Sheet 1 - 2 Sheets.

G. W. Parrott,

Pegging Machine,

No. 36,476, Patented Sep. 16, 1862

Fig: 3.

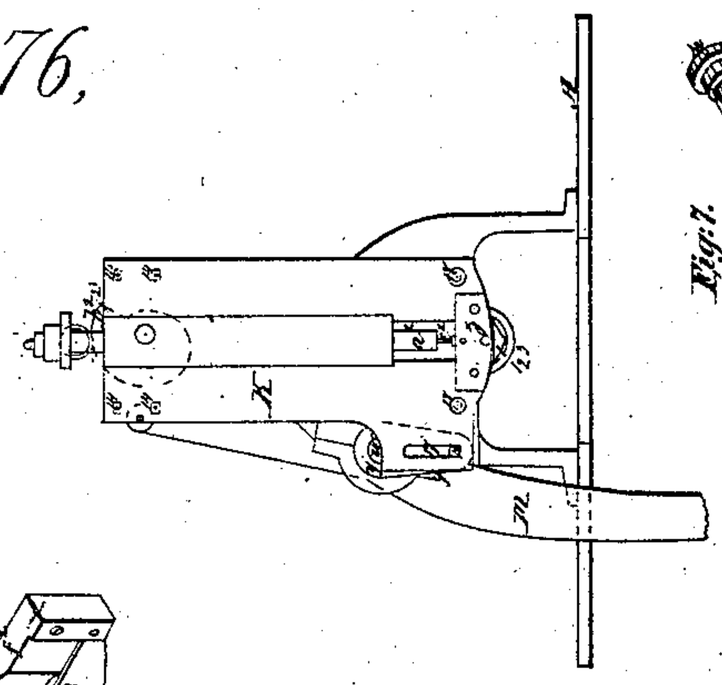


Fig: 7.

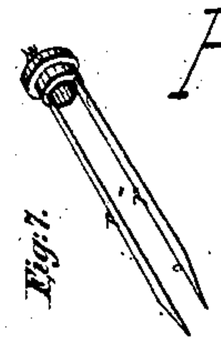


Fig: 6.

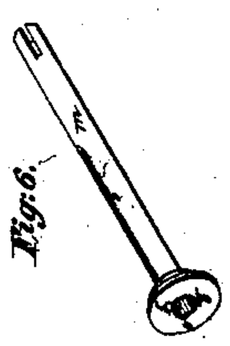


Fig: 4.

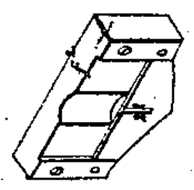


Fig: 4a.

