(No Model.) 2 Sheets—Sheet 1.

J. F. DAVEY.

PEGGING MACHINE.

No. 555,434. Patented Feb. 25, 1896.

Fig. 1.

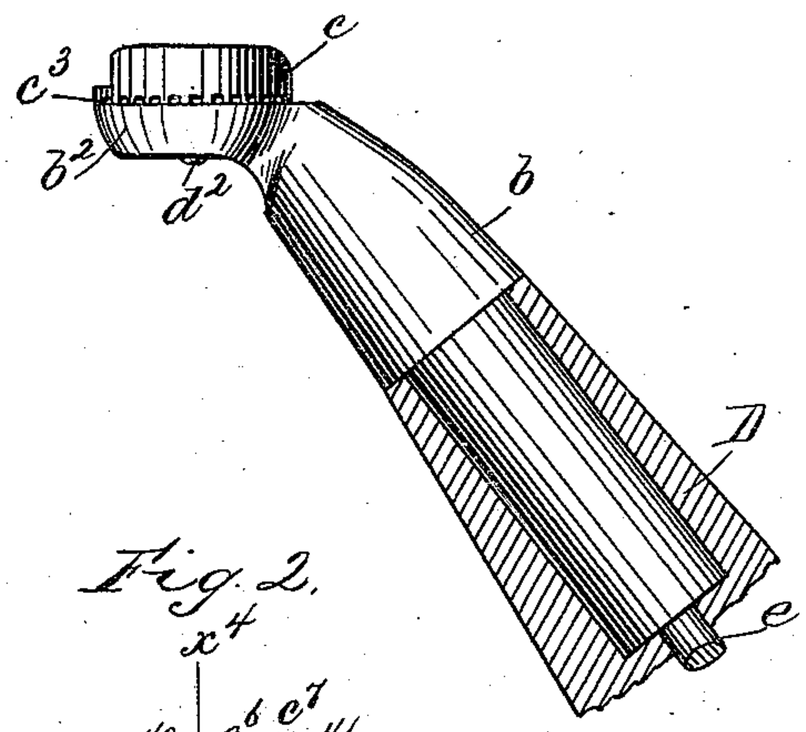


Fig. 2.

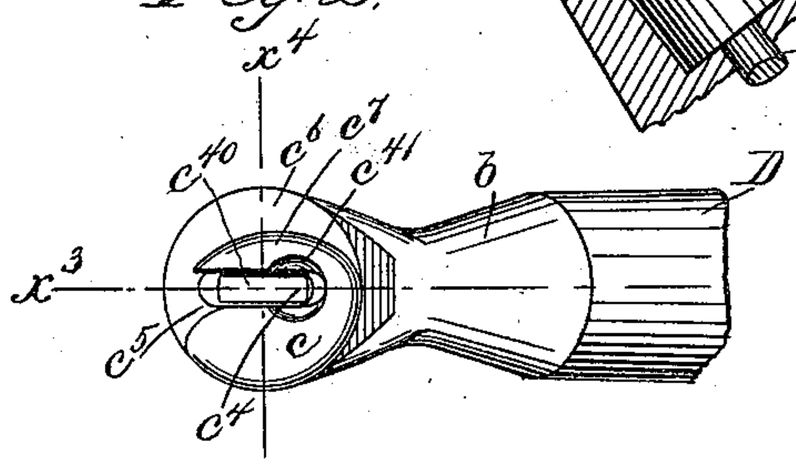


Fig. 3.

