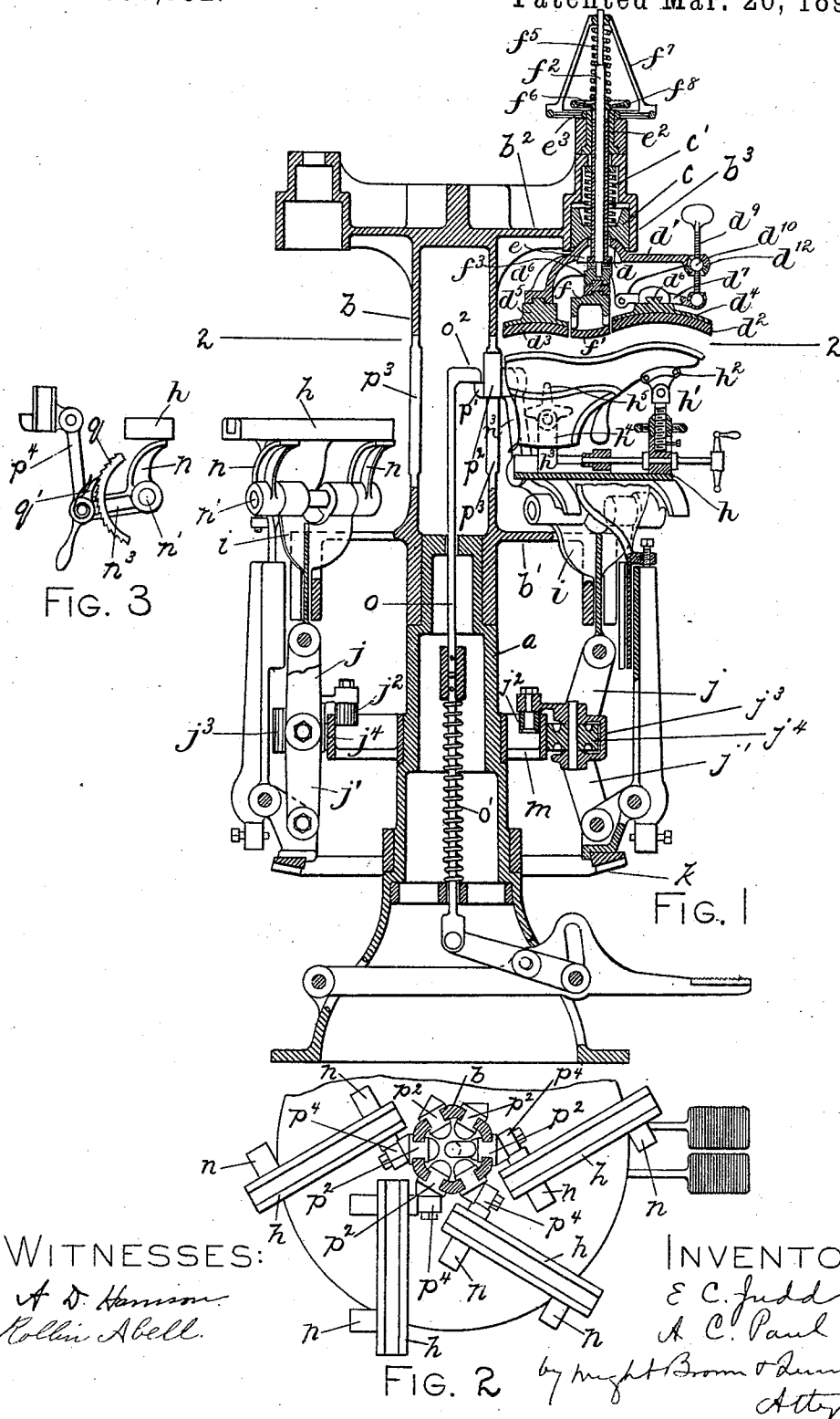


3 Sheets—Sheet 1.

SOLE LAYING MACHINE.

Patented Mar. 26, 1895.