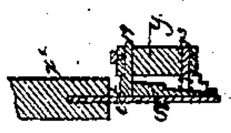
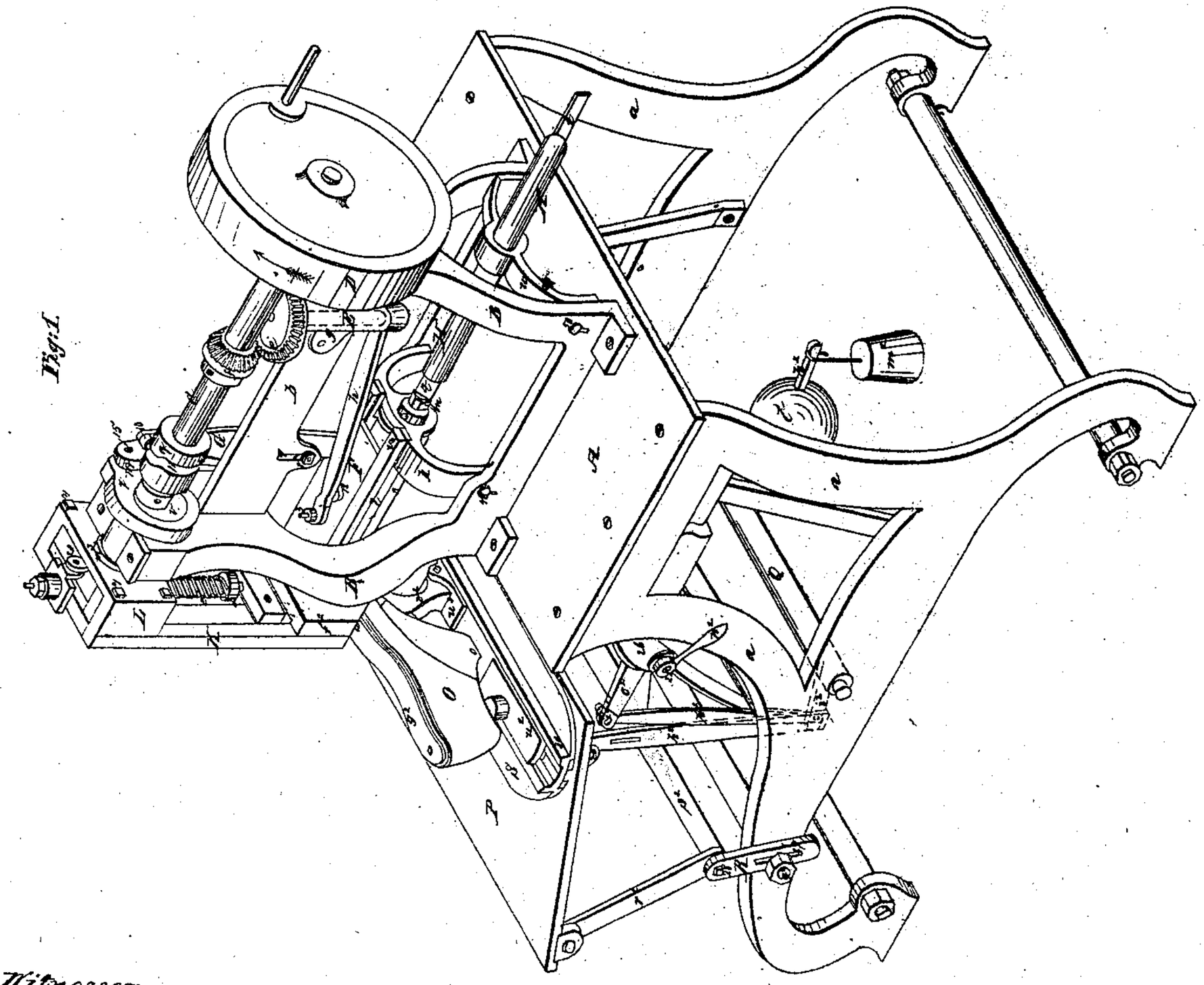


Fig: 1.



Witnesses:

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Sheet 2-2 Sheets.

G. W. Parrott,

Pegging Machine,

No. 36,476, Patented Sep. 16, 1862.

Fig: 8.

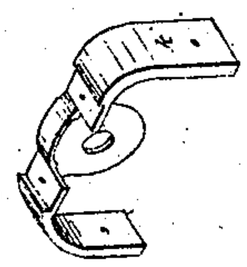


Fig: 5.

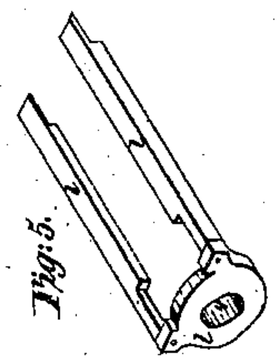


Fig: 12.

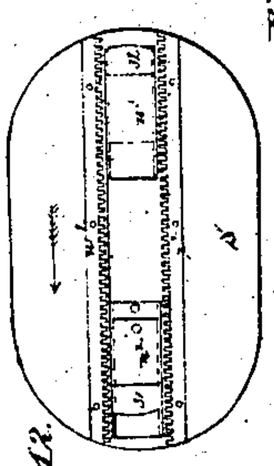


Fig: 3.

