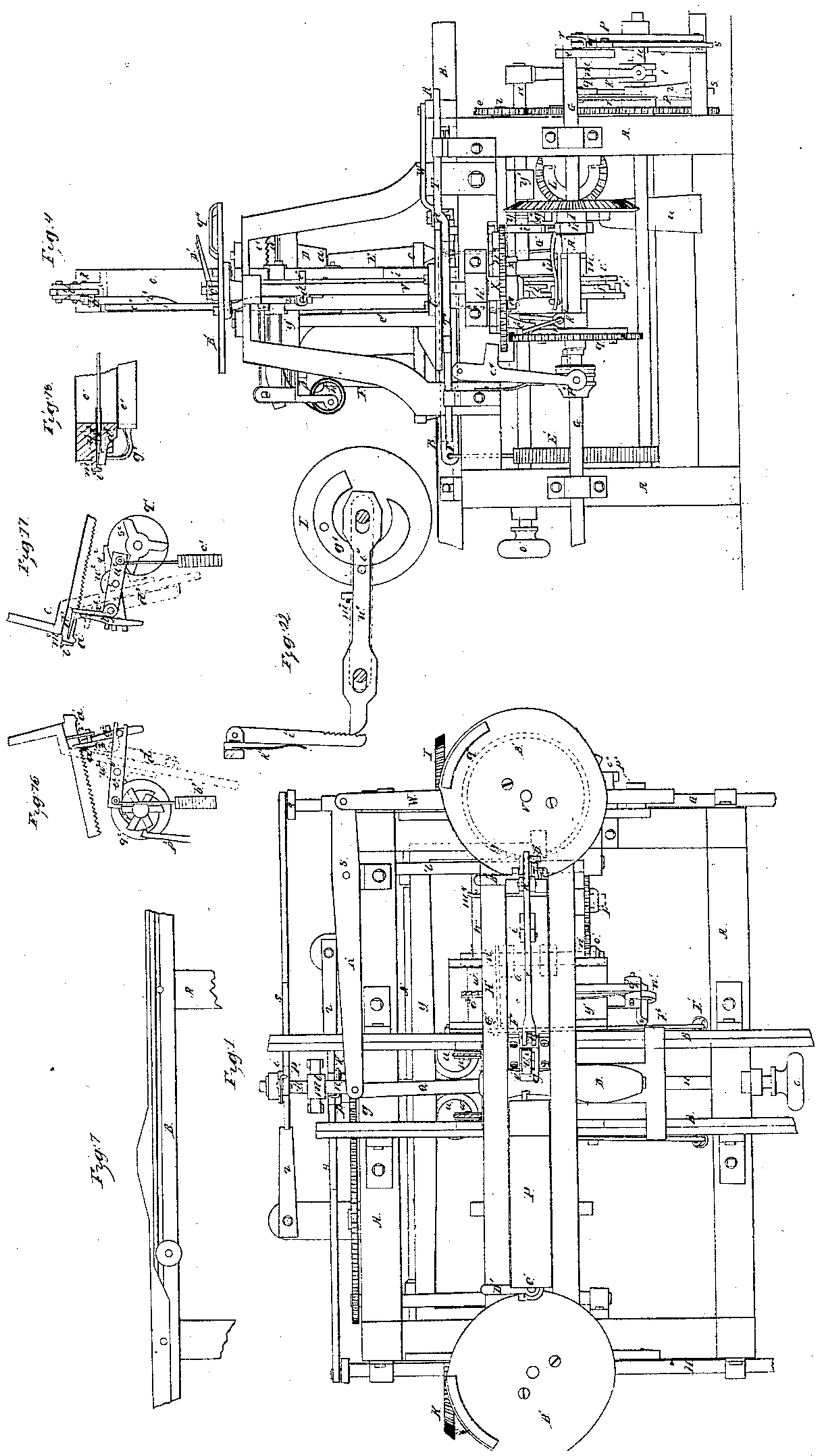
3 Sheets—Sheet 1.

S. D. TRIPP.

MACHINE FOR PEGGING BOOTS AND SHOES.

No. 9,629. Patented Apr. 12, 1853.



