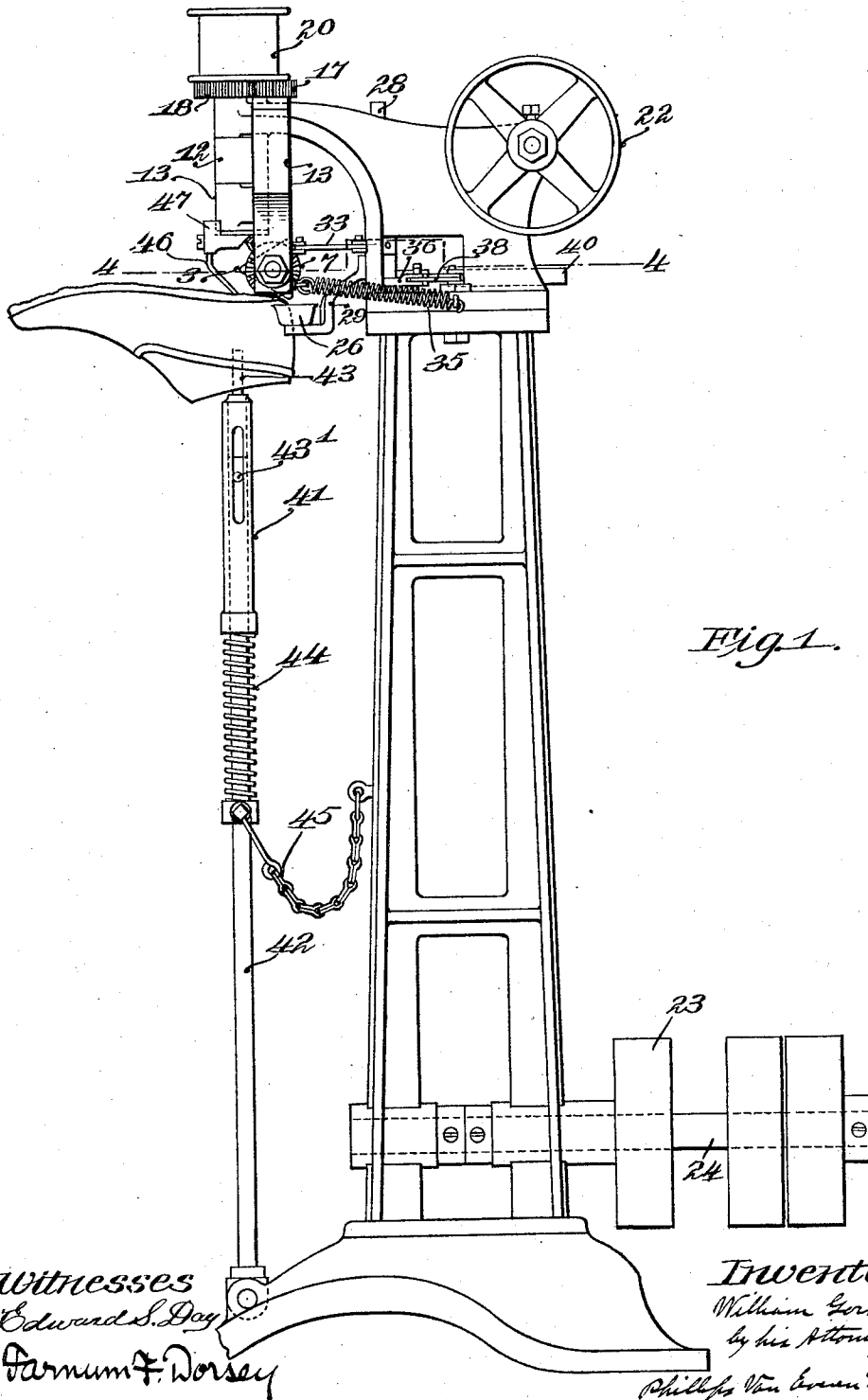


W. GORDON.
MACHINE FOR BEATING OUT SHOE UPPERS.
APPLICATION FILED MAR. 23, 1905.

1,030,578.

Patented June 25, 1912.