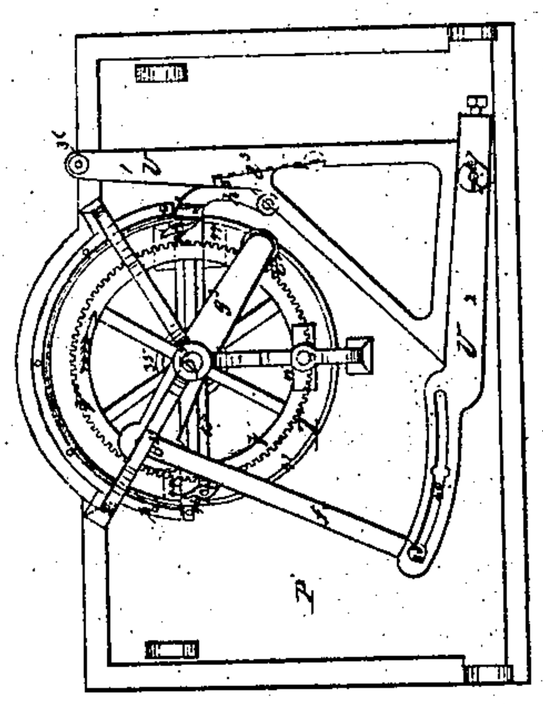


Fig: 15.

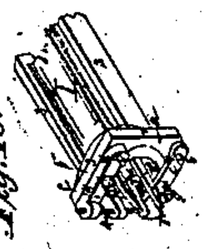


Fig: 4.

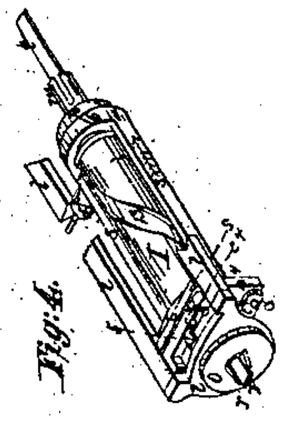
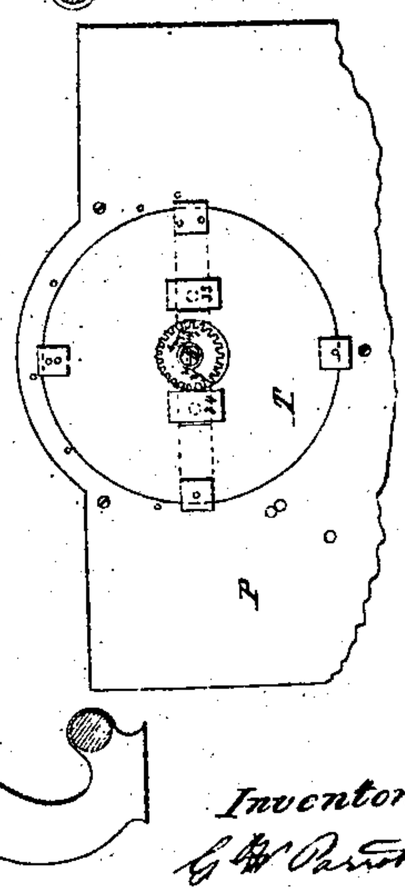


Fig: 2.

Fig: 10.

Fig: 13.



Witnesses:
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Inventor:
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UNITED STATES PATENT OFFICE.

GEORGE W. PARROTT, OF LYNN, MASSACHUSETTS.

IMPROVED MACHINE FOR NAILING ON THE SOLES OF BOOTS AND SHOES.

Specification forming part of Letters Patent No. **36,476**, dated September 16, 1862.

To all whom it may concern:

Be it known that I, GEORGE W. PARROTT, of Lynn, in the county of Essex and State of Massachusetts, have invented an Improved Machine for Nailing on the Soles of Boots and Shoes, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a perspective view of the machine; Fig. 2, a vertical section through the middle of the same; Fig. 3, a plan of the under side of the table on which the last is supported and revolved; Figs. 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, and 15, details to be referred to.

The machine which is the subject of my present invention is for nailing the soles of boots and shoes to the upper-leather, the nails being driven through and clinched down on a metal-plated last, and is more particularly applicable to the manufacture of thin-soled boots or shoes, such as those intended for ladies' wear.

That others skilled in the art may understand and use my invention, I will proceed to describe the manner in which I have carried it out.

