2 Sheets-Sheet-1

S. D. Tripp.

Pegging Machine.

No. 18,170. Patented Sep. 8, 1857.

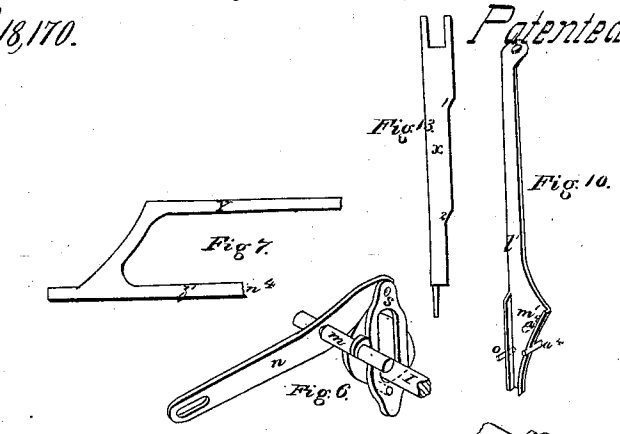

Fig. 13.

Fig. 10.

Fig. 7.

Fig. 6.

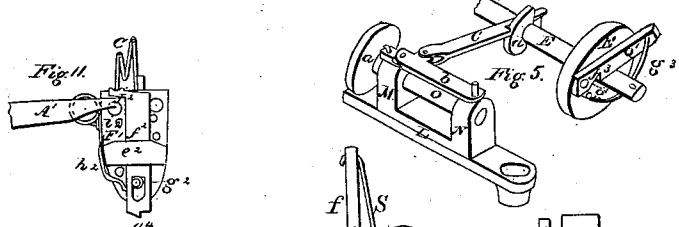

Fig. 11.

Fig. 5.

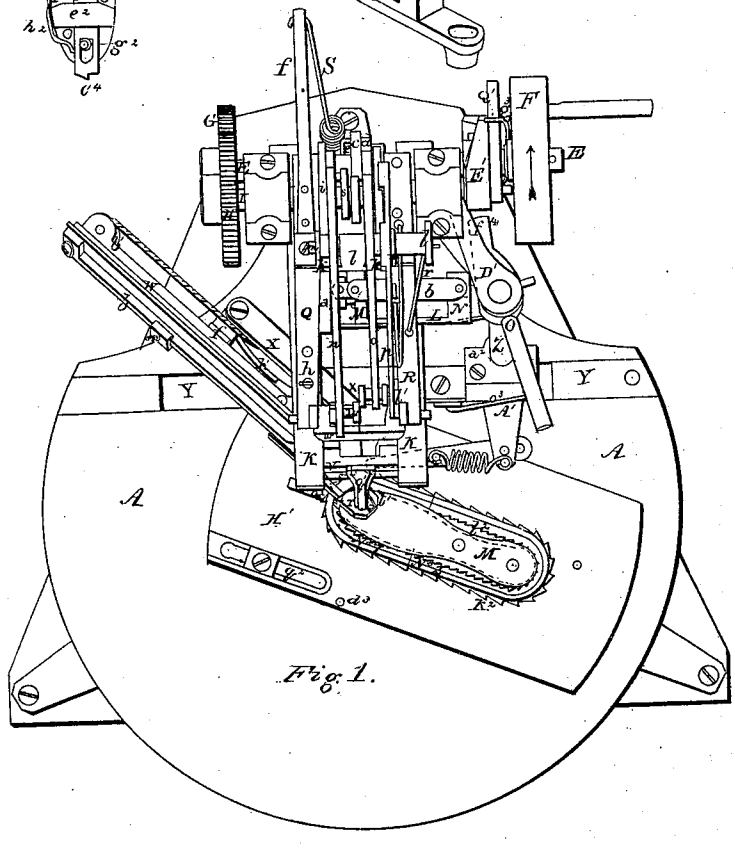

Fig. 1.

2 Sheets-Sheet 2.

S. D. Tripp,

Pegging Machine.

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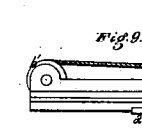
Fig. 9.

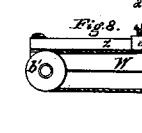
Fig. 8.

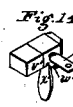
Fig. 14.