WITNESSES:

A. D. Harrison.
Rollin Abell.

INVENTORS:

E. C. Judd
A. C. Paul

FIG. 2 by night Brom & Dumbly
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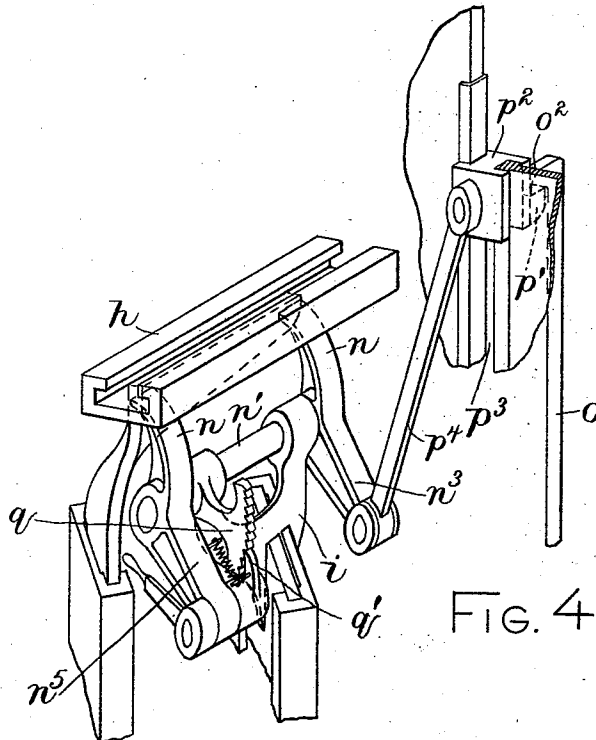
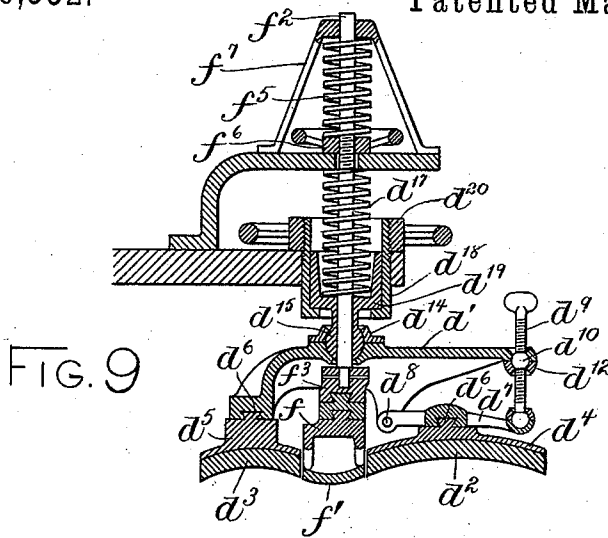
(No Model.)

3 Sheets—Sheet 2.

E. C. JUDD & A. C. PAUL.
SOLE LAYING MACHINE.

No. 536,352.

Patented Mar. 26, 1895.



WITNESSES:

A. D. Hanson
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(No Model.)

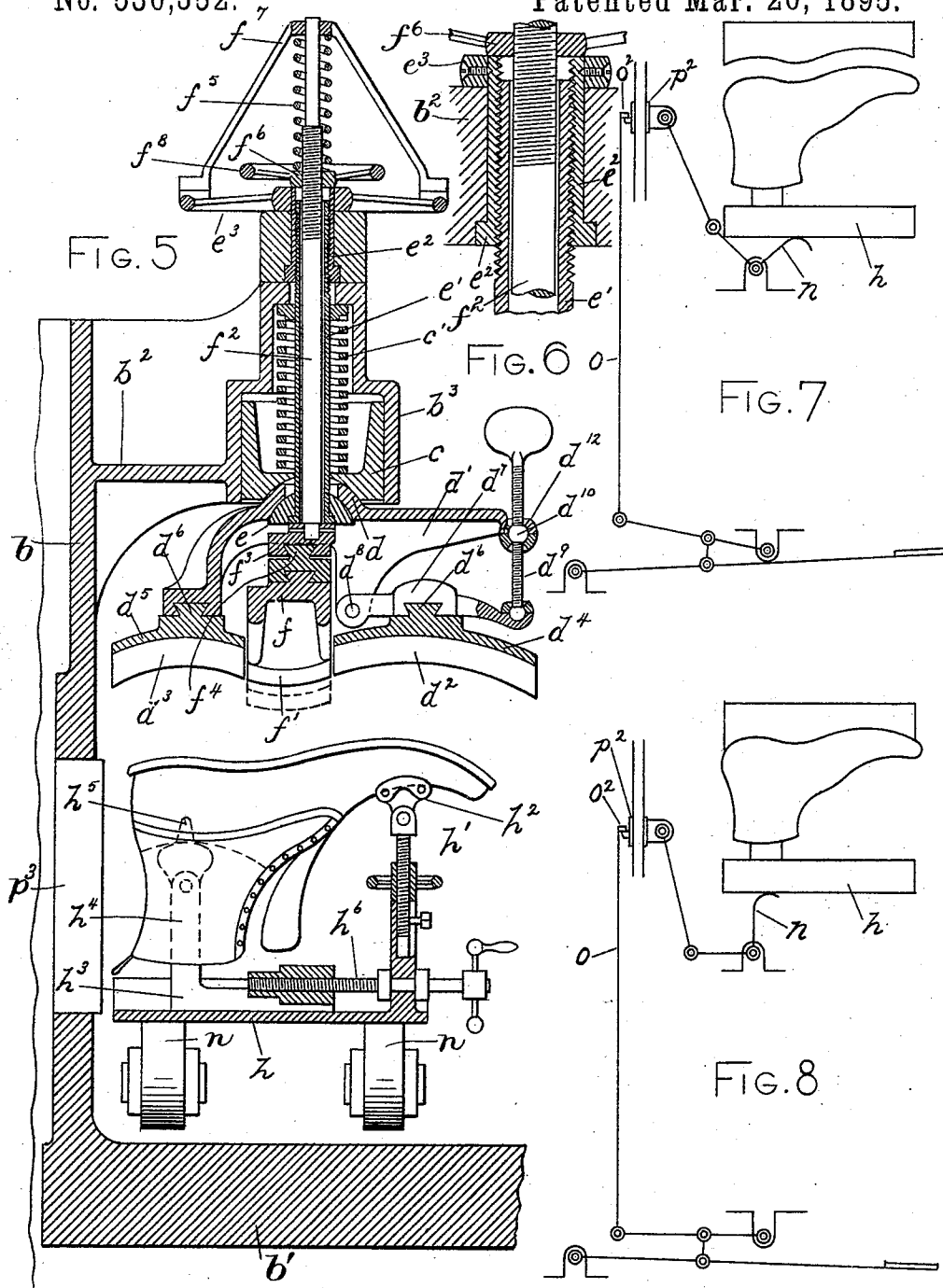
3 Sheets—Sheet 3.

E. C. JUDD & A. C. PAUL.

SOLE LAYING MACHINE.

No. 536,352.

Patented Mar. 26, 1895.



WITNESSES:

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UNITED STATES PATENT OFFICE.

EDWARD C. JUDD, OF BOSTON, AND ABNER C. PAUL, OF LYNN, MASSACHUSETTS; SAID PAUL ASSIGNOR TO SAID JUDD.

SOLE-LAYING MACHINE.

SPECIFICATION forming part of Letters Patent No. 536,352, dated March 26, 1895.

Application filed January 3, 1895. Serial No. 533,767. (No model.)

To all whom it may concern:

Be it known that we, EDWARD C. JUDD, of Boston, in the county of Suffolk, and ABNER C. PAUL, of Lynn, in the county of Essex, State of Massachusetts, have invented certain new and useful Improvements in Sole-Laying Machines, of which the following is a specification.

This invention relates to machines for applying pressure to a sole laid upon the portions of the upper of a boot or shoe that project over the bottom portion of the last, and maintaining such pressure while the cement which has been applied to the contacting surfaces of the sole and upper is setting or hardening, the object being to temporarily secure the sole to the upper preparatory to the permanent attachment of said parts by stitches or other fastenings.

The invention has for its object to provide an improved construction of the platen or presser which bears upon the outer surface of the sole during the pressing operation and co-operates with the jack which supports the lasted upper in securing the desired intimate contact between the inner surface of the sole and the upper.