In the said drawings, A is the bed of the machine, supported on legs *a*. From this bed rises a frame, B, in suitable bearings, on the top of which is carried the main shaft C, which is revolved in the direction of the arrow by any suitable power applied to the pulley D. A brace, *b*, connects the two end pieces of the frame B. A short vertical shaft, E, supported in a bearing, *g*, attached to this brace *b*, carries a beveled gear, *e*, which engages with a gear, *f*, on the shaft C. A crank attached to the lower end of the shaft E has pivoted to it a rod, *h*, which is pivoted at 3 to a block, F, which slides back and forth as the shaft C is revolved in ways *i*, supported on the frame B and on a cross-brace, *k*, of the frame. This cross-brace is attached to the frame B by a pin and slot, 45, which permits the brace to be raised and lowered to change the inclination of a nail-rod, to be presently described. There is also attached to the frame B and cross-brace *k* a frame, *l*, (detached in Figs. 4 and 5,) through a hole, 4, in the head of which passes a tube, *m*, (detached in Fig. 6,) which is of sufficient length to pass through the brace *k*. Two slots, 5, are cut one through each side of this tube for about half its length and have corresponding notches cut through the head *o*. A ring or hollow head, *p*, (detached in Fig. 7,) has attached to it two spring-rods, *r*, which are beveled at the outer end and lie in the slots 5 of the tube *m*, the ends projecting slightly beyond the head *o*. The head *p* is attached to the head 6 of a frame, *s*, Fig. 4, which lies within the frame *l* and is capable of being moved back and forth longitudinally a short distance in the following manner: A pin, 7, which projects from one of the side rails of the frame *s*, just below the rail of the frame *l*, enters a slot in the lower end of a lever, G, Figs. 1 and 2, which is pivoted at 8 to the longitudinal brace *b*. Slots 9 in the brace and lever permit the position of the pivot 8, which is secured by a screw-nut, to be raised or lowered, and the length of the vibrations of the lower end of the lever to be varied. A pin and roller, 10, on the upper end of this lever enter a groove, 11, in a cam, *q*, on the shaft C, the groove being so formed as to give the required motion to the frame *s* to hold it stationary for an instant while the nail is being cut off. The metal strip or nail-rod *t* passes through a guide-tube, H, in which it is free to turn over, the tube being supported in a cross-brace, *u*, which may be adjusted by raising or lowering the brace *u* to correspond with the brace *k*, the brace being attached on each side to the frame B by a pin and slot, 50. This strip then passes through the tube *m*, the rods *r* resting one on each edge of the strip, which is held central in the tube by a small rod of wood which lies on each side of the metal strip. As the frame *s* and head *p* are drawn back by the lever G, the clamps *r* take a fresh grip of the metal strip *t*, and at the next vibration of the lever carry the strip forward an amount equal to the thickness of the nail to be cut. They are caused to grasp the edges of the metal strip *t* with sufficient force to feed it in the following manner: To the head a^4 of the frame *s* are attached by pivots 3 two blocks, c^4, the opposite ends of which are drawn together to adjust them by a screw-bolt, 4. A small friction-roll, 5, is attached to each block of such a diameter that it extends beyond the edge of the block. As the nail is cut slightly tapering (by the incline of the tube *m* and the nail-rod) and it is necessary to present the nail to the driver with the point downward, the metal strip must

be revolved a half-turn each time a nail is cut off. This is done in the following manner: A cylinder, I, Fig. 4, lies within the frame *s*, the tube *m* passing through it. A pin, 12, Figs. 1 and 2, which projects down from the sliding block F, enters a spiral groove, 13, in the cylinder, and as the block is moved back and forth along the ways *i* the cylinder is revolved a half-turn. The rods *r*, Fig. 7, which lie on the outside of the tube *m* for part of its length, act as splines which move in longitudinal grooves cut on the inner side of the cylinder, so that while the frame S, head *p*, and clamps *r* are moved back and forth by the vibrations of the lever G to produce the feed the cylinder I, with the tube *m* and metal strip *t*, are revolved a half-turn (to reverse the position of the strip *t*) each time the shaft C is revolved. When the cylinder is in the position shown in Fig. 4 the clamps *r* may be drawn back; but when revolved a half-turn, as in Fig. 15, the clamps *r* press against the small rolls 5, and the clamps are pressed down onto the edge of the strip *t* to grasp it, ready for the next feed movement.