Fig. 15.

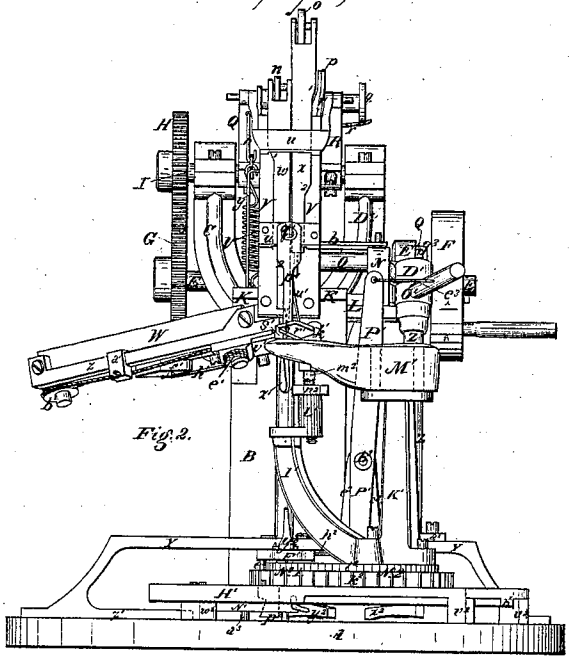
Fig. 2.

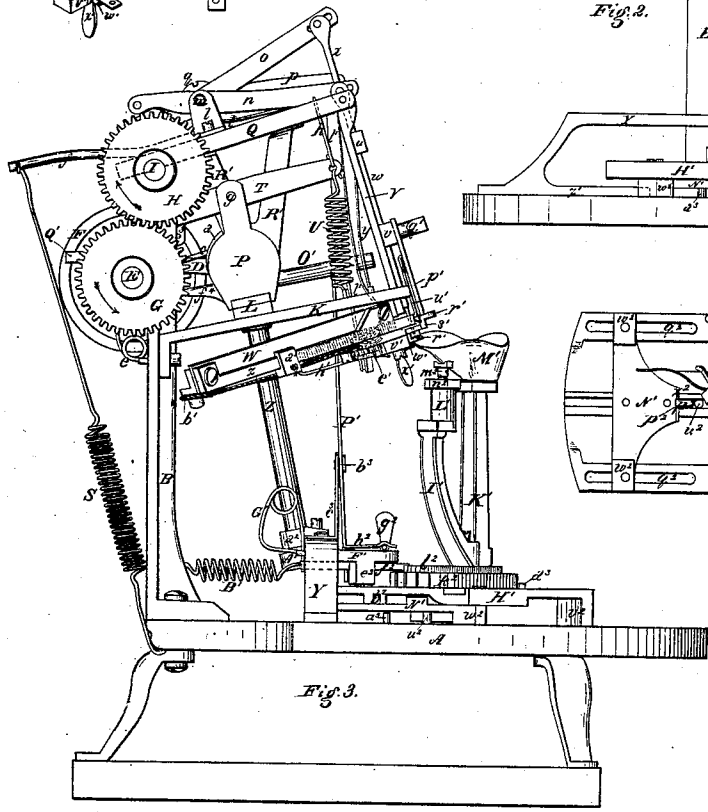
Fig. 3.

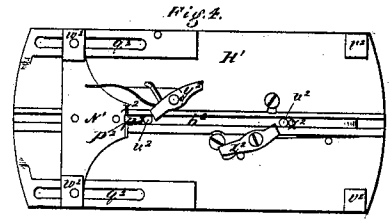
Fig. 4.

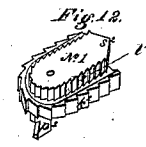
Fig. 12.

UNITED STATES PATENT OFFICE.

SETH D. TRIPP, OF WINCHESTER, MASSACHUSETTS, ASSIGNOR TO HIMSELF AND LUTHER HILL.

MACHINE FOR PEGGING BOOTS AND SHOES.

Specification of Letters Patent No. 18,170, dated September 8, 1857.

To all whom it may concern:

Be it known that I, SETH D. TRIPP, of Winchester, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Machines for Pegging 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 plan; Fig. 2 a front elevation; Fig. 3 a side elevation; Figs. 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14 and 15 details to be referred to hereafter.