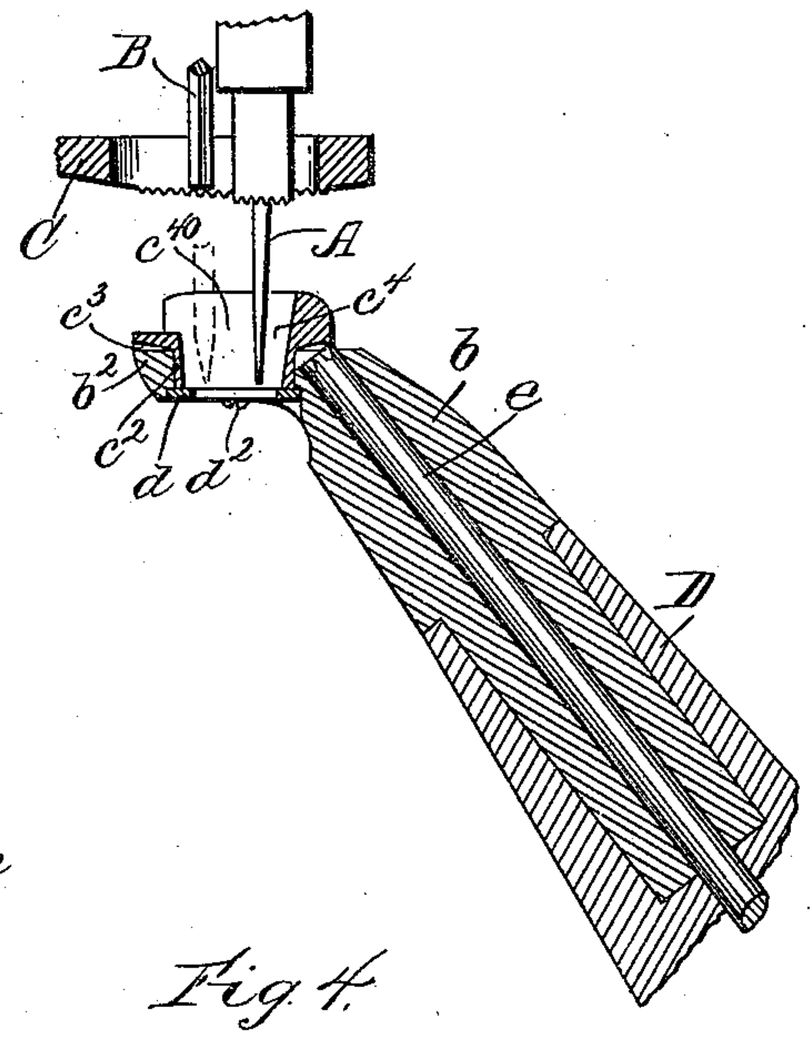


Fig. 4.

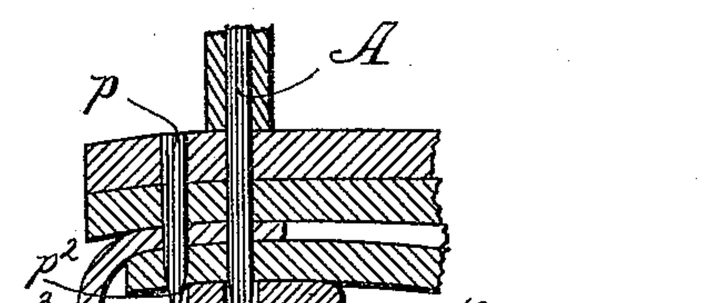


Fig. 5.

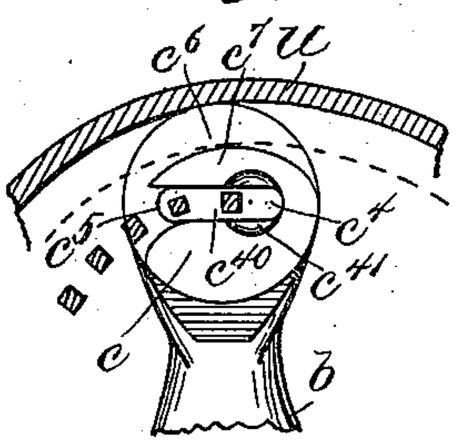


Fig. 6.

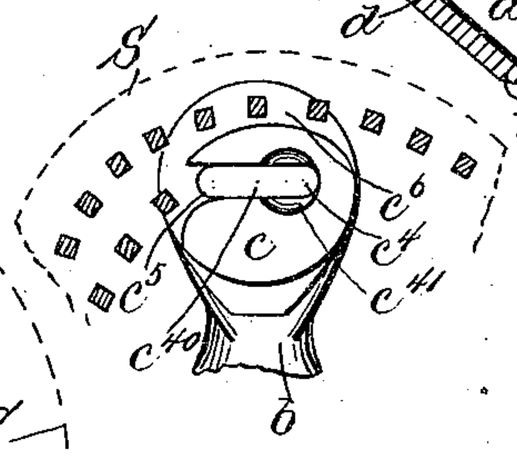


Fig. 8.

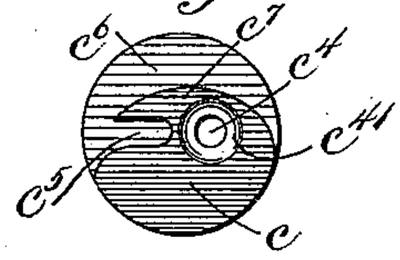
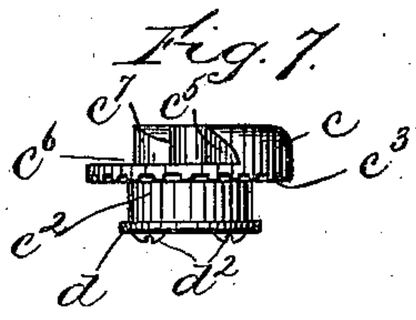


Fig. 7.