The invention also has for its object to provide improved means in a power-operated machine for bringing the upper and sole into contact with each other before the power of the machine is applied to complete the pressure.

To these ends, the invention consists in the improvements which we will now proceed to describe and claim.

Of the accompanying drawings, forming a part of this specification, Figure 1 represents a vertical central section of a machine embodying our improvements. Fig. 2 represents a section on the plane of line 2—2 of Fig. 1, and a plan view of portions of the mechanism below said line. Fig. 3 represents an elevation of a part of the jack-raising mechanism shown in Fig. 1. Fig. 4 represents a perspective view of a portion of the jack. Fig. 5 represents a sectional view of a portion of the machine on a larger scale than shown in Fig. 1. Fig. 6 represents an enlargement of a portion of Fig. 5. Figs. 7 and 8 are diagrams showing the foot-power actuated means

for raising the jack into contact with the presser or platen. Fig. 9 represents a sectional view showing a different construction of the means for supporting the presser or platen.

The same letters of reference indicate the same parts in all the figures.

In the drawings, a represents the supporting standard or pedestal of the machine, upon which is mounted to rotate horizontally a frame carrying the sole-pressing and shoe-supporting devices hereinafter described, said frame comprising a vertical tubular portion b , a base portion b' , and a top portion or head b^2 . The rotary frame is provided with a plurality of jacks which support the lasted uppers of a series of boots or shoes, and with a plurality of sole pressers or platens which co-operate with the jacks and the lasts thereon in pressing the cement-coated soles against the cement-coated uppers; and as all the jacks and pressers or platens are alike, we will describe the construction and mode of operation of one jack, and the accompanying presser or platen.

The head b^2 is provided with a spring-pressed coupling or joint member c , which is movable vertically in a guide or socket b^3 forming a part of said head, and is pressed downwardly by a spring c' bearing at its upper end on a shoulder in the socket b^3 and at its lower end on the coupling member c . The under side of the coupling member is concave, and constitutes a seat upon which bears a coupling or joint member d formed on the platen or presser, said coupling member d being convex and constituting with the coupling member c the equivalent of a ball-and-socket joint which permits a free oscillating movement of the sole-presser or platen not only lengthwise but crosswise. In other words, the said presser or platen has a universal tipping motion.

The presser or platen is composed of a holder d' upon which the coupling-member d is formed, a sole-pressing pad d^2 , and a heel-pressing pad d^3 affixed respectively to rigid back-pieces d^4 d^5 which have dovetail ribs d^6 , by means of which they are detachably affixed to the holder. The rib d^6 of the heel-pressing pad d^3 is engaged with a dovetail

groove formed in the holder d' , while the rib of the sole-pressing pad is engaged with a dovetail groove formed in an arm d^7 which is adjustably connected to the holder, in order that the sole pressing pad may be given various inclinations although at all times rigidly connected with the holder, said arm d^7 being pivoted at d^8 to the holder and engaged at its outer end by a ball-and-socket joint with a screw-threaded adjusting-rod d^9 which works in a spherical nut d^{10} contained in a socket d^{12} formed on the holder d' . By rotating said rod d^9 , the outer end of the sole-pressing pad d^2 may be raised or lowered, as the case may be, and said pad thus adjusted to the curvature of the toe portion of the last, the toe being higher in some lasts than in others. We do not limit ourselves to the employment of an adjustable sole-pressing pad, however, and may attach the said pad to the holder in the same manner that the heel-pressing pad d^3 is attached, the two pads being in all cases rigidly attached to the holder and incapable of independent yielding or self-adjusting movement excepting such movement as may be due to the elasticity of the pads themselves, the latter being preferably comparatively thick blocks or pieces of rubber fixed to the backs d^4 d^5 .

It will be seen that the spring c' exerts a downward yielding pressure upon the coupling-member c , and through the latter upon the presser or platen, the latter being therefore adapted to yield bodily to the pressure exerted against it by the jack, as hereinafter described, this yielding movement of the presser or platen enabling it to conform to the thickness of the sole and the size of the last interposed between it and the jack.