The manner in which a nail is cut from the strip *t* and is driven at each revolution of the shaft C will now be described.

A block, K, (shown detached in Fig. 9,) is attached by pins 14 to a head or collar, L, which hangs on an eccentric, m^3, on the shaft C, Fig. 1. A slight lateral motion is given to this block K sufficient to cut off a nail, as follows: An eccentric, *v*, on the shaft C is embraced by a strap, *x*, to which is pivoted at 15 a lever, M, which is attached to one end of a short shaft, *w*, which has its bearing in the side of the frame B. (See Fig. 9.) A crank, *y*, attached to the other end of this shaft, carries a pin, 16, which plays in a slot, 17, in the block K, so that as the shaft C is revolved a slight lateral motion is given to the block K sufficient to cut off a nail. Pins 18 pass through slots in the lower end of the block K to steady it. The movement of this block K is, of course, properly timed with respect to the feed of the metal strip *t*. A piece, *z*, (shown enlarged in Fig. 14,) attached to the lower end of the block K, has a pin, 19, passing through it, which is secured in place after being adjusted by a screw passing through the top of the block *z*. To this pin is pivoted a tapering bar, o^3, which plays in a recess in the block, and is pressed out at its lower end by a spiral spring which encircles a screw, r^3, the end of which serves as a stop or limit to the swing of the bar o^3. Against this bar o^3 the strip *t* is thrust by the feed to regulate the thickness of the nail cut. The end of the nail-rod being inclined, the nail, after being cut off, would not be held steady and straight under the driver if it simply fell into a straight recess. The piece o^3 is therefore necessary to keep the nail central with its point in the axis of the driver.

A rod, a^2, which rises and falls vertically in bearings in the block K, has attached to its upper end a roll, 20, which bears on a cam, b^2, Figs. 2 and 10, attached to the end of the shaft C, which is of such a form as to raise the rod a^2 until the roll 20 drops off from the shoulder 21, when the rod is thrown down by a spiral spring, c^2, with sufficient force to drive the nail. A driver or hammer, e^2, Figs. 2 and 9, attached to the lower end of the rod a^2, plays up and down in a recess in the lower end of the block K, opposite to a slot, 22, in a block, f^2, Fig. 11, attached to the frame B. The strip of metal *t* is fed through this slot 22 into the recess in which the hammer e^2 plays and against the stop o^3, and as the block K is vibrated the nail is cut off by the face of the block K, (which forms a pair of shears with the block f^2,) and is then driven by the hammer e^2.

The shoe to be nailed is placed on a metal or metal-plated last, O. The sole is tacked on, and a plate, g^2, of less size than the sole, is secured on it. This plate bears against a tongue, 23, which projects from the lower end of the block K and serves as a guide to regulate the distance at which the nails are driven from the edge of the sole, and also serves to keep a thin sole flat and smooth. The feed of the shoe beneath the driver will now be described. A table, P, (a plan of the under side of which is shown in Fig. 3 and a partial plan of the top side in Fig. 13,) is supported at the side next the bed A on a frame, h^2, to which it is pivoted at 24, and which frame is pivoted at each side to an arm, i^2, projecting from a shaft, Q, which has its bearings in the stand of the machine. A lever, k^2, projecting from the middle of the shaft Q, carries a counterpoise-weight, l^2, and an adjusting-weight, m^2, which support the weight of the front of the table P and hold the shoe up to its work. The following device enables the operator to lower the front edge of the table when he has to remove or replace a shoe on the jack: A short shaft, 25, which has its bearings in a bracket, 26, attached to the stand *a*, has attached to it a hand-lever, n^2, and a lever, o^2, which is pivoted at 27 to a rod, p^2, the lower end of which is pivoted to one of the arms i^2, as shown dotted in Fig. 1, so that by vibrating the lever n^2 the shaft Q is rocked and the front edge of the table P is raised or lowered. The outer side of this table is pivoted to legs r^2, which project one on each side from a shaft, s^2, which is pivoted at 28 to a block, R, which can be adjusted in height by screw-bolts and nuts q^2, passing through slots 29 in the stand *a*. This permits the inclination of the table P to be varied, by which the direction or inclination at which the nails are driven may be changed, or the table be adjusted to suit different-sized lasts. A spring, t^2, attached to one of the legs r^2 and to the stand *a*, holds the table P up toward the bed A and keeps the plate g^2 in contact with the guide 23. The last O is set on a pin which projects from a block, u^2, which slides in ways 30 on a carriage, S. A jack, v^2, which is pivoted to a sliding block, w^3, at the

