

1,019,067.

Patented Mar. 5, 1912.

7 SHEETS—SHEET 1.

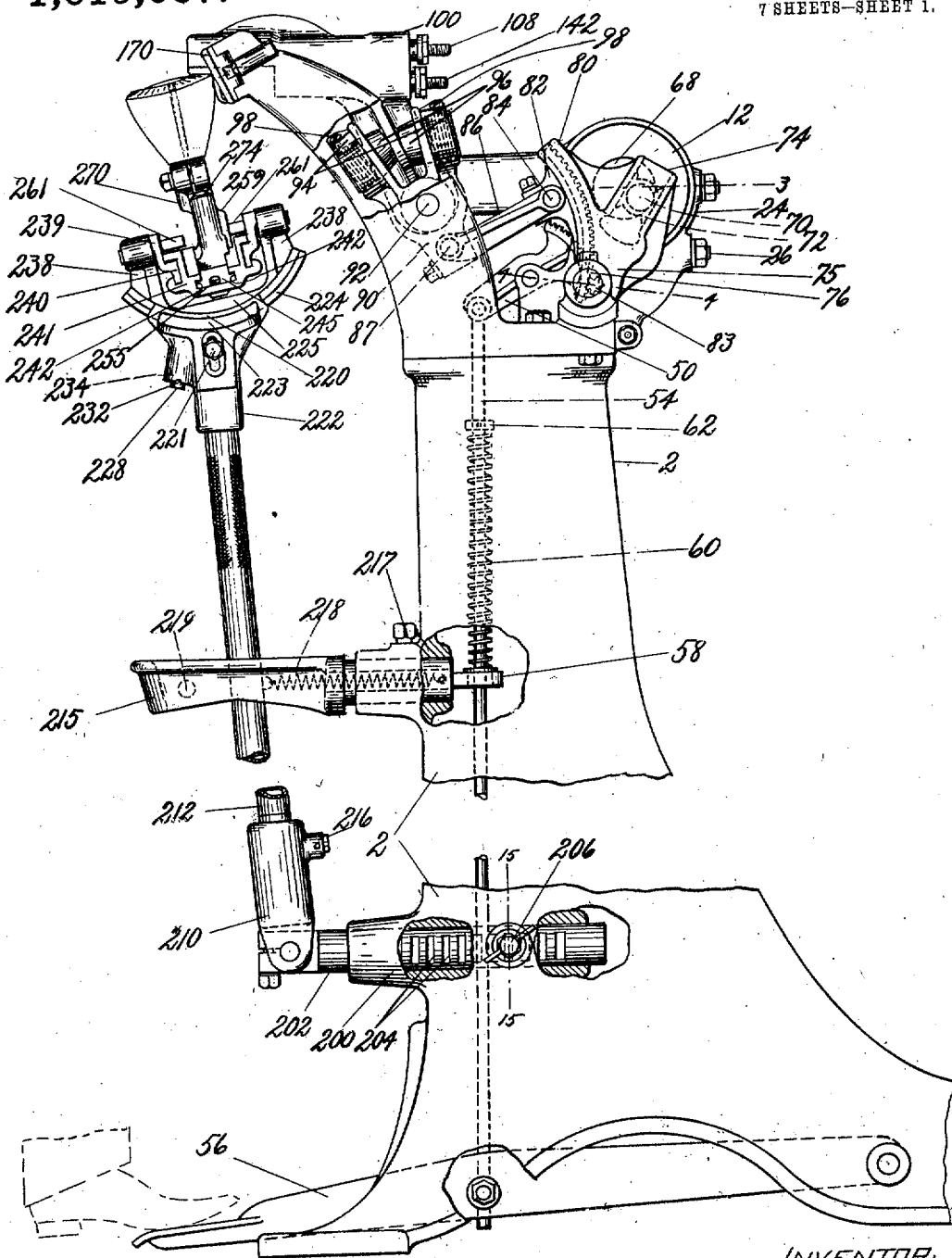


Fig. 1.

WITNESSES.

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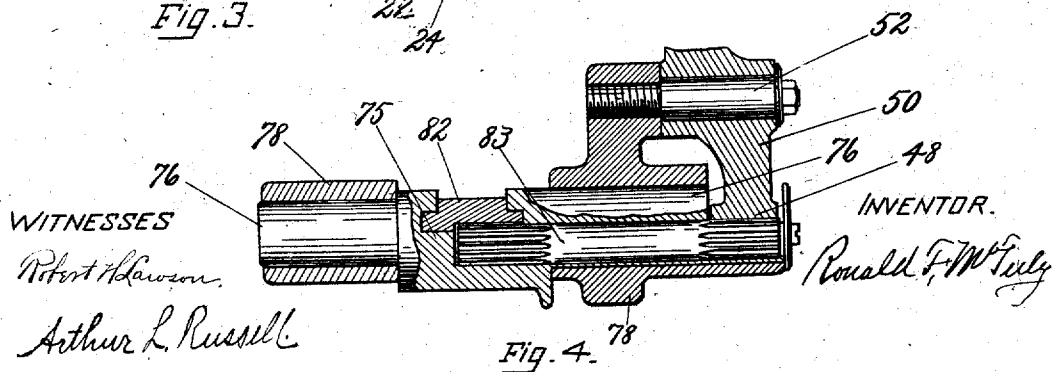
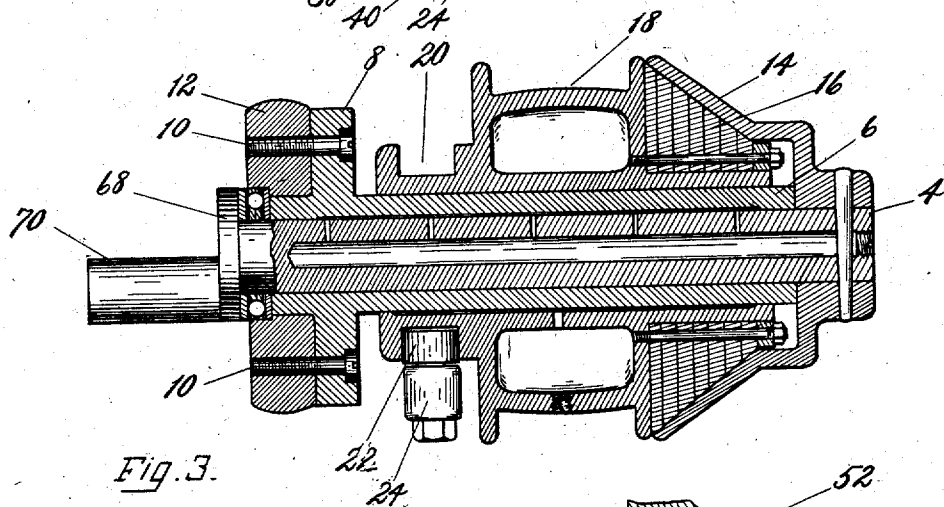
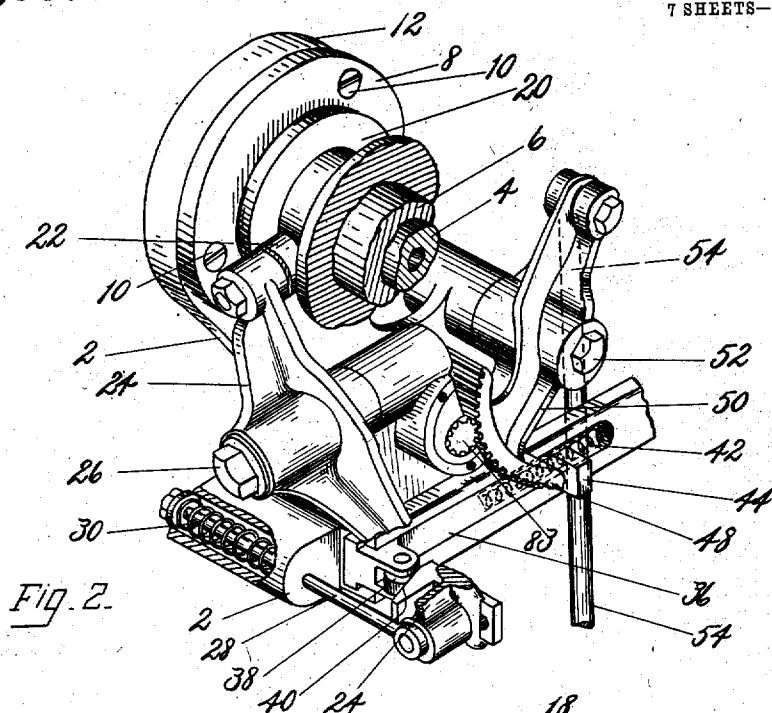
Ronald F. McFeely

R. F. McFEELY.
POUNDING-UP MACHINE.
APPLICATION FILED AUG. 15, 1904.

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7 SHEETS—SHEET 2.



WITNESSES

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Fig. 4.

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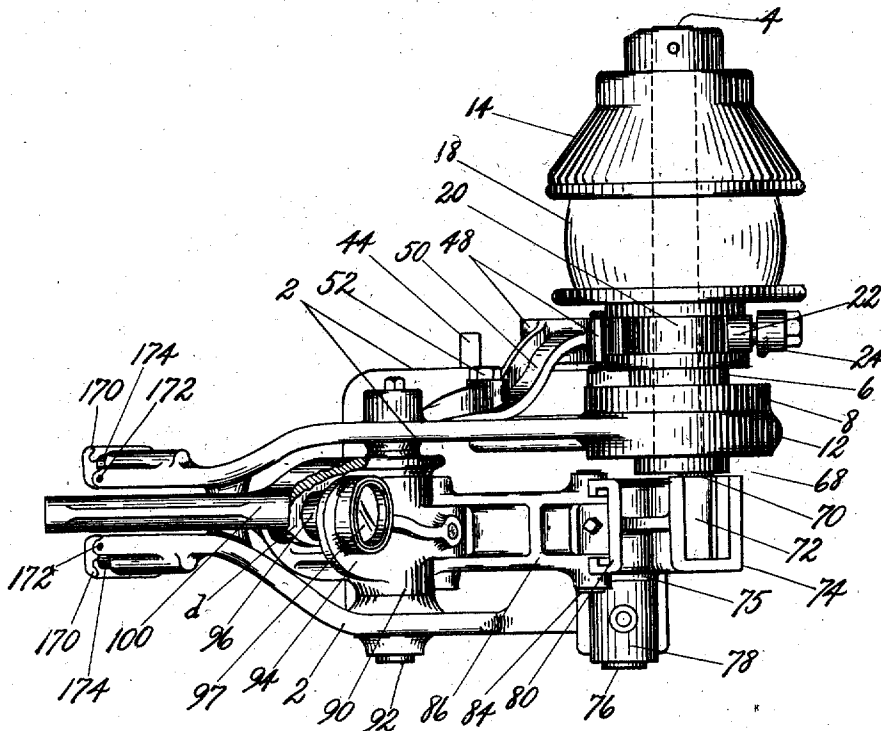


Fig. 5.

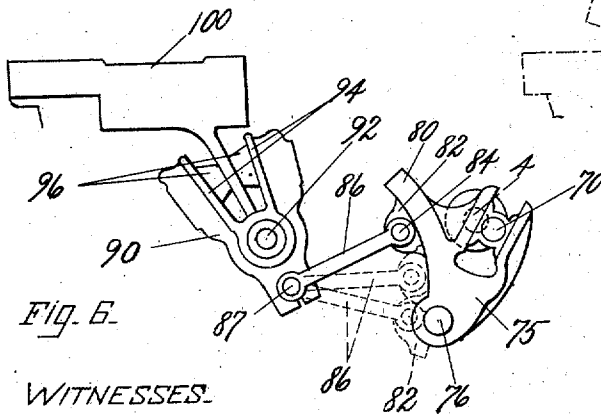


Fig. 6.

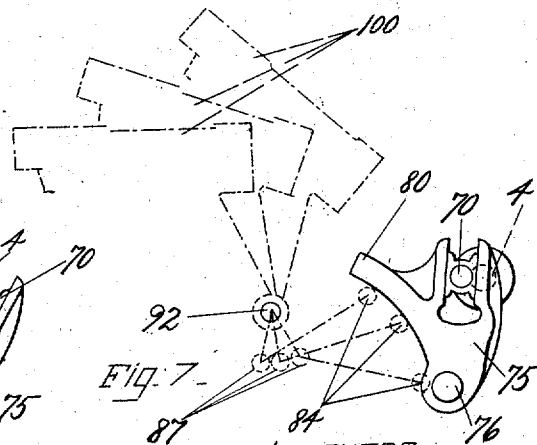


Fig. 7.

WITNESSES.

Robert H. Lawson.