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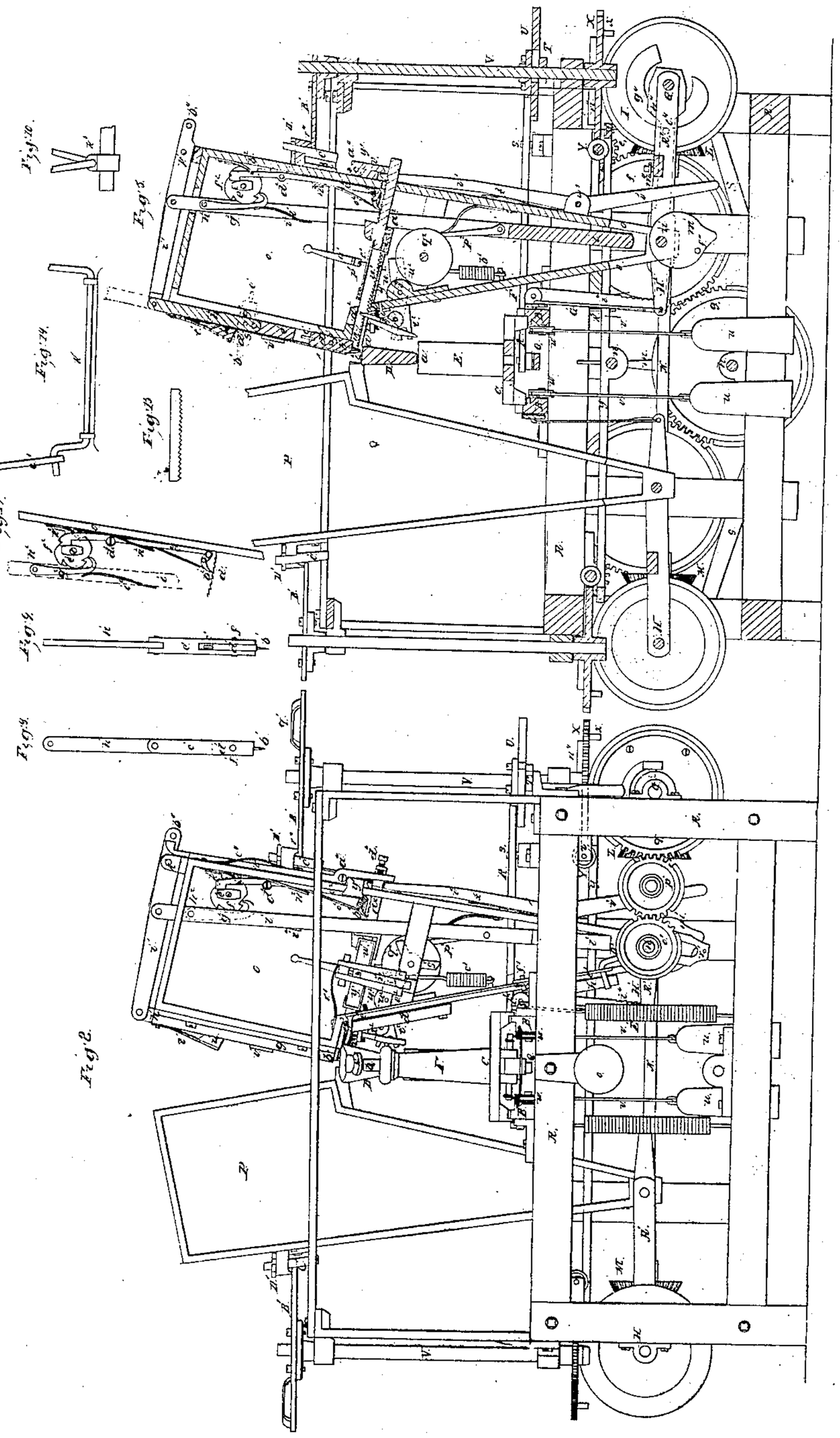

