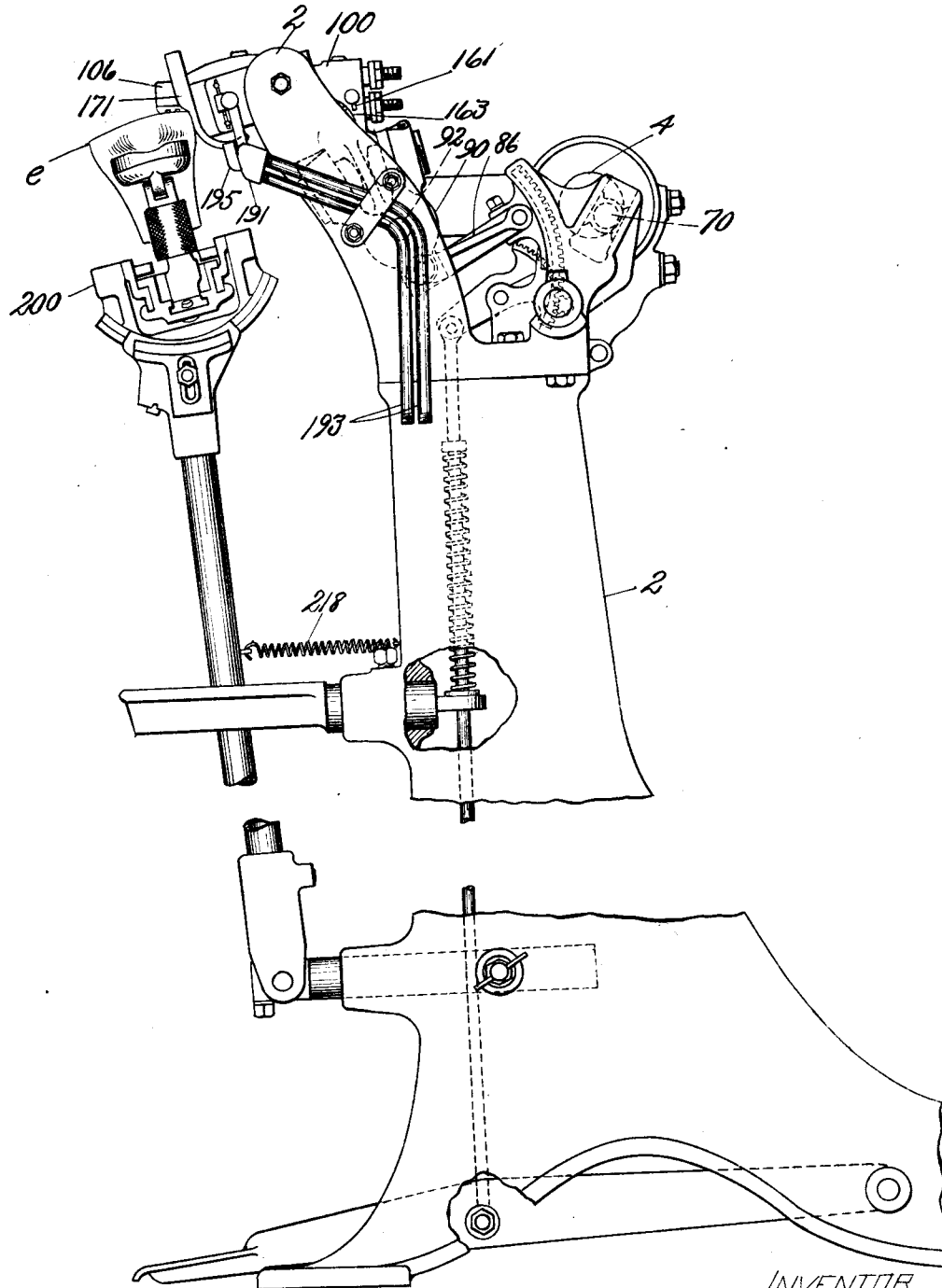


O. ASHTON.
POUNDING-UP MACHINE.
APPLICATION FILED JUNE 16, 1906.

Patented Dec. 31, 1912.
3 SHEETS-SHEET 1.

1,048,788.



WITNESSES.

Bertha H. Hawthorn
Bertha M. Hutchinson

Fig. 1.

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Patented Dec. 31, 1912.

1,048,788.

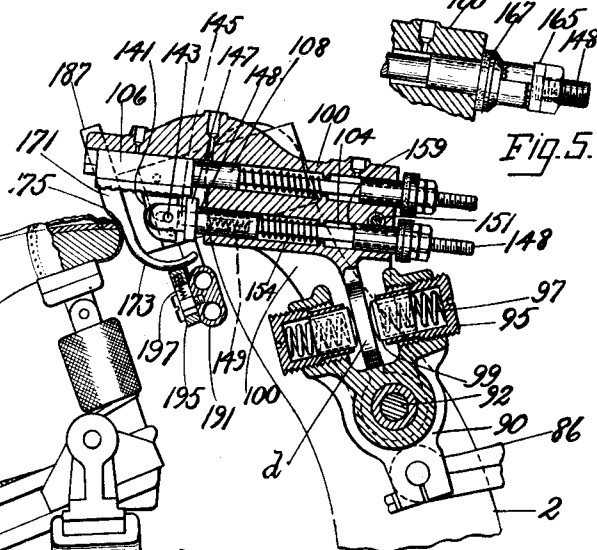


Fig. 2.