In the said drawings A is the bed-plate or stand, from the back part of which rises the verticial standard B which is divided or forked at its upper end into two arms C, D, in suitable bearings attached to the back of which runs the shaft E to which motion is communicated by power applied to the drum F; this drum is clutched with the shaft in a manner which will be hereafter described. By means of the gears G and H which revolve in the direction of their arrows (Fig. 3) motion is given to the shaft I which is carried in suitable bearings on the top of the arms C, D. Attached to the standard B and extending out toward the front of the machine are two arms K. Upon these arms is secured a cross bar L (Fig. 5) from which rise two standards M, N carrying a short shaft O to one end of which is secured a disk *a* (Figs. 1 and 5). To this disk is hinged by a toggle joint a flat bar *b*, the other end of which is pivoted to the top of the standard N—to the bar *b* near the toggle joint is attached an arm *c* the forked end of which embraces the shaft E on which is a cam *d* that bears against a notch in one side of the arm *c* and pushes it forward straightening the toggle and forcing the disk *a* toward another disk P (Fig. 3) rising from the end of the cross bar L—a spring *e* serves to retract the arm *c* when it is relieved from the cam *d*.

Q and R are two arms hung upon the shaft I one near each of its bearings. These arms carry the punching and pegging apparatus and are counterpoised by the spring S attached to a rod *f* secured to one of them and extending out over the back of the machine.

Pivoted at *g* to a standard rising from the disk P is a lever T to one end of which is connected the spring U attached to the stationary arm K. A rod *h* connects this same end of the lever to the vibrating arm Q, the rod passing loosely through a hole in this arm and being bent over onto it; thus the spring U serves to pull down the arm Q and the parts connected therewith, but when the forward end of the lever T is raised which is done at intervals by a cam *i* (Fig. 2) on the shaft I the arm Q is relieved by taking off the tension of the spring V. The two arms Q, R are secured together and braced by a cross piece *k* (Fig. 1) from this piece and from each arm rise short standards *l* which serve as bearings for a shaft *m* on which vibrate the levers *n*, *o*, and *p*, the shaft *m* at the part where it passes through the levers *n* and *p* being formed into eccentrics (Fig. 6) so that as the shaft is turned by the adjusting wheel *q* secured to one end of it, the throw of the levers is altered, allowing them to be so vibrated that their outer ends shall be depressed a greater or less distance by their cams. The wheel *q* is held when adjusted by a spring pawl *r* attached to the arm R.

The levers *n* and *o* are alternately vibrated by cams (one of which is seen in Fig. 6) on the shaft I. The cam of each lever pressing against its rear end serves to lift this end of the lever. A slotted arm *s* (Fig. 6) is pivoted to the lever, the shaft I passing through the slot, and a pin (seen dotted) near the lower end of the arm rests against the cam and serves as the cam revolves to depress the lever. The short end of the lever *p* is lifted at intervals by its cam on the shaft I and is returned into position by a spring *l* attached to the arm R (Fig. 1). Pendant from the outer ends of the arms Q and R and pivoted thereto is a gate V having on its front side two cross pieces *u* and *v* which serve as guides for two slides *w* and *x* which carry at their lower ends the awl and driver, the awl being attached to the slide *w* and the driver to the slide *x*; these slides are attached at their upper ends to their respective levers *n* and *o* by pins pasing through slots in the ends of the levers allowing a slight play in the direction of the length of the lever and a wide notch in the head of the slide allows its pin to move through the lever when the slide is moved laterally. These slides are formed as seen in Figs. 2 and 13 with the inner edge or that which moves against the other slide