3 SHEETS—SHEET 1.



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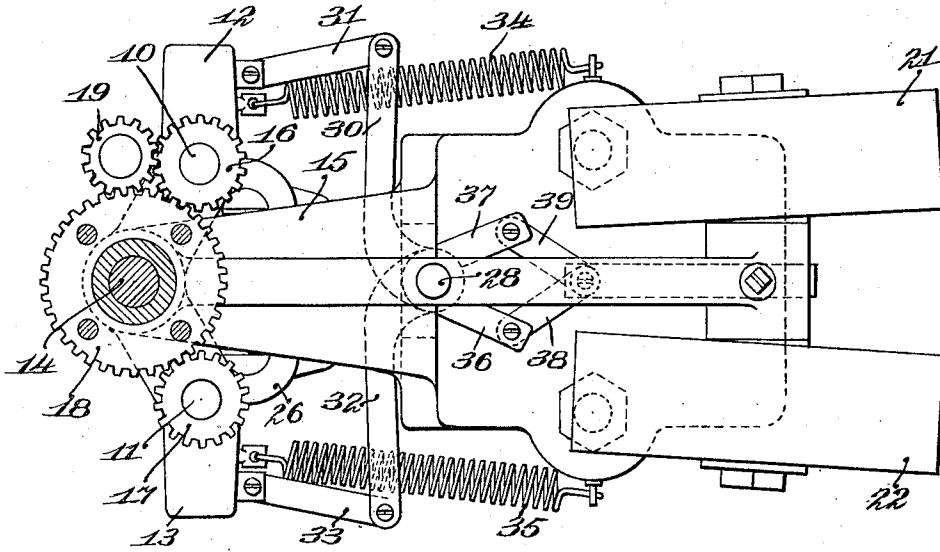
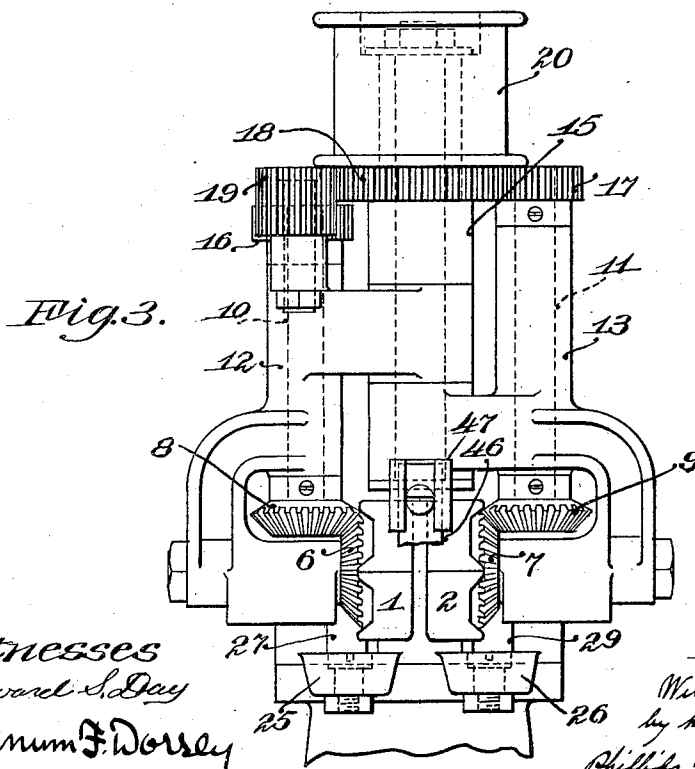


Fig. 2.