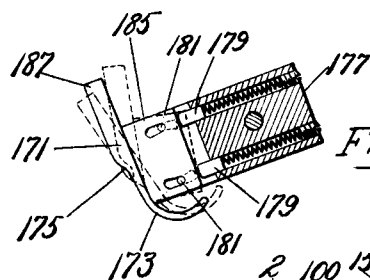


Fig. 7.

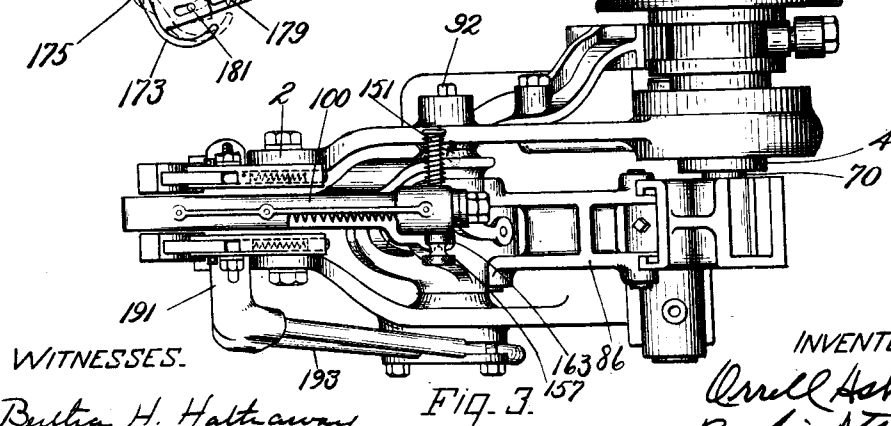
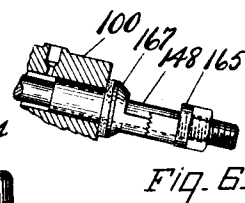


Fig. 3.

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3 SHEETS-SHEET 3.

1,048,788.

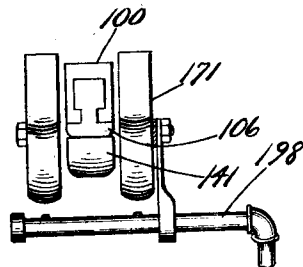
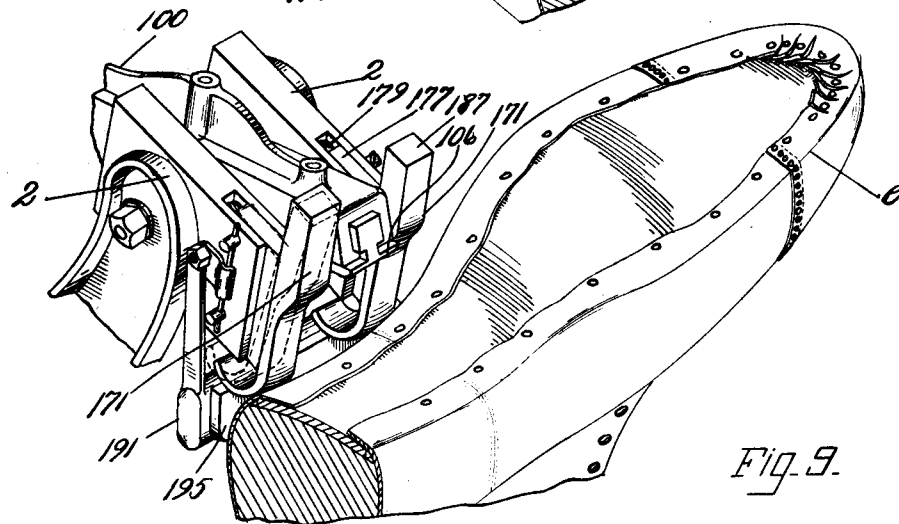
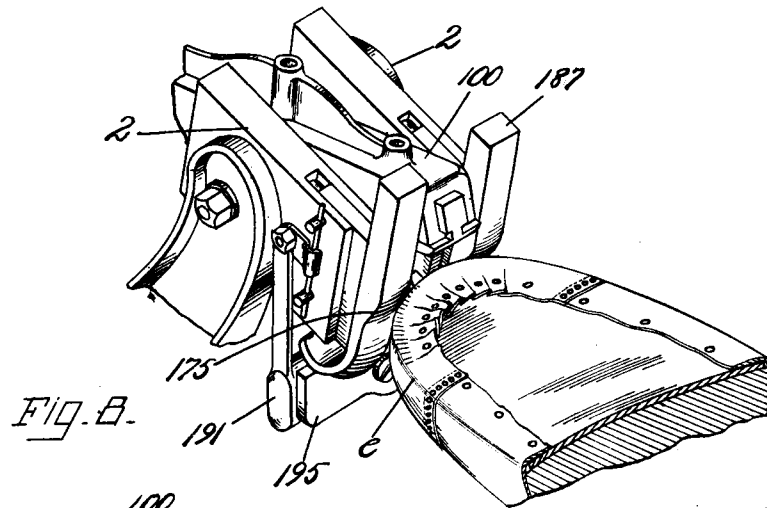


Fig. 10.
WITNESSES.

Bertie H. Hathaway
Bertha M. Hutchinson.