Witnesses
Jas. J. Maloney.
J. P. Livermore.

Inventor:
John F. Davey.
by Jos. P. Livermore
Atty.

(No Model.) 2 Sheets—Sheet 2.

J. F. DAVEY.

PEGGING MACHINE.

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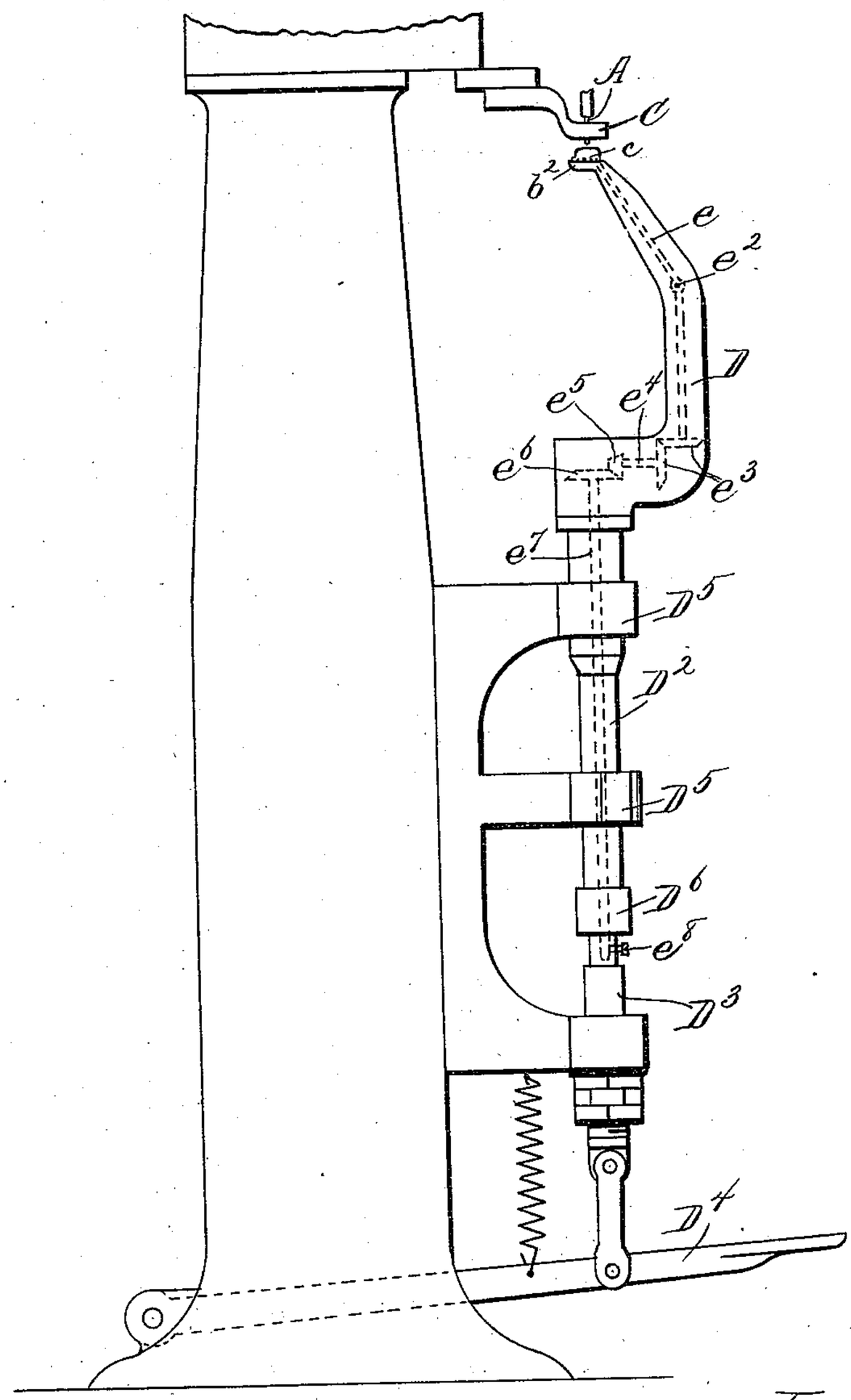
Fig. 9.



