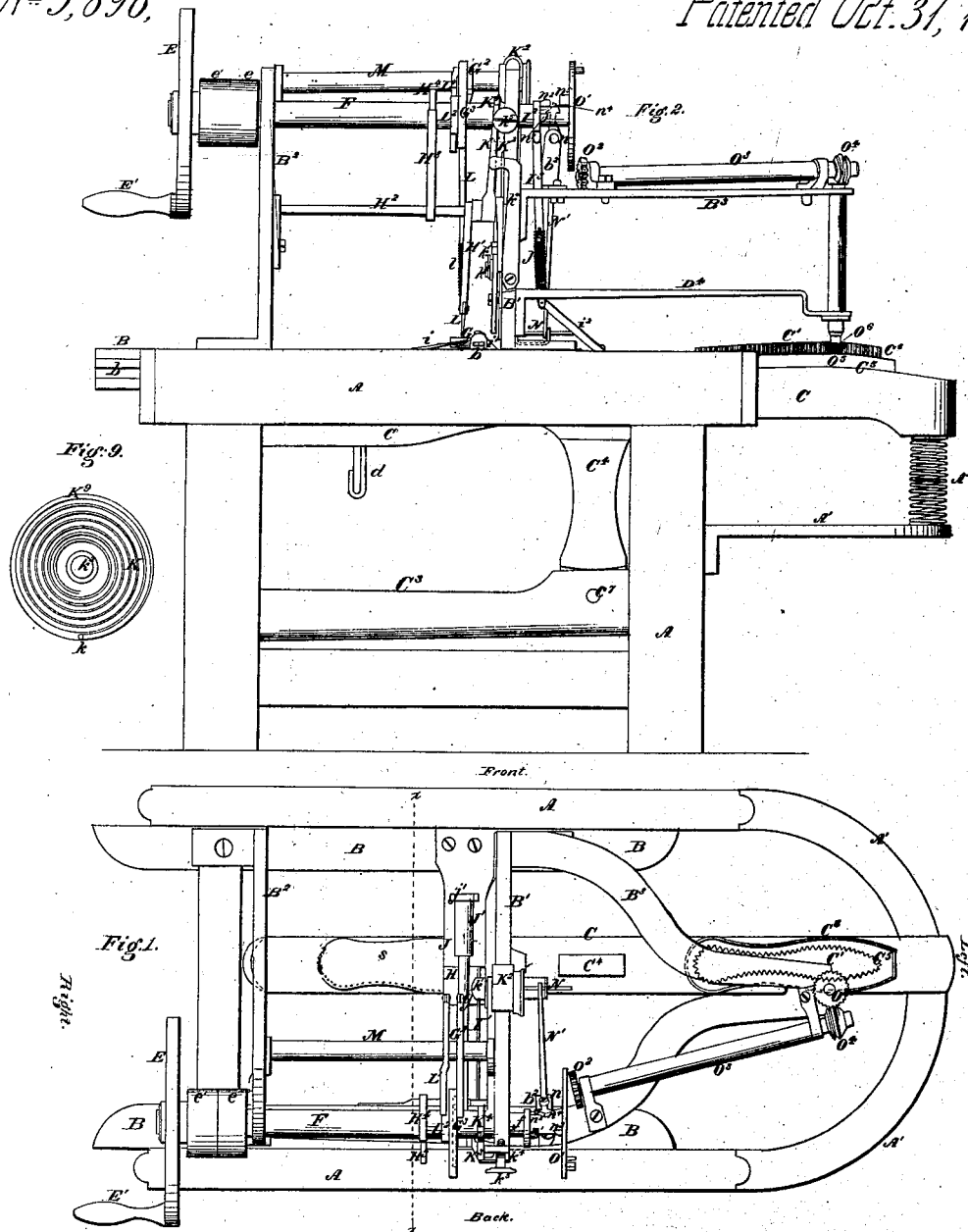


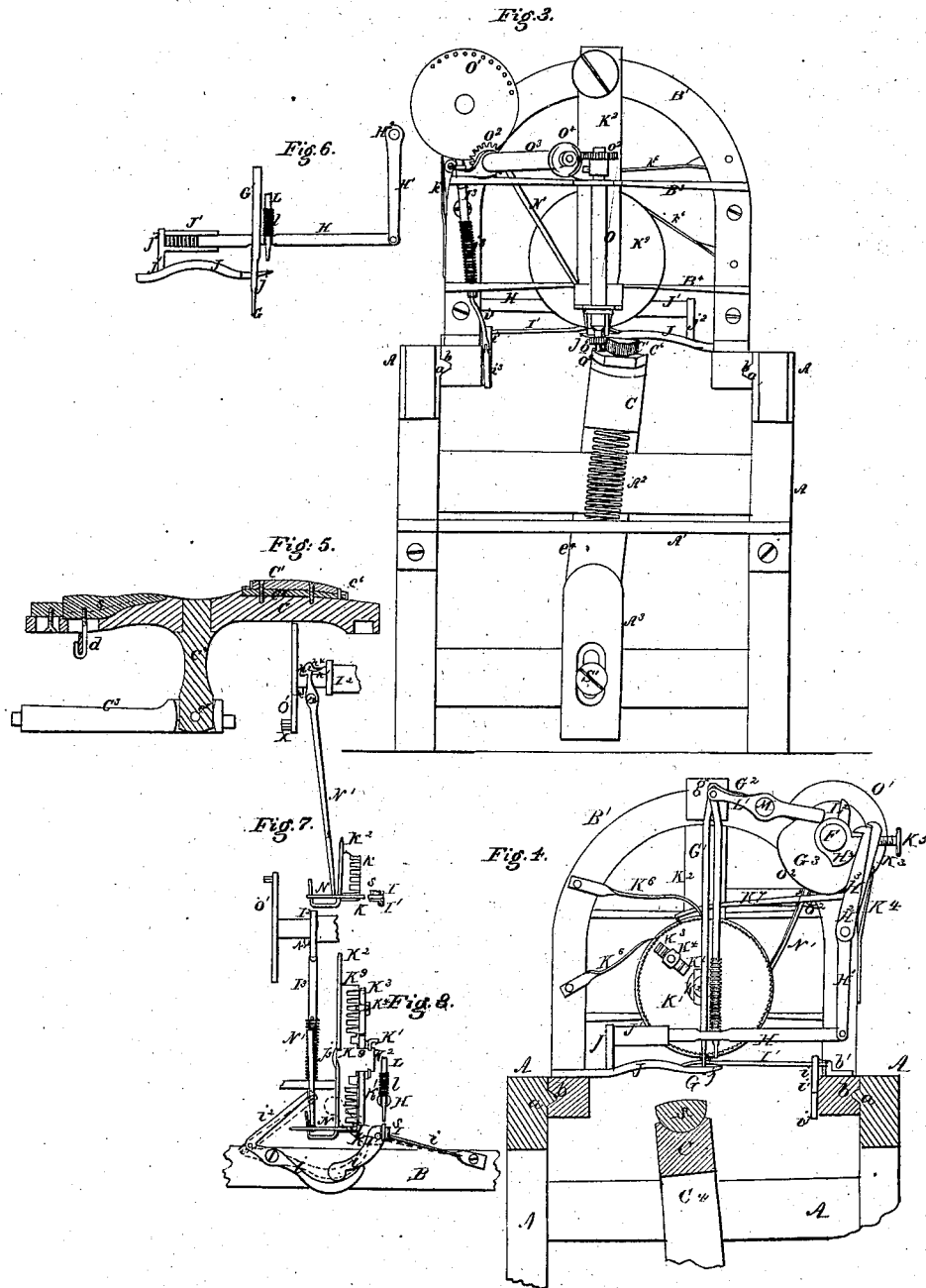
*J. Robinson,*  
*Pegging Machine,*

*No 5,896,*

*Patented Oct. 31, 1848.*



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# UNITED STATES PATENT OFFICE.

JOEL ROBINSON, OF METHUEN, MASSACHUSETTS.

## SHOE-PEGGING MACHINE.

Specification of Letters Patent No. 5,896, dated October 31, 1848.