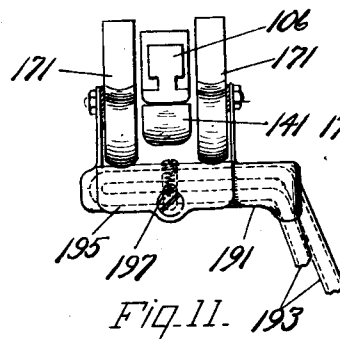


Fig. 11.

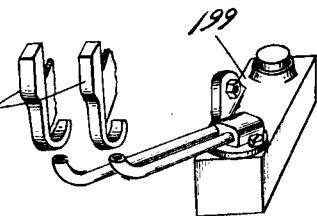


Fig. 12.
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UNITED STATES PATENT OFFICE.

ORRELL ASHTON, OF LAWRENCE, MASSACHUSETTS, ASSIGNOR TO UNITED SHOE MACHINERY COMPANY, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

POUNDING-UP MACHINE.

1,048,788.

Specification of Letters Patent.

Patented Dec. 31, 1912.

Application filed June 16, 1906. Serial No. 322,070.

To all whom it may concern:

Be it known that I, ORRELL ASHTON, a citizen of the United States, residing at Lawrence, 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.

This invention relates to machines used in the manufacture of boots and shoes and is herein shown as embodied in a machine of the type shown in United States Letters Patent to McFeely, No. 1,019,067, granted March 5, 1912, intended for performing the operations of pounding-up and of blocking shoes. It is found in practice that lasts differ enough in shape so that the acting face of a blocking tool can not be so formed that it will act uniformly on different lasts.

One feature of the invention consists in a novel construction and arrangement by which the blocking tool is enabled to adapt itself readily to the contours of different lasts. To this end there is provided an improved arrangement for permitting the blocking tool to be turned by engagement with the work and also to yield bodily backward, in whatever angular position it has assumed, after it strikes the work. For the purpose of further improving the means for blocking the shoe, the construction and arrangement of the blocking tool and of its supporting and operating means are such as to cause the tool to strike the shoe lightly and then, after being displaced if necessary, as by turning, for conforming to the contour and position of the surface of the shoe to be treated, to be forced with increased pressure against the side of the shoe for shaping it. In blocking means thus constructed and arranged the blocking tool will better adapt itself to the contour and position of the work than will such tools as heretofore constructed. Furthermore, the blow is not concentrated on as small a portion of the work as is the case either with tools rigidly mounted or with tools having less capacity for adjusting their positions to the surface of the work.

In operating upon plain toe shoes or shoes in which there is no box toe or stiffener, it is, however, found that the blocking tool is not

essential and, in fact, if the shoe upper consists of certain light grades of leather, the blocking tool is liable to bruise or mar the leather. In accordance with another feature of this invention, therefore, means is provided for rendering the blocking tool inoperative without affecting the operation of other mechanisms of the machine. To this end locking means is provided for securing the blocking tool in a retracted and inoperative position. Conveniently too, and as herein shown, means is provided by which the blocking tool may be moved to an inoperative position and locked in that position by a single operation.

A further feature of the invention consists in an improved construction and arrangement of means for smoothing the side of the shoe to obliterate any marks or wrinkles which remain in the upper near the edge of the shoe after the action of the blocking tool or which may exist when the blocking tool is not used. When the blocking tool is used, the smoothing means may be located adjacent thereto and preferably will comprise a pair of tools arranged one upon each side of the blocking means, although, if desired, the smoothing means may comprise a single member positioned and arranged to engage the shoe immediately after the operation of the blocking means thereon. The acting faces of the smoothing tools are preferably formed so as to insure that as large a portion of the side of the shoe as is practicable shall be smoothed. For the purpose of further extending the surface of the work that may be treated and for enabling these tools to adapt themselves to the slightly varying contours of different portions of the work, the tools are each mounted to yield under pressure of the work against them and also to be turned, alternatively or successively, about axes located at different altitudes.

Another feature of the invention consists in means especially adapted for treating the edge portion of the upper at the junction of the side and bottom faces of the shoe to remove wrinkles and other inequalities which are sometimes formed at the edge of the shoe and which it is difficult to remove by pounding up and blocking tools. To this end the smoothing tools have faces adapted to engage the edge of the shoe and preferably to overhang slightly the bottom of the

shoe and the machine has provision both for imparting to these tools through their supports a light vibratory movement toward and from the work and also for vibrating or rocking them about pivotal connections with their supports. By this construction, the smoothing tools are caused to deliver light rapid blows directed to the edge of the shoe the character of the blows and the above outlined conformation of the working faces of the tools resulting in most efficiently smoothing and shaping the edge of the shoe. This action of the smoothing tools is more gentle than the action of the blocking tool and said tools can therefore be used advantageously on the lighter kinds of upper leather as well as upon heavier shoes.