Witnesses
Jas. J. Maloney.
H. J. Livermore

Inventor.
John F. Davey.
by Jos. P. Livermore
Atty.

UNITED STATES PATENT OFFICE.

JOHN F. DAVEY, OF MARLBOROUGH, MASSACHUSETTS.

PEGGING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 555,434, dated February 25, 1896.

Application filed September 30, 1895. Serial No. 564,127. (No model.)

To all whom it may concern:

Be it known that I, JOHN F. DAVEY, of Marlborough, county of Middlesex, and State of Massachusetts, have invented an Improvement in Pegging-Machines, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

My invention is embodied in a pegging-machine for boots and shoes, and relates especially to the horn-tip and work-support employed in the inside of the shoe during the pegging operation, and the relation thereof to the awl of the peg-driving mechanism.

It has been proposed to peg boots and shoes—that is, to drive one or more rows of pegs that fasten together the outsole, upper, and insole of the lasted shoe—after the last has been withdrawn therefrom; but such operation is attended with various difficulties, and prior to my invention the common practice has been to peg boots and shoes while on the last, although the plan of pegging after the last is withdrawn has many obvious advantages, and if it could be satisfactorily accomplished would afford a large saving in cost of manufacture over the plan of pegging on the last.

Among the difficulties which have been encountered in attempts to peg after the last is withdrawn are that of producing a suitable horn-tip or work-support within the shoe capable of entering far enough into the toe portion to bring the rows of pegs at the proper distance from the edge of the sole, while at the same time providing a support that will allow the awl to penetrate through the insole a sufficient distance to make a suitable opening for the peg, and also in machines having an awl-feed to allow the awl to have sufficient lateral movement while extending through the sole to produce the requisite feed of the shoe. Another difficulty is due to the projection of the ends of the driven pegs from the insole inside the shoe, so that they interfere with the feed, and in such machines as have been devised heretofore prevent a second row of pegs from being driven until after the ends of the row first driven have been smoothed off even with the insole. Attempts have been made to overcome this latter difficulty by providing the horn-tip or work-support with devices intended to cut off or cripple the projecting ends of the pegs after they have been driven and during the feed of the material in the pegging operation.

The purpose of the present invention is mainly to overcome the foregoing difficulties and to provide a horn-tip and work-support therein by means of which shoes can be pegged rapidly and satisfactorily after the last is drawn. To this end the horn-tip of the machine embodying this invention is provided with an annular support, and a work-supporting anvil or button mounted to rotate therein, and provided with gearing by which it is retained in the same position with relation to the awl and driver of the machine, whatever may be the position of the horn, which has to be rotated in presenting different parts of the edge of the shoe to the awl and driver in the usual manner.

In the pegging-machines heretofore constructed in which the work is pegged on a horn after the last is drawn the awl of the peg-driving mechanism enters the material in line with the center of the horn-tip or in the axis of rotation of the horn, and after the awl-hole is made the material is fed the distance between two adjacent pegs, thus bringing the part of the material that is to receive the peg at a distance radially from the axis of the horn equal to the length of the feed. Thus the work is pierced by the awl at a point coaxial with the horn and the peg is driven at a point eccentric to the axis of the horn, requiring that the tip or substantially circular anvil in the end of the horn should be of a radius substantially greater than the length of the feed, thereby precluding the entrance of the horn far enough into the toe portion of the shoe to drive the pegs properly.

In the work-support forming the subject of this invention the work-supporting anvil or "button," as it will be hereinafter called for convenience, which is supported in the end of the horn, but restrained from rotation therewith with relation to the peg-driving mechanism, is provided with an awl-passage extending vertically through the same, but eccentric to the axis, being set to one side of the axis a distance about equal to one-half the normal feed or space between the con-

secutive pegs to be driven in the material. The awl-hole is thus formed in the material at a point eccentric with the axis of the horn, and the feed takes place carrying said material so that the awl-hole formed therein passes across the center of the horn and at the end of the feed movement is eccentric thereto on the other side of the axis from the point at which the awl-hole was made, so that the diameter instead of the radius of the button, as heretofore, need be only large enough to accommodate the feed of the material and afford a support therefor adjacent to the point in the material at which the awl penetrates and at which the peg is driven. Thus, other things being equal, the button having an eccentric awl-passage in accordance with the present invention may be much smaller than those heretofore made having a concentric awl-passage, and by this and other features of construction hereinafter described the horn-tip and work-support forming the subject of the present invention is made sufficiently compact to peg properly around the toe portion of a boot or shoe.