*To all whom it may concern:*

Be it known that I, JOEL ROBINSON, of Methuen, in the county of Essex and State of Massachusetts, have invented a new and useful Machine for Pegging Shoes, which I denominate the "Automaton Shoemaker," of which the following is a full, clear, and exact description, reference being had to the annexed drawings of the same, making part of this specification, of which—

Figure 1 is a top view, Fig. 2 a back elevation, Fig. 3 is an elevation of the left end, Fig. 4 is a vertical transverse section through the line *x x* of Fig. 1, Fig. 5 is a vertical longitudinal section through the stock (the same being removed from the machine) Fig. 6 is a vertical section through the guide rod and its supports and the lower end of the awl and punch. Fig. 7 is a vertical section taken through the turning tube charger and driver at the moment the peg is placed in the turning tube, Fig. 8 is a vertical section taken through the turning tube, charger, and driver, and the lower end of the punch at the moment the peg is placed over the puncture made in the sole, ready to be driven, Fig. 9 is a plan of the spiral peg chamber, the pusher and ratchet wheel being removed.

The front and back sides, and the right and left ends of the machine, are respectively marked on the top view, or figure of the drawings.

When the same parts occur in the different figures they are designated by the same letters of reference.

My invention consists of a machine for pegging shoes, actuated by manual, or other power, and embracing in its construction, a variety of mechanical devices.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation. The frame A Figs. 1, 2, 3 and 4 is composed of longitudinal and transverse timbers joined together in any convenient and suitable way; and of a curved metallic bar of iron A' to support the helical spring A<sup>2</sup>, which is secured to the left end of the woodwork by screw bolts or otherwise. On the inner side of the two longitudinal timbers or caps A a the ribs *a a* Figs. 3 and 4 are secured, which ribs support the carriage and on which it slides.

The rock shaft C<sup>3</sup> Figs. 2 and 5 is placed on the lower part of the frame and turns

on pivots in suitable bearings formed in the adjustable standards A<sup>3</sup> Fig. 3 these standards are secured by set screws S' to the lower transverse timbers of the frame A. The stock C is mounted upon the rock shaft C<sup>3</sup> 60 and secured thereon by a joint pin C<sup>7</sup> Figs. 2 and 5 on which it is free to turn this joint pin is placed at right angles to the axis of the rock shaft—this arrangement of the pivots of the rock shaft and stock-hinge, 65 form an universal joint, which admits of the shoe being moved in any direction that may be required to place it in the proper position to receive the pegs.

The stock C is composed of a horizontal 70 beam of timber having an arm or standard *o*<sup>4</sup> projecting from its under side the lower end of which is secured to the rock shaft by the joint pin *o*<sup>7</sup>. Upon the upper side of the left end of the beam a cogged and 75 grooved guide pattern *o*<sup>1</sup> is secured by screws, or other means which will admit of its being removed for the purpose of substituting another in its place differing in size, or from it being necessary to have as many of these guide patterns of different 80 forms and sizes as there are different forms and sizes of shoes to be made; because the form and size of the pattern determines the form and extent of the rows of pegs around 85 the sole of the shoe. This guide pattern is composed of a lower part or base *o*<sup>5</sup> having its upper edge raised above the surface forming a rib or guide *o*<sup>6</sup> for the lower end 90 *o*<sup>5</sup> of the guide and feed shaft O to press against when traversing the groove formed between the raised edge *o*<sup>6</sup> and the upper or cogged part of the pattern; the form of the plan of the base *o*<sup>5</sup> corresponds in form with 95 the plan of the sole of the shoe, upon the base the upper section of the pattern *o*<sup>1</sup> is secured in any suitable way, it is smaller than the base, but in the form of its plan the same and in position placed concentric therewith. On the edge of this upper part 100 a series of teeth are formed in the manner of a rack in which the teeth of the pinion *o*<sup>6</sup> of the traversing guide shaft O gear, by which means the carriage B and stock C are connected together and mutually adjusted. 105 The bottom of the groove on the upper surface of the base of the guide pattern is so formed that the end *o*<sup>5</sup> of the guide shaft O while traversing the same may depress the left end of the stock C to raise the shoes 110

placed on the right end against the under side of the stop *j* which has an aperture through it to admit of the descent of the awl and pegs into the sole. The bottom of the guide groove, is held against the lower end of the guide shaft, by the pressure of the helical spring *A*<sup>2</sup> which is placed beneath the left end of the stock *C*.

In the upper surface of the right end of the stock *C* a suitable receptacle or seat is formed to receive the shoe or boot *s*, to be pegged in which seat, or bed the shoe is held by a clamp screw *d* and, a key, or other suitable means which admit of one shoe being readily removed and another substituted in its place, this being important, because since it takes but about five minutes to peg a shoe, it would occupy more time to put them into and take them out of the stock, than to peg them, unless a ready means of performing this operation is provided.