My experiments have furthermore demonstrated that by heating the vamp on the side of a shoe in advance of the operation of a beating or finishing tool thereon the effectiveness of the succeeding action of such tool is greatly increased, since the leather of the upper is so softened and prepared for the subsequent treatment thereof that, as a result, the beating or finishing tool will much more readily and thoroughly obliterate wrinkles or inequalities in the surface of the upper. It is also highly advantageous in machines employing both beating and finishing tools to provide for further heating the upper after the beating operation and before or simultaneously with the smoothing or rubbing action of the finishing tool, such treatment of the upper tending to lay the grain of the leather and to give a superior appearance to the shoe. In operating upon some grades of shoes, entirely satisfactory results can be obtained by thus applying heat to the upper and treating it by a smoothing or finishing tool without using a beating tool at all. It is also particularly advantageous to smooth and rub under heat the edge of the upper formed by the junction of the side and bottom faces of the shoe and thus entirely to finish this portion of the shoe at this point in the manufacture of the shoe in view of the fact that after the sole is attached to the shoe it is exceedingly inconvenient to get at this edge portion of the upper for polishing or otherwise finishing it. Furthermore, in the manufacture of shoes having vamps or tips of patent leather, enameled leather or similar stock, herein referred to generically as "enameled leather", fine wrinkles and surface inequalities are frequently made at the sides and edges of the shoe because of unequal stretching of the leather base and its enamel coating where the vamp is bent over the edge of the last. The enamel can, however, be softened and shrunk and such wrinkles obliterated by heating the enamel in advance of the operation thereon of a beating or finishing tool or by thus treating the enamel

substantially simultaneously with the application of heat thereto. An important feature of the invention, therefore, is the provision of means for thus heating the upper to be treated. Although in the embodiment of the invention herein shown and described by way of illustration the means provided for applying heat to the upper as aforesaid are particularly arranged and adapted for use in connection with blocking and smoothing tools of the type above mentioned, the invention in this aspect of it is, however, capable of various uses and is not at all limited to the illustrated showing of one convenient application thereof.

Other features of the invention, including details of construction and combinations of parts, will be hereinafter described and pointed out in the claims.

Figure 1 is a side elevation of a machine embodying the present invention. Fig. 2 is a detail view, partly in section, through the lever which carries the pounding-up and blocking tools, and shows a shoe supported on a jack in position to be operated upon by the tools. Fig. 3 is a plan view of the upper portion of the machine. Figs. 4, 5, and 6 are details of devices for securing the blocking tool in retracted position. Fig. 7 is a detail view, partly in section, of one of the smoothing tools and its support. Fig. 8 is a perspective view showing the relative position of the several tools and the work when the toe portion of a shoe is being operated upon. Fig. 9 is a similar view showing the relative position of the shoe and the tools when the shank of the shoe is being operated upon. Figs. 10, 11, and 12 are detail views showing different arrangements for heating the ironing tools.

The frame 2 supports a fulcrum pin 92 for a lever 90 which has connection through a link 86 and intermediate devices, forming no part of the present invention, with a crank 70 on the driving shaft 4 by means of which the lever is oscillated. The lever 90 is forked at its upper end and provided with adjustable caps 95 containing springs 97 acting on plungers 99 between which is located a laterally projecting portion or flange *d* of a carrier lever 100. The pounding-up means, the specific construction of which is not a part of the present invention, is herein shown as comprising a head 106 mounted on a shank 108 which is longitudinally movable in a guideway in the carrier lever and arranged to be oscillated with said carrier lever toward and from the work and to be reciprocated relatively in the guideway. The particular construction of the pounding up means is not important to the present invention and any other suitable pounding-up means may be substituted for the one shown in the present embodiment of the invention. The blocking means, which as herein shown

is carried by the lever 100, comprises a shank 148 which is longitudinally movable in a guideway 104 in the lever. The blocking means is moved toward and from the plane of the shoe bottom by the oscillation of the carrier lever and is actuated longitudinally in its guideway for striking the work by reason of its inertia which causes it to move backwardly when the carrier lever rises and to be impelled forwardly when the lever descends. The forward movement is accelerated by a spring 154 which is compressed during the rearward movements of the blocking means and expands during its forward movement. The blocking means comprises further a head 141 having an acting face shaped to conform approximately to the side of the fore part of an inverted shoe from the edge *e* downwardly. The head is connected to the shank 148 by a pin and slot connection 143, as shown in full and dotted lines in Fig. 2. This connection permits the head of the blocking tool to have a slight rocking movement either upwardly or downwardly from its normal central position. A spring-pressed plunger 145 is herein shown as mounted in the shank directly in the rear of the pin and slot connection and in position to hold the head 141 normally in its central position. The pin and slot connection also permits the blocking tool to have a rearward bodily movement with relation to its shank, this movement being limited by the engagement of the rear face of the tool with a collar 147 on the shank. The spring 149 acting upon the plunger 145 and normally holding the blocking tool at the limit of its forward movement away from the collar 147 is much lighter than the spring 154, which assists in impelling the blocking tool forwardly. By this construction and arrangement the blocking tool is permitted when it strikes the work to rock upon its pivot and adjust itself to the position and contour of the portion of the side of the shoe engaged by it. During this rocking movement the shank of the tool will continue its forward movement until the lost motion permitted by the pin and slot connection is exhausted, whereupon the blocking tool, which has become properly adjusted, will be actuated against the work with the full force of the spring 154 and the momentum which it has acquired during the downstroke of the carrier lever.