straight, the outer edge having offsets 1 and 2, giving to the slide as viewed from front a different width at different portions of its length. As each slide is alternately driven down by its lever the inclines or offsets 1 and 2 on its outer edge strike against the end of the recess in the cross pieces *u* and *v* and throw the slide over laterally toward the center of the gate V, the inclines on the other slide as it ascends allowing it to move away from this center line, thus permitting the awl and the driver to descend alternately in the same line passing vertically through the middle of the gate V. This gate hangs between and is steadied by the stationary arms K and is allowed to swing a short distance in a vertical plane parallel with the axis of these arms, to accommodate itself to the inequalities of the edge of the shoe, being pressed out against the shoe by a spring *y* (Figs. 2 and 3) attached to one of the arms K. Attached to the lower end of the gate V is a long bar W (seen detached in Fig. 8 which is a view from beneath and in Fig. 9 which is a top view of the same). In front of this bar is placed a way *z* which is secured thereto by a screw at each end leaving a small space between it and the bar in which is placed a sheet or slip of wood notched at its lower edge ready to be split into pegs. This slip which is seen dotted in Fig. 3 is fed forward as required by a block *a'* sliding on the way *z*. A cord attached to this block leads over a pulley *b'* at the outer end of the bar W and another pulley *c'* (Figs. 8 and 9) near the other end of the bar; on the shaft of this latter pulley is a ratchet wheel *e'* which is moved one notch at a time by its pawl *d'* (seen detached in Fig. 15) which is operated in the following manner: From one side of the bar W near the middle of its length projects the piece *f'* to which is pivoted at one end an arm X, to a block *g'* projecting from the under side of which is attached by a pin and slot the pawl *d'* which is held up to the ratchet wheel *e'* by a spring *h'* secured to the piece *f'*. The arm X has pivoted to its outer end at *k'* a piece l^4 to which is attached the splitting knife *i'* which plays through a slot in the bar W, splitting off a peg from the sheet each time the arm X is vibrated. This movement of the arm X is caused in the following manner: Pivoted to the longer arm of the lever *p* is a rod *l'* (seen detached in Fig. 10) the lower end of which is widened out at *m'* where it has on one side a straight and on the other an inclined edge, the middle part being cut away forming a raised lip on each side. This rod *l'* slides up and down in a slot 3 cut through the block *n'* (Figs. 8 and 9) attached to the bar W; the straight edge of the rod slides against the back of the slot and the pin *o'* (Figs. 9 and 10) which passes through from one side of the block *n'* into the slot 3 presses against one of the lips and confines this part of the rod *l'* to a nearly vertical motion; the other lip which is inclined to the straight edge of the rod is embraced on either side by pins a^4 Figs. 8, 9 and 10 attached to the block *g'* on the arm X. Thus as the rod *l'* is moved up and down at intervals by the cam on the shaft *l* operating on the lever *p* the arm X is vibrated a short distance, operating the ratchet wheel *e'* and the knife *i'*. As the eccentric fulcra which carry the levers *n* and *p* are upon the same adjustable shaft *m* it is evident that as this shaft is turned both the thrust of the awl and the vertical movement of the rod *l'* will be simultaneously increased or diminished. The movement of the rod *l'* regulates the swing of the arm X and consequently the distance which the splitting knife is thrust forward.

The pegs after being split off by the knife *i'* are cut off to the proper length in the following manner: A rod *p'* is so attached to the cross piece *v* on the front of the gate V by an eccentric pin *q'* passing through the upper end of the rod that as the pin is turned the rod is moved up and down a short distance; to the other end of this rod is attached a flat block *r'*, a projecting piece *s'* of which slides up and down in a dovetailed groove in the end of the bar W. On the top side of the block *r'* (see Fig. 9) is pivoted by one end a piece of steel *t'* the other end of which is formed into a knife, this piece *t'* is forced back by a spring *u'* attached to the back of the rod *p'* (Figs. 2 and 3) against a pin in the top of the block *r'*; a pin b^4 projecting from the splitting knife *i'* strikes against the outer end of the piece *t'* (when the head of the peg is to be cut off) and pushes it forward. Thus as the splitting knife *i'* detaches a peg, the knife on the piece *t'* cuts off the top, the peg being held between the splitting knife and the block *r'*, resting in a notch in the inner edge of the block. In certain work longer pegs are required upon some portions of the sole than upon others. This I arrange by employing pegs of a length equal to the longest required, a portion of which is cut off when the work requires a shorter peg; the thrust of the awl being proportionately reduced at the same time; these ends are accomplished as follows: When the long peg is required for the thicker portions of the sole, the awl is allowed to descend sufficiently low to make a hole of the requisite depth. On arriving at that portion of the sole which requires a shorter peg the thrust of the awl is reduced and a corresponding reduction of the length of the peg is made in the manner which will now be described. It has been stated that the levers *n* and *p* have their centers of mo-