As it is desirable to permit the awl to extend a considerable distance below the support, so that the length of the awl-stroke need not be varied in passing from thick to thin material, the work-support forming the subject of this invention is so constructed as to afford a vertical awl-passage wholly through the same, thus affording no obstruction to the penetration of the awl to any desired depth. To attain this result the button is provided with a shank of sufficiently large diameter to include within it the eccentric awl-passage, and the part that supports the button but rotates with the horn (while the button is reversely rotated so as to stand still with relation to the peg-driving mechanism) is made as an annulus surrounding the shank of the button to confine the same in proper position therein, the said button being provided with a supporting-shoulder that rests on the top of the annulus, which thus sustains the button against the pressure of the work thereon in the operation of pegging.

In machines having an awl-feed, which are believed to be the most desirable for embodiment of the present invention, the eccentric awl-passage through the button (including its top that stands above the supporting-annulus and shank within the supporting-annulus) is formed at one end of a slot extending from said awl-passage across the axis of the button to a point equally eccentric at the other side, thus affording a space to accommodate the awl, which may be driven down through the material any desired depth and then move transversely while in the material to feed the same, the projecting end of the awl below the surface of the inner sole being accommodated by the said slot in the work-supporting button in these operations. Above the supporting-shoulder which rests upon the top of the supporting-annulus of the horn-tip the button is provided with a top, head, or anvil portion which extends above the same a height greater than the maximum projection of the driven pegs below the inner surface of the insole. This upwardly-projecting portion or head, the upper surface of which constitutes the actual support in engagement with the insole, is cut away or slotted in line with the awl-passage at the other side of the axis of the button, thus affording a free passage for the projecting ends of the driven pegs in the feed of the work, and the upwardly-projecting portion is also cut away or recessed at one side of the awl-passage and peg-slot so as to afford a clearance or space in which the ends of a previously-driven outer row of pegs may travel while a second inner row is being driven, and the side walls of the said recess and peg-slot of the button, along which the projecting ends of the pegs pass in the feed of the material, are properly curved to accommodate the passage of the pegs while the shoe is feeding around the most-curved portion of the edge of the shoe—as, for example, in pegging around the toe end—the result of all the foregoing features of construction being that the first row of pegs may be driven as close to the periphery of the shoe as is desired for the proper fastening of the soles, and a second row may be subsequently driven within and at a proper distance from the first row, the ends of which pass by in the recess in the button without obstructing the feed movement.

The invention further consists in details of construction hereinafter described that contribute to the durability and efficiency of the device.

Figure 1 is a side elevation of a horn-tip and work-supporting button embodying this invention. Fig. 2 is a plan view thereof; Fig. 3, a vertical longitudinal section on the line x^3; Fig. 4, a vertical section on line x^4, Fig. 2, showing also the relation of the material operated upon to the work-support; Fig. 5, a plan view of the work-support, showing also the relation of the insole, upper and driven pegs thereto in the operation of driving the first row of pegs; Fig. 6, a similar view showing the working relations in driving the second or inner row of pegs; Fig. 7, an elevation of the button detached; Fig. 8, a plan view showing a modified construction which may be used when the awl has no lateral movement while projecting below the insole; and Fig. 9, a side elevation, on a smaller scale, showing the horn and gearing that may be employed to prevent rotation of the button therewith.

The work-support to which the invention especially relates may be employed with any suitable or usual peg-driving mechanism, of which only the awl A, Figs. 3 and 4, driver B, and foot C are herein shown, it being understood that said awl operates in the usual manner to penetrate the stock, as shown in Fig. 4, and in case of an awl-feed machine

to move laterally while in the stock from the position shown in full to that shown in dotted lines, Fig. 3, for the purpose of feeding the stock between the successive peg-driving operations.

In order to properly support the lasted boot or shoe after the last is withdrawn during the pegging operation, the machine is provided with a horn D to enter the shoe, which horn may be of usual construction—that is, mounted to be capable of turning about an axis approximately in line with the point at which the fastenings are driven and extending diagonally up to a tip *b* just below the foot C of the peg-driving portion of the machine, so as to afford a support at the inside of the shoe, as indicated in Fig. 4, for the material into which the pegs are driven. The said horn-tip *b* is in accordance with this invention provided with a substantially horizontal supporting-annulus b^2, which turns with the same in the swiveling movement of the horn that is necessary to present all parts of the shoe to the pegger, said annulus being coaxial with the swivel-support of the horn.