Provision is made for rendering the blocking tool inoperative at times. To this end means is provided for limiting or discontinuing the reciprocation of the blocking tool and for holding it in a retracted position where it will not engage the work when the carrier lever is oscillated. In Figs. 2 and 3 the carrier lever is shown as provided with a locking pin 151 which is normally held by a spring 153 in the position illustrated, said

pin having a reduced portion 155 located adjacent to the shank 148 of the blocking tool. The pin 151 has a head 157 by means of which it may be moved in opposition to the tension of the spring 153 to bring a thick portion of the pin into position to cooperate with a shoulder 159 on the shank for holding the blocking tool in a retracted position. The blocking tool requires to be pressed backwardly against the tension of the spring 154 before the locking pin can be manipulated as described. The locking pin has a stud 161 for engaging a shoulder 163 on the lever to hold the pin in its adjusted position. In Figs. 5 and 6 is illustrated a modified construction by means of which the movement of the blocking tool into its retracted position and the locking of the tool may be conveniently effected. This construction comprises a collar 165 mounted on the rear portion of the shank 148 and provided with a forwardly extending member herein shown as a half sleeve. A second collar 167 abuts against the rear end of the carrier lever 100 and has a rearwardly extending projection, also shown as a half sleeve. The blocking tool may be retracted by engaging the collar 165 and pulling it to the rear and the tool may be locked in this retracted position by rotating the collar 167 to bring its half sleeve into alignment with the half sleeve on the collar 165, as shown in Fig. 6. The free end faces of the half sleeves are shown as roughened to prevent accidental rotary movement when these faces are in engagement. It is obvious that it is not important to form the cooperating projections carried by the collars 165 and 167 as half sleeves for any suitable construction of projection and cooperating recessed member would serve the same purpose.

For smoothing the upper material the machine is provided with one or more tools 171. These tools are preferably alike and are each formed with surfaces shaped to act upon the side of the shoe adjacent to the bottom of the shoe. As herein shown, the lower portions of the tools have receding faces 173 to enable them to act upon the side of the shoe at the shank—for example, as shown in Fig. 9—the curved surfaces of these faces avoiding all danger of the upper being marred by the tools. Preferably the smoothing tools are provided with faces 175 shaped to conform approximately to the corner or edge *e* of the shoe formed by the junction of the side and bottom faces. As shown, the faces 175 are extended to overhang slightly the bottom of the shoe. The machine herein illustrated is provided with a smoothing tool located upon either side of the plane in which the pounding-up and blocking tools are mounted, but if desired a single smoothing tool may be employed which will preferably be mounted on the

rear side of the pounding-up and blocking tools or in position to operate on successive portions of the shoe after they have been acted upon by the pounding-up and blocking tools. In using the machine the shoe is 5 firmly pressed laterally against the smoothing tool or tools and as it is fed forward the tools rub the side and preferably the edge of the shoe to smooth it and remove 10 any wrinkles or marks which may exist. Preferably the shoe will be supported upon a jack 200 and a spring 218 may be employed as shown in Fig. 1 to assist the operator in actuating the jack and shoe to- 15 ward the smoothing tools. Preferably the smoothing tools 171 will be yieldingly supported and as shown in Fig. 7 the tools are so mounted upon their supports 177 that they may be pressed backwardly against 20 the tension of spring-pressed plungers 179. As herein shown the smoothing tools are also connected to their supports 177 for pivotal movement about two centers located one above the other, as in Fig. 7. This 25 connection is formed by the pins 181, shown as carried by the support 177, and by curved slots formed in the rearwardly extending shanks 185 of the tools, as clearly shown in Fig. 7. This arrangement permits the tools 30 to adapt their position to the position and contour of the portion of the shoe pressed against them.

The supports 177, upon which the smoothing tools are mounted, are preferably con- 35 nected rigidly to the frame 2 of the machine upon which the carrier lever 100 is pivoted. In practice the carrier lever is rapidly oscillated and causes a vibration of the machine frame forwardly and backwardly. In 40 accordance with one feature of this invention this vibration of the machine frame effected by the rapid oscillation of the carrier lever and its actuating mechanism is utilized for vibrating the smoothing tools to cause 45 them to deliver light rapid blows upon the side and edge of the shoe. The point of the engagement of the shoe with the smoothing tools is above the lower pivot pins 181 and the vibration of the frame causes the 50 smoothing tools to rock or vibrate slightly about said pivot pins 181 as centers in addition to their movement forwardly and backwardly with the vibrating frame. This rocking movement of the tools about the 55 pivot pins causes the faces 175 of the tools and the adjacent portions of the tools overhanging the shoe bottom to strike the edge of the shoe with oblique blows inclined downwardly and outwardly with relation 60 to the machine or downwardly and inwardly with relation to the shoe bottom, as will be readily understood from Fig. 7. For the purpose of rendering the smoothing tools more effective for beating the side and 65 edge of the shoe the tools are extended up-

wardly and enlarged as shown at 187 to increase their weight.

Preferably provision will be made for heating the smoothing tool or tools to enable 70 said tools to be employed for ironing portions of the shoe engaged by them when the machine is employed for operating upon chrome-tanned and other grades of upper leather that can be advantageously treated 75 with a heated iron. This is of great advantage because the edge of the lasted shoe acted upon by the smoothing tools and the portion of the side of the shoe adjacent to the edge is not easily accessible to an iron- 80 ing tool after the sole has been applied to the shoe, whereas in accordance with this feature of the present invention the edge and side of the shoe can be conveniently ironed before the sole is applied to the shoe and when these parts of the shoe are freely 85 accessible.