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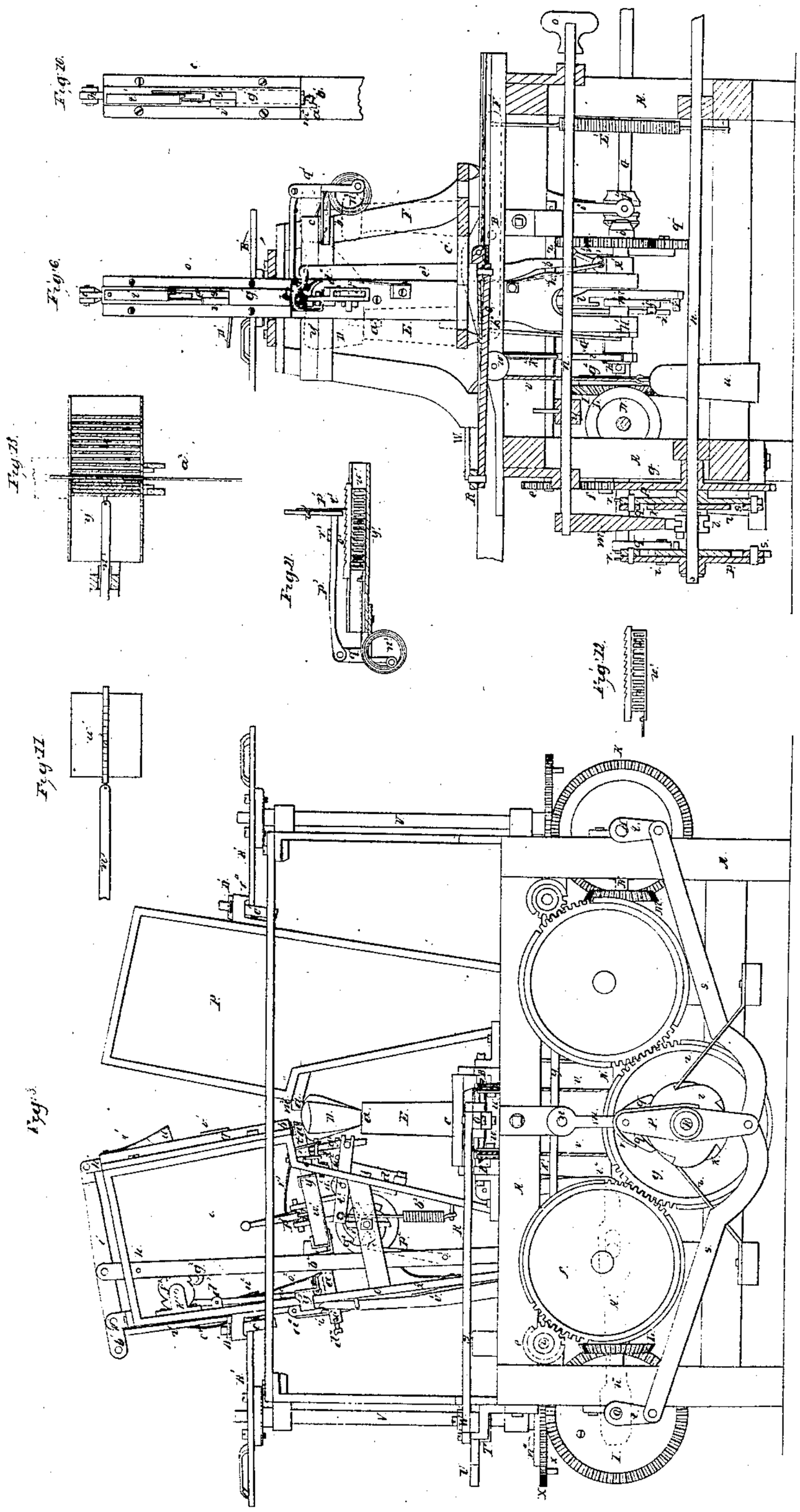

UNITED STATES PATENT OFFICE.

SETH D. TRIPP, OF ROCHESTER, MASSACHUSETTS, ASSIGNOR TO EDWARD L. NORFOLK.

MACHINE FOR PEGGING BOOTS AND SHOES.

Specification of Letters Patent No. 9,629, dated April 12, 1853.

To all whom it may concern:

Be it known that I, SETH D. TRIPP, of Rochester, in the county of Plymouth and State of Massachusetts, have invented a new or Improved Machine for Pegging Boots or Shoes; and I do hereby declare that the same is fully described and represented in the following specification and the accompanying drawings, letters, figures, and references thereof.

Of the said drawings Figure 1 denotes a top view of my said machine. Fig. 2 is an elevation of one side of it. Fig. 3 is an elevation of the other side of it. Fig. 4 is an elevation of one end of it. Fig. 5 is a central, vertical, and longitudinal section of it. Fig. 6 is a central, vertical, and transverse section of it. Such other figures as may be necessary to a full description and delineation of my said machine will be hereinafter referred to and duly specified.

The principal parts of my machine may be said to be as follows: First, machinery for supporting the shoe and moving it under the pegging mechanism; second, machinery for sustaining the pegging mechanism and regulating the direction of the pegging awl so that it shall pass into the sole at the proper angle under any change in the curvature of the sole; third, machinery for operating the pegging awl and driver; fourth, machinery for sustaining the peg wood and forcing it forward toward the shoe; fifth, machinery for splitting the pegs from the peg wood; sixth, machinery for operating the charger that contains the peg wood.

In the said drawings A represents the main frame by which the operative parts of the machine are supported.