tion upon eccentrics upon the shaft m, these eccentrics are arranged to project upon opposite sides of the shaft m so that when the awl descends its greatest distance, the rod l' shall not descend low enough to vibrate the arm X a sufficient distance to cause the pin b^4 upon the splitting knife to actuate the cutting off knife, consequently the whole length of the peg is driven; but when the shaft m, is turned so as to cause the awl to penetrate its least distance into the sole, the rod l' descends to its lowest point, vibrating the lever X a sufficient distance to actuate the cutting off knife and reduce the length of the peg. The depth of the puncture may be regulated by adjusting the awl in its slide w, and the length of the peg after it is reduced, by raising or lowering the block r' by turning the eccentric pin q'. After a peg has been driven and the splitting knife is drawn back, the sheet of pegs is fed forward by the last part of the backward movement of the arm X, a pin upon the block g' moving in a slot in the pawl d', and allowing the arm nearly to complete its motion before the pawl is actuated. Attached to the underside of the bar W beneath the gate V is a block v' (see Figs. 8 and 14) in a dovetailed groove in the bottom of which slides a piece w' which is moved in and out in its groove a short distance by an eccentric pin x'. The outer end of the piece w' bears against the edge of the shoe and determines the distance at which the row of pegs shall be placed from the edge. As before stated the spring y pressing against the back of the gate V bears it up against the shoe. When a double row of pegs is to be driven, after the first or outside row is completed the pin x' is turned drawing in the piece w' which allows the awl and driver to come down onto the sole a short distance farther in from the edge to make the second row of pegging. Attached to the front of the block v' and pivoting in it is a flat vibrating rest y' (Fig. 14) through a hole near the outer end of which passes the awl and driver, the rocking motion of this rest allows it to accommodate itself to any inequalities of the surface and to follow the undulations of the sole while it is pressed against it.

Attached to the bed plate A and elevated a short distance above it (see Fig. 2) is a bar Y a portion of which where it is attached extends along on the bed plate, forming a guide z (Figs. 2 and 7). Having bearings in a piece a^2 attached to the bar Y and in the end of the cross pieces L is a vertical shaft Z attached to the lower end of which is a bell crank A′ (Fig. 1). To the longer arm of this crank that extends along under the bar Y is attached a spring B′ (Fig. 3) the other end of which is fastened to the standard B; near the outer end of the other arm is attached a feeding pawl b^2. A pin c^2 passing through a slot d^2 in the pawl, allows the pin a slight play in the direction of the length of the pawl. A spring C′ is fastened at one end to a pin on the pawl and at the other to the end of the arm of the bell crank A′.

Attached to the upper end of the shaft Z is an arm D′ the outer end of which rests against the side of the cam wheel E′ secured to the driving shaft E. Secured to the under side of the bar Y near the middle of its length is a block F′ (seen detached in Fig. 11) from the bottom of which projects the piece e^2 in which slides the holding pawl or bolt f^2 which is pushed forward by a spring G′ (Figs. 3 and 11). Through a slot near the outer end of this bolt passes an eccentric pin g^2 turning in the block F′. The bolt f^2 has a slight play laterally vibrating on the pin g^2 between pins or stops i^2 projecting from the bottom of the block F′. A spring h^2 attached to the side of the block presses against the side of the bolt; the front end of this bolt is notched, forming a tooth c^4 which enters the notches of a ratchet to be hereafter described. By turning the eccentric pin g^2 the bolt f^2 is adjusted laterally and the tooth c^4 is thrown a sufficient distance to one side to stop the carriage in such a position as shall cause the pegs of the second row to be placed opposite to the middle of the spaces between those of the first row.

From one side of the rear end of the bolt f^2 projects a short piece j^2 (Fig. 11) against which the end of the longer arm of the bell crank A′ strikes when it is drawn back by the spring B′. The bolt is thus retracted whenever the arm D′ drops into the notch in the cam wheel E′.