To limit the yielding movement imparted to the presser or platen by the spring c' , we provide a stop e , which, in the construction shown in Figs. 1 and 5 is a collar having a convex upper surface fitting the concave under side of the coupling-member d . Said collar e is provided with a tubular stem or shank e' , which extends upwardly through the socket b^3 and constitutes a connection between the stop e and the head b^2 which rigidly supports the stop and causes it to support the presser or platen against the downward pressure of the spring c' , said stop permitting the yielding movement of the presser or platen. We prefer to make the connection between the stop and the supporting-frame adjustable, so that the stop may be depressed or raised to vary the initial position of the presser or platen from which its yielding movement commences. To this end, we have shown in Figs. 1, 5, and 6, an internally screw-threaded nut or bushing e^2 fitted to rotate in a socket formed in the head b^2 and engaged with an external thread formed on the tubular stem e' , said bushing e^2 being provided with a hand-wheel e^3 by which it may be rotated to raise or depress the tubular stem e' and stop e . When the said stem and stop are

depressed, the spring c forces the presser or platen downward, so that its normal position is lower than before; and when the stop is raised, it raises the presser or platen with it, the spring c' yielding, so that the normal position of the presser or platen is higher than before.

The holder d' is formed so that the sole and heel pressing pads are separated from each other by an intervening space of sufficient width to receive a shank-presser, which is composed of a rigid holder f and a pad or strip f' affixed thereto and formed to bear upon the shank portion of the sole. The shank-presser is supported by a rod or stem f^2 the lower end of which is affixed to a block or head f^3 to which the holder f of the shank-presser is connected by a segmental rib f^4 fixed to said holder and entering a segmental groove formed in the head f^3 , said rib and groove being arranged to permit the shank-presser to tip or rock crosswise of the sole. The shank-presser does not partake of the oscillating movements of the sole and heel-pressing platen above described, but is adjustable vertically independently of said platen, so that it can be depressed to any desired distance below the surfaces of the sole and heel pads, and thus act to confine the shank portion of the sole against the corresponding portion of the upper before the pads d^2 and d^3 act on the fore-part and heel portions of the sole. The shank-presser and its rod f^2 are subjected to the downward pressure of a spring f^5 which bears upon an adjusting nut f^6 which is engaged with a screw-thread on the upper portion of the rod f^2 , said spring being supported by a yoke or frame f^7 secured to a suitable support such as a hand-wheel e^3 . The spring f^5 holds the adjusting nut f^6 against a suitable support or bearing, which as here shown is the upper end of the bushing e^2 above described.

The adjusting nut f^6 has a hand-wheel f^8 by which it may be rotated to raise or depress the rod f^2 and the shank-presser. The shank-presser can therefore be adjusted vertically independently of the sole and heel pressing platen, and is at all times yieldingly supported, the yielding support being due to the spring f^5 when the shank-presser is adjusted, so that its head f^3 is separated from the stop e . When said head f^3 is brought in contact with the stop e by the yielding of the spring f^5 , the shank-presser partakes with the sole-pressing platen of the yielding movement permitted by the spring c' and the sliding coupling-member c .

It will be seen that the presser composed of the heel and fore-part pads affixed to an oscillating holder common to them both, said holder having also a yielding movement, and the shank-presser adjustable independently of the heel and fore-part presser and having an independent yielding movement as well as a yielding movement in common with that of the heel and fore-part presser, constitutes

a simple and effective means for co-operating with a jack in pressing a sole against the lasted upper and maintaining the pressure while the cement is setting or hardening.

We do not limit ourselves to the details of construction above described, and may modify the same without departing from the spirit of our invention.

In Fig. 9, we show a modification in which the coupling-member on the holder d' is a socket d^{14} , and the spring-pressed coupling-member is a ball d^{15} , the adjustable stop which limits the downward movement caused by the depressing spring d^{17} being a sleeve d^{18} having a flange at its lower end adapted to support the sliding part d^{19} on which the ball d^{15} is formed. The sleeve d^{19} is adjusted by means of a nut d^{10} engaged with a screw-thread on the exterior of said sleeve.