B, B, are two rails or ways for supporting the carriage C that sustains the shoe last or shoe D. The shoe last rests on two columns or posts E, F, that extend upward from the carriage, one of them having one or more pins *a*, *a*, extended above it and made to enter the rear part of the last while the other has a screw *b* that is made to extend or screw into it and to act against a saddle *c* and press the same upward against the toe part of the last or shoe so as to confine the last on the pegs *a*, *a*, in a manner similar to that in which it is ordinarily confined on a common peg jack. The ways on which the carriage rests are curved as seen in Fig. 7 which denotes an inner side view of one of them.

G denotes the main driving shaft of the machine which is arranged or applied to one end of the frame A as seen in the drawings. There is another and similar shaft H applied in a similar way to the other end of the machine. On each of these shafts there is a bevel gear I or K, which is made to engage with a bevel pinion L or M, affixed upon a cross horizontal shaft N, the object of such bevel gears and shaft being to communicate motion from the main driving shaft G to the shaft H, and so as to give to said shaft H the same number of revolutions in a given period of time that are imparted to the shaft G during the same length of time.

I would now take occasion to remark that the mechanism which is placed on one side of the shoe or produces the pegging of it from the middle of the heel to the middle of the toe is precisely similar to that which is arranged on the opposite side of it and effects the pegging of the remainder of it. In the description of the machine it will therefore only be necessary for me to show the position of the two frames that carry the two sets of pegging mechanism and to represent and describe such mechanism as applied to one of them, it being adapted in the same manner to the other as will readily be seen by persons skilled in the art of constructing pegging machines. The said two frames for carrying the pegging machinery are seen at O and P. Before going into a further description of them I will proceed to explain the mechanism by which the shoe carriage that supports the shoe D is moved upon its ways.

To the underside of the shoe carriage C one end of a connecting rod Q is jointed by a universal joint, its other end being jointed to a horizontal lever R that turns upon a fulcrum or pin S. The other arm of the said lever is connected by a connecting rod W to a slide T jointed to both of them. The slide T is arranged against one end of the machine as seen in Figs. 1 and 4. The said slide is supported so as to move freely back and forth in longitudinal directions, and it is put in movement by means of a scroll cam U which is fixed upon a vertical shaft V and made to act against a projection or shoulder *d* of the slide T. On the lower end of the vertical shaft V there is a worm gear X which is made to engage with a worm or endless screw Y (see Figs. 1, 2, and

5) affixed upon a horizontal shaft Z arranged as seen in the drawings. On the outer end of the said shaft Z there is a pinion spur gear *e* which is made to engage with a large spur gear *f* which connects or engages with another similar gear *g* fixed upon a horizontal shaft *h* arranged in the middle of the machine and extending transversely across it as seen in the drawings.

To the horizontal shaft *h* an intermittent rotary motion is given either in one direction or the opposite as occasion may require. The machinery for producing this motion may be thus described. On the shaft are placed two ratchet wheels *i*, *k*, which rotate freely on the shaft and are arranged as seen in the drawings and have a clutch *l* placed between them and on the shaft and made to slide on the shaft and to be connected with it by a feather or spline in the usual way. Each of the ratchet wheels on that side of it which is next to the clutch is provided with suitable clutch teeth by which when the clutch is moved against it and is in rotation it will be caused to turn or revolve with the shaft *h*. The clutch is moved by means of a fork *m* which is attached to a sliding rod *n*. By taking hold of the knob *o* at the opposite end of the rod the rod may be moved so as to move the clutch toward and against either one or the other of the ratchet wheels as occasion may require.

Each ratchet wheel has a pawl lever *p* placed by the side of it and made to turn freely on the shaft *h*. The upper arm of the said pawl lever carries an impelling pawl *q* which rests on the periphery of the ratchet wheel and is kept against it by a spring *r*. The lower arm of each lever *p* is jointed to the lower end of one of two connecting rods or bars *s*, *s*, that are respectively jointed at their upper ends to cranks *t*, *t*, that are made to project respectively from the two shafts G, H. By the rotary movements of the shafts G, and H such movement will be imparted to the rocking pawl levers *p*, *p*, as will impart to the ratchet the intermittent rotary motion required. As one of these ratchets is clutched to the shaft while the other is unclutched an intermittent rotary movement will thus be given to the shaft which movement will be transmitted to the vertical shaft V and of course to the scroll cam U and of course to the carriage C whereby the shoe will not only be made to stop while a hole is being made in it to receive a peg and the peg inserted and driven, but afterward to move the required distance for the formation of the next hole and reception of the next peg. One of the ratchet wheels when clutched to the shaft causes the shoe to be moved in one direction, while the other ratchet wheel when it is clutched to the shaft gives to the shoe a motion in a reverse or opposite direction. The scroll cam U moves the carriage in one direction by pressure against the projection or shoulder *d* but when the said scroll cam is turned in an opposite direction it governs or regulates the return movement of the shoe carriage which movement is produced by the action of one or two weights *u*, *u*, that are suspended from it by means of one or more cords *v*, *v*, made to pass over one or more pulleys *w*, *w*, affixed to the rails or ways B, B. Immediately after the completion of a line or row of pegs and just before the scroll cam completes its revolution the movement of the shoe is arrested by the following means or mechanism. A pin or stud *x* is made to project downward from the underside of the worm gear X. At the proper time this stud or pin comes in contact with the end of a slide bar *y* (which is connected with the slide rod *n*) and moves said slide bar *y* and the slide rod *n* so as to throw the clutch out of gear with the clutch wheel with which it had just previously been in action. A retaining pawl or spring *z* is applied to each clutch gear as seen in the drawings.