Moving on the bed plate A is a carriage H′ (a view of the underside of which is shown in Fig. 4). On the top of this carriage is secured an oblong ratchet plate k^2 to the top of which is attached a similar shaped but smaller ratchet l^2 having the number of teeth required for a row of pegs, these ratchet plates are divided into two portions No. 1 and No. 2 (the removable part being seen detached in Fig. 12). From the part No. 2 which is permanently secured to the carriage H′ rises two standards I′ and K′ which support the last M′ on which the shoe to be pegged is placed, two pins from the head of the standard K′ (dotted in Fig. 2) entering the last near the heel end; on the top of the standard I′ is a sleeve L′ in which slides a screw rest m^2 which is elevated or depressed by turning the nut n^2 on its screw; this rest is placed under the last near its toe, and when tightened up binds it on the two pins and holds it firmly. The portion No. 1 (Fig. 12) of the ratchet plates is made removable that it may be replaced with one of a different length, to suit

the varying length of shoes. Through the carriage H′ is cut a slot o^2 (Fig. 1) through which projects a notched shank p^2 attached to the part No. 1 of the ratchet plate. On the under side of the carriage slide a plate N′ (Fig. 4) which is secured by screws passing through slots g^2; the beveled edge of this plate at r^2 presses against the inclined notch in the shank p^2 and binds this end of the piece No. 1 down onto the carriage. A tongue s^2 on No. 1 enters a notch in No. 2 and prevents any lateral motion of No. 1. This tongue s^2 extends under the standard I′ and holds this end of No. 1 down. In the under side of the carriage H′ is a groove l^2 into which enters a pin u^2 (Fig. 3) attached to the bed plate A; the carriage slides longitudinally on this pin.

From the underside of the carriage at two of its corners project blocks v^2; and on the plate N′ are two similar projections or blocks w^2; one of these blocks is always in contact with the guide z' when the carriage is moving longitudinally and the block must pass the end m^4 of this guide before the carriage can be turned around upon the pin w^2; when this is to be done it is necessary that the pin should be held in the groove l^2, that the carriage may no longer be allowed to move longitudinally but may rotate around the pin as a center; this is done in the following manner: On one side of the groove l^2 is pivoted a dog x^2 with its spring, and attached to a piece projecting from the plate N′ is another similar dog y^2, with its spring; in the bottom of the groove l^2 is a pin z^2 which serves as a stop against which the pin u^2 brings up when the carriage is moved in one direction, while the shank p^2 answers the same purpose when it is traveling in the other direction; the pin u^2 as it approaches either of these stopping points pushes back and passes one of the dogs x^2 or y^2 which springs back again behind it and holds the pin between the end of the dog and the stop; the pin is held in this position while the carriage is being rotated around it (which is necessary in pegging the heel and the toe of the shoe); but when the carriage is intended to resume its longitudinal movement, the dog is tripped by a pin x^3 (Figs. 2 and 3) attached to the bed plate A setting free the pin to traverse its groove. It is obvious that when a longer shoe is being pegged it is requisite that the two points around which the carriage turns should be farther removed from each other; now as a longer shoe always requires a longer piece No. 1 of the ratchet plates, the shank p^2 and plate N′ are removed nearer to the end of the carriage, this also moves back the blocks w^2, so that the carriage travels longer in a straight line before either of these blocks will pass the end m^4 of the piece z' and allow the carriage to turn around.

Vibrating loosely on the shaft Z near its head is a lever O′ (Figs. 1 and 2) one end of which is connected by a rod e^3 to the end of a long lever P′ (Figs. 2 and 3) pivoted at b^3 to a standard c^3 rising from the bar Y. When the pegging of a shoe is completed and the carriage H′ has made a complete revolution, a pin d^3 (Figs. 1 and 3) attached to the top of it strikes against the lower end of the lever P′ and throws around the short arm f^4 of the lever O′ so that it intercepts an arm Q′ attached to the cam wheel E′ and disconnects the pulley F stopping the operation. The machine is always started with the pin d^3 against the back edge of the lever P′, so that the carriage has made a complete revolution when the lever is tripped.