opposite end of this carriage, supports the toe of the last.

Stops 31 and 32, attached to the blocks u^2 and u^3, project a short distance beneath the carriage. Two racks, w^2 x^2, are attached to the under side of the carriage. These engage alternately with a pinion, y^2, Fig. 13, which projects above a disk, T, which is set in the table P and is free to revolve therein at certain times, as will be presently explained. Two guide-blocks, 33 and 34, project above the disk T and lie between the racks w^2 x^2, keeping the pinion engaged with the rack on the upper side. The pinion is eccentric to the disk T. These blocks are attached through slots in the disk to a bar, a^3, which slides in guides 44 on the under side of the disk. This bar has a slight longitudinal motion. The shaft b^3, which carries the pinion y^2, is supported in a step, c^3, suspended by braces d^3 from the lower side of the table P, (see Figs. 2 and 3,) passing through an eye, 35, in the bar.

The pinion y^2 is revolved in the direction of its arrow in the following manner: The lever M, which, as before explained, is vibrated by the eccentric v on the shaft C, is pivoted at its lower end at 36 to a bell crank, U, Fig. 3, which is pivoted at 37 to the under side of the table P. To the opposite end of this frame or bell-crank U is pivoted at 38 a rod, f^3, which is pivoted at 39 to a lever, g^3, which vibrates freely on the shaft b^3. A slot in the end 39 of the lever g^3 and another slot, 40, in the crank U permit the adjustment of the vibrations of the lever g^3, to the outer end of which is pivoted a dog, i^3, which is held by a spring in contact with the teeth of a cog-wheel, V, secured to the shaft b^3. This adjustment of the throw of the lever g^3 is necessary to cause the wheel V to be fed along one, two, or more teeth at each vibration of the crank U and to cause the pinion y^2 to feed the carriage S and the shoe faster or slower to space the nails one from the other. A flange or rim, 41, projects from the lower side of the disk T. It is cut away on opposite sides in line with the bar a^3. A dog, h^3, pivoted to the under side of the table P, is held up by a spring, l^3, and falls into one of the notches in the rim 41 against the end of the bar a^3. A dog, 42, is pivoted to each end of the bar a^3. Each dog is so placed and held up to its work by a small spring that when the bar a^3 is pushed along in the direction of the arrow, Fig. 3, and the dog h^3 is pushed back by it out of the recess in the rim 41 to allow the disk T to revolve the dog 42, which is at the end of the bar a^3 farthest from the dog h^3, shall engage with the cog-wheel V and carry the disk round with the wheel. This occurs twice in each revolution and is necessary when the last is to be turned to place the row of nails around the heel or around the toe. When the bar a^3 is pushed in and the disk T begins to revolve, the end of the bar passes behind a flange, p^3, secured to the under side of the table P, which prevents the bar from being accidentally pushed back, which would disengage the dog 42 from the wheel V. As the shaft b^3 and cog-wheel y^2 are eccentric to the disk T, the disk is supported independently of the shaft, revolving in a circular opening in the table P and being supported on friction-blocks which rest on the cog-wheel V, which, in addition to its support on its shaft b^3, has one or more friction-blocks, 45, placed between it and the braces d^3, the pressure or friction being adjusted by a set-screw passing through the brace d^3. I have placed this block 45 on the lower or down-hill side of the table P, as the jack and last are held inclined to the direction of motion of the hammer e^2, and any tendency the disk T may have to vary from the plane of the table P is thus opposed. The portion 1 of the bell-crank U, which is pivoted to the end of the lever M, is also pivoted vertically at 46 (see Fig. 2) to the part 2 of this crank, so that the inclination of the table P may be varied without altering the connection of the crank with the lever M.