We now come to a description of the machinery for sustaining the pegging mechanism and regulating the direction of the pegging awl so that it shall pass into the sole at the proper angle under any change in the curvature of the sole. The frames O, P, before mentioned carry the principal parts of the pegging mechanism. Each of the frames O, P, is jointed to the inner end of a rocker frame A′ whose outer end is supported and rocks or plays up and down vertically upon one of the shafts G, H. Each frame O, P, has a projection *a′* that rests upon the sole of the shoe close to the line of pegs. Now as the shoe moves in a longitudinal direction it will simultaneously elevate or depress the two frames O, P, their rocker frames A′ allowing them to be so moved. In order to move each frame O, P, so as to keep the pegging awl in the proper path around the sole, I make use of a cam B′ which is placed and fixed upon the top of the shaft V and bears against an eccentric pin C′ attached to each one of the frames O, P, as seen in the drawings. This eccentric pin is kept perfectly stationary while a row of pegs is being formed in the sole of the shoe, but when it is desirable to cause the machinery to make a second row of pegs or one within the first row the eccentric pin is turned around (by means of a lever D′ attached to it) and by pressure against the periphery of the cam moves its frame O or P inward toward the middle of the shoe the distance required for another row of pegs to be inserted in said shoe. Each frame O or P is pressed toward its cam B′ by means of a spring E′ which acts on a lever F′ Figs.

1, 4, 5, 6 and arranged as seen in the drawings and connected (by means of a connecting rod G′) with an arm H′ that projects inward from the lower part of the frame O or P as seen in the drawings, in Figs. 5 and 6.

We now come to the machinery for operating the pegging awl and driver. As each of the frames O, P, has such machinery applied to it it will be sufficient for our purpose to describe such machinery and its application to one of the frames only, it being understood that when two frames are used it is to be applied to each of them. My improvements in such machinery however do not confine me to the use of two frames, as one of them only may be employed in connection with the shoe, but when two are arranged and used together I gain a very great advantage as I am enabled by one single movement of the shoe carriage to complete the pegging entirely around the sole, whereas were I to use but one of the frames and its pegging mechanism, the shoe its carriage and ways would have to be turned around one hundred and eighty degrees in order to accomplish the pegging of the opposite side of the shoe.

In the drawings b' denotes the pegging awl and c' the driver of the pegs, both of them being projected in opposite directions from a rectangular piece of metal or carrier d'. This carrier is supported within and by a forked slide e' of which side and edge views of it and the carrier are given in Figs. 8, and 9. The carrier turns or revolves freely on a pin or fulcrum f' extended through the fork of the slide. The slide and carrier play freely up and down in a tube g' applied to the inner edge of the upper part of the frame O as seen in the drawings. The slide is connected by a connecting rod h' with a lever i' which turns on a fulcrum k' and is jointed to the upper end of a long bar l' which is made to slide freely up and down and is arranged within the frame O as seen in the drawings. It is by the movement of the lever i' that the forked slide e' is elevated and depressed. The movement of said lever i' is produced in the following way, that is to say, the lower end or part of the bar l' has a projection or shoulder which rests upon a cam m' that is fixed upon the shaft n' by which the frame O is connected with its rocker frame A′. The shaft n' is connected with the shaft G by a train of gears o', p', q', the first of said gears being fixed upon the shaft n' and the last placed upon the shaft G. From the above it will be seen that during the rotation of the shaft G motion will be communicated to the shaft n' so as to turn the cam m' and elevate and depress the long bar l', the depression of it being effected by the action of the cam against a stud r' made to project from the lower end of the bar.