The driving pulley F is locked to and unlocked from the cam wheel E′ in the following manner (see Figs. 1 and 5): To one side of the wheel E′ near its edge is pivoted an arm Q′ having a notch f^3 in which catches a pin g^4 (seen in red Fig. 5) projecting from the inner face of the pulley F. The arm is held up in position by the bent spring g^3. When the lever O′ is vibrated as before explained by the pin d^3 the lever Q′ strikes against the short arm f^4 of the lever O′ and is thereby raised out of the way of the pin g^4, the spring g^3 yielding and permitting the pin g^4 to pass without engaging in the notch f^3, the pulley F runs loose on the shaft E and the machine stops; should any unusual strain be brought upon the pin of the pulley F, the spring g^3 will yield and allow the pin to slip out of the notch in the arm Q′ and prevent the breaking of the machine should the awl or driver strike upon any hard substance.

The carriage H′ is fed forward and revolved in the following manner: When the lever D′ drops into the notch in the side of the cam wheel E′ the spring B′ draws back the longer arm of the bell-crank A′, which arm strikes against the projection j^2 of the bolt f^2 (see Fig. 11) and withdraws the tooth c^4 in the outer end of it from the smaller or top ratchet plate l^2. At the same time the shorter arm of the crank A′ throws forward the pawl b^2, the pin c^2 being drawn against the end of the slot d^2 by the spring C′. This pawl has a hook at its outer end which catches into one of the notches in the lower ratchet plate k^2 (the position of the spring C′ keeping the hook in contact with the ratchet plate). As the cam wheel E′ is revolved and the end of the lever D′ is moved by the inclined edge of the wheel, the crank is moved in the opposite direction against the resistance of the spring B′, this allows the bolt f^2 to be forced out by its spring G′ and its tooth c^4 enters a notch of the ratchet plate l^2. The hook on the end of the pawl b^2 having caught one of the notches of the ratchet plate k^2 the carriage is fed

along by it until arrested by the bolt f^2 when if the movement of the crank is continued the pin c^2 slides in the slot d^2 and the spring C′ is distended. The line in which the bolt f^2 is thrust out may be regulated by turning the eccentric pin g^2. This is requisite when forming the second or inner row of pegging as before explained. The spring C′ and slot d^2 accommodate the different length of feed, although the swing of the bell-crank A′ is the same at each revolution of the cam wheel E′.

The carriage H′ is started with the pin d^3 against the back of the foot of the lever P′ and as the carriage is fed along it slides longitudinally on the pin u^2 until this pin pushes by the dog x^2 on the bottom of the carriage and is caught between the end of the dog and the stop z^2 (as seen in red Fig. 4) in the bottom of the groove t^2 when the carriage is arrested in its longitudinal movement and the pin u^2 becomes a center on which the carriage is revolved by the continued feed of the dog b^2. At the same time the block v^2 which has been sliding in contact with the guide z' passes the end m^4 and allows the carriage to turn around, as is requisite for pegging the heel of the shoe; the same thing occurs when the feed of the carriage has brought the pin u^2 toward the other end of the groove t^2 and into contact with the shank p^2 (as seen in red in Fig. 4) the position of which and of the plate N′ as before explained is regulated by the length of the shoe, the block w^2 passing the end m^4 of the guide z' at the proper time to allow the carriage to turn on the pin, to make the row of pegging around the toe.

That the vibrating rest z' (Fig. 14) through which passes the awl and driver may be kept pressed down firmly upon the sole while the awl is entering it and being withdrawn, I have adopted the following device: When the lever T is relieved from its cam, and the spring U draws down the arms Q and R and the pegging apparatus attached thereto pressing the rest z' onto the sole of the shoe, a flat V-shaped brace R′ (Fig. 3) attached to the arm Q slides between the disks P and a, when the cam d on the shaft E (Fig. 5) pushes forward the arm c and straightens the toggle-joint to which it is attached, forces the disk a toward the disk P and grasps the brace R′ between them preventing the arms Q and R from being raised when the awl is retracted.