The jack comprises a base portion h having a telescopic standard h' provided with a toe-rest h^2 , and a slide h^3 having a standard h^4 provided with a spindle h^5 formed to enter the socket in the heel portion of the last, the slide h^3 being adjustable by means of a screw h^6 . The jack is suitably engaged with a jack-carrier i , which is vertically movable on the supporting frame, and is moved vertically to apply and remove pressure by means of a power mechanism which comprises toggle-links $j j'$ connected respectively to the jack-carrier and to a power-driven gear-wheel k which rotates with the supporting-frame on the standard a , and a cam m affixed to the standard a and formed to be engaged by an overhanging trundle-roll j^2 connected with the meeting ends of the links $j j'$. The trundle-roll j^2 is mounted on a frame or holder j^3 which is connected with the links $j j'$ and is provided with a trundle-roll j^4 bearing on the outer surface of the cam m , the trundle-roll j^2 bearing on the inner surface of said cam. The cam is formed to simultaneously hold the links of all the toggle-joints in alignment with each other, thus elevating the jack-carriers excepting at one point, where the meeting ends of the links are thrown inward, thus depressing the jack-carrier and jack, as shown at the right in Fig. 1, so that the jack-carriers and jacks are elevated at all points excepting at one side of the machine, each jack-carrier and jack being depressed when it reaches said point, which is the operator's station. Each jack-carrier is provided with two cams n affixed to a rock-shaft n' journaled in bearings in the jack-carrier, said cams bearing on the base portion h of the jack. The cams when free to assume their normal position, are depressed by the weight of the jack, so that the jack rests upon the inner portions of the cams. A partial rotation of the rock-shaft n' and its cams will raise the jack to the position shown at the left in Fig. 1, the object of thus raising the jack being to bring the last and the upper and sole thereon into operative relation with

the platen or presser before the application of the power which applies the final pressure.

The jack-carrier and the mechanism for operating the jack and jack-carrier thus far described is not new, being substantially the same as that shown in patent to F. W. Coy, dated January 10, 1888, No. 376,406. We have added to said mechanism a treadle adapted to be operated by the foot of the operator, and devices operated by said treadle whereby the cams of each jack-carrier may be moved by the operator's foot, to give the jack its preliminary upward movement, so that the operator's hands are left free to attend to the other parts of the mechanism.

o represents a vertical rod located in the standard a and connected at its lower end to a treadle by the operation of which the rod may be depressed, the rod being normally raised by means of a spring o' . On the upper end of the rod is formed an arm or hook o^2 which is in position to engage a lug p' formed on a slide p^2 which is movable in a slot p^3 formed in the tubular portion b of the supporting frame. The slide p^2 is connected by means of a link p^4 with an arm n^3 affixed to the rock-shaft n' . When the jack is depressed and the cams held by the weight of the jack in a depressed position, the slide p^2 is elevated by the connection between it and the cams, and is in position to engage the hook o^2 , so that when the said hook is depressed by a movement of the treadle, the rock-shaft n' and cams n will be turned to raise the jack independently of the jack-carrier. A segmental ratchet q is affixed to the jack-carrier in position to engage a spring-pawl q' on the arm n^3 , said ratchet and pawl locking the cam in its jack-raising position, as shown in Figs. 3 and 4.

It will be understood that as the supporting frame rotates on the standard a , the slide p^2 connected with each jack carrier is raised when the jack-carrier is permitted to drop by the action of the cam m and the toggle-links, as above described, so that said slide is in position to be engaged by the hook o^2 and operated to raise the jack after the operator has removed the completed shoe and applied another to the jack. The operator is therefore enabled to change the position of the jack by foot-power.

The diagram shown in Fig. 7 shows the positions of the slide, cam, and treadle before the jack has been raised by the depression of the treadle; and the diagram shown in Fig. 8 shows the position of said parts after the jack has been raised by the depression of the treadle.

We claim—

1. In a sole-laying machine, a sole and heel presser or platen composed of a holder having at its central portion a universal coupling or joint member and yielding sole and heel pressing pads affixed to said holder and separated by an intervening space, combined

with a sliding universal coupling or joint member engaged with the coupling member of the presser, a spring which exerts a yielding pressure on said sliding member and
 5 presser, an independently movable shank-presser located in said space, and an independent spring for depressing the shank-presser.