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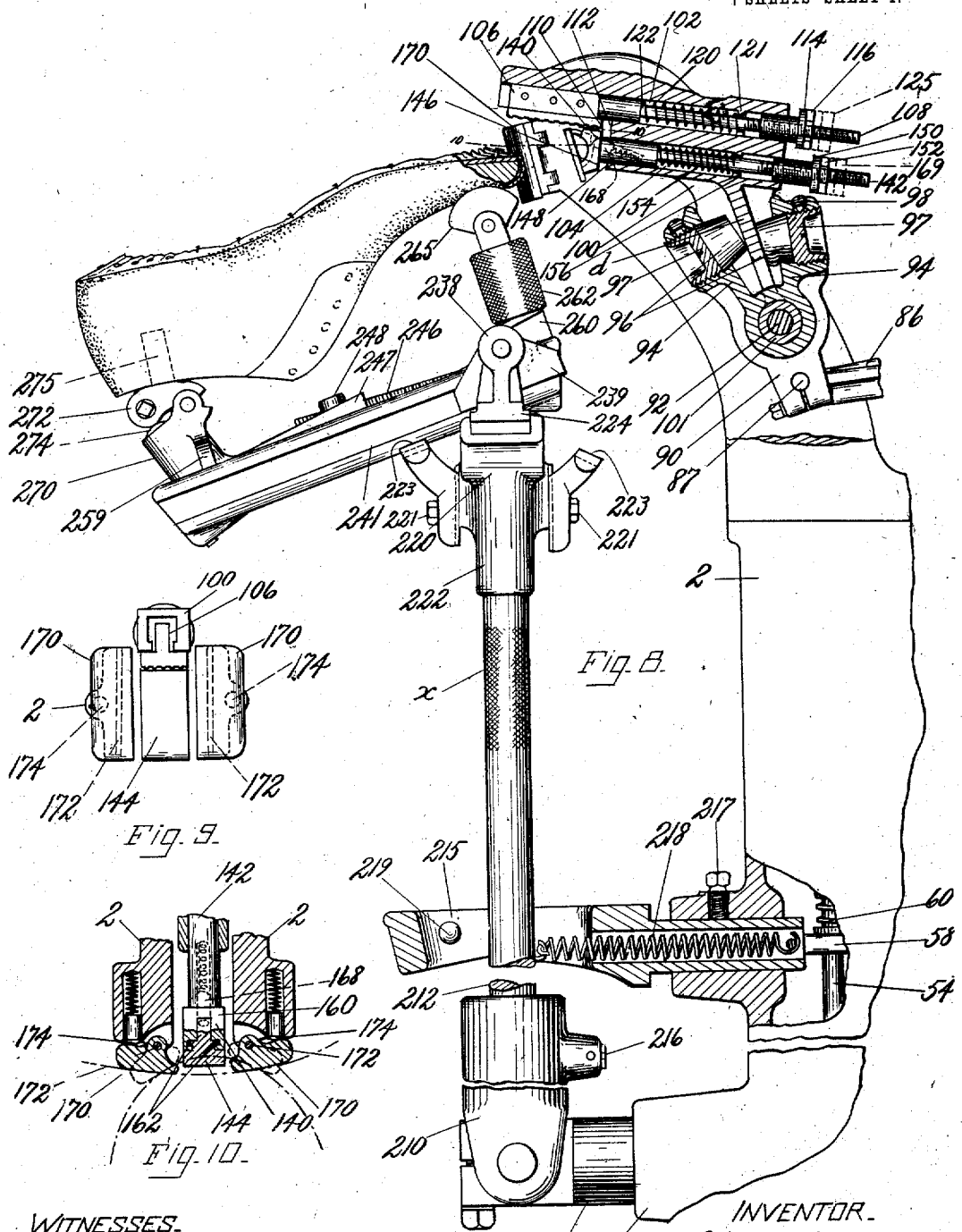
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7 SHEETS—SHEET 4.

1,019,067.



WITNESSES.

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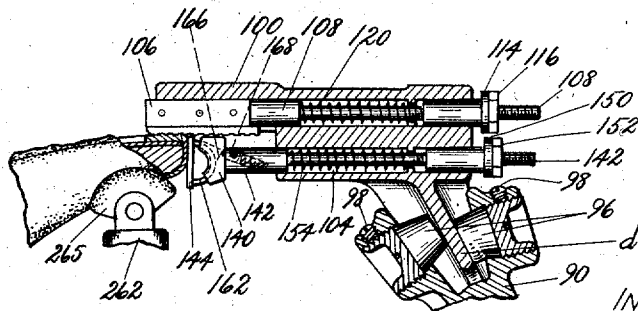
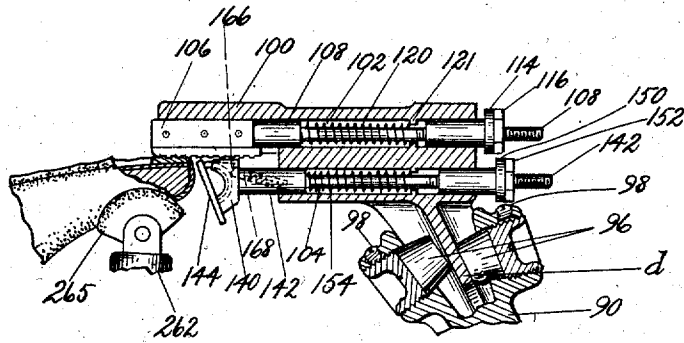
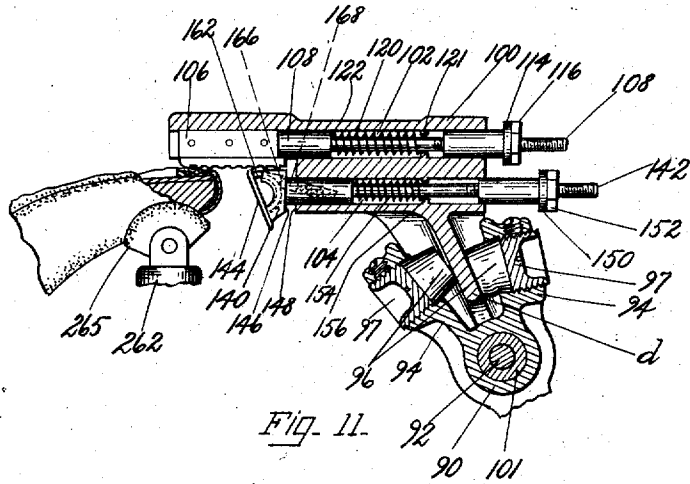
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7 SHEETS—SHEET 5.



WITNESSES.

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Fig. 13.

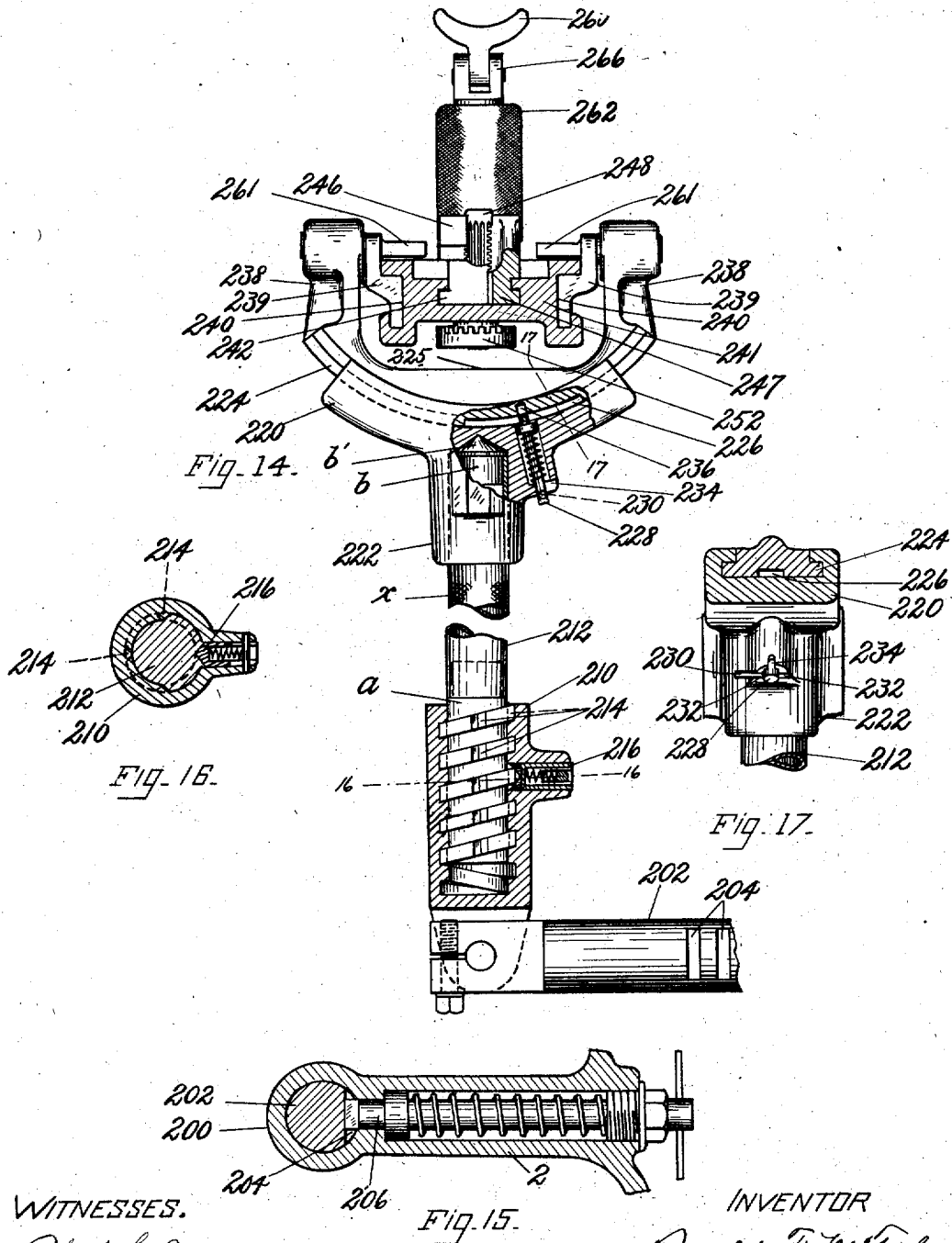
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 APPLICATION FILED AUG. 15, 1904.

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7 SHEETS—SHEET 6.



WITNESSES.

Robert H. Lawson.

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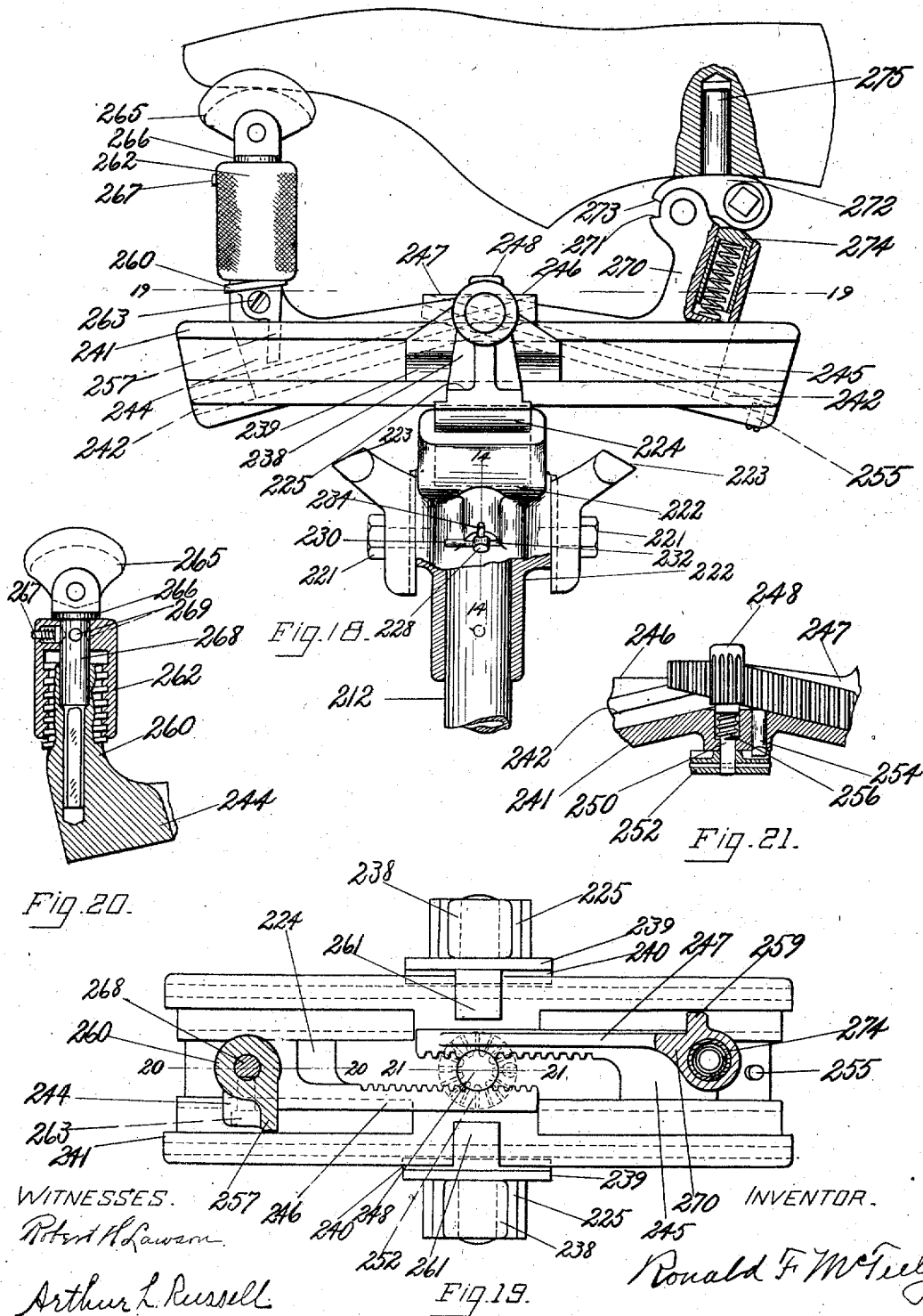
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1,019,067.