Any suitable means may be employed for heating the ironing tools. In the main fig- 90 ures of the drawings is shown means for heating the tools by steam. This means comprises a steam box 191 supported upon a convenient portion of the frame and fur- 95 nished with steam from suitable inlet and outlet supply pipes 193. Preferably the steam box will be provided with means for engaging the smoothing tools so that heat 100 may be conducted directly to the tools. As herein shown the steam box is provided with a plate 195 pivotally secured to the steam box by a pin and slot connection and 105 pressed yieldingly against the lower portions of the smoothing irons by a spring 197, see Figs. 2 and 11. This construction insures that the plate 195 shall be main- 110 tained in contact with both of the smoothing irons in the different positions which said irons assume in their movements. In Fig. 10 a gas pipe 198 is shown as support- 115 ed in position to heat the smoothing tools while in Fig. 12 a box 199 suitable for containing and burning alcohol or oil is shown with burners in position to heat the smooth- 120 ing tools. The machine is shown as provided with two tools 171 and with means for heating both of these tools. The tool 115 which acts upon the stock in advance of the action of the pounding-up and blocking tools heats and softens the stock so that it responds more readily to the action of the blocking tool in removing wrinkles or in- 120 equalities from the stock and in shaping the side of the shoe. The tool which acts on the stock after the pounding and blocking tools smooths and irons it in a manner sim- 125 ilar to that in which the other portions of the shoe upper are usually ironed in the operation of finishing the shoe. It is of course not necessary to employ two smoothing or ironing tools and it is not essential that both tools if employed be heated. The heat- 130

ing means serves to heat to some extent the blocking and ironing tools and this enables these tools to perform their functions more effectively.

5 In the use of the machine the shoe, preferably supported upon the jack 200, is held by the operator, assisted by the spring 218 if the spring is employed, against the smoothing tools in position to be acted upon
10 by the pounding-up and blocking tools. When the machine is started the carrier lever 100 is oscillated about its pivot 92 moving the pounding-up tool with it toward and from the work, and in practice the tool
15 reciprocates in its guideway in the carrier lever so that it forces the upper material on the shoe bottom downwardly toward the innersole and inwardly away from the edge of the innersole. The blocking tool is
20 moved by the carrier lever toward and from the plane of the shoe and is caused by the oscillation of the lever to reciprocate in its guideway and to strike the shoe after the pounding-up tool has engaged the shoe bot-
25 tom and therefore position the blocking tool vertically by arresting the downward movement of the carrier lever. As the blocking tool is impelled forwardly in its guideway into engagement with the side of the shoe
30 the light spring 149 is compressed until the rear face of the tool comes into contact with the collar 147 on the shank of the tool. During the compression of this spring the tool may rock about its pivot 143 to adapt
35 its position to the contour and position of the shoe. When the collar 147 on the shank engages the rear face of the tool the tool will be actuated forwardly against the shoe with the full force produced by its momen-
40 tum and the expansion of spring 154. If the operation of the blocking tool is not desired the tool can be rendered inoperative by forcing it into a retracted position in its guideway and securing it by the locking
45 pin 151, or it may be retracted by moving the device 165 to the rear and may be locked by turning said device to bring its half sleeve or projection into engagement with
50 the outer face of the half sleeve or projection of the device 167. In presenting the shoe in position to be operated upon by the pounding-up tool and the blocking tool the shoe may be pressed against the smoothing tools with sufficient force to rub out and
55 smooth wrinkles or uneven places in the portion of the shoe engaged by the smoothing tools. The faces 175 of these tools will act upon the edge of the shoe for smoothing and evening it and preferably the
60 smoothing tools will vibrate with the machine and rock about the pivotal connections with their supports for beating the side and edge of the shoe. If the smoothing tools are heated they will also iron the
65 portions of the side and edge of the shoe

engaged by them. While good results can be obtained by using one smoothing tool located in position to act on the stock after it has been acted upon by the pounding-up and blocking devices, preferably two tools
70 will be used and when they are heated the tool which acts upon the stock in advance of the action of the blocking and pounding-up tools will heat and soften the stock, thus preparing it for the action of the blocking
75 tool, while the tool which is located in position to act on the stock after it has been acted upon by the pounding-up and blocking tools will iron the upper, removing any wrinkles which may remain and also any
80 marks which may not have been obliterated or may have been made by the blocking tool. The latter smoothing tool thus acts to iron and finish the portion of upper at and adjacent to the edge of the shoe which is
85 not conveniently accessible for finishing after the sole of the shoe has been attached. When operating on some kinds of shoes the use of the blocking tool may be dispensed with and the smoothing and ironing tools
90 alone depended upon for shaping and finishing the side and edge of the shoe.

When shoes having vamps or tips of enameled leather are being operated upon the use of one or more heated tools, as 171,
95 serves to soften the enameled leather to prepare it for the action of the blocking tool if that tool is used, and to make more effective the rubbing action of the smoothing tools. In addition to this the heat seems to
100 shrink the enamel the result being that the wrinkles are obliterated. This removal of the wrinkles is probably facilitated by the rubbing contact of the tool 171 against the shoe, but this invention is of course not limited to a construction in which the heating
105 means contacts with the work.

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

1. In a machine of the class described, a blocking tool, a support upon which the blocking tool is mounted to move in two directions, means for holding the tool in a
115 normal central position with relation to its supporting means, and mechanism for actuating the tool.