In order to provide a support for the material close around the point at which the awl penetrates and at which the peg is driven and at the same time to accommodate the movements of the material and awl and pegs therein, the said horn-tip is provided with a work-supporting button *c*, having a supporting-shoulder or base portion that rests upon and is preferably substantially equal in diameter to the supporting-annulus b^2, as shown in Figs. 1 and 3, said button having a shank c^2, (see Figs. 3 and 7,) which enters the opening in the annulus, but is free to turn in the same as a bearing.

In order to prevent the button from accidentally rising out of its bearing-socket in the horn-tip, it is provided with a flange or collar *d* of slightly larger diameter than the shank and adapted to be secured to the lower end thereof, as by the screws d^2, as shown in Fig. 4, said flange engaging with the end portion of the supporting-annulus b^2, preferably in a rabbet, as shown, and thus securely connecting the button with the horn-tip, although the one is capable of rotation relative to the other.

It is necessary that the button should remain in the same position in relation to the peg-driving device, and it is consequently provided with gearing which prevents it from rotating with the horn when the latter is rotated with relation to the main framework of the machine, the result being that when the horn is swung around its swivel the button has no rotary movement with relation to the main framework of the machine and to the peg-driving devices thereon. This gearing in its general nature may be the same as has heretofore been employed to prevent rotation of a button or similar device at the end of the horn wherever it is necessary to prevent rotary movement of said button with relation to the fastening-applying devices of the machine—as, for example, in that form of pegging-machine in which the button is provided with a cutter to cut off the projecting ends of the pegs in the feed of the material; but in order to meet the exigencies of a practical device for pegging boots and shoes the button is in accordance with the present invention provided with teeth c^3 in the surface that is in bearing engagement with the supporting-annulus of the horn-tip, said teeth being preferably formed in the shoulder that rests upon the top of the annulus b^2 and supports the said button against the downward pressure of the material upon it. The said teeth c^3 are engaged by teeth at the end of a spindle *e* extending through the horn and operated by gearing in the horn and at the base thereof in the usual manner to prevent rotation of the button with the horn when turned with relation to the frame of the machine, so that the horn-tip rotates around the button which itself stands still. A suitable construction of this gearing is indicated in Fig. 9, wherein the toothed spindle *e* is provided with a universal joint at e^2 at an angle in the horn D and is connected at its lower end by bevel-gearing e^3 with a shaft e^4 provided with a pinion e^5 meshing with a gear e^6 connected with a shaft e^7 extending through the swivel-support of the horn and made fast, as by a set-screw e^8, to the non-rotating part D^3 of the horn-support. The said horn-support is shown as connected with a treadle D^4 by which the horn may be depressed to permit the insertion of the material between its tip and the foot C of the pegger.

The lower portion, D^3, of the horn shaft or support that is connected directly with the treadle has no rotary movement, while the upper portion, D^5, on the main frame is connected by a swivel-joint at D^6 to the lower portion, D^3, so that the horn D and upper portion, D^2, of its supporting-shaft rotate freely and the entire support and horn are capable of up-and-down vertical movement.

By providing the gear-teeth C^3 in the bearing-surface of the button, as before described, vertical space in the horn-tip is greatly economized, this in conjunction with other features hereinafter described enabling the same to enter sufficiently far into the toe of the boot or shoe, as will be understood from Fig. 4, and at the same time the gear-teeth are in a position to be well protected from the entrance of foreign material that might interfere with the proper working of the device.

The button is provided with a top or head extending above the toothed supporting-shoulder at c^3 a height about as great as the distance that the ends of the driven pegs *p* project through the insole, as indicated at p^2, Fig. 4, the said upwardly-projecting portion constituting the anvil or support proper for the material, which anvil supports the material close to the point at which the awl or

fastening passes through, as will be understood from Fig. 4, where the awl A is shown as having penetrated the stock, which is supported against the thrust of the awl and subsequent thrust of the peg being driven by the upwardly-projecting portion or head of the button, as there shown. The said button is provided with a vertical awl-passage c^4 extending wholly through the head and shank thereof, and preferably also through the fastening-collar *d*, as shown, said awl-passage being eccentric to the button or offset from the axis thereof a distance about equal to one-half the normal feed of the material between consecutive peg-driving operations.