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7 SHEETS—SHEET 7.



WITNESSES.

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UNITED STATES PATENT OFFICE.

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POUNDING-UP MACHINE.

1,019,067.

Specification of Letters Patent.

Patented Mar. 5, 1912.

Application filed August 15, 1904. Serial No. 220,828.

To all whom it may concern:

Be it known that I, RONALD F. McFEELY, a citizen of the United States, residing at Beverly, in the county of Essex and Commonwealth of Massachusetts, have invented certain Improvements in Pounding-Up Machines, of which the following description, in connection with the accompanying drawings, is a specification, like reference characters on the drawings indicating like parts in the several figures.

The present invention relates to machines used in the manufacture of boots and shoes and the preferred form of the invention is embodied in a machine for performing the operation known in the art as "pounding-up" the shoe and also the operation of "blocking" the shoe. These operations usually follow immediately after the lasting operation in which the upper is stretched and drawn over the edge of the last and fastened to the innersole on the last bottom, and they have for their general object to force the upper material into close contact with the innersole on the bottom of the shoe and with the side of the last adjacent to its edge, thereby smoothing and evening the surfaces acted upon and causing the upper to conform accurately to the shape of the last. At certain portions of the shoe, particularly at the toe and heel, the upper material requires in lasting to be crimped or plaited to take care of the fullness as it is worked into position to be fastened to the innersole, and at these parts of the shoe the upper material is usually very bulky, comprising at the toe the upper itself, the toe cap, the toe stiffener, and the several thicknesses of the lining materials, while at the heel there is the thick counter or heel stiffener in addition to the upper and linings. The upper material at these portions of the shoe particularly, therefore, forms on the margin of the shoe bottom a rough or uneven surface for the reception of the outersole, and sometimes the tacks commonly used for securing the upper temporarily to the innersole are not driven fully into the work so that they also render the bottom of the lasted shoe uneven. It is important that this unevenness of the upper material on the shoe bottom be corrected and that the upper material be flattened and compacted against the innersole before the outersole is applied. Also the upper material does not lie as close to the

face of the innersole and the side of the last as is desirable at the end of the lasting operation, but springs away at these points when it is bent over the square edge of the last and innersole. This is particularly noticeable at the heel and toe because of the stiffness of the materials at these places, but it is also apparent at the sides of many shoes. It is essential to a perfect fitting of the shoe to the last that the upper material be forced into contact with the side of the last and with the innersole adjacent to the edge of the shoe in order that there shall be no slack leather at these places, and it is desirable that a well defined angular edge, as distinguished from a rounded edge, be formed at the junction of the side and bottom of the lasted shoe. This sharply defined angular edge on the lasted shoe is very desirable because it greatly improves the appearance of the shoe. Wrinkles too are sometimes formed in the sides of the shoe near the edge as the upper is drawn over in lasting and these need to be smoothed out to produce a well lasted shoe. It has heretofore been the custom to "pound-up" the shoe with a hammer for drawing the upper up to the last and leveling the irregular surface of the upper material to form a more even face for receiving the outersole. The hand workman also uses his hammer along the side near the edge to beat the upper material into close contact with the last and to smooth out any wrinkles from this portion of the shoe, this operation being termed "blocking" or "crowning" the shoe. The pounding-up and blocking operations have both been hand operations performed by skilled workmen, and if done with proper care added considerably to the labor cost of the shoe. One very important object of this invention is to provide mechanism for performing both the pounding-up operation and the blocking operation with great rapidity and in a better manner than heretofore has been possible. Preferably the means for blocking the shoe will be arranged to act upon the side of the shoe while the pounding-up means is in engagement with a contiguous portion of the upper material on the bottom of the shoe, whereby said two means shall force the upper material into intimate engagement with the side of the last and with the innersole on the bottom of the last and may also cooperate for forming

a well defined angular edge on the shoe at the junction of the side and bottom of the shoe.

It will now be understood that a feature of this invention consists in the employment in connection with a pounding-up means and a blocking means, of means, herein shown as the carrier lever in which they are mounted, for so correlating the pounding-up means and the blocking means that when one of them strikes the work the position of the path of further movement of the other is determined. Preferably, as above stated, the pounding-up means strikes the work first and determines the plane in which the further movement of the blocking means against the shoe takes place. This is important because the level of the different parts of the shoe bottom differs, the shoe bottom usually standing highest at the ball and being lower at the shank and when this correlation is insured a jack may be employed that is mounted upon a fixed support and, therefore, does not move up and down to compensate for the differences in height of the different portions of the last. When this correlation exists the pounding-up means will find the sole of the last and being checked thereby will hold the blocking means at the desired elevation with relation to the part of the work upon which it is immediately after to operate.

A feature of the invention which is of great importance consists in so constructing and arranging the pounding-up means and its actuating mechanism that the pounding-up means is actuated downwardly toward the shoe bottom and may also have a movement in a direction inwardly over the shoe bottom while it is in engagement with the work. In the illustrated embodiment of the invention the pounding-up means is mounted in a carrier which is actuated to move the pounding-up means downwardly toward the bottom of the shoe for forcing the upper material against the innersole, and the pounding-up means is also arranged to move relatively to its carrier for the purpose of forcing the upper material inwardly away from the edge of the innersole. The carrier shown is a lever which is oscillated to move the pounding-up means in a curved path toward the work and the pounding-up means is movably mounted in the carrier lever and adapted to reciprocate therein as the lever oscillates, whereby the pounding-up means has a whipping stroke, the arrangement being such that the pounding-up means moves in its carrier in a direction to force the upper material inwardly away from the edge of the innersole at the time when, moving with its carrier, it has been brought into engagement with the work for forcing the upper material downwardly toward the innersole. Preferably the

pounding-up means is slidably mounted in its carrier lever in a guideway which extends at an angle to the length of the lever, whereby the pounding-up means is automatically reciprocated in the guideway by reason of its inertia as the lever is oscillated, being moved rearwardly as the upward stroke of the lever is completed and its direction of movement reversed and being moved forwardly in the guideway as the downward stroke of the lever is arrested by the engagement of the pounding-up device with the work. Means, such, for example, as a suitably arranged spring, may be employed for accelerating the movement of the pounding-up means in its carrier during its forward stroke, and the force with which the pounding-up means shall act in forcing the upper inwardly away from the edge of the innersole may also be changed by varying its weight. Preferably also the parts will be constructed and arranged to enable the spring to impart to the pounding-up means a further forward movement in its carrier as it rises from the work, thus not only insuring that the upper material shall not be displaced outwardly toward the edge of the innersole, but also tending to force the upper material farther inwardly.

The blocking means, in the convenient embodiment of the invention herein shown, is operated in time relation with the pounding-up means and yieldingly actuated for hammering the side of the shoe. As herein shown the blocking means is mounted in the same carrier lever in which the pounding-up device is mounted and is similarly arranged therein, being mounted for sliding movement in a guideway which extends at an angle to the length of the lever, whereby the blocking means is automatically reciprocated with relation to the lever by reason of its inertia as the lever is oscillated. A spring will preferably be arranged for accelerating the movement of the blocking means in its guideway during its forward stroke and the force with which it shall strike the work may be varied by increasing or decreasing the weight of the blocking means. Preferably the machine will be so arranged and constructed that the downward movement of the lever carrying the blocking means shall be arrested before the blocking means in its forward stroke comes into engagement with the work, and thus the blocking means will be enabled to strike squarely against the side of the shoe.

It is an important feature of this invention that blocking means cooperates with the downwardly and inwardly acting pounding-up means to shape the upper material at the junction of the side and bottom of the shoe, as here shown, forming thereon a well defined angular edge.

Another feature of the invention consists

in providing novel mechanism for actuating the carrier on which the pounding-up and blocking means are mounted. Preferably said mechanism has provision for adjustment whereby the extent of the movement of said carrier may be varied for causing the pounding-up and blocking means to act on the work with more or less force. As herein shown means is provided under control of the workman for adjusting or shifting the actuating mechanism at will for increasing or decreasing the extent of the movements of the carrier, as it is found in practice that some shoes need harder pounding to produce the desired results than other shoes require and also that some portions of the same shoe may with advantage be pounded harder than other portions. In the preferred embodiment of the invention provision is made for starting and stopping the machine as a whole, as well as for adjusting said actuating mechanism, and a single foot treadle is so connected with the starting and stopping mechanism and the adjusting means that the machine may be started by the first portion of a movement of the treadle and the actuating mechanism also adjusted for a short stroke, and thereafter the further movement of the treadle in the same direction acts to adjust the actuating mechanism for increasing the extent of the movements of the carrier, while a reverse movement of the treadle causes first the movements of the carrier to be shortened and finally causes the machine to be stopped. Preferably also the actuating mechanism is so constructed and arranged that the lower limit of the movement of the carrier remains substantially the same in all adjustments of said actuating mechanism, while the upper limit is raised or lowered as the extent of the movement is increased or diminished. It will now be understood that by increasing or diminishing the extent of the movements of the carrier for the pounding-up means and the blocking means the force with which the pounding-up means is actuated downwardly toward the last bottom will be varied and also that the force with which the pounding-up means and the blocking means are each moved back and forth in their guideways in the carrier will be increased or diminished likewise to vary the action of said means respectively in drawing the upper inwardly away from the edge of the innersole and in hammering the upper against the side of the last.

A further feature of my invention of great importance consists in improved shoe supporting means, comprising a shoe holder or jack and a spindle, the jack being so mounted on the spindle that it may be moved relatively thereto in such manner that as the different portions of a shoe are presented to the pounding-up and blocking

means the point of engagement of the pounding-up means with the shoe will always be substantially over the upper end of the spindle and the spindle may be maintained always in substantial alinement with its point of support and the pounding-up means. This construction has the great advantage that the shoe is more firmly supported and there is less tendency for the pounding-up means to force the work laterally out of position to be operated upon than would be the case if the spindle were not maintained in substantial alinement with its point of support and the pounding-up means.

Still another feature of the invention consists in providing means for smoothing from the side of the shoe any inequalities which may exist in the upper material after the operation of the blocking means. The means for smoothing the side of the shoe is herein shown as located adjacent to the path of the blocking and pounding-up means in position for the shoe to be pressed against it when presented to the blocking and pounding-up means, said means serving as a gage or rest for determining the position of the shoe and acting to smooth the shoe as the shoe is turned to present its different portions to the pounding-up and blocking means. In the form shown said smoothing means comprises members or rests arranged on either side of the path of the pounding-up and blocking means and movably mounted to enable them to adapt their positions to the contour of the portion of the shoe pressed against them. Preferably said members or rests will be arranged to permit the end portions of the shoe to be presented nearer to the machine than the side portions of the shoe, whereby the pounding-up means may engage the shoe for a greater distance inwardly from its edge at the ends than at the sides, and the blocking means may act on the end portions of the shoe without necessarily acting on the side portions.

These and other features of the invention, including certain details of construction and broad as well as specific combinations, will be hereinafter described and pointed out in the claims.