In the operation of the carrier d' it is moved downward for the purpose of pressing the awl into the leather of the sole which being effected the carrier is next raised upward and is reversed or turned around one hundred and eighty degrees and forced downward so as to carry the driver down against a peg so as to force it into the hole previously made by the awl. The front part of the tube g' has a long slot s' made in it which extends from near the top of the tube downward about two thirds the length of the tube. Lying over the slot and applied to the upper part of the tube is a spring t' see Figs. 5 and 10 the latter being a front view of the tube g' and the carriage O. The said spring t' has a projection u' extending backward from it into the tube which when the carrier is elevated bears against that arm of it which may be uppermost and turns the carrier ninety degrees, the projection during the same time passing into the fork of the slide e'. When the slide e' descends the projection is thrown out of the fork by the action of the upper part of the fork against it, and during each descent of the slide a further rotation of the carrier ninety degrees of a circle is effected by the carrier being forced against the upper end of a projection v' applied to the front of the slide tube and made to extend over the slot s' as seen in Fig. 10 in the drawings. The rear part of the tube g' is made sufficiently open or slotted to allow of the aforesaid rotary movements of the carrier. From the above it will readily be seen how during one movement of the carrier the awl is made to descend and pass into the work or shoe and during the next downward movement of it the driver is made to descend upon a peg.

We now come to the description of the machinery for sustaining the peg wood and forcing it forward toward the shoe. The peg woods are made in strips which are respectively placed in the apertures of a sliding charger w' a top view of which is given in Fig. 11, and a side view in Fig. 12 and a horizontal section of it and its supporting frame y' in Fig. 13. This charger is a frame having a series of compartments z', z', each of which is capable of carrying a slip of peg wood. It is made to slide freely in transverse directions in a supporting frame y' which is firmly fastened to the frame O. A slide or piston a^2 works through the frame y' and into some one of the compartments z', z', of the charger, such slide having an intermittent movement imparted to it such as will be sufficient to force the slips of peg wood forward toward the shoe as fast as may be necessary. The upper edge of the slide or piston a^2 has a rack of teeth

formed upon it which engages with an impelling pawl b^2 that is jointed to the lower end of a spring lever c^2 that turns upon a fulcrum d^2 fastened to the frame O. The upper arm of the lever c^2 is formed as seen in the drawings. It rests against a cam e^2 that is affixed to the side of a ratchet wheel f^2 as seen in Fig. 14 which also exhibits a side view of the spring lever c^2 and the spring hook pawl g^2 by which the ratchet wheel is turned. Said spring hook pawl is jointed to the bar l' or turns upon a pin h^2 and plays within said bar and is forced toward the ratchet wheel by a spring i^2. The cam e^2 is supported by a projection k^2 from the frame O. Now when the bar l' is raised upward it will be seen that rotary motion will be given to the ratchet wheel whereby the cam e^2 will be made to turn the spring lever c^2 upon its fulcrum so as to move the slide a^2 and thus force a slip of peg wood forward against a small bearer or shoulder l^2 extended from a plate m^2 applied to the frame O, as seen in the drawings. After the cam e^2 has acted on the projection of the upper part of the upper arm of the spring lever such projection passes forward oper the cam so as to relieve the piston or slide a^2 from the pressure of the cam or impelling pawl of said lever, thus at the same time relieving the peg wood from such pressure. The upper arm of the spring lever c^2 is pressed toward the cam by the action of a spring n^2 which is fastened to the frame O and made to bear against the lower arm of the lever. The impelling pawl h^2 is pressed down against the rack by a spring o^2. The object of making the lower arm of the lever c^2 a spring is to press the peg wood forward with a force such as will not compress it to its injury.