Witnesses
Edward S. Day
Farnum F. Dorsey

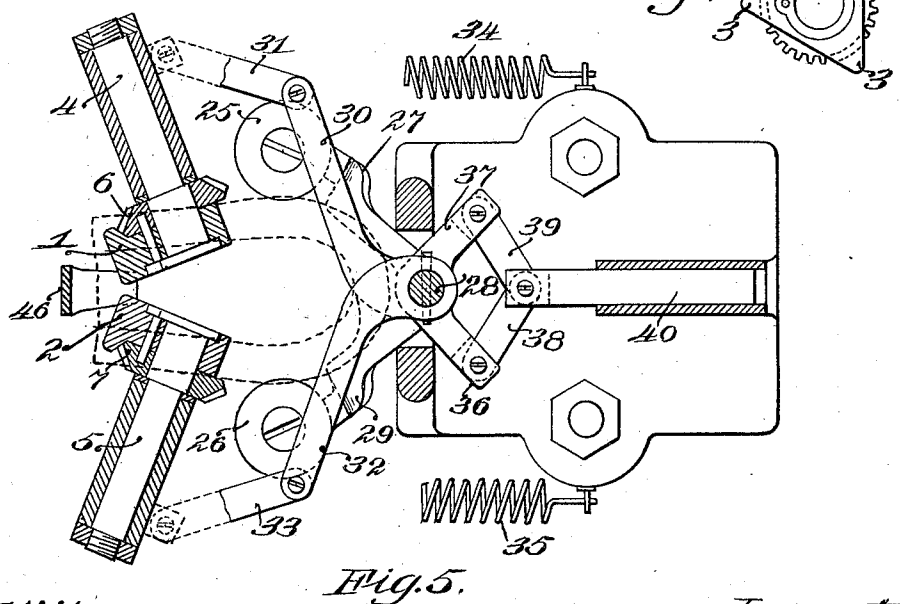
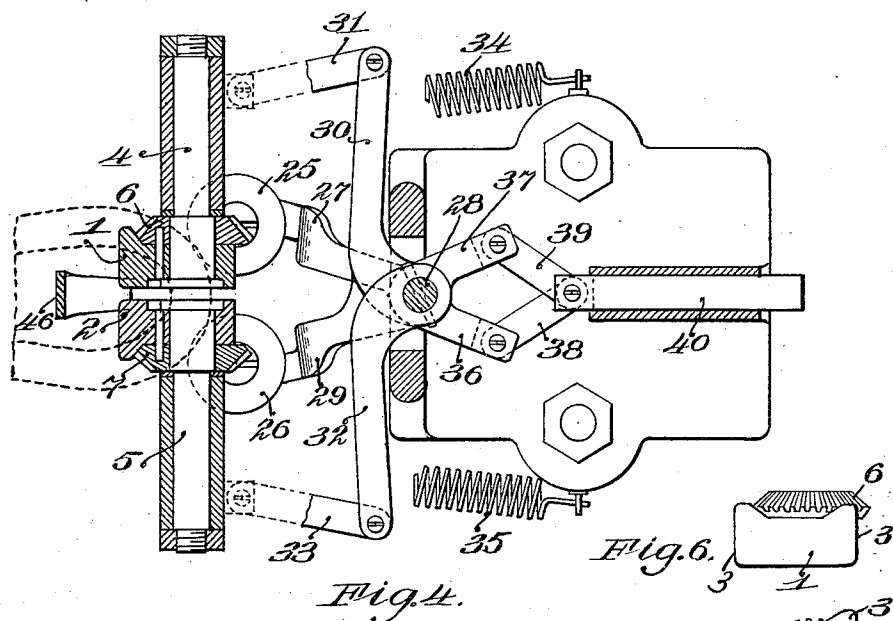
Inventor
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UNITED STATES PATENT OFFICE.

WILLIAM GORDON, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO UNITED SHOE MACHINERY COMPANY, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

MACHINE FOR BEATING OUT SHOE-UPPERS.

1,030,578.

Specification of Letters Patent.

Patented June 25, 1912.

Application filed March 23, 1905. Serial No. 251,618.

To all whom it may concern:

Be it known that I, WILLIAM GORDON, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Machines for Beating Out Shoe-Uppers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The present invention relates to a machine for beating out shoe uppers.

In the manufacture of shoes it is desirable that the lower edge of the upper be pulled tightly and smoothly over the edge of the heel portion of the insole and be pressed closely against the surface of the insole in order that the outsole may fit close to the upper and the upper present a neat and finished appearance in the completed shoe.

The object of the present invention is to provide a machine by which these operations can be performed quickly and in a satisfactory manner.

In accordance with the present invention the operation of pressing the lower edge of the upper closely against the surface of the insole is performed by means of a tool which acts to deliver a series of blows upon the lower edge of the upper and beat it out upon the insole. This beating action of the tool not only presses the upper closely against the surface of the insole, but also forms a permanent sharp bend in the upper at the edge of the insole so that this