2. In a machine of the class described, the combination with a blocking tool, and a support therefor, of mechanism for actuating the tool, and a single connection between the blocking tool and its support constructed
120 and arranged to permit the blocking tool both to be turned by contact with the work and also to yield bodily backward with relation to the support when the tool strikes the work.

3. In a machine of the class described, the
130

combination with a blocking tool, of supporting means, and actuating means therefor constructed and arranged to cause the blocking tool to strike the work lightly, then yield bodily backward with relation to its supporting means, and then press against the work with greater force.

4. In a machine of the class described, the combination with a blocking tool, of supporting means, and actuating means comprising a light spring arranged to permit bodily yielding movement of the tool backwardly when the tool strikes the work, and a heavier spring for subsequently forcing the tool against the work with increased pressure.

5. In a machine of the class described, the combination with a blocking tool, of supporting means with relation to which the tool is movably mounted, and actuating means comprising a light spring arranged to allow bodily, backward, yielding movement of the tool when the tool strikes the work to permit the tool to position itself according to the contour of the surface of the work, and a heavier spring for subsequently forcing the tool against the work with increased pressure.

6. In a machine of the class described, the combination with mechanisms for operating upon a shoe, and actuating means therefor, said mechanisms comprising a rest for the edge of the shoe and means for blocking the shoe, of means for rendering the blocking means inoperative by its actuating means without rendering the other mechanisms for operating upon the shoe inoperative with relation to their actuating means, all while the edge rest is continued in its operative position.

7. In a machine of the class described, the combination with means for pounding the shoe and means for blocking the shoe, of means for rendering one of said means inoperative while the other means continues in operation.

8. In a machine of the class described, the combination with a blocking tool and a carrier lever in which the blocking tool is mounted for longitudinal movement, of a device operatively connected with the blocking tool and constructed and arranged for movement to retract the blocking tool and lock it in inoperative position.

9. In a machine of the class described, the combination with a blocking tool having a supporting shank and a carrier lever in which the shank is mounted for longitudinal movement, of a stop on the carrier lever and a half sleeve mounted on the shank and adapted to be turned into position to cooperate with the stop on the lever for holding the blocking tool in a retracted position.

10. In a machine of the class described, the combination with means for supporting

a shoe, and a blocking tool movable toward and from the plane of the shoe bottom, and also movable in a plane substantially parallel to the shoe bottom for striking the shoe, of means for discontinuing one of said movements while the other movement continues.

11. In a machine of the class described, the combination with blocking means and smoothing means, of mechanism for actuating said blocking means and said smoothing means, and means for rendering one of said means inoperative while the other means continues to be operative.

12. In a machine for conforming the marginal portion of an upper to a last, the combination with a support and means whereby said support is vibrated, of a smoothing device loosely mounted on said support to move relatively thereto in the direction of the vibratory movement, said parts being constructed and arranged to cause the vibration of the support to actuate the smoothing device for delivering light rapid blows to the shoe.

13. In a machine of the class described, means for smoothing the vamp on the side of a shoe, comprising a tool having an acting face shaped to conform substantially to the surface of the work presented to it and mounted to turn about a plurality of parallel axes located one above the other and occupying constant relations to one another.

14. In a machine of the class described, means for smoothing the vamp on the side of a shoe, comprising a tool having an acting face shaped to conform substantially to the surface of the work presented to it, means for supporting the tool, and connections between the tool and its supporting means constructed and arranged to permit the tool to yield bodily toward the supporting means and also to have a rocking movement about parallel axes located respectively above and below the middle of the work engaging surface of the tool.

15. In a machine of the class described, means for smoothing the side of a shoe, comprising a tool having an acting face shaped to conform substantially to the surface of the work presented to it, means for supporting the tool, and two pivotal connections between the tool and its supporting means both of which connections are constructed and arranged to permit the tool to move bodily toward and from the supporting means and to permit the tool to turn about a plurality of centers, and means for yieldingly holding the tool in a normal position.

16. A machine of the class described, comprising a finishing tool having a continuous uninterrupted working surface and constructed and arranged to engage the upper of a shoe at the side of the shoe and formed to overhang and contact with the

edge formed by the junction of the side and bottom faces of the shoe for smoothing said edge of the shoe, and means for imparting to the tool rapid vibratory movements or impulses while maintaining substantially continuous engagement of the tool with the work.

17. A machine of the class described comprising a tool having a face formed to engage the side of a lasted shoe and to overlie and engage the edge of the shoe, and means constructed and arranged to impart to said tool short vibratory movements directed inwardly and downwardly against the surfaces being treated while maintaining substantially continuous engagement with said surfaces to smooth the edge of the shoe.

18. A machine of the class described, comprising a side beating tool constructed and arranged to engage the edge of a shoe and to overhang the bottom of the shoe, said machine having provision for causing said tool to deliver light rapid blows directed inwardly upon the edge of the shoe while maintaining substantially continuous engagement with the side of the shoe.

19. A machine of the class described, comprising a tool constructed and arranged to engage the side and edge of a shoe, and a support upon which the tool is mounted for rocking movement, said machine having provision for vibrating the support substantially perpendicularly to the face being treated to cause the tool to deliver light rapid blows or impulses against the side of the shoe while maintaining substantially continuous engagement with the side of the shoe and permitting rocking movement inwardly and outwardly over the shoe edge.