As it is desirable to place the nails in the row around the heel or around the toe at a somewhat greater distance one from the other, to prevent a crowded appearance, particularly in small-sized shoes, I make the following adjustment of the parts to accomplish this: The lever g^3 (see Fig. 3) has a slot in which the pin 39, on which the rod f^3 pivots, is adjustable. By changing the pin in this slot the opposite end of the lever g^3, to which the dog i^3 is attached, is carried at each vibration of the lever higher or lower with respect to the position of the stationary dog h^3. The throw of the lever g^3 is adjusted (by pin 39 in slot 40 of crank U) so that the dog i^3 will feed so many teeth of the wheel V as will give the required spaces to the nails on the half-circle of the heel or toe while the plate T is revolving with the wheel V, at which time the dog h^3 is pushed back by the bar a^3. Outside of the rim 41 of the disk T the tail or longer end of the dog i^3 may now be carried, as the lever g^3 vibrates, past the head 3 of the dog h^3; but when the bar a^3 is pushed back, as in Fig. 3, and the feed is to be along the sides of the shoe, the head 3 of the dog h^3 enters one of the notches of the rim 41 of the disk T, and in this position intercepts the path of the tail of the dog i^3, and does not allow this dog i^3 to catch in the teeth of the wheel V at the latter part of the vibration of the lever g^3, and consequently the feed of the wheel is one or two teeth less and the nails are placed a little closer along the sides of the shoe than they are at the heel or toe.

The motion of the block K, which cuts off the nails, is peculiar. It has not only the lateral motion at its lower end, given to it by the lever M, but also an up-and-down motion given by the eccentric m^3, on which it is hung. This latter motion causes the lower end of the block to press down on the sole of the shoe while the nail is being driven and relieves the shoe of the pressure while the block is being vi-

brated in the direction counter to the feed of the shoe. Otherwise the block would obstruct the feed.