This machine is composed of two principal parts, or divisions—the frame with the stock for holding the shoe to be pegged coggèd pattern—and the carriage which is mounted upon the frame, and carries the awl to perforate the leather the spiral chamber to contain the pegs with its appendages to supply them as required and the punch drive them; also the mechanism for operating the awl and punch, supplying the pegs and moving the carriage and stock, likewise the winch, fly wheel, and pulleys, to which the power is applied which actuates the whole machine. The former of these principal divisions I have described, I will now proceed to a description of the latter.

The carriage is composed of two longitudinal side pieces *B B* having grooves *b, b*, Fig. 3 formed in their outer sides corresponding to the ribs, or ways *a a* of the frame on which they slide; these side pieces are connected by the vertical transverse arches *B' B*<sup>2</sup> which are secured to them by screws, or otherwise. To the arch *B'* the parallel horizontal pointed arches *B<sup>3</sup> B<sup>4</sup>* are secured in any suitable way. The several arches and the side pieces together, constitute the frame of the carriage, on which are mounted the various contrivances referred to in a preceding paragraph.

The fly wheel *E* is made of such dimensions that it will give steadiness to the motion of the machine; it is mounted upon the main driving shaft *F* upon which the several cams and segment wheel are also mounted. To the face of the fly wheel a wrist or handle *E'* is secured for the purpose of being laid hold of by the operator to turn it. Between the fly wheel and the arch *B<sup>2</sup>* the fast pulley *e* and the loose pulley *e'* are placed, these pulleys are used in communicating motion to the machine when other than manual power is used to actuate the same. *G'* is a rod to

the lower end of which the awl *G* is secured; this rod moves at its lower end in a guide formed by a hole perforated through the guide rod *H*; its upper end is connected by a joint pin *g* to the vibrating lever *G<sup>2</sup>* which turns on the rod *M* as a fulcrum; this lever is connected by a pin (represented by dotted lines in Fig. 1) projecting at right angles from its end, with the eccentric groove of the cam *G<sup>3</sup>*; by the motion of the cam, the pin on the end of the lever is caused to traverse the groove in the same which raises and lowers the end of the lever and the awl connected therewith once while the said cam is making five eighths of one revolution and holds the awl in a raised position, during the remaining three eighths of the revolution; when the awl is depressed by the lever it penetrates the sole of the shoe, making a hole to receive the peg. Simultaneously with the perforation of the leather by the awl *G* the turning tube *I* Figs. 4, 7, and 8 is supplied with a peg from the charger *l* by the action of the driver *N*; the turning tube is secured at right angles to the rock shaft *I'*, and when in a horizontal position is in a line with the charger and it is held in this position by the upward pressure of the spring *i* against the under side of the right end of the lever *i'*. The turning tube *I* is in the form of a hollow cylinder made of brass or other metal and having a spring *s* on its inner side to keep the pegs from dropping out while it is turning from the horizontal to the vertical position. The rock shaft *I'* turns in suitable bearings formed in the rest *J* and the stud *b'*. The charger *l* is a tube formed at the outer end of the spiral chamber, a groove *K* Fig. 9 which forms the reservoir for the pegs, this tube or charger corresponds in diameter with the width of the chamber, and is open on the side adjacent thereto, in order that it may receive the pegs from it. The reservoir or chamber to contain the pegs is a spiral groove in depth equal to the length and in width equal to the diameter of a peg, it is formed in the face of the disk *K<sup>2</sup>* Fig. 9 commencing at the center and extending to the circumference thereof in a regular scroll which terminates at the charger *l*, the pegs are arranged in the groove with their points outward so that they may be delivered from the charger to the turning tube the point foremost in order that when the tube is turned down beneath the punch as shown in Fig. 8 the head of the peg may be uppermost. After the spiral groove is filled with pegs the revolving disk *K'* Figs. 4 and 8 having ratchet teeth formed on its periphery, is placed over them to keep them in the groove; this disk is secured upon the pivot *l<sup>2</sup>* on which it turns by the forked key *l'* passed over said pivot in a groove formed near its outer end. In this disk a radial slot *l<sup>3</sup>* Figs. 4 and 8 is made, through which the

pusher  $k^4$  is passed and in which it is free to slide; this pusher on its inner end is made the same size of the pegs and is inserted into the groove K behind the pegs for the purpose of forcing, or pushing them around to the charger; it is caused to traverse the groove and force the pegs around by the revolving of the disk  $K^7$ .