20. A machine of the class described, comprising a tool for smoothing the upper of a lasted shoe, a support upon which the tool is pivotally mounted to turn on an axis that is substantially parallel with the edge of the shoe, and means for vibrating the support to cause the tool to rock about said pivotal connection for beating the upper while maintaining substantially continuous engagement with the shoe.

21. In a machine of the class described, the combination with means for pounding-up a shoe and means for blocking the shoe, of additional means arranged to overhang and smooth the edge of the shoe.

22. In a machine of the class described, the combination with means for pounding-up a shoe and means for blocking the shoe, of smoothing means constructed and arranged to act on the edge of the shoe in the rear of the pounding-up and blocking means and in a direction at an angle to the movement of the pounding-up means and the blocking means.

23. In a machine of the class described,

the combination with means for supporting a shoe, of a tool constructed and arranged for engaging the upper at the side and edge of a lasted shoe mounted on said support, means for imparting light rapid vibratory movements or impulses to the tool while maintaining the tool in substantially continuous engagement with the shoe, and means for heating the tool.

24. In a machine of the class described, the combination with a jack for supporting a shoe, of a tool mounted in operative relation to the jack for engaging the edge of the shoe, means for actuating the tool from and toward the surface being treated to beat the edge of the shoe, and means for heating the tool to cause it to iron the edge of the shoe.

25. In a machine of the class described, the combination with a tool constructed and arranged to engage the side of the shoe and to overhang the shoe bottom for smoothing the edge of the shoe, of means for heating the tool, and means for imparting short vibratory movements or impulses to the tool while it maintains substantially continuous engagement with the shoe.

26. In a machine of the class described, the combination with a blocking tool and means for actuating it to beat the upper of a shoe, of heated means arranged with relation to the blocking tool to heat the upper in advance of the action of the blocking tool.

27. In a machine of the class described, the combination with a blocking tool for beating the upper at the side of the shoe, and means for operating the blocking tool, of means operating after the beating operation to make a local application of heat to the beaten upper and simultaneously to smooth and rub it to impart a surface finish and polish thereto, together with mechanism for giving said finishing means a rapid series of light vibratory movements.

28. In a machine of the class described, the combination with a blocking tool for beating the upper at the side of the shoe, and means for operating the blocking tool, of heated means arranged to engage the shoe immediately in advance of the action of the blocking tool to make a local application of heat to the upper to prepare it for the beating operation, together with means arranged relatively to the blocking tool for thereafter making a further local application of heat to the beaten upper and simultaneously therewith rubbing the upper and smoothing it.

29. In a machine of the class described, a finishing tool having a continuous uninterrupted face formed to engage the side of a shoe and to overhang the bottom of the shoe to permit the said tool to treat the upper and lateral sides of the edge formed by the

junction of the side and bottom faces of the shoe for smoothing said edge of the shoe, combined with means for imparting short vibratory movements to the tool while it remains in substantially continuous contact with the shoe, and means for making local application of heat to the said edge of the shoe simultaneously with the operation of said tool to facilitate the finishing action thereof.

30. In a machine of the class described, the combination with a vibratory ironing tool, of means for heating the tool, comprising a relatively fixed heater, a contact plate slidably mounted on the heater, and yielding means for holding the contact plate in contact with the ironing tool in the different positions assumed by the latter.

31. In a machine of the class described, the combination with a plurality of relatively movable ironing tools, of a heater, a contact plate connected to the heater for sliding and rocking movement, and means for maintaining the contact plate in engagement with the tools in the different relative positions assumed by the latter.

32. In a machine of the class described, the combination with a blocking tool for beating the upper at the side of a shoe, and of means operating immediately in advance of the action of the blocking tool for making local application of heat to the vamp on the side of the shoe to soften the leather and prepare it for the succeeding beating operation.

33. In a machine for operating upon shoes having enameled leather uppers, the combination with a blocking tool for beating the upper at the side of a shoe, and mechanism for operating the blocking tool, of means operating immediately in advance of the action of the blocking tool to make a local application of heat to the upper to shrink the enamel thereon to obliterate wrinkles and to soften the enamel to condition it for the succeeding beating operation,

and mechanism to impart short vibratory movements or impulses to said means.

34. In a machine for operating upon shoes having enameled leather uppers, the combination with a tool for beating the upper at the side of a shoe, and means for operating the beating tool, of means arranged relatively to the blocking tool to make a local application of heat to the enamel directly after the action of the blocking tool thereon and simultaneously to smooth and finish the heated enamel to remove surface blemishes and inequalities.

35. In a machine of the class described, means for pounding-up a shoe, and means for blocking the shoe, combined with means arranged to act on the shoe immediately in advance of said pounding and blocking means for heating the shoe upper to prepare it for the action of the pounding-up and blocking means.

36. A machine for conforming the marginal portion of an upper to a last, comprising means for beating the bottom of the shoe, means for beating the side of the shoe, and means for actuating the beating means, one of said beating means being arranged to be rendered inoperative while the other beating means continues in operation.

37. A machine of the class described, having, in combination, a shoe bottom beating tool and its carrier provided with the laterally projecting flange *d*, of the lever 90 provided with oppositely disposed spring pressed plungers 99 arranged to engage the front and back faces of the flange *d*, and devices 95 for adjusting relatively the forces with which the two plungers are actuated and thereby determining the position of the carrier with relation to the lever.

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

ORRELL ASHTON.

Witnesses:

WARREN G. OGDEN,
ARTHUR L. RUSSELL.