position to apply cementing material to the lift which is being fed, and means by which the cementing device may be moved out of operative position when the plunger is operated to feed a lift.

8. In a heel making machine, the combination with a holder, of a reciprocative plunger for feeding the lifts one at a time flatwise against each other in the holder, a cementing device actuated by the plunger for applying cementing material to one flat side of each lift as it is fed, means for normally positioning said cementing device so that it may operate when the plunger is operated, and means by which operation of said cementing device may be prevented when the plunger is reciprocated.

9. In a heel making machine, the combination with a holder, of a reciprocative plunger for feeding the lifts one at a time flatwise against each other into said holder, a cementing device carried by the plunger and normally held in position on said plunger to apply cementing material to one flat side of the lift which is being fed when the plunger is moved to feed a lift, and means for moving said cementing device on said plunger to a position in which it will be inoperative when the plunger is moved to feed a lift.

10. In a heel making machine, the combination with a holder, of a reciprocative plunger for feeding the lifts one at a time flatwise against each other into said holder, a cementing pad slidable on said plunger, means for normally holding said pad, when the plunger is operated to feed a lift, in a position in which the pad may apply cementing material to said lift, and means by which said pad may be slid from such position to an inoperative position.

11. In a heel making machine, the combination with a holder, of a reciprocative plunger for feeding the lifts one at a time flatwise against each other into said holder, means for reciprocating said plunger, a cementing device normally carried by said plunger a part of its feeding stroke in position for applying cementing material to the lift which is being fed, and means for removing the said cementing device from operative position prior to the completion of the feeding stroke of said plunger.

12. In a heel making machine, the combination with a holder, of a reciprocative plunger for feeding lifts one at a time flatwise against each other into said holder, means for reciprocating said plunger, a cementing device carried by said plunger to a position in which said device will apply cementing material to the lift which is being fed, means for arresting the movement of said cement-

ing device before the plunger has completed its feeding stroke, and means by which the said cementing device may be held so as not to come into operative position when the plunger is moved forward on its feeding stroke.

13. In a heel making machine, the combination with a holder adapted to contain a pile comprising a plurality of sections each composed of alternate layers of lifts and cementing material, of means for assembling said layers in said holder, said assembling means having means by which the cementing layer is omitted between said sections.

14. In a heel making machine, the combination with a holder having a rigid guide and having means for forcing the lifts against said guide, of means for feeding the lifts into said holder, and means for applying cementing material to said lifts as they are fed into the holder.

15. In a heel making machine, the combination with a holder having a rigid guide, and having resilient means for forcing the lifts against said rigid guide, of means for feeding the lifts into the holder one at a time.

16. In a heel making machine, the combination with a holder having a rigid guide and having resilient means for forcing the lifts against said rigid guide, of means for feeding the lifts into said holder one at a time, and means for applying cementing material to each of said lifts.

17. In a heel making machine, the combination with a holder having means for forcing the lifts into alinement with each other at one set of edges, of a reciprocative plunger for forcing the lifts one at a time flatwise against each other into said holder, means for reciprocating said plunger, means actuated by the plunger for applying cementing material to each lift as it is fed, and means by which the cement applying means may be rendered inoperative.

18. In a heel making machine, the combination with a holder, of a reciprocative plunger for feeding the lifts one at a time into the holder, a pad carried by the plunger for applying a cementing material to the lifts, said pad being movable into and out of operative position on said plunger, a spring for normally holding said pad in operative position, and means by which the pad may be held from moving to operative position when the plunger is moved to feed a lift into the holder.

19. In a heel making machine, the combination with a holder, of a reciprocative plunger for feeding the lifts into the holder one at a time, a vessel for holding cementing material, and a cementing device carried by the plunger and movable into said vessel for applying cementing material to the lifts as they are fed into the holder by said plunger.

20. In a heel making machine, the combination with a holder, of a reciprocative plunger for feeding the lifts into the holder one at a time, a vessel for holding cementing material, and a cementing device carried by the plunger and movable into said vessel for applying cementing material to the lifts as they are fed into the holder by said plunger.

nation with a support, of a holder mounted thereon and having guides for the lifts one of which is rigid, a reciprocative plunger for feeding the lifts into said holder between said
5 guides, means on said support for supporting and properly positioning said lifts, means for reciprocating said plunger, means carried by the plunger for applying cementing material to the lifts as they are fed into the holder,
10 and means by which said cement applying

means may be rendered inoperative when the plunger is feeding a lift.

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

JAMES L. RAKERD.

Witnesses:

E. B. HOUSE,
R. S. SARVER.