Figure 1 of the drawings, which show one form of mechanism embodying my invention, is a side elevation of the machine, the shoe support being in position to present the side of the shoe to the pounding-up and blocking devices and the lever carrying said devices being at the lower limit of its stroke. Fig. 2 is a perspective view of a portion of the actuating mechanism as seen from the side of the machine opposite to that shown in Fig. 1. Fig. 3 is a longitudinal sectional view on line 3—3 of Fig. 1. Fig. 4 is a sectional view on line 4—4 of Fig. 1. Fig. 5 is a plan view of

the head of the machine, certain portions being broken away. Figs. 6 and 7 are diagrammatic views showing the effect produced by different adjustments of the actuating mechanism. Fig. 8 is a side elevation of a portion of the machine, partly in section, showing the pounding-up and blocking devices and the lever which carries said devices, the lever being at the upper limit of its stroke and the shoe support being positioned to present the toe of the shoe in position to be operated upon. Fig. 9 is a front elevation of the pounding-up and blocking devices, the lever which carries them, and the rests against which the side of the shoe is positioned. Fig. 10 is a sectional view on line 10—10 of Fig. 8. Figs. 11, 12, and 13 are views illustrating successive stages of a preferred mode of operation of the pounding-up and blocking devices. Fig. 11 is a view illustrating an approximate position of the pounding-up and blocking devices as the lever carrying said devices approaches the lower limit of its stroke and the pounding-up device is about to engage the bottom of the shoe. Fig. 12 is a view illustrating a position of the pounding-up and blocking devices at the time when the carrying lever has completed its downward stroke and the pounding-up device has flattened the upper down onto the innersole and is moving forwardly in its guideway for forcing the upper inwardly away from the edge of the innersole, while the blocking device is just about to come into engagement with the upper at the side of the shoe. Fig. 13 is a view showing the final position of the pounding-up and blocking devices before the lever rises, the blocking device having advanced into full engagement with the side of the shoe for pressing the upper firmly into contact with the last. Fig. 14 is a detail view, partly in section, of the preferred form of shoe support, which is also shown in side elevation in Figs. 1 and 8, this view illustrating the horizontally adjustable bar which sustains the lower end of the spindle and also illustrating the means for adjusting the length of the spindle. Fig. 15 is a sectional view on line 15—15 of Fig. 1. Fig. 16 is a sectional view on line 16—16 of Fig. 14. Fig. 17 is a sectional view on line 17—17 of Fig. 14. Fig. 18 is an enlarged side elevation, partly in section, of a preferred construction of the upper portion of jack of the shoe support. Fig. 19 is a plan view, partly in section, as seen from the line 19—19 of Fig. 18. Fig. 20 is a sectional view on line 20—20 of Fig. 19. Fig. 21 is a sectional view on line 21—21 of Fig. 19.

The frame 2 of the machine is constructed to rest on a floor and in its upper portion supports a shaft 4. The shaft is shown, see Figs. 2 and 3, as mounted in a bearing 6

which is provided with a collar 8. The bearing is firmly secured in position by screws 10 which connect the collar 8 to an extension 12 of the frame 2.

The outer member 14 of a cone clutch is pinned to the end of the shaft opposite that carrying the collar 8, while the inner member 16 of said clutch is loose on the shaft and is movable lengthwise of the shaft toward and from position to engage the outer member. The inner clutch member 16 is shown as formed upon one end of the hub of the driving pulley 18, which is continuously rotated, while the other end of said hub is formed with a circumferential groove 20 to receive a roll 22 on the clutch-operating lever 24.

The clutch-operating lever 24 is pivoted on a stud 26 and its lower end has connection with a rod 28, see Fig. 2, which is acted upon by a spring 30, inclosed in a chamber in the frame. The spring 30 moves the lever, when permitted to do so, in the direction for forcing the inner clutch member 16 into frictional engagement with the outer clutch member 14, whereby the shaft is rotated. The mechanism for moving the clutch-operating lever in opposition to the action of the spring 30 for separating the clutch members comprises a slide 36, see Fig. 2, provided on one side with a roller 38 adapted to engage the inclined face 40 of a block secured to the lower arm of the clutch-operating lever 24. The slide 36 is acted upon by a spring 42 for pressing it normally in the direction for positioning the roller 38 over the low part of the inclined face 40, and when the roller is in this position the spring 30 acts through the lever 24 to force the clutch member 16 toward the cooperating clutch member 14 for starting the machine. The slide is further provided with an outstanding lug 44, see Figs. 2 and 5, located in the path of the heel of the segmental shaped lower end 48 of a lever 50. The lever is fulcrumed on a fixed stud 52 and its end opposite to that having the segment is connected by a rod 54 to a foot treadle 56, see Fig. 1. The rod 54 extends through a fixed guide 58 and is surrounded above said guide by a spring 60, the tension of which is adjusted by a collar 62 secured to the rod. The spring 60 is of proper strength to hold the rod and treadle 56 normally elevated and the lever 50 and slide 36 in the position shown in Fig. 2 in which the roller 38 is engaged with the high part of the inclined face 40 and the clutch-operating lever is positioned for holding the clutch members apart.

The shaft 4 is provided, on the end opposite that to which the clutch member 14 is secured, with a disk 68 and a suitable anti-friction bearing is interposed between said disk and the end of the sleeve bearing 6, as seen in Fig. 3, to take the thrust of the shaft

when the movable clutch member is pressed against the fixed member. The disk 68 is provided with a crank pin 70 upon which is mounted a block 72, shown by dotted lines in Fig. 1 and by full lines in plan view in Fig. 5. The block fits in a guideway in the side face of the rear arm 74 of an angle lever 75 having trunnions 76 mounted in bearings 78, 78 of the machine frame, as shown in Figs. 1 and 4, which latter figure is a section through the hub and trunnions of the lever 75 and through the bearings 78. The other arm 80 of the angle lever 75 is provided with a curved guideway, hereinafter further described, which extends the full length of the front face of the arm and is formed in cross section, as shown in Fig. 4, to receive a flanged segment-shaped block 82 which is pivotally attached at 84 to the rear end of a connecting link 86. The link is joined at its front end by a pivot 87 to the lower arm of a lever 90 which is fulcrumed on a pivot pin 92 carried by upwardly and forwardly directed extensions of the machine frame. The lever 90 above its pivot is forked and in the adjacent faces of its two branches 94, 94 are mounted cushion blocks 96, 96 of rubber or other suitable yielding material. The cushion blocks are preferably backed up by base pieces 97 which are adjustable in screw-threaded apertures in the branches 94, a binding screw 98 coöperating with each base piece for securing it in adjusted position, as shown in Figs. 1 and 8. A lever 100, which in the present embodiment of the invention carries the pounding-up and blocking devices, is fulcrumed at its lower end on the pivot pin 92 above mentioned, said lever being formed with a sleeve hub 101 upon which the lever 90 is directly mounted, as shown in Fig. 8. The lever 100 has a laterally projecting portion or flange *d*, see Fig. 5, which extends between the two cushion blocks 96 carried by the branches 94 of the lever 90. By this arrangement the lever 100 is oscillated about its fulcrum by the lever 90, the movements of the lever 100 being yieldingly effected in both directions.

The lever 100 carries the pounding-up means and the blocking means in the illustrated embodiment of the invention and provision is made for varying the length of the strokes of the lever for the purpose of causing said pounding-up and blocking means to act upon the work with greater or less force. To this end the segment-shaped block 82, by which the link 86 and lever 90 are connected to the angle lever 75, is adjustable in the arm 80 of said angle lever for increasing or diminishing the movement of the link 86 and thereby varying the extent or amplitude of the oscillations of the carrier lever 100. For the purpose of effecting this adjustment of the segment-shaped block 82 said block is provided on its rear face with rack teeth

constructed to engage a pinion formed on the adjacent end of a shaft 83 which is mounted in the angle lever 75, as shown in Figs. 1, 2, and 4, the shaft 83 being preferably so located in the angle lever 75 that the point of engagement of said shaft with the segment-shaped block will be substantially at the center of oscillation of the angle lever, as shown in Fig. 4. The opposite end of the shaft 83 is also formed as a pinion and is engaged by rack teeth formed on the segment-shaped lower end 48 of the lever 50 before described. The arrangement is such that when the lever 50 is rocked by means of its connection with the foot treadle 56 to permit the clutch members to engage, or to disengage said clutch members, as heretofore explained, the shaft 83 will be simultaneously rotated to raise or lower the segment-shaped block in its guideway in the angle lever. In practice the segment-shaped block will preferably stand in substantially its lowest position indicated in dotted lines in Fig. 6 when the foot treadle is elevated and the clutch members therefore disengaged, and in this position of the block the link 86, which connects the segment-shaped block 82 with the lever 90, is approximately in alinement with the fulcrum of the angle lever and the pivot 87 which connects said link to lever 90, so that little or no movement is imparted to said lever 90 and the carrier lever 100. When, however, the foot treadle is depressed, to move the lower end 48 of the lever 50 away from the lug 44 and thereby permit the spring 30 to cause the clutch members to engage, as before explained, the shaft 83 will be turned by the lever 50 in the direction to raise the segment-shaped block 82 toward the full line position shown in Fig. 6, thereby placing said link 86 out of alinement with pivot 87 and the axis of angle lever 75, whereby the levers 90 and 100 will be oscillated by the angle lever. The movement required of the treadle and the lever 50 for permitting the machine to be started raises the segment-shaped block a distance sufficient to cause the carrier-lever 100 to be oscillated through only a small arc, but by further depressing the treadle lever the segment-shaped block may be raised to any desired position in its guideway and the amplitude of the oscillations of the carrier lever increased as may be required for the particular work in hand. The single foot treadle operates to release the movable clutch member so that it may engage the coöperating clutch member and simultaneously to shift or adjust the segment-shaped block 82 of the actuating mechanism for the carrier lever sufficiently to cause a short stroke to be imparted to said carrier lever, and further manipulation of the foot treadle shifts or adjusts said actuating mechanism to vary the stroke of the

carrier lever without disturbing the clutch until the treadle is again released.

It is to be noted by reference to Figs. 1, 6, and 7 that the actuating mechanism for the carrier lever is so arranged that the lower limit of the strokes imparted thereby to the carrier lever would be constant if the carrier lever were unyieldingly connected to said actuating mechanism, while the upper limit of the strokes would vary as the amplitude of the lever's oscillations is increased or diminished. This result is obtained by so forming the guideway in the front face of the arm 80 of the angle lever 75 that it is concentric with the pivot 87 when the angle lever is at the rear or right-hand limit of its stroke and the crank pin 70 stands in the position shown in Figs. 1 and 6. By reason of the guideway being formed so that when the angle lever 75 is at the rear limit of its stroke the guideway is concentric with the pivot 87 it matters not what position the segment-shaped block may occupy in that guideway, the carrier lever 100 will always be moved downwardly by its actuating mechanism to the same point, but will be moved upwardly therefrom a distance dependent upon the position of the segment-shaped block in said guideway. This is illustrated in Figs. 6 and 7. Fig. 6 shows two extreme positions and an intermediate position of the block 82 in its guideway and illustrates that the lower limit of the stroke of the carrier lever is theoretically the same for each position of the block 82. Fig. 7 illustrates corresponding positions of the block 82 when the angle lever is at the forward or left-hand limit of its stroke, and it may be seen from this figure that the upper limit of the stroke of the carrier lever 100 varies according to the position of the block in its guideway. It is to be understood, however, that while the lower limit of the stroke imparted to the carrier lever by its actuating mechanism would be constant as above explained if the carrier lever were unyieldingly connected to said actuating mechanism, the cushion blocks 96 in practice yield sufficiently to permit the carrier lever, when rapidly oscillated, to move below the limits of its stroke as indicated by the stroke of its actuating mechanism, and it will of course be understood also that the extent of this further movement of the carrier lever will in practice vary, being greater when the carrier lever has a long stroke than when it has a short stroke. Also by varying the tension of the springs or cushion blocks 96 the extent of this further movement of the carrier lever may be varied. By adjusting one of said springs 96 toward the lever 100 and the other in the opposite direction the carrier lever may be raised or lowered

and therefore the limits of its stroke changed.

The pounding-up means is preferably mounted to slide in a guideway 102 in the carrier lever 100 and the blocking means is also preferably slidably mounted in a similar guideway 104 in said lever. As herein shown, the guideways 102 and 104 are formed at such an angle to the length of the carrier lever that the pounding-up means and the blocking means are automatically reciprocated in their guideways by reason of their inertia as the carrier lever is oscillated, whereby said pounding-up and blocking means have not only a movement with their carrier as it is oscillated about the pivot 92, but they each have also a reciprocating movement with relation to their carrier. This latter movement carries the pounding-up means over the shoe bottom, in the direction from the edge of the inner-sole inwardly, and also carries the blocking means forwardly against the side of the shoe. It will be understood that the force with which the pounding-up means and the blocking means are reciprocated is varied by varying the extent of the oscillatory movements of the carrier lever 100. The actuating mechanism above described imparts to the pounding-up means a movement downwardly toward the work and forwardly over the work, thereby effecting what may be termed a "whipping" stroke of the pounding-up means. It is of course within the scope of the invention to impart to the pounding-up and blocking means or either of them different movements than those herein described for the purpose of effecting their respective operations and also to employ other means than those here shown for actuating the pounding-up and blocking means.