2. In a sole-laying machine, a sole and heel
 10 presser or platen composed of a holder having a coupling-member adapted to co-operate with a supporting coupling-member, a yielding heel pressing pad affixed to said holder, and a sole pressing pad pivotally secured to
 15 the holder and provided with means for adjusting its inclination and holding it positively in any position to which it may be adjusted.

3. In a sole-laying machine, a sole and heel
 20 presser or platen composed of a holder having a coupling-member adapted to co-operate with a supporting coupling-member, a yielding heel pressing pad affixed to said holder, an arm jointed at one end to said holder and
 25 connected at its other end with the holder by an adjusting-screw, and a sole pressing pad affixed to said arm.

4. In a sole-laying machine, the combination of a yielding-surfaced presser or platen
 30 having a coupling-member, a spring-pressed coupling-member which exerts a yielding pressure on said platen, a supporting collar or stop engaged with the coupling-member of the platen, and connections between said stop
 35 and the frame of the machine whereby the stop is rigidly supported and caused to limit the movement imparted to the platen by said spring.

5. In a sole-laying machine, the combination of a yielding-surfaced presser or platen
 40 having a single central coupling member, a sliding coupling member engaged with the coupling member of the platen, a fixed guide for said sliding member, a spring which exerts a yielding pressure on said sliding coupling member and presser, a movable stop for
 45 limiting the movement of the platen by said spring, and means for adjusting said stop and for positively holding it in any position to
 50 which it may be adjusted.

6. In a sole-laying machine, a shank-presser provided with a depressing spring and with adjustable means for limiting the downward
 55 movement caused by said spring, combined with a heel and sole presser composed of a holder jointed to the supporting frame and adapted to oscillate independently of the shank-presser, and sole and heel pressing
 60 pads affixed to said holder and located at opposite ends of the shank-presser.

7. In a sole-laying machine, the combination of a sole and heel presser or platen composed of a holder having a central coupling-member, heel and sole pressing pads affixed

to the ends of the holder, a presser-support- 65
 ing stop having an adjustable tubular supporting standard, means for holding said standard at any position to which it may be adjusted, a spring-pressed coupling-member which holds the coupling-member of the 70
 presser yieldingly against the stop, a shank-presser composed of a holder and a yielding pad or strap affixed thereto located between the heel and sole pads, a rod secured to the shank-presser and extending through the said 75
 tubular standard, a spring which exerts a downward pressure on the shank-presser, and an adjusting-nut on the rod of the shank-presser, said nut being held by the spring against a fixed support or bearing and co-op- 80
 erating with the spring in holding the shank-presser yieldingly at various heights.

8. In a sole-laying machine, the combination of a shank-presser having a rod or stem, an adjusting-nut engaged with said rod, a 85
 spring exerting downward pressure on the shank-presser through said nut and rod, the said nut determining the extent of depression of the rod and presser by said spring, a sole and heel presser composed of a holder having 90
 a coupling-member surrounding the rod of the shank-presser and sole and heel pressing pads attached to said holder, a supporting stop having a tubular shank or stem surrounding the rod of the shank-presser, an ad- 95
 justing-nut engaged with a fixed support and with said tubular stem, whereby the sole and heel presser may be adjusted, and a spring-pressed coupling-member bearing yieldingly on the coupling-member of the sole and heel 100
 presser.

9. In a sole-laying machine, the combination of a supporting standard; a frame mounted to rotate on said standard; a series of jack-carriers vertically movable on said frame, each 105
 having a jack-raising cam; a series of jacks mounted on said carriers and movable independently thereof by the cams; slides movable in guides in the frame and connected by suitable intermediate devices with said cams; 110
 an operating rod located in the standard and formed to engage the slides, one at a time; a treadle connected with said rod and adapted to depress the latter, the depression of the rod actuating the slide engaged therewith and 115
 raising the cam connected with said slide; and devices for locking said cams in their jack-raising positions.

In testimony whereof we have signed our names to this specification, in the presence of 120
 two subscribing witnesses, this 22d day of December, A. D. 1894.

EDWARD C. JUDD.
 ABNER C. PAUL.

Witnesses:

C. F. BROWN,
 E. BATCHELDER.