Operation: The parts being properly adjusted as before explained, and the carriage H′ in position for starting the machine is set in motion by moving the hand lever O′ out of the way of the arm Q′ attached to the cam wheel E′, which arm is drawn up by its spring g^3 and the notch f^3 is caught by the pin g^4 projecting from the driving pulley F and the shaft E is revolved in the direction indicated by the arrows, when by the arrangement of cams on the shaft I the levers n, o, and p are vibrated at the proper times; the slide w is forced down driving the awl through the hole in the rest y' into the sole of the shoe, the slide x being raised at the same time out of the way, before the awl begins to penetrate the leather, the lever T is relieved from the cam and the spring U through the arm Q draws down the rest y' onto the sole, in which position it is immediately held by the disks P and a clamping the brace R′, and is prevented from being lifted as the awl is either thrust in or withdrawn, as the awl ascends out of the way, the lever p pushes down the rod l' the inclined edge at the bottom of which vibrates the arm X causing the knife i' to split off a peg from the sheet of pegs which is fed by the retraction of the arm X as the rod l' is raised as before explained. The next instant after the peg is separated the lever o forces down the slide x and the driver pushes the peg through the hole in the end of the bar W and through the rest y' into the hole made in the sole by the awl and drives it home. When the pegs are to be cut off as before explained, as the splitting knife i' advances to cut off a peg, a pin b^4 (Figs. 8 and 9) projecting from it strikes against the back of the piece t' and vibrates it on its pivot against the resistance of its spring u' causing the knife at its end to cut off the head of the peg which is ready for driving, and which is held between the splitting knife and the block r' as before stated, leaving it at the exact length required; the height of the cutting off knife is adjusted as before explained by the eccentric pin q'. By means of this adjustment of the length of the peg driven to the thickness of the sole, the pegs are not unnecessarily driven through into the last. While the driver is descending the lever T is borne down by its cam relieving the bar Q from the tension of the spring U when the arm c and its toggle-joint are drawn back by the spring e and the brace R′ is relieved from the grasp of the disks a and P, allowing the spring S through the rod f to lift the pressure of the rest y' off the shoe, ready for the carriage H′ to be fed along as soon as the peg is driven. This feed of a single notch is effected by the cam wheel E′ as before explained, previous to the next descent of the awl. These operations are repeated at each revolution of the shafts E and I, until the carriage H′ has made a complete revolution and the row of pegging is finished when the pin d^3 trips the lever P′ throwing the inner end f^4 of the lever O′ into the path of the arm Q′ when the pulley F will be disconnected from the wheel E′ and the machine will be stopped. If a double row of pegging is required the piece w' (Fig. 14) which rests against the

edge of the sole and determines the distance of the row of pegs from the edge is retracted in its groove by turning the eccentric pin x', so that the gate V which is pressed out by its spring y may hang farther over toward the middle of the shoe and bring the awl and driver into the required line for the second row of pegs. As it is desirable to place the second row of pegs intermediate between those of the first row, it becomes necessary to adjust the tooth c^4 in the required position to effect this object, which is accomplished by turning the eccentric pin g^2 in the block F′ as before explained. When thus adjusted the machine may be set in motion again, and the second row of pegs be finished in the same manner as the first.

As the pegging proceeds, on arrival at the parts of the sole which require a shorter peg, the operator turns the set wheel q and alters the thrust of the awl and brings into operation the cutting off knife; the block r' having been previously adjusted at the proper height.

What I claim as my invention and desire to secure by Letters Patent in machines for pegging boots and shoes (when the gate which carries the awl and driver is allowed to swing freely in a plane perpendicular to the surface of the sole or nearly so) is—

1. The arrangement and combination of the spring, U, the disks P and a, lever b, with its toggle joint and connecting rod c and the lever T, for the purpose of bringing down, clamping and releasing the gate in the manner set forth.

2. I claim the feeding pawl b^2 with its spring C′ and slot d^2 in combination with the holding pawl or bolt f^2 operating in the manner and for the purpose substantially as described whereby the amount of feed of the carriage H′ is regulated and the latter is held stationary as set forth.

3. I claim regulating the motion of the carriage H′ by means of the combination of the following devices or their substantial equivalents, viz—the groove t^2, pin u^2, dogs x^2 and y^2 tops z^2 and p^2, blocks w^2 and v^2 and guides z' operating in the manner set forth.

4. The combination of the devices employed for the purpose of cutting off a portion of the pegs, and for adjusting the throw of the awl and driver to correspond therewith, or their substantial equivalents, whereby the awl and pegs are prevented from penetrating the last as set forth.

5. I claim the offsets 1 and 2, upon the slides w and x operating in the manner set forth for the purpose of causing the driver to descend over the hole made by the awl as described.

SETH D. TRIPP.

Witnesses:
JOHN ALLEN,
JOHN NORTON.