In the illustrated embodiment of the invention the pounding-up means is a hammer or device comprising a head 106 and a shank 108. The head is shaped as shown in end elevation in Fig. 9 to fit the similarly shaped front portion of the guideway 102, whereby rotative movement of the pounding-up device in the guideway is prevented. The pounding-up device is arranged to reciprocate longitudinally in its guideway in the lever between certain limits, its rearward movement being limited by engagement of the shoulder 110 on the head 106 with a co-operating face 112 of the lever, see Fig. 8, while its forward movement is limited by the flange 114 of a sleeve which is adjustably mounted on the screw-threaded rear end of the shank 108 and secured in adjusted position by a locking nut 116. Preferably a spring 120 is provided which surrounds the shank 108 and is held under tension between an inwardly extended flange 121 in

the wall of the guideway 102 and a shoulder 122 on the shank. The working face of the head 106 of the pounding-up device is suitably shaped to conform approximately to the surface of the portion of the work to be pounded by it and is serrated or roughened, as shown in the drawings, to adapt it for engaging the work frictionally. The above described construction and arrangement of the pounding-up device and the carrier lever 100 is such that the pounding-up device will be automatically reciprocated in the carrier lever as the latter is oscillated, the pounding-up device being moved rearwardly in the guideway 102 by reason of its inertia as the lever reaches the limit of its upward stroke, this rearward movement taking place against the tension of spring 120 and varying in extent as the extent of the oscillatory movements of the lever is increased or diminished. The pounding-up device, therefore, occupies a retracted position in its guideway as it approaches the work on the downstroke of the carrier lever, and when the device engages the work and thereby arrests the downward movement of the carrier lever the device is impelled forwardly over the work both by its inertia and by the expansion of the spring 120. It is to be noted that the spring will have been compressed by the pounding-up device during the rearward movement of said device in its guideway by reason of its inertia, thereby storing up energy which is utilized in expanding the spring to accelerate the forward movement of the pounding-up device. The momentum with which the pounding-up device moves in its rearward stroke will thus be utilized in actuating said device over the shoe for forcing the upper material inwardly away from the edge of the innersole. The spring may, if desired, be arranged or adjusted to cause the pounding-up device to move forwardly in its guideway more or less while it is moving downwardly and forwardly with the carrier lever about the fulcrum 92 of said lever. By the forward movement of the pounding-up device after it has engaged the work, the upper material on the marginal portion of the shoe bottom is forced inwardly away from the edge of the innersole to take up any slack which may exist in the upper material on the bottom or side of the last adjacent to the edge of the last. The force with which the pounding-up device moves forwardly over the work may be increased by adding to the mass of the device by means of weights 125, as indicated in dotted lines in Fig. 8. It is to be noted that by this means the force of the forward movement of the pounding-up device relatively to the carrier lever may be varied without appreciably altering the force of its downward movement with the carrier lever.

Preferably the stop 114 will be adjusted to permit a greater forward movement of the pounding-up device in its guideway than will be required for taking up the slack in the upper material, as illustrated in Figs. 12 and 13, and for the best results the pounding-up device will have, by reason of the spring 120, a further forward movement with relation to the carrier lever as it rises from the work in the upstroke of the lever, whereby the pounding-up device leaves the face of the work by an initial movement forwardly and upwardly, thus not only insuring that the upper material shall not be displaced outwardly toward the edge of the innersole, as might be the case if the pounding-up device moved only with the lever upwardly and backwardly about the fulcrum 92 of said lever, but also tending to force the upper material farther inwardly away from the edge of the innersole.

The blocking device comprises a head 140 and a shank 142 arranged to slide in the guideway 104 in the carrier lever. The rearmost position which the blocking device may occupy is determined by the engagement of the face 146 on the head 140 with a cooperating face 148 on the lever, see Figs. 8 and 11, while its forward movement is limited by the flange 150 of a collar which is adjustably mounted on the screw-threaded end of the shank, said flange being adapted to engage with the rear side of the lever. The collar is secured in adjusted position by a locking nut 152. A spring 154 surrounds the shank 142, abutting against an inwardly projecting flange 156 on the wall of the guideway 104 and engaging at its front end against a shoulder on the shank 142 to press the blocking device normally forward. This construction and arrangement of the blocking device permits said device to be reciprocated automatically in the carrier lever as the latter is oscillated in the same manner that the pounding-up device is reciprocated in said lever. The spring 154 will be compressed by the blocking device during the rearward movement of said device in its guideway by reason of its inertia, thereby storing up energy which is utilized in expanding the spring to accelerate the forward movement of the blocking device. The momentum with which the blocking device moves in its rearward stroke will thus be utilized for actuating the shoe forwardly against the side of the shoe for blocking the shoe. Weights 169, see Fig. 8, may be applied to the shank 142 by means of which the inertia of the blocking device is increased and thereby the force of its forward movement in the lever is varied. The head 140 of the blocking device preferably is provided with a movably mounted work engaging member or contact piece 144, as shown in Figs. 8, 10, and 13, which may

rock to adapt itself to the contour of the work. The contact piece is connected to the head 140 for movement thereon in an arc of a circle and to this end the head is bifurcated, as shown in Fig. 10, and the adjacent walls of the branches thereof are provided with curved grooves to receive ribs 162 on the side of the rear portion of the contact piece. Said rear portion is also provided with a face 166, see Figs. 8 and 13, formed eccentric to the curvature of the ribs 162, and a spring-pressed plunger 168 is mounted in the shank in position to act on the face 166 of the contact piece. The spring which acts on the plunger 168 preferably will be strong enough to hold the contact piece normally in the position shown in Figs. 8, 11, and 12, but allow it to adapt its position to the contour of the work engaged by it. The contact piece might, of course, be rigidly attached to the head of the blocking device if desired.

In the preferred mode of operation of the machine the blocking device will be permitted to slide rearwardly in its guideway farther than the pounding-up device so that said blocking device will, during the downstroke of the carrier lever, occupy a position sufficiently far back in its guideway 104, as shown in Figs. 8 and 11, that it will not engage the shoe until after the carrier lever has completed its downstroke and the pounding-up device has flattened the upper material downwardly against the innersole. Preferably the pounding-up device will also first have completed or approximately completed its forward movement for forcing the upper material inwardly away from the edge of the inner-sole for taking out substantially all of any slack there may be in the upper material on the side or bottom of the last. The position of the parts at this point in the operation is illustrated in Fig. 12. The blocking device will then engage the side of the shoe by a movement in a plane substantially at right angles to the side of the shoe and deliver a quick, sharp blow to the side of the shoe, the impact of the device forcing the upper material firmly against the side of the last, see Fig. 13. The blocking device, in cooperation with the pounding-up device, shapes the edge of the shoe, forming a well defined angular edge on the shoe at the junction of the side and bottom portions of the shoe acted upon by said devices respectively. It is to be noted that when the blocking device is in engagement with the work, see Fig. 13, the upper end of the acting face of said device is close to or approximately in contact with the acting face of the pounding-up device so that said two devices mold or shape the edge of the shoe between them from the rounded form shown in Fig. 11 to the angular form shown in Fig. 13. It will of course be understood

that the machine is operated at a high speed so that the pounding-up and blocking devices impart to the work a rapid succession of blows.

Devices 170 are mounted at either side of the path of the carrier lever 100 upon pivot pins 172 secured in the forwardly projecting portions of the frame. These devices 170 serve the double function of rests for determining the position of the shoe with relation to the pounding-up and blocking devices and of smoothing irons for smoothing out any irregularities which may remain in the stock after the action of the blocking device and also smoothing out any marks which may have been made by the blocking device. Each device or rest 170 is acted upon on its side most remote from the path of the lever 100 by a spring-pressed plunger 174. The plungers normally hold said rests rocked toward each other, as shown in dotted lines in Fig. 10, in position to give support to the curved end portions of the shoe; but the rests are adapted to be rocked in the opposite direction, by pressure of the work against their acting faces, into position to support firmly the side portions of the shoe, as shown in full lines in said Fig. 10. It will be noted that the rests allow the shoe to be positioned farther under the carrier lever and the pounding-up device when the ends of the shoe are presented than when the side portions of the shoe are presented, as it is advantageous to have the pounding-up device act upon the shoe bottom at the ends of the shoe, more especially at the toe, for a greater distance inwardly from the edge than is required at the sides of the shoe. It is also sometimes undesirable to have the blocking device act upon the shank of the shoe and the rests may be so arranged that while permitting the end portions of a shoe to be positioned near enough to the blocking device to allow said device to engage these portions, said rests can hold the shank portions of the shoe out of the range of action of the blocking device. The manner in which the rests are mounted also enables them to adapt themselves to the shape of the different portions of the shoe so as always to present an extended bearing surface to the work, and as the shoe is turned to present its different portions successively to the operation of the pounding-up and blocking devices and is pressed against the rests the side of the shoe is smoothed by the rests to remove any wrinkles or creases or any marks that may have been made on the upper by the blows of the blocking device.

A novel construction and arrangement of shoe-supporting means is employed in combination with the pounding-up and blocking means and the same is shown in the drawings and will be herein fully described, although the shoe-supporting means is not

specifically claimed herein but is made the subject-matter of a divisional application Serial No. 264,260, filed June 8, 1905. It will be understood that while a feature of this invention consists in the combination with the devices for operating upon the shoe, of a shoe support having certain characteristics adapting it particularly for supporting a shoe in position to be operated upon by said devices, the specific construction of the shoe supporting means, except as stated in the claims, is not essential to the invention. For sustaining the shoe-supporting means the frame of the machine is herein shown as provided with an extended bearing 200 in which is arranged a forwardly projecting supporting bar 202, to the outer end of which is connected the spindle of the shoe support, see Figs. 1, 8, and 14. The supporting bar is adjustable longitudinally in its bearing to move the attached end of the spindle toward or from the machine, and said bar is provided with notches 204 adapted to be engaged by a spring-pressed plunger 206, see Figs. 1 and 15, for securing the bar in adjusted position. The spindle is shown as made in two sections 210 and 212, the section 210 being formed as a sleeve hinged at its lower end to the supporting bar 202 and internally screw-threaded to receive the threaded lower portion of the section 212. The threads on the section 212 are provided with shallow transverse notches 214 adapted to be engaged by the beveled end of a spring-pressed plunger 216 which prevents accidental rotation of the section 212, but permits said section to be turned for adjusting the spindle longitudinally when sufficient force is applied. The section 212 is shown as roughened at *x* to enable the operator better to grasp it for turning the section. The spindle is guided loosely through a bracket 215 which is adjustably secured in the frame by a binding screw 217. A spring 218 connected to the spindle and to the frame holds the shoe support yieldingly toward the machine with the shoe against the rests 170 in position to be operated upon. Holding means, shown as a spring-pressed pin 219, is arranged in the outer part of the bracket in position to engage the spindle frictionally and hold the shoe support away from the machine when desired, as, for example, while a shoe is being removed from the jack and another one is being applied. The section 212 of the spindle is shown as comprising a tubular body portion and solid end pieces *a* and *b*, the former of which is rigidly secured to the lower end of the body portion, see Fig. 14, and is provided with screw threads, as above explained, while the end piece *b*, see Fig. 14, is firmly attached to the upper end of the spindle and is formed with a conical head *b'*. It is obvious, however,

that the spindle section might be formed as a single tubular or solid bar.

The jack which is sustained by the spindle comprises among its parts a base 220 having a depending tubular portion 222 adapted to fit over the upper end of the spindle and free to turn thereon. On its upper side the base 220 is provided with a transversely extending curved guideway having undercut side walls, see Figs. 14 and 17, to receive the correspondingly shaped foot 224 of the trunnion block 225, which is adapted to slide in the guideway. The foot is provided on its lower face with a groove 226 to receive the projecting end of a spring-pressed pin 228 which, by engaging the ends of the groove, limits the sliding movement of the trunnion block in the guideway. The pin is provided with a finger piece 230 by which it may be withdrawn from the groove 226 to permit the removal of the trunnion block. The finger piece normally rests in the notch 232, as shown in Figs. 14 and 17, but is permitted when properly positioned for the purpose to fit into the deeper notch 234 and thus allow the spring actuating the pin 228 to force the pin into a socket 236 which is located in the groove 226, see Fig. 14. The finger piece may be thus positioned when it is desired to lock the trunnion block 225 against movement in its guideway. The trunnion block has at either end posts 238 in which are formed bearings for the trunnions of hangers 239, see Fig. 14. Each hanger is formed on its inner side with a guide rib 240 and on the guide ribs of the two hangers is slidably mounted the carriage 241 which supports the heel post and the forepart rest of the jack. Stops 223 are adjustably attached to the base piece by clamping bolts 221 in position to be engaged by the carriage for limiting the rocking movement of the carriage and hangers with relation to the trunnion block, the upper faces of these stops being curved similarly to the foot 224 of the trunnion block, whereby to stop the carriage uniformly in any laterally inclined position which it may assume. The carriage is provided on its upper face with guideways 242 for sliding plates 244 and 245, see Fig. 19, which support respectively the forepart rest and the heel post. The guideways for the plates 244 and 245 are shown, see Figs. 18 and 21, as inclined upwardly from the opposite ends of the carriage toward the middle thereof, whereby as the plates are moved toward the middle of the carriage to adapt the forepart rest and heel post to support a short shoe, said rest and post will also be raised to adapt them for the less thickness of the smaller shoe, while a movement of the plates in a direction to accommodate a larger shoe will lower them to adapt the rest and post to the greater thickness of the larger shoe.