We next come to a description of the machinery for splitting the peg from the strip of peg wood. The form of each strip of peg wood is given in Fig. 15. The object of its being serrated at bottom is to enable us to cut each peg with a pointed end. To about the middle of the bar l' I apply a hook or draw pawl p^2 which I cause to act against the periphery of a ratchet wheel q^2 see Fig. 16 which is a view of some of the parts which I shall now proceed to describe. On one side of this ratchet wheel is a cam wheel r^2 which has double the number of teeth or cams of another cam wheel s^2 placed on the opposite side of the cam wheel, the same being as seen in Fig. 17 which represents a view of the plate splitting mechanism taken on that side of the ratchet wheel which is opposite to that shown in Fig. 16. The two cam wheels r^2 and s^2 respectively operate or act against two levers t^2, u^2, that turn on a common fulcrum pin v^2 extended through a projection w^2 from the frame O. To the front end of the lever u^2 the cutting knife or chisel x^2 is jointed, while to the front end of the lever t^2 what I term the guide y^2 of the knife is jointed. The said knife and the said guide are pressed toward one another by means of two springs z^2 and a^3. The outer spring z^2 or that which rests against the guide and is nearest to the shoe being made of greater power than the other for the purpose of keeping or pressing the guide and knife toward the peg wood. The rear arm of each lever t^2 u^2, is drawn down against the teeth of its cam wheel r^2 or s^2, by means of one of two springs b^3, c^3, applied to them and the frame O. In Fig. 18 I have represented a top view of the projection or plate m^2, its bearer l^2, the peg cutting apparatus and a pressure spring d^3 to be hereinafter described. The said pressure spring consists of a spring fastened to the frame O and made to press at its upper end against the pegs and peg wood and force the same toward and hold them against the projection or plate m^2. In order that the pegs and peg wood may be firmly held against such projection when a peg is in the act of being cut from the strip this spring d^3 is pressed firmly or strongly against the peg wood by a lever e^3 which is arranged as seen in the drawings and turns upon a fulcrum or pin f^3 and has a bent projection g^3 extended from its upper end to and against the upper part of the pressure spring d^3. The pressure of the projection g^3 against the spring d^3 is produced by the action of a spring h^3 that is attached to the frame O and made to press against the bent arm of a lever or rod k^3 arranged as seen in the drawings and having the form represented in side view in Fig. 19 and in end view in Fig. 20. This lever k^3 is also shown in the end view of the machine where is shown the cam m^3 by which its outer arm is actuated, the said cam m^3 being applied to the inner side of the cog wheel q'. During the time the peg is being split from the peg wood by the action of the knife the spring h^3 so operates the lever e^3 as to press the pressure spring d^3 close or hard up against the peg wood and pegs. At other times this extra pressure is relieved, the same being effected by the action of the cam m^3 which so actuates the lever k^3 as to press back the spring h^3 and thereby relieve the lever e^3 from the pressure thereof. The action of the knife x^2 and the guide y^2 may be thus described. At the proper time for the peg to be split from the peg wood the knife x^2 is thrown up against it and separates the peg from the strip. The guide y^2 at the same time or instantly or immediately afterward being thrown up so as to catch the peg between it and the knife. Next the guide is drawn downward below the peg and springs toward and against the knife

and is thrown upward between the peg and the knife. Next the guide and the knife are brought down to their lowest position so as to bring the top edge of the knife a short distance below that of the guide. When they next go upward to remove another peg the guide will first strike against the end of the peg wood and will thereby guide the knife in a proper manner against the same in order that it may cut away a peg of the requisite thickness, and to guide the knife into that serration of the strip of peg wood which is next to the front end of the strip. It will thus be seen that the object of the guide in its combination with the knife is for the purpose of directing said knife in the manner just explained. The pegs as they are cut off are successively moved forward by the action of the piston slide a^2 of the charger w' and by the action of the awl b' and driver c' as hereinbefore described are successively inserted in the sole of the shoe.

We now come to a description of the machinery for operating the charger that contains the strips of peg wood, such machinery being to so move said charger—as to bring a fresh strip of peg wood under the action of the slide or piston a^2 after any one strip has been driven forward and cut up into pegs. In Fig. 21 I have given a vertical and longitudinal section of the charger, its operating spring and spring pawl and rack. The operating spring is shown at n^3. It is so applied to the charger and the supporting frame y' thereof as to continually operate to draw the charger in one direction. On the top of the charger is a rack o^3 provided with triangular teeth into which rack a click or pawl p^3 operates, the said pawl being hinged to a projection q^3 extending up from the supporting frame y'. The pawl p^3 is pressed downward toward the rack by a spring r^3, and has a spring t^3 applied to the upright part u^3 of it and made to extend a short distance below the lower end of such part u^3. To the outer edge of the frame O a bent lever v^3 is applied as seen in the drawings, it being made to turn on a pin or fulcrum w^3 and have its upper arm pressed in a direction away from the frame O by a spring x^3. A latching slide y^3 is so applied to the frame O in the position as seen in the drawings as to be capable of being raised up and lowered down and to latch the upper arm of the lever v^3 against the frame O. The said latching slide has a bent lever z^3 applied to it, the said lever being shaped as seen in the drawings and made to turn on a fulcrum a^4 projecting from the latching slide. The upper end of the lever is made in the form of a hook and it acts in concert with a stud or pin b^4 made to project from the outer arm of the lever i'. A spring c^4 serves to press the upper arm of the lever z^3 toward the frame O. When the piston slide a^2 has driven a strip of peg wood entirely through the charger a small stud or screw d^4 applied to one end of the slide is brought by the movement of the slide into contact with the lower arm of the lever z^3 and thereby moves said arm toward the frame O and the upper arm away from said frame so as to throw the hook of the said arm over the stud or pin b^4 so that the next time the bar l' and the lever i' are depressed the latching slide y^3 will be elevated above the upper arm of the lever v^3 so as to enable the spring x^3 to throw the upper arm of said lever in a direction away from the frame O and against a stud or projection e^4 from the piston slide a^2 and thereby suddenly move said slide entirely out of the charger which being done the charger will be moved by the action of its spring a distance far enough to bring the piston into line with the next compartment of the charger. After this the piston will be moved forward as hereinbefore described. By applying the hand to the upright part u^3 of the pawl the spring t^3 will spring over that tooth of the rack which is immediately under it and rest against the next succeeding tooth so that when the charger is next released from the action of the piston slide or the piston slide is drawn out of it, the operating spring n^3 of the charger can draw back the charger until the lower part of the spring t^3 is drawn close against the upright part u^3 of the pawl. In order to bring the upper arm of the bent lever v^3 back or up against the frame O so that the latching slide may again latch it thereto its lower arm is struck by a projection f^4 from the cam m' during the revolution of said cam. In order to keep the frame O from rising either during the time the pegging awl or the peg is being made to enter the leather we make use of machinery as follows, Fig. 22 representing an inner side view of such machinery. It is composed of a cam g^4 affixed to the inner side of the large bevel gear I. A sliding bolt h^4 that at the proper time is thrown forward by said cam against a vertical catch rack i^4 that is hinged to one of the rails B, B, and pressed in a direction toward the bolt by a spring k^4. The cam g^4 acts against a projection or stud l^4 extended from the inner side of the slide bolt, the same being represented in dotted lines in Fig. 5, the slide bolt being moved back by a retractive spring m^4. Now at such times as the pegging awl or the peg is being driven into the leather the slide bolt is driven forward into a notch of the catch rack, and thereby prevents the frame O from being raised upward. The slide bolt is applied to one side of the rocker frame A'.