When the work-support forming the subject of this invention is to be used in a pegging-machine having an awl-feed, as indicated by the full and dotted line position of the awl A, Fig. 3, the said eccentric awl-passage c^4 is at one end of a slot c^{40} extending therefrom through the axis of the button and to the other side thereof, as best shown in Figs. 2 and 3; but if said work-support is to be used in a machine in which the awl is withdrawn from the material at the same point at which it enters, having no lateral movement while in the material, it will not be necessary to slot the button, and the eccentric awl-passage may be made as shown in Fig. 8, it being understood that by reason of the prevention of rotation of the button with the horn said eccentric awl-passage c^4 always stands beneath the point at which the awl penetrates the material, regardless of the rotation of the horn about its axis.

It is desirable to have the upper portion of the awl-passage countersunk, as shown at c^{41}, Figs. 2 and 8, in order to direct the awl into the awl-passage in case it should be slightly deviated from its proper position by striking a lasting-tack or otherwise.

When the button is slotted to accommodate a lateral feed of the awl, as shown in Figs. 2 and 3, the length of said slot c^{40} in the direction transverse to the button is sufficient to accommodate the maximum feed movement of the awl, which is consequently in no wise interfered with by the work-support, and by having the slot extend across at both sides of the axis, as shown, the button may be of much smaller diameter than would be the case if the awl entered directly over the axis of the button, which latter would then have to have a radial slot of sufficient length to accommodate the feed movement of the awl.

When the pegs *p* are driven, their points project below the inner surface of the insole, and in order that such projecting points may not interfere with the feed of the material the head or upper portion of the button is cut away at the opposite side of the axis from the eccentric awl-passage and substantially in continuation with the slot c^{40} in an awl-feed machine, thus forming a lateral opening or peg-slot c^5 for the ends of the driven pegs to pass through as the shoe is fed, as will be understood from Figs. 5 and 6. The inner wall of this passage—that is, the one that stands on the side toward the middle of the shoe—is curved to correspond approximately to the most-curved portions of the rows of pegs, so that the latter pass readily in feeding around the most-curved portions at the toe end of the shoe, as will be understood from Figs. 5 and 6, in which the dotted line S represents the outline of the toe end of the insole, while the upper U and point portions of the pegs are indicated in section.

It will be recognized from Figs. 4 and 5 that a horn-tip and button of the diameter and vertical thickness therein shown will be readily accommodated by the upper and permit the pegs to be driven at the proper distance from the edge of the sole, but that if the button and tip were substantially increased in diameter or vertical thickness this could not be done, and it will be recognized that the novel arrangement of the gear-teeth in the supporting-surface of the button and of the awl-passage eccentric to the axis of the button, as before set forth, are essential to afford the requisite compactness in these parts to enable the toe portions of the boots or shoes to be pegged. In order to enable a second row of pegs to be driven within and parallel to the first row, the head of the button *c* is cut away or recessed, as shown at c^6, thus leaving a supporting portion c^7 at one side of the awl-passage c^4 and peg-slot c^6, so that the insole is properly supported against the thrust of the awl and peg, the wall of said recess c^6 or outer surface of the supporting portion c^7 being curved, as shown in Figs. 2, 5, and 6, to correspond with the curvature in the edge of the shoe, so that in driving a second row of pegs, as shown in Fig. 6, the projecting ends of the row previously driven will pass through the recess c^6, as shown in Figs. 4 and 6, without obstructing the feed movement.

The head or upwardly-projecting anvil portion of the button, upon the top of which the material rests while the pegs are being driven, thus affords a firm support for the material at both sides of and close to the point at which the awl or fastening penetrates, thus insuring efficiency of operation of the pegging devices, and at the same time the projecting ends of the pegs do not interfere with the proper operation of the machine, which, owing to the features of construction of the horn-tip and supporting-button heretofore pointed out, is capable of pegging boots and shoes rapidly and effectively while off the last.

While all of the hereinbefore-described features of construction of the work-support contribute to the compactness thereof, by which it is possible to do all classes of pegged work after the last is drawn, certain of said features would be useful without the others, as, for example, the annular construction of the horn-tip in conjunction with a button supported

thereby, as described, would provide for an awl-passage wholly through the support, thus offering no restriction to the amount of descent of the awl, which is of advantage whether the awl-passage be eccentric or not, and the advantage arising from curving the side of the peg-slot or widening said peg-slot toward the periphery of the button and of recessing the anvil portion at the side to afford clearance for a previously-driven row of pegs might be availed of in buttons of different construction as to the remaining features, said features being believed to be novel.