The plates 244 and 245 are provided with arms 246, 247, respectively, extending toward and beyond the middle of the carriage and located as shown upon opposite sides of a pinion 248. The arms are provided on their adjacent sides with rack teeth engaging with the pinion, whereby the plates 244, 245 are compelled to move together when adjusted toward or from the center of the carriage for positioning the forepart rest and heel post for small or large shoes. The pinion 248 is shown as provided with a depending stem 250, see Fig. 21, mounted to move endwise in the carriage 241 and provided on its lower end, under the carriage, with a disk 252 having serrations or notches in its upper face adapted to fit over the beveled end of a pin 254 depending from the carriage. The stem 250 is encircled by a spring 256 which normally forces the pinion and its connected parts upwardly to put the disk 252 against the pin which holds the disk and the pinion from rotation and therefore locks the plates 244 and 245 in their adjusted positions with relation to each other. The pinion may be depressed by the finger of the operator for forcing the disk below the plane of the pin 254 and then the plates carrying the forepart rest and heel post may be moved toward or from each other as desired to adapt them to the length and thickness of the size of the shoe next to be operated upon. When the pinion is released and the spring 256 is permitted to do so it raises the pinion and the attached disk 252 to bring the latter into engagement with the pin 254 for locking the forepart rest and heel post in their new positions. The outward movement of the plates is limited by a stop 255 secured in the end of the carriage in position to be engaged by the plate 245, see Figs. 1, 18, and 19. Stops 257 and 259 are also provided on the plates 244 and 245 to cooperate with lugs 261 on the hangers 239, see particularly Fig. 1, for limiting the sliding movement of the carriage and parts supported thereby with relation to the hangers. The forepart rest is supported in a vertical arm 260, which rises from the outer end of the plate 244, see Figs. 18 and 20, and has screw-threaded engagement with a cap piece 262 which may be adjusted by rotation to change the effective length of the arm. The forepart rest comprises a pad 265 which may be of any suitable construction and is secured to the head 266 of the stem 268. The head rests upon the upper face of the cap piece 262 and the stem has a non-circular lower portion which fits into a socket in the arm 260, see Fig. 20, and is engaged by a screw 263, Fig. 19, whereby the forepart rest is held from axial movement without interfering with its longitudinal adjustment.

The forepart rest may be vertically ad-

justed, independently of the heel post, by turning the cap piece 262, and a spring-pressed locking pin 267 having a blunt beveled end, as shown in Fig. 20, is mounted in the cap piece in position to engage in shallow recesses 269 in the non-rotatable stem for securing the cap piece in its adjusted position. The heel post is mounted on a vertical arm 270 which rises from the outer end of the plate 245, and the pin 275 which enters the usual pin hole of the last is secured to a base piece 272 which is pivotally connected, at the inner or front side of the pin, with the arm 270. The base piece is engaged on the other or rear side of the pin 275 by a spring-pressed plunger 274 for holding the pin yieldingly tipped toward the forepart rest and the forepart of the shoe therefore pressed downwardly against the forepart rest with force sufficient to hold the shoe firmly in position on the jack.

It will be understood that with the above construction of the shoe supporting means the bar 202 can be adjusted for moving the lower end of the spindle toward or from the machine frame to position the point of support of the spindle properly with relation to the direction of the blows of the pounding-up means. The spindle may be adjusted longitudinally to raise or lower the jack for causing the work to be engaged by the pounding-up device earlier or later in the descent of the carrier lever 100, and the jack itself may be turned freely about the spindle to present the different sides of the shoe to the pounding-up and blocking devices. The jack also may be rocked or tipped in a direction lengthwise of the shoe by a movement of the hangers 239 on their trunnions, and may be tipped or rocked transversely of the shoe by the movement of the trunnion block 225 in the base 220. By these universal rocking or tipping movements the different portions of the bottom of the shoe may be presented at the desired angles to the action of the operating devices. The stop 223 cooperating with the rear end of the carriage may be positioned for stopping the carriage, as shown in Fig. 8, with the toe of the shoe at the desired inclination to the pounding-up device, and the workman will thus be relieved of the labor of holding the shoe in this position. The carriage will in practice be given a sliding movement in the hangers 239 during the operation of the machine to move the shoe relatively to the spindle so that the points of engagement of the pounding-up device with the work shall be always substantially over the end of the spindle, as illustrated in Figs. 1 and 8. The spindle may, therefore, be maintained at all times substantially in alinement with the pounding-up device and the supporting bar 202, so that the work is firmly supported and there is no tendency

for the pounding-up device to force the work away from position to be operated upon, as would be the case if the spindle were not at all times directly under the portion of the shoe being pounded. The simultaneous movement of the heel post and forepart rest relatively to each other and at the same time vertically enables the operator to adjust the jack very quickly to the length and thickness of the shoe to be operated upon and the locking device 252 automatically secures both the forepart rest and heel post in adjusted position as soon as the operator releases said device.

In the operation of the machine, the several parts having been properly adjusted, a shoe on its last will be applied to the shoe support by placing the heel of the last upon the heel pin and then raising the forepart of the shoe and swinging it into position upon the forepart rest, as shown in Figs. 8 and 18, the spring-pressed plunger 274 connected with the heel post thereafter holding the shoe with its forepart pressed firmly down upon the rest 265. The shoe support, which preferably is held away from the machine by the engagement of the spring holder 219 with the spindle when no shoe is being operated upon, will now be moved toward the machine to free it from the holder and to place the shoe against the rests 170 in position to be acted upon by the pounding-up and blocking means in the carrier lever 100. The foot treadle 56 will now be depressed to withdraw the lower end 48 of the lever 50 from the lug 44 on the slide 36 and permit the spring 42 to move the slide for releasing the clutch-operating lever 24, whereupon the spring 30 will rock said lever to slide the movable clutch member 16 into engagement with the fixed clutch member. This movement of the foot treadle and lever 50 will also turn the shaft 83 and thereby move the segment-shaped block 82 upwardly in its guideway in the arm 80 of the angle lever 75 from its lowermost position in said guideway, which preferably will be an approximately neutral point with relation to the axis of oscillation of the angle lever, to a position in the guideway at which a short stroke will be imparted to said block and through its connections 86 and 90 to the carrier lever 100. If a longer stroke of the carrier lever is desired the foot treadle will be further depressed without affecting the clutch, and by moving the foot treadle down and up between the point at which the engagement of the clutch members is effected and the maximum depression of the treadle any desired extent of oscillation of the carrier lever may be obtained. In these different adjustments of the actuating mechanism the carrier lever rises to a greater height as its amplitude of oscillation increases, but descends to a position which

is approximately constant, as heretofore explained, said position varying only as the springs or cushion blocks 96 yield more or less.

As the carrier lever in its oscillation completes its upward stroke and its direction of movement is reversed the pounding-up device and the blocking device slide rearwardly in their guideways by reason of their inertia and the carrier lever therefore descends with each of these devices occupying a retracted position in its guideway. By adjusting the spring 120 to cause it to move the pounding-up device forwardly in its guideway during the downstroke of the carrier lever the direction of the blow-delivered to the work by the pounding-up device may be varied. Preferably and as herein shown, the blocking device is arranged to have a greater movement in its guideway than has the pounding-up device so that the blocking device occupies during the descent of the carrier lever a position farther back in the lever than the pounding-up device, as illustrated in Figs. 8 and 11. The downward stroke of the carrier lever is in practice limited by the contact of the pounding-up device with the shoe bottom, and the pounding-up device and the blocking device is each impelled forwardly in its guideway by its inertia as the downward stroke of the carrier lever is arrested, and this forward movement is accelerated by the springs 120 and 154 acting on said devices. The forward movement of the pounding-up device carries it over the shoe bottom in the direction for forcing the upper material inwardly away from the edge of the innersole and thereby taking up all slack there may be in the upper material, either on the bottom of the last or on its side adjacent to the edge of the last. By reason of this forward movement of the pounding-up device over the shoe bottom in addition to its downward movement upon the shoe said pounding-up device not only flattens the upper material down so as to form an even surface for the outersole, but also forces the upper material firmly into contact with the bottom and the side of the last near the edge, whereby the upper is fitted snugly to the last at these places. The blocking device, having moved rearwardly farther in its guideway than the pounding-up device when the upward movement of the carrier lever was reversed, has to slide forwardly a greater distance before it comes into contact with the shoe than the pounding-up device slides. The pounding-up device, therefore, preferably completes or substantially completes its forward stroke for forcing the upper inwardly away from the edge of the innersole before the blocking device comes into engagement with the side of the shoe. Then as the

blocking device advances by reason of its inertia and also the pressure of the spring 154, it delivers a sharp, quick blow to the side of the shoe. By these movements the blocking device blocks the side of the shoe and cooperates with the pounding-up device in shaping the edge of the shoe, forming, as herein shown, a sharply defined angular edge in place of the rounded edge which is usually found on a shoe before the blocking and pounding-up operations are performed.

As the carrier lever rises and lifts the pounding-up device from the shoe bottom the spring 120 preferably forces the device farther downwardly in the carrier lever so that the pounding-up device leaves the work by a movement upwardly and forwardly away from the edge of the shoe, and therefore has no tendency to slacken the upper material by drawing it toward the edge of the last, as might be the case if the pounding-up device moved entirely with the carrier lever upwardly and backwardly about the fulcrum 92.

It is to be noted that the duration of the engagement of the pounding-up and blocking devices with the work may be varied by raising or lowering the jack to cause the devices to engage the work earlier or later in the downstroke of the carrier lever, the cushion blocks or springs 96 yielding to permit the relative movement of the carrier lever and the forked lever 90 while the stroke of the latter is completed, as illustrated in Figs. 11 and 12. The time during which the pounding-up and blocking devices shall remain in engagement with the work may also be varied by adjusting the cushion blocks 96 to raise or lower the stroke of the carrier lever, although the adjustment of the cushion blocks is intended primarily for varying the tension of said blocks and for compensating for wear of the blocks.

The workman holds the shoe firmly against the rests 170 during the operation of the machine, being assisted in doing this by the spring 218 and turns the shoe and jack on the spindle to present the different portions of the shoe to the pounding-up and blocking devices. The rests smooth the side of the shoe as the latter is turned while held pressed against them, their pivotal connection with their supports permitting them to adapt themselves to the shape of the different portions of the shoe and present thereto always an extended bearing surface. The workman also tips the shoe in the jack to present the different portions at the proper angle to the pounding-up device and by sliding the shoe and carriage 241 in the hangers 239 he may always maintain the spindle in substantially upright position in approximate alinement with its support and the

pounding-up device while every part of the shoe is being pounded-up, as shown in Figs. 1 and 8, whereby the pounding-up device has little or no tendency to force the shoe away from position to be operated upon. In practice it will usually be found advantageous to manipulate the foot treadle for adjusting the actuating mechanism to vary the amplitude of the oscillations of the carrier lever as the different portions of the shoe are presented to the pounding-up and blocking devices, for harder blows of said devices may be required on one portion of the shoe than are desirable on other portions.

It will of course be understood that many features of this invention may be embodied in machines which do not include mechanism for performing both the pounding-up operation and the blocking operation, and that, therefore, the invention is not limited to machines for performing both of these operations; also that substantially different mechanisms from those herein described for performing the blocking operation or the pounding-up operation, or both operations, may be used which will come within the intended and reasonable scope of the claims in which I have defined my invention generically.

Having indicated the nature of my invention and fully described one construction embodying the invention in a preferred form, I claim as new and desire to secure by Letters Patent of the United States:—

1. A machine of the class described having, in combination, devices constructed and arranged to engage the upper on the bottom and side of a shoe substantially to its edge, and automatic actuating means for causing said devices to form the upper against the innersole and side of the last and to shape the edge of the shoe.

2. In a machine of the class described, the combination with devices for engaging the upper on the bottom and the side of a shoe, of automatic actuating means for moving said devices first together and then relatively to shape the edge of the shoe.

3. A machine of the class described having, in combination, devices for engaging contiguous portions of upper material on the bottom and side of a shoe, and automatic actuating means for causing said devices to force said portions respectively downwardly and inwardly, with relation to the last for shaping the edge of the shoe.

4. In a machine of the class described, the combination with pounding-up means, of actuating mechanism for moving said means toward and away from the work, said mechanism being constructed and arranged to impart to the pounding-up means a whipping stroke in a path having its major axis extending in a general direction of the plane of the work, substantially as described.

5. In a machine of the class described, the combination with pounding-up means, of mechanism for actuating said pounding-up means into and out of engagement with the work, and other means for moving said pounding-up means forwardly over the work, said other means being arranged to produce movement of the pounding-up means over the work after the movement into engagement with the work has terminated.