At the conclusion of the operation of pegging a boot or shoe, a cam n^4 placed on the

top of the worm gear X is brought around in contact with a pendulous fork lever o^4 which is connected with a clutch p^4 and so moves the lever and clutch as to unclutch the wheel q' from the main driving shaft G whereby the mechanism by which the pegging operations are carried on and which is applied to the frame O is stopped in its action. On the completion of the pegging operation a cam q^4 placed on the top of the cam wheel B′ passes under a projection r^4 from the frame O and elevates said frame some distance above the sole of the boot or shoe in order that the passage of the sole under the bearer or projection a' of the next boot or shoe to be pegged may be insured, the said cam being so formed as to allow the descent of the frame at the proper time for the pegging operation to be commenced.

What I claim as my invention is—

1. The combination of each frame O, P, with its supporting shaft G or H, by means of a rocker frame A′, the same being for the purpose of allowing a free vertical as well as other movements as above described of either of the frames O, and P, so that it may be guided in its vertical movement by the curvature of the upper surface of the sole of the boot or shoe, and horizontally by the cam wheel B′ substantially as above specified.

2. I also claim the manner of combining the awl and driver with one carrier made to operate substantially as above described, whereby they are alternately presented or brought down against or toward the sole by the revolution of the carrier substantially in the manner as above specified.

3. And I also claim the combination of the guide y^2 with the knife or chisel x^2 and so as to operate therewith substantially as specified in the manner and for the purpose of guiding said chisel properly against the peg wood, as described.

4. I also claim the improvement in the construction of the charger, viz, the making of the same with two or more separate compartments for holding the strips of peg wood which compartments are to be successively brought forward under the operation of the piston slide as the several pieces or strips of peg wood are successively cut up into pegs, meaning to claim a combination of a series of compartments with one single piston slide made to operate substantially as above set forth.

5. I also claim the combination of mechanism by which the charger is moved, the same consisting in the operating spring n^3, the rack o^3, the click or pawl p^3 and the spring t^3 applied to the upright part u of the pawl the whole to act in conjunction with the piston slide a^2 as above described.

6. I also claim the combination of mechanism for operating the slide a^2, the same consisting of the rack or ratchet thereof, the impelling pawl b^2, the spring lever c^2, the cam e^2, the ratchet wheel f^2 and the spring hook pawl g^2 as applied to the frame O and the bar l' and made to operate substantially as above set forth, the same causing peg wood to be shoved through the charger and keeping the pegs in advance of the peg wood, and successively forcing them into their correct position over the hole made in the sole by the awl.

7. And in combination with the pressure spring d^3, I claim the lever e^3 with its bent projection g^3, spring h^3, bent lever k^3, cam m^3, the same being for the purposes as above set forth.

In testimony whereof I have hereto set my signature this thirteenth day of November A. D. 1852.

SETH D. TRIPP.

Witnesses:
J. W. Richardson,
John W. Emerson.