I claim—

1. A work-support for pegging-machines comprising a horn-tip provided with a supporting-annulus; combined with a button having a shank contained within said annulus and a supporting portion resting on said annulus, said button being provided with external gear-teeth in a portion of its surface in bearing engagement with said annulus, substantially as and for the purpose described.

2. The combination of the rotatable horn of a pegging-machine, with a work-supporting button pivotally supported in the tip thereof and provided with an eccentric awl-passage and means for preventing rotation of the button when the horn is turned, substantially as and for the purpose described.

3. The combination of the rotatable horn of a pegging-machine, with a work-supporting button pivotally supported in the tip thereof and provided with an eccentric awl-passage and a slot extending laterally therefrom through and to the other side of the axis of the button, and means for preventing rotation of the button when the horn is turned, substantially as and for the purpose described.

4. The combination of the rotatable horn of a pegging-machine, with the awl arranged eccentric to the axis of rotation of the horn, said awl having a feed movement from one to the other side of the axis of the horn, substantially as described.

5. A work-supporting button for a pegging-machine having a bearing portion and anvil portion projecting above the same, an eccentric awl-passage extending through said anvil portion, and a lateral opening or peg-slot at the opposite side of the button-head, substantially as and for the purpose described.

6. The combination of the rotatable horn of a pegging-machine, with a work-supporting button having a bearing portion and top or head projecting above the same, said button being provided with an awl-passage and the head provided with a lateral opening or peg-slot, the width of which is increased toward the periphery of the button-head, and means for preventing rotation of the button when the horn is turned, substantially as and for the purpose described.

7. The combination of the rotatable horn of a pegging-machine with a work-supporting button having a bearing portion and anvil portion projecting above the same and an awl-passage, and a lateral opening or peg-slot at one side of the anvil portion of the head, said anvil portion being recessed at one side of said awl-passage and slot, and means for preventing the rotation of the button when the horn is turned, substantially as and for the purpose described.

8. A work-support for a pegging-machine comprising a horn-tip provided with a supporting-annulus, combined with a work-supporting button supported in said annulus and having an anvil portion extending above the same, said button being provided with an awl-passage extending wholly through the same within the opening of the annulus, and a lateral peg-slot in the anvil portion above the annulus, substantially as described.

9. The combination of the rotatable horn of a pegging-machine with a work-supporting button having a bearing portion and anvil portion projecting above the same to support the material during the pegging operation, the said anvil portion being recessed at one side to afford clearance for a previously-driven row of pegs, and means for preventing rotation of the button when the horn is turned, substantially as described.

10. The combination of the horn adapted to rotate upon a vertical axis provided at its tip with a supporting-annulus concentric with its axis of rotation; with a button supported by said annulus and provided with an eccentric awl-passage within the opening of the annulus, and means for preventing rotation of the button when the horn is turned, substantially as and for the purpose described.

11. The combination of a horn adapted to rotate about a vertical axis provided with a supporting-annulus at its tip, with a button having a shank contained within said annulus and an anvil portion projecting above the said annulus, said button being provided with an awl-passage within the annulus and a lateral peg-slot in the portion above the annulus, and means for preventing rotation of the button when the horn is turned, substantially as described.

12. The combination of a horn adapted to rotate about a vertical axis provided with a supporting-annulus at its tip; with a button having a shank contained within said annulus and an anvil portion projecting above said annulus, said button being provided with an eccentric awl-passage within the annulus, and a slot extending therefrom through and to the other side of the axis of the button, and with a lateral opening or peg-slot in the anvil portion of the button and a recess in the anvil portion at the side of the awl-passage and peg-slot; and means for preventing rotation of the button when the horn is turned, substantially as described.

13. A work-supporting button for a pegging-machine horn, having a pivotal bearing-shank, and an anvil portion projecting above said shank and provided with an eccentric awl-passage and slot in lateral continuation

thereof, extending through said anvil portion into said shank portion and a lateral opening through the anvil portion communicating with said slot and awl-passage, substantially as and for the purpose described.

14. A work-supporting button for a pegging-machine horn, comprising a shank portion, and an anvil portion projecting above and outward over said shank portion, the lower surface of said anvil portion and outer surface of the shank portion constituting the pivotal bearing portion of the button, said button being provided with gear-teeth in said bearing portion, and with an eccentric awl-passage and slot in lateral continuation thereof extending through said anvil portion into said shank portion and a lateral opening or peg-slot in said anvil portion communicating with said slot and awl-passage, substantially as and for the purpose described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN F. DAVEY.

Witnesses:
JOS. P. LIVERMORE,
SIDNEY W. WINSLOW.