The following is the operation of this machine: The shoe to be nailed is put on the last O, the sole is put on, and the metal guide-plate g^2 is tacked down on it. The last is set on the pin on the block u^2 and the jack v^2 is pressed up against and supports the toe of the last. The distance of the blocks u^2 w^2 apart will depend on the length of the last used, and this determines the point when the disk T shall commence to revolve to turn the last to have the row of nails driven around the heel or toe of the shoe. The table P is adjusted at the proper inclination by adjusting the blocks R. This determines the inclination at which the nails shall be driven. The front of the table is raised by the hand-lever n^2 to bring the edge of the sole (commencing to nail near the toe) up under the block K, with the guide-plate g^2 bearing against the stop 23 on the lower end of the block K. The weights l^2 m^2 and spring t^2 keep the shoe up to the block K. A thin strip of copper or other suitable metal or alloy is passed through the tubes H and m and is presented to the block K, which cuts off the nail in an inclined position, (adjusted by raising or lowering the braces k and u,) so that a nail may be cut from the strip, which nail is tapering toward its point which is down toward the shoe. The shaft C is revolved in the direction of the arrow by power applied to the pulley D. This vibrates the block K and cuts off a nail from the rod t, which has been thrust out through the slot 22 in the piece f^2, Fig. 11, against the spring-stop o^3, Fig. 14, which accommodates itself to the inclined end of the nail-rod t and holds the nail after it is cut off in the proper position to be driven. The cam b^2 on the shaft C, which has raised the hammer rod a^2 as it continues to revolve, drops the roll 20, attached to this rod, from the shoulder 21 of the cam, when the spring c^2 throws down the rod and its hammer e^2 and drives the nail through the sole of the shoe, clinching it down on the metal-plated last O. After a nail is cut from the metal strip t it is necessary that the strip should be turned over to bring the point of the next nail down and be fed forward toward the block K. As the shaft C is revolved the cogs f e revolve the shaft E. This through the rod h slides the block F in its ways i, and the pin 12, moving in the groove 13 of the cylinder I, revolves this cylinder a half-turn, and as the clamps r act as splines, sliding in grooves on the inside of the cylinder I, and also lie in the grooves 5 in the tube m, this tube is revolved with the cylinder and the rod t is turned over. Immediately before the cylinder I is revolved the cam q on the shaft C vibrates the lever G, which is connected by the pin 7 to the small frame s, which is drawn back in the direction of the arrow, Fig. 4, and carries back the clamps r, which rest one on each edge of the rod t to take a fresh grasp of the rod. When the cylinder I and tube m are revolved, these clamps r strike on the small rolls 5, as shown in Fig. 15, and the clamps are pressed by the rolls onto the edges of the rod t, so that at the next vibration of the lever G the frame s, clamps r, and rod t are carried forward to make the feed, the rod t, as before, being fed up against the stop o^3, ready to have another nail cut off at the next vibration of the block K. The form of the cam q holds the rod t stationary for an instant while it is being cut off. After a nail is driven and while the block K is slightly raised by the cam m^3, on which it is hung, the shoe is fed forward the requisite distance. This is done by the lever M, operated by the concentric v on the shaft C, which vibrates the bell-crank U and lever g^3, (which has been previously adjusted to give the required amount of feed,) and revolves the cog-wheels V and q^2. This latter wheel, engaging with the rack w^2, moves the carriage S in the direction of the arrow, Fig. 12. This feed is repeated at each revolution of the shaft C until the stop 31, attached to the block u^2, strikes the stop 33, which projects above the disk T, Fig. 13, and moves the bar a^3 in the direction of its arrow, Fig. 3. This throws out the dog h^3 and engages one of the dogs 42 with the wheel V, when the disk T is revolved along with the wheel V, and the last O and the shoe are revolved a half-circle to place the row of nails around the heel of the shoe. When this half-circle is completed, the dog h^3 again falls into the notch in the rim 41 of the disk, pushes back the bar a^3, and disengages the dog 42 from the wheel V, when the cog-wheel y^2 engages with the rack x^2 and feeds the shoe along to complete the nailing of the opposite side of the shoe. When this is done, the stop 32, attached to the block u^3 near the other end of the carriage S, strikes the stop 34, and in the same manner as before the disk T is revolved to place the row of nails around the toe of the shoe and complete the operation.

I am aware that a nail to be driven into a shoe has been cut from a strip of metal by a swinging gate or cutter. I do not, therefore, claim this, broadly; but

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The vibrating block K, for cutting off the nail when the block is hung on an eccentric, m^3, by which it is raised to relieve the pressure on the shoe while the shoe is being fed along under it, substantially in the manner set forth.

2. Inclining the nail rod or strip t to the block or cutter K to cut the nail tapering and turning over the strip after each cut to present the nail to be driven with its point down, substantially in the manner specified.

3. The clamps r and the parts connected therewith for feeding forward the strip t, in combination with the mechanism for revolving the said strip, substantially as described.

4. The sliding block F, pin 12, and grooved cylinder I, for revolving the strip *t*, substantially as set forth.

5. The adjustable braces *k* and *u*, for setting the nail-rod at any required inclination to the block or cutter K.

6. The mechanism, substantially as described, for feeding the shoe and turning it round to place the row of nails around the heel and toe.

7. Adjusting the lever g^3 so that the dog i^3 on it shall strike the head of the dog h^3 or other stop at part of the vibration of the lever and thereby vary the feed, to make the spaces between the nails different along the sides of the shoe and around the heel and toe.

8. Placing the cog-wheel y^2 eccentric to the disk T, so that it shall engage with the rack, w^2 or x^2, which may be on the upper side, substantially as specified.

9. The plate g^2, applied to the sole of the shoe, in the manner and for the purpose specified.

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Witnesses:
THOS. R. ROACH,
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