6. In a machine of the class described, the combination with pounding-up means and mechanism for actuating said pounding-up means into and out of engagement with the work, of other means for imparting to said pounding-up means an additional movement along the surface of the work and continuing that additional movement after the movement toward the surface of the work has been interrupted by engagement with the work.

7. In a machine of the class described, pounding-up means and actuating mechanism, comprising a yielding element, for moving said pounding-up means in one direction until it has engaged with the work and then also yieldingly in a direction at an angle to the direction of its first movement and then away from the work.

8. In a machine of the class described, pounding-up means and actuating mechanism for moving said pounding-up means downwardly into engagement with the work, then yieldingly forward over the work, and then forwardly and upwardly away from the work.

9. In a machine of the class described, the combination with pounding-up means and mechanism for moving said pounding-up means toward and from the work, of other means for actuating said pounding-up means forwardly while in engagement with the work, whereby the upper material is forced inwardly away from the edge of the innersole, said actuating means being arranged for further moving said pounding-up means forwardly while it is leaving the work.

10. A machine of the class described, comprising pounding-up means and actuating mechanism for moving said pounding-up means toward and from the work, said actuating mechanism including yielding means for actuating the pounding-up means forwardly as it moves away from the work.

11. In a machine of the class described, the combination with a pounding-up device, of actuating means for moving the pounding-up device downwardly and forwardly toward the work, said actuating means being arranged to allow the inertia of the pounding-up device to impart to it additional forward movement.

12. In a machine of the class described,

the combination with pounding-up means, of mechanism for actuating said pounding-up means downwardly and forwardly into engagement with the work and then yieldingly actuating it further forwardly over the work.

13. In a machine of the class described, the combination of pounding-up means and mechanism for actuating said pounding-up means downwardly and forwardly into engagement with the bottom of a shoe, said means being constructed and arranged for independent additional forward movement over the bottom of the shoe, and a blocking device for engaging the side of the shoe.

14. In a machine of the class described, the combination with a pounding-up device and a carrier therefor, of means for operating said carrier to actuate the device away from the work and then toward the work for forcing the upper material downwardly toward the innersole, said device being also arranged for movement in the carrier and with relation to the said actuating means at an angle to the direction of the carrier movement for forcing the upper material inwardly away from the edge of the innersole.

15. In a machine of the class described, the combination with pounding-up means and a carrier therefor, of actuating mechanism for moving the carrier and pounding-up means together toward and from the work and moving the pounding-up means relatively to the carrier over the work.

16. In a machine of the class described, the combination with a pounding-up device of an oscillating carrier provided with a guideway to receive the pounding-up device, a spring for pressing the pounding-up device forwardly in its guideway, and means for actuating the carrier to move the pounding-up device toward and from the work.

17. A machine for conforming the marginal portion of an upper to a last, comprising pounding-up means, a carrier therefor, and actuating mechanism for moving said pounding-up means toward and from the work, said actuating mechanism including yielding means for moving the pounding-up means forwardly with relation to its carrier when the carrier moves away from the work.

18. In a machine of the class described, the combination with pounding-up means, of actuating mechanism therefor, said actuating mechanism comprising means for moving the pounding-up means toward and from the work, and adjustable means for actuating the pounding-up means forwardly during its movement downwardly toward the work whereby the direction of the blows delivered to the work may be varied.

19. In a machine of the class described,

the combination with a pounding-up device and a lever in which the device is slidably mounted for movement in a direction at an oblique angle to the length of the lever, of means for oscillating the lever whereby the
 5 pounding-up device is actuated with the lever toward and from a shoe for forcing the upper material of the shoe downwardly upon the innersole and is also actuated rela-
 10 tively to the lever for forcing the upper material inwardly away from the edge of the innersole.

20. A machine of the class described, comprising a lever, a guideway formed therein
 15 at an oblique angle to the length of the lever, pounding-up means mounted to move in said guideway, and means for oscillating the lever toward and from the work and thereby reciprocating the pounding-up
 20 means over the work.

21. A machine of the class described, comprising a lever, a guideway formed therein at an angle to the length of the lever, and
 25 pounding-up means slidably mounted in said guideway, combined with means for oscillating the lever to move the pounding-up means toward and from the work and to reciprocate the pounding-up means in the guideway, and a spring arranged to ac-
 30 celerate the forward movement of the pounding-up means in the guideway.

22. In a machine of the class described, the combination with pounding-up means, mechanism for actuating said pounding-up
 35 means downwardly toward the work, and other means for actuating the pounding-up means forwardly over the work, of means for varying the relative forces with which the pounding-up means is actuated toward
 40 the work and over the work.

23. A machine of the class described, comprising a lever provided with a guideway, pounding-up means slidably mounted in
 45 said guideway, means for yieldingly actuating the lever to move the pounding-up means toward and from the plane of the work, and means for yieldingly actuating the pounding-up means over the work.

24. In a machine of the class described,
 50 the combination with pounding-up means, of actuating mechanism therefor, and means arranged to be manipulated by the workman while he is presenting a shoe to the pound-
 55 ing-up means for adjusting said actuating mechanism.

25. In a machine of the class described, the combination with pounding-up means, of mechanism for actuating the pounding-
 60 up means toward and from the work, and means under the control of the workman for adjusting said actuating mechanism while the machine is running to vary the force with which the pounding-up means is actu-
 65 ated toward the work.

26. In a machine of the class described,

the combination with pounding-up means and actuating mechanism for moving the pounding-up means for forcing the upper inwardly away from the edge of the inner-
 sole, of a manually controlled adjuster for
 70 varying the force with which the pounding-up means is so moved.

27. In a machine of the class described, the combination with pounding-up means and actuating mechanism therefor, of means
 75 under control of the workman and arranged to be operated while the machine is running to adjust the actuating mechanism for vary-
 ing the length of the stroke of the pounding-
 up means imparted by the said actuating
 80 mechanism.

28. A machine for pounding-up shoes hav-
 ing, in combination, a pounding tool, mech-
 anism for actuating the tool to beat the
 bottom of a lasted shoe, and means arranged
 85 to be manipulated while the machine is running to adjust said actuating mechanism for varying the action of the pounding tool upon the shoe.

29. In a machine of the class described,
 90 the combination with pounding-up means, of mechanism including starting and stop-
 ping means for actuating the pounding-up means toward and from the work, and means under control of the operator for starting
 95 the machine and simultaneously adjusting the actuating mechanism to govern the stroke of the pounding-up means.

30. In a machine of the class described, the combination with pounding-up means,
 100 of mechanism for actuating the pounding-up means toward and from the work, and means under control of the workman and arranged to be actuated for rendering the
 105 actuating mechanism operative and to be further actuated for varying the stroke of the pounding-up means.

31. In a machine of the class described, the combination with pounding-up means and actuating mechanism for moving the
 110 pounding-up means toward and from the work, of means for varying the length of the strokes of the pounding-up means by vary-
 ing the upper limits of the strokes.

32. In a machine of the class described,
 115 the combination with pounding-up means and actuating mechanism for moving the pounding-up means toward and from the
 work, of means for adjusting said actuating mechanism to vary the length of the strokes
 120 of the pounding-up means while the lower limits of the strokes remain substantially unchanged.

33. In a machine of the class described,
 125 the combination with pounding-up means and actuating mechanism for moving the pounding-up means toward and from the
 work for flattening the upper material against the innersole, of means to adjust
 130 the actuating mechanism while the machine

is running for varying the force with which the pounding-up means acts upon the work.

34. In a machine of the class described, the combination with pounding-up means, of a carrier therefor, and actuating mechanism for the carrier comprising a lever, means to oscillate the lever, a connection between said lever and the carrier, and means for adjusting said connection with relation to the fulcrum of the lever for varying the stroke imparted to the carrier.

35. In a machine of the class described, the combination with pounding-up means, of a carrier therefor, and actuating mechanism for the carrier comprising a lever, means to oscillate the lever, a shiftable connection between the lever and the carrier, and means under the control of the workman for shifting said connection relatively to the lever during the operation of the machine for varying the movement of the carrier.

36. In a machine for conforming the marginal portion of an upper to a last, the combination with a pounding-up device, a carrier for the pounding-up device, and means for actuating the carrier, of a blocking device mounted in the carrier and arranged for movement with relation to the carrier, said parts being so arranged that the pounding-up device will first engage the stock and arrest the movement of the carrier, and thereafter the blocking device will advance into engagement with the stock in a plane determined by the position in which the movement of the pounding-up device is arrested.

37. In a machine for treating a shoe prior to the application of the outersole, a device for engaging the side of the shoe at its edge, and mechanism for actuating said device to strike a plurality of blows in quick succession on the same portion of the shoe to block the shoe and shape the edge of the shoe in combination with means which engages the bottom of the shoe and relatively positions the shoe and said device prior to said blows whereby the blows are directed against the desired portion of the shoe.

38. In a machine of the class described, a device for engaging the side of a shoe at its edge, and mechanism for rapidly vibrating said device to cause it to deliver blows in quick succession to substantially the same portion of the side of the shoe for blocking the shoe, and means other than the striking tool to determine the relation of the shoe bottom and the path of said tool for causing the blows of the tool to be delivered against the edge of the shoe.

39. In a machine of the class described, the combination with a blocking device, of actuating means for moving the blocking device downwardly and forwardly toward the work, said actuating means being ar-

ranged to allow the inertia of the blocking device to impart to it additional movement.

40. In a machine of the class described, the combination with a carrier, of blocking means movably mounted therein, and actuating mechanism for oscillating the carrier whereby the blocking means is reciprocated in its carrier toward and from the work.

41. In a machine of the class described, the combination with a lever provided with a guideway, of blocking means arranged to move in the guideway, actuating mechanism for oscillating the lever to move the blocking means toward and from the plane of the work and causing the blocking means to reciprocate in its guideway toward and from the work, and a spring for accelerating the forward movement of the blocking means in the guideway.

42. In a machine of the class described, the combination with a lever provided with a guideway extending at an angle to the length of the lever, of blocking means arranged to move in the guideway, and actuating mechanism for oscillating the lever to move the blocking means toward and from the plane of the work and causing the blocking means to reciprocate in its guideway toward and from the work.

43. In a machine of the class described, the combination with blocking means and actuating mechanism therefor, of means under control of the workman and arranged to be operated while the machine is running for varying the force with which the blocking means is actuated.

44. In a machine of the class described, the combination with blocking means, and actuating mechanism including starting and stopping means, of means under control of the workman and adapted to be moved for operating the starting and stopping mechanism and to be further moved for varying the force with which the blocking means is operated.

45. In a machine of the class described, the combination with blocking means, of actuating mechanism for reciprocating the blocking means, said actuating mechanism comprising a lever, means for oscillating the lever, a movable connection between said lever and the blocking means, and means under control of the workman for shifting said movable connection with relation to the fulcrum of the lever for varying the extent of the reciprocations imparted to the blocking means.

46. In a machine of the class described, the combination with a carrier, of pounding-up means mounted thereon, said carrier being provided with a guideway, a blocking device slidably mounted in the guideway, and mechanism for actuating the carrier to cause the pounding-up means to pound the shoe on the bottom of the last and for actu-

ating the blocking device to pound the shoe on the side of the last.

47. In a machine of the class described, the combination with a carrier lever provided with a plurality of approximately parallel guideways extending at an angle to the length of the lever, pounding-up means and blocking means slidably mounted in said guideways, and means for oscillating said carrier lever to move the pounding-up means toward and from the plane of the shoe bottom and automatically causing the pounding-up means and blocking means to reciprocate in their guideways.

48. In a machine of the class described, the combination with a lever and mechanism for oscillating the lever, of pounding-up and blocking means arranged in said lever to be reciprocated automatically with relation thereto as the lever is oscillated, and means for limiting the reciprocating movements of the pounding-up and blocking means, said limiting means being arranged to permit a longer reciprocation of the blocking means than of the pounding-up means whereby the pounding-up means may act upon the work for taking up the slack in the upper before the blocking means engages the shoe.

49. In a machine of the class described, the combination with pounding-up means and actuating mechanism therefor, of rests pivotally supported at opposite sides of the path of the pounding-up means, and yielding means for holding said rests normally in position to support the end of the shoe, said yielding means permitting the rests to be rocked into position to support the side of the shoe.

50. In a machine of the class described, the combination with means for forcing the upper material of a shoe into position, of co-operating edge rests spaced apart and movable relatively to adapt them to guide automatically portions of the shoe having different contours into different relation to said forcing means.

51. In a machine of the class described, the combination with blocking means adapted to act on the side of a shoe, and means for reciprocating the blocking means toward and from the shoe automatically, of means supported for movement during the operation of the machine about axes substantially perpendicular to the plane of the bottom of the shoe and adapted for smoothing the portion of the shoe acted upon by the blocking means.