The disk  $K^9$  in which is the reservoir K is secured to the carriage frame by the hanger  $K^2$  Figs. 8, 4 and 3.

The driver N Figs. 1, 2, 7, and 8, is a cylindrical piece of metal rather smaller in diameter than the charger, it slides in circular holes formed in the hanger  $K^2$  which is bent round in a suitable form for that purpose, the position of the driver in its guides is in a right line with the charger—in the center of the driver a notch is made for the purpose of connecting it with the forked end of the lever  $N'$  turns on the pivot  $n$  Figs. 1 2 and 7, backwards and forwards to push the pegs out of the charger into the turning tube; the lever  $N'$  turns on the pivot  $n$  Figs. 1 2 and 7, as a fulcrum which pivot is secured to the bent standard, or elbow  $b^2$ : the lever is moved to the right at its lower end by the oblique stud  $n'$  Figs. 1, 2, and 7 which is secured to the side of the cam  $I^2$  and which presses against the projecting arm  $n^2$  of the upper end of the lever as it is turned around with the cam. As soon as the upper end of the lever has been thus moved to the left and the lower end to the right forcing the driver through the charger and pushing the peg into the turning tube the oblique stud  $n^3$  which is affixed to the face of the segment wheel  $O'$ , then immediately comes into contact with the projecting arm  $n^4$  on the opposite side of the upper end of the lever  $N'$  and presses it to the right which causes the lower end to move to the left bringing with it the driver which is thus withdrawn from the charger, this latter operation is completed simultaneously with the withdrawal of the awl from the leather when making the hole for the peg. Immediately upon the awl being raised out of the leather the sliding guide bar H Fig. 4 moves over toward the front of the machine carrying with it the awl a distance equal to the space from the center of the awl, to the center of the punch thus bringing the punch directly over the hole made in the leather by the awl, where it is held until the peg has been driven into the shoe and the punch raised again out of the turning tube by the action of the spring  $j$  Fig. 4 the lever  $L'$  being relieved by the cam  $L^2$  at that moment.

The guide bar H rests on its front end in the cylindrical tube  $J'$  in which it slides backward and forward in moving the awl and punch to and from the line of the pegs, within the tube is placed a helical spring  $j^2$  Fig. 6 for the purpose of forcing the bar

toward the back of the machine, the action of the cam  $H^4$  against the arm  $H^3$  only moving it toward the front; the tube  $J'$  is supported on a standard  $j'$  erected upon the rest J; the back end of the guide bar is suspended by a joint pin to the lower end of the vibrating arm  $H'$  of the rockshaft  $H^2$  Fig. 4; the arm  $H^3$  is kept in contact with the cam  $H^4$  by the pressure of the helical spring  $j^2$  Fig. 6 acting against the end of the guide bar H which forces the lower arm  $H'$  of the rockshaft toward the back of the machine and the upper arm  $H^3$  toward the front or against the cam  $H^4$  Fig. 4; this cam is so shaped and arranged that it will remove the awl from the line of the pegs as soon as the hole for the peg has been punctured and the awl raised again; the cam will also hold the awl aside until the peg is driven and the punch raised out of the turning tube, when it immediately relieves the arm  $H^3$  which admits of the awl being brought back again into the line of the pegs, as before described. At the same time that the awl is thus brought into position the carriage is moved on the line of the pegs and the shoe is adjusted so as to bring it into the proper position to have another hole punctured and another peg driven.