52. In a machine of the class described, the combination with reciprocating blocking means adapted to act on the side of a shoe, of rests relatively movable about axes substantially perpendicular to the plane of the bottom of the shoe and arranged upon opposite sides of the path of the blocking means and adapted to be engaged by the shoe for

smoothing the portions of the shoe acted upon by the blocking means.

53. A machine of the class described, comprising pounding-up means, and means for actuating it to press the upper downwardly toward the innersole and inwardly away from the edge of the innersole, said machine having provision for varying the relative forces with which the upper is pressed downwardly and inwardly by the pounding-up means.

54. A machine for pounding-up shoes having, in combination, a pounding-up tool, mechanism for actuating the tool, and means against which the shoe is positioned in presenting it for the action of the pounding-up tool and which is movably mounted to adapt it to be automatically positioned in different relations to the pounding-up tool as portions of the shoe having different contours are presented to the operation of the tool.

55. In a machine of the class described, the combination with pounding-up means and actuating mechanism therefor, of means for resting the shoe in position for the pounding-up means to act upon the shoe bottom at different distances from the edge of the shoe, said resting means being adapted to be positioned automatically for supporting the end portions of the shoe farther under the pounding-up means than the side portions of the shoe are supported.

56. A blocking machine arranged to permit a shoe to be moved with relation thereto for presenting different portions of the shoe to the action of the machine and having shoe resting means constructed and arranged to position the shoe automatically out of the range of the blocking instrumentalities as the shank portion is moved past said instrumentalities and to permit the end portions of the shoe to come within the range of the blocking instrumentalities.

57. In a machine of the class described, the combination with means for supporting a shoe, of means arranged to be actuated toward and from the shoe bottom for forcing the upper material on the bottom of the shoe downwardly toward the innersole and to be actuated for forcing the upper inwardly away from the edge of the innersole after the downward movement has been stopped by engagement with the bottom of the shoe.

58. In a machine of the class described, the combination with pounding-up means, mechanism for moving said pounding-up means downwardly and inwardly with relation to the last, and blocking means for acting on the side of the shoe, of means to assist the operator in presenting the shoe in operative relation to said pounding-up and blocking means and in resisting displacement of the shoe by the action of said two means.

59. In a machine of the class described, the

combination with means for pounding-up a shoe, of a shoe support comprising a jack and a spindle, and means connected with the lower end of the spindle for sustaining the shoe support, said sustaining means being adjustable for positioning the spindle different distances from the machine.

60. In a machine of the class described, the combination with means for pounding-up a shoe, of a support for the shoe, said support including a jack, a spindle, a guide for the spindle, means for yieldingly actuating the shoe support toward position for the shoe to be operated upon, and means for securing the support in a position away from the pounding-up means to permit a shoe to be applied to or removed from the jack.

61. In a machine of the class described, the combination with pounding-up means adapted to act upon different portions of a shoe successively, of a shoe support comprising a spindle normally in substantial alignment with its point of support and the pounding-up means, and shoe holding means mounted to slide relatively to the spindle in the direction of the length of the shoe and also in the direction of the width of the shoe whereby it may be moved to present the different portions of the shoe to the pounding-up means without materially shifting the spindle from alinement with the pounding-up means.

62. In a machine of the class described, the combination with pounding-up means, of a shoe support comprising a spindle and shoe holding means movable relatively to the spindle to enable the different portions of the shoe to be presented to the pounding-up means while maintaining the point of engagement of the pounding-up means with said different portions of the shoe always substantially over the upper end of the spindle.

63. In a machine of the class described, the combination with pounding-up means, of a shoe support comprising a spindle and shoe holding means freely movable relatively to the spindle both transversely and longitudinally of the shoe to enable different portions of the shoe to be presented to the pounding-up means while maintaining the point of engagement of the pounding-up means therewith always substantially over the upper end of the spindle.

64. In a machine of the class described, the combination with pounding-up means, of a work support comprising shoe holding means and a pivotally mounted spindle adapted to be swung for moving the work toward and from the pounding-up means, said shoe holding means being freely movable relatively to the spindle to enable the different portions of the shoe to be presented to the pounding-up means while maintaining the point of engagement of the

pounding-up means with the shoe always substantially over the upper end of the spindle.

65. In a machine of the class described, the combination with pounding-up means for forcing the upper material downwardly toward the innersole, of a shoe support comprising a shoe holder mounted to rock longitudinally of the shoe, and means for limiting said rocking movement and sustaining the shoe holder with the shoe at a predetermined inclination to the pounding-up means.

66. In a machine of the class described, the combination with pounding-up means for forcing the upper material downwardly toward the innersole, of a shoe support comprising a shoe holder mounted to rock longitudinally and also transversely, and an adjustable stop to be engaged by the shoe holder for limiting said longitudinal rocking movement, said engaging parts having cooperating faces shaped to cause the shoe holder to be sustained at a predetermined inclination to the pounding-up means when the shoe holder is rocked transversely into different positions.

67. In a machine of the class described, a carrier and means to impart to the carrier a back and forth movement, combined with a work engaging device loosely mounted on the carrier and arranged to be actuated relatively to the carrier by reason of its inertia.

68. In a machine of the class described, a carrier and means to impart to the carrier a back and forth movement, combined with a work engaging device loosely mounted on the carrier and arranged to be actuated relatively to the carrier by reason of its inertia, and a spring arranged to be compressed when said device is moved in its carrier in one direction and to accelerate the movement of said device in its carrier in the reverse direction.

69. A machine of the class described, comprising a pounding-up device, of means for yieldingly actuating the pounding-up device toward and from the work and moving the device over the work while it is in engagement therewith, said machine having provision for varying the duration of the engagement of the pounding-up device with the work.

70. In a machine for conforming the marginal portion of an upper to a last, the combination with means for engaging the upper on the bottom of the shoe, of a plurality of rests relatively movable about axes substantially perpendicular to the bottom of the shoe and arranged on opposite sides of the path of the pounding-up means to engage the side of the last and to prevent the concave curved portions of the last from entering between them while allowing the portions of the last having convex curvatures of small radius to enter farther between the

rests and into the range of the pounding-up device than the less curved portions.

71. In a shoe-shaping machine the combination with bottom-beating means and side beating means, of shoe positioning means constructed and arranged to assist the operator in offering resistance to displacement of the shoe by either of said bottom or side beating means.

72. In a shoe-shaping machine the combination with bottom-beating means and mechanism for actuating said beating means downwardly upon and inwardly over the bottom of the shoe, of shoe positioning means constructed and arranged to assist the operator in offering resistance to displacement of the shoe either downwardly or outwardly by said beating means, said machine being adapted to perform the shoe beating progressively around different portions of the shoe and said positioning means being movable to present different portions of the shoe to the beating means, and a spring arranged to resist outward displacement of the shoe with increasing force as such displacement increases in the manipulation of the shoe.

73. In a machine of the class described, the combination with a pounding-up means, of actuating mechanism for moving said means toward and away from the work, said mechanism being constructed and arranged to impart to the pounding-up means a stroke in a direction to force the upper downwardly and inwardly, and means, operative in all positions which it is necessary for the shoe to occupy in presenting the several portions to the pounding-up means, for actuating the shoe laterally to resist the inward thrust of the pounding-up means.

74. In a machine of the class described, the combination with pounding-up means, of actuating mechanism for moving said means toward and away from the work, said mechanism being constructed and arranged to impart to the pounding-up means a whipping stroke, and means for yieldingly resisting displacement of the shoe laterally by the lateral thrust against it of said whipping stroke.

75. In a machine constructed and arranged to deliver a plurality of blows to substantially the same portion of the upper on the bottom of a shoe, the combination with a hammer, and means for actuating the hammer to cause it to move from a position outside of the shoe bottom and to strike from the edge of the shoe bottom inwardly, of a blocking tool having a separate advancing movement.

76. In a machine for beating the upper of a shoe, the combination with a side beater for the shoe, of a hammer having provision for yielding upwardly and means for actuating the hammer downwardly in

a path inclined to the shoe bottom and directed inwardly over the shoe bottom, said machine being constructed and arranged to permit the shoe to be moved to present different portions thereof to the operation of the hammer.

77. In a machine for beating the upper on the bottom of a shoe, the combination with a beating device and means independent of the work for actuating the beating device in a curved path to deliver oblique blows directed downwardly toward the shoe bottom and inwardly from the edge of the shoe bottom, of means for smoothing the upper on the side of the shoe, and means to actuate the smoother.

78. In a machine for beating the upper of a shoe, the combination with a side beating device and a bottom beating device, of means for actuating said latter device to beat the upper downwardly toward the shoe bottom and inwardly away from the edge of the shoe bottom and then to carry the bottom beating device upwardly and farther inwardly away from contact with the shoe.

79. The combination with suitable actuating means, of a side beater, which in addition to its movement from and toward the side of the shoe, is yieldingly moved down to the plane in which it is to strike, and means relatively to which the forward stroke takes place and which is arranged to engage the bottom of the shoe to guide the side beater in its forward stroke into predetermined relation to the plane of the adjacent portion of the shoe bottom.

80. In a machine for conforming the marginal portion of an upper to a last, the combination with pounding-up means and blocking means, of mechanism for actuating said two means, said actuating mechanism having provision for so correlating the pounding-up means and the blocking means that upon impact of one of said means against the work the position of the path of further movement of the other means is determined, and mechanism for actuating said two means constructed and arranged to impart to the blocking means a further forward movement independently of the movement of the pounding-up means after the pounding-up means has engaged the shoe bottom.

81. A machine for operating on shoes having, in combination, an operating tool, mechanism, including starting and stopping means, for actuating said tool to do its work, and a single means under control of the operator for starting the machine and then adjusting the actuating mechanism to govern the action of the tool on the work.

82. In a machine of the class described, the combination with blocking means, of actuating mechanism therefor, and means

under control of the workman for adjusting said actuating mechanism while the machine is running whereby different parts of the same shoe may be treated differently.

5 83. A shoe shaping machine having, in combination, a carrier, a bottom beating tool and a side beating tool both movable by the carrier and actuating mechanism for said carrier and tools arranged to effect a movement of the bottom beating tool toward and from the bottom of the shoe unyieldingly in its carrier and a movement of the side beating tool toward and from the side of the shoe.

15 84. A shoe shaping machine having, in combination, a carrier lever, a bottom beating tool mounted on said carrier lever, a blocking tool arranged to engage the side of the shoe, means for actuating the carrier lever, and additional means for actuating the blocking tool forwardly to beat the side of the shoe after the bottom beating tool has engaged the shoe bottom.

20 85. In a machine of the class described, the combination with blocking means and actuating mechanism for reciprocating the blocking means, of yielding means for pressing the shoe laterally toward the blocking means and means for limiting the approach of the shoe to the blocking means.

30 86. In a machine of the class described, the combination with means for pounding-up a shoe, of a guide for directing movement of the shoe toward and from position to be operated upon, means for yieldingly actuating the shoe toward position for the shoe to be operated upon, and means for securing the shoe in a position away from the pounding-up means.

40 87. A machine for beating out shoe uppers, having, in combination, a tool arranged to bear against the upper at the edge of the insole, a tool arranged to act upon the lower edge of the shoe upper, and means

for actuating said last mentioned tool to draw the upper over the edge of the insole and to beat out the lower edge of the upper upon the insole.

88. In a machine of the class described, the combination with means for forcing the upper material of a shoe into position upon the shoe bottom, of means supported for movement about axes substantially perpendicular to the plane of the bottom of the shoe, and adapted for smoothing the upper material at the side of the shoe.

89. In a machine of the class described, the combination with pounding-up means, of means supported upon pivotal axes substantially perpendicular to the plane of the shoe bottom and adapted for smoothing the upper material at the side of the shoe.

90. In a machine of the class described, the combination with pounding-up means and means for actuating it to force the upper downwardly toward the innersole and inwardly away from the edge of the shoe, of means for engaging the upper at the side of the shoe adjacent to said edge and which is mechanically driven to cause it to smooth out the upper during the operation of the pounding-up means.

91. In a machine of the class described, the combination with pounding-up means, and means for actuating it to force the upper downwardly toward the inner-sole and inwardly away from the edge of the shoe, of means to engage the upper on opposite sides of said pounding-up means and adjacent said edge for smoothing the upper at the side of the shoe.

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

RONALD F. McFEELY.

Witnesses:

ROBERT H. LAWSON,
ARTHUR L. RUSSELL.

Correction in Letters Patent No. 1,019,067.

It is hereby certified that in Letters Patent No. 1,019,067, granted March 5, 1912, upon the application of Ronald F. McFeely, of Beverly, Massachusetts, for an improvement in "Pounding-Up Machines," an error appears in the printed specification requiring correction as follows: Page 12, line 16, for the word "downwardly" read *forwardly*; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 2nd day of April, A. D., 1912.

[SEAL.]

C. C. BILLINGS,

Acting Commissioner of Patents.