Simultaneously with the removal of the awl to one side of the line of pegs the turning tube is changed from the horizontal to the vertical position placing the peg in a vertical position also with its head uppermost, directly over the hole and beneath the punch ready to be driven; the turning of the tube is effected by the cam  $I^2$  Figs. 1 and 2 striking the vertical sliding rod  $I^3$  and depressing it, which forces down the inclined connecting rod  $i^2$  depressing the lever  $i^3$  on the left of its fulcrum and raising it on the right which turns the arm  $i'$  and the rockshaft  $I'$  and tube I through an arc of ninety degrees into the position in which they are severally represented by the dotted lines in Fig. 8; the cam  $I^2$  is so shaped and arranged that it will hold the turning tube in the vertical position until the peg has been forced into the shoe and the punch raised again, when it instantly releases the tube and by the joint action of the spring  $i$  on the arm  $i'$  of the rockshaft  $I'$  and the helical spring  $j^3$  surrounding the rod  $I^3$  and pressing it upward the tube I is turned back into the horizontal position as seen in Fig. 4 and the rods, levers, and arms, again assume the position indicated by the dark lines, in Fig. 8. Next the peg is punched, or forced into the leather by the sudden depression of the punch L Figs. 2, 4 and 8; the punch is formed on or secured to the lower end of the rod L which moves in a circular guide perforated through the guide bar H Fig. 6 in like manner with the awl G, the upper end of the rod L is connected with the lever  $L'$  Figs. 1 2 and 4

which turns on the rod M as a fulcrum, the rear end of the lever is held against the cam L<sup>2</sup> and the punch is raised by the upward pressure of the helical spring l; the cam L<sup>2</sup> is so formed and arranged that immediately upon the peg being placed over the hole made in the leather by the awl, it causes the punch to descend upon and drive it, instantly releasing the punch again to allow the spring to raise it. Simultaneously with the driving of the peg into the shoe the charger is supplied with another peg from the spiral chamber by the turning of the ratchet disk K' which moves the pusher l<sup>4</sup> against the pegs, pushing them forward or around in the spiral chamber K; this operation is effected by means of the ratchet or reaching arm K' connected with the lever K<sup>2</sup> by a joint pin; the fulcrum of this lever is the rockshaft H<sup>2</sup> the lever is held against the cam K<sup>4</sup> by the pressure of the spring l<sup>4</sup> this cam is so constructed and arranged that when the peg is being driven it comes into contact with the lever K<sup>3</sup> moving it backward and pulling the ratchet K' with it, which being in gear with the disk, or ratchet wheel K', the latter is turned on its axis a distance equal to the space through which the ratchet is moved; the motion of the ratchet is governed by the set screw l<sup>5</sup> which allows it to approach nearer to, or farther from the cam. After the cam K<sup>4</sup> has forced the lever and ratchet back, the spring l<sup>4</sup> presses the lever forward again causing the ratchet to advance over one or more teeth of the disk K' for the purpose of again turning it, when they are next drawn back by the cam. The dogs or pawls l<sup>6</sup> keep the disk from turning back again. After one peg has been driven and the charger supplied with another the shoe is moved a distance on the line of the pegs equal to the space it is required to have from the center of one peg to the center of the next. This is effected by means of the cogs and groove of the guide pattern C' and the traversing pinion o and guide and feed shaft O; the segment wheel O' is secured to the end of the main shaft F, its teeth are secured by screws formed on thin shanks, which are inserted in corresponding holes made in the face of the wheel, these teeth gear into the pinion O<sup>2</sup> and as there are a greater or less number of them placed in the wheel the pinion is turned more or less; the pinion O<sup>2</sup> is secured to the shaft O<sup>3</sup> on the opposite end of which the screw O<sup>4</sup> is placed, which gears into the wheel o<sup>2</sup> mounted upon the upper end of the shaft O, which it turns, the pinion O<sup>6</sup> on the lower end of the shaft o gears into the rack of the pattern C', and when turned, by the oblique pressure of the teeth of the pinion and the rack against each other the lower end of the shaft is held against the outside of the groove in the pattern which causes the stocks and the shoe

secured to them to move from side to side, and in curved and in right lines exactly corresponding to the plan of the groove of the pattern and at the same time the carriage is moved backward, forward, or remains stationary according as the line of the pegs is backward forward or across the shoe; when the line of the pegs is directly across the sole as at the toe of a square toed shoe the spaces between the pegs are produced by the movement of the stocks alone and when the line of pegs is in the direct line of the length of the shoe, or parallel to the line of progress of the carriage as on the sides of the shoes the distance between the pegs is produced by the motion of the carriage alone but when the line of pegs is obliquely across the shoe the distance between the pegs is produced by the simultaneous movement of the stocks and carriage.

I have not entered into a particular description of the cams from which the varied motions of the machine are derived, because they are common devices, and their principle and modes of action are well understood, and also because they may be considerably varied in their size and proportions and would yet produce the desired effect.

Having incidentally described the operation of the parts severally, in describing their construction, I will now briefly describe their operation in connection. The soles being placed on the last and adjusted to the upper leather of the shoe in the same manner that the operation would be performed preparatory to pegging it on by hand; the shoe and last are now secured properly to the stocks, the carriage is next run out to the right until the pinion o<sup>6</sup> and guide shaft O are placed at the center of the heel, the reservoir being supplied with pegs and other parts properly adjusted the operator now lays hold of the handle E' and turns the fly wheel E and the cam shaft F on which it is mounted about five eighths of one revolution, which punctures the soles and supplies the turning tube with a peg from the charger; next the fly wheel E is turned about one eighth of a revolution farther around which will remove the awl to one side of the line of the pegs and bring the punch immediately over the hole, the turning tube will also be now placed in a vertical position holding the peg erect with the point downward, directly over the hole and beneath the punch; by turning the fly wheel E one eighth of a revolution farther around, the peg will be punched into the shoe and the charger supplied with another peg from the spiral chamber or reservoir; the fly wheel is now turned the remaining eighth which completes the revolution, by which the stocks and carriage are mutually adjusted, so as to bring the awl in advance of the peg last driven in the proper position

to puncture a hole in the leather for the next peg. This has brought the fly wheel and main shaft into the position they were in when the operation began and completes the operation of putting one peg into the sole of the shoe. The turning of the fly wheel E is continued until the shoe is pegged; every revolution inserting one peg by the successive operations just enumerated.

10 If it is required to make two rows of pegs around the sole, a cylindrical ring is placed upon the lower end or guide pivot of the shaft O which in thickness corresponds to the distance at which it is required to place 15 the rows of pegs apart, this causes the teeth of the pinion and rack to take deeper into gear bringing the centers of the guide pivot and of the pattern nearer together which is equivalent to using a smaller pattern. The ring or thimble is put on after the outside row of pegs is made instead of the spiral chamber for supplying the pegs to the turning tube, the wood cut into strips for pegs in the usual manner, and unsplit may be supplied to the machine in any convenient way and each peg cut off as the driver is ready to convey it to the turning tube; this mode of supplying the pegs would save the labor of arranging them one by one in the reservoir with their points all one way but the benefits of this arrangement would be in some measure counterbalanced by the liability under it to miss driving a peg occasionally by reason of the defects in the strips of wood from which they are cut.

Having thus fully described the construction and operation of my invention; what I claim therein as new, and desire to have secured to me by Letters Patent, is—

40 1. Holding the shoe on rocking, turning or moving stocks, in the proper position to be pegged, whether the same be constructed, arranged and operated as herein described or in any other way by which similar results 45 are produced.

2. I also claim; the simultaneous intermittent movement of the carriage (B) and stock (C) by means of the cogged and

grooved guide pattern (C') and traversing guide shaft ( $o^5$ ) and pinion ( $o^6$ ) for the purpose of arranging the pegs at uniform distances apart in lines around the sole of the shoe and parallel to its edge whether the same be constructed arranged and operated as herein described, or in any other manner substantially the same.

3. I also claim the employment of the turning tube (I) for the purpose of receiving the pegs from the charger ( $k$ ) and then placing them over the holes punctured in the sole of the shoe by the awl, in the proper position to be driven therein, whether the same be made and operated as herein described or in any other mode substantially the same.

4. I also claim the manner of supplying the turning tube (I) with pegs from the charger ( $k$ ) at suitable intervals by means of a vibrating driver (N) constructed arranged and operated substantially as herein described.

5. And lastly I claim the employment of a spiral chamber, or groove (K) to contain the pegs and supply them to the charger ( $k$ ), one at a time, by the simultaneous intermittent action of the transverse pusher ( $k^4$ ) and ratchet wheel (K'), or otherwise, in combination with the charger  $k$ , driver N, turning tube I, awl G and punch L, arranged and operated in the manner and for the purpose described; but I wish it to be distinctly understood that I do not claim the spiral chamber K, nor its use as a supplier, as it has been used for percussion caps in fire arms, provided with a traversing pusher similar to mine; but I merely claim its employment in combination as above stated, for supplying pegs for pegging shoes.

In testimony whereof I have hereunto signed my name in presence of two subscribing witnesses the thirteenth day of November A. D. 1847.

JOEL ROBINSON.

Witnesses:

P. H. WATSON,  
A. E. H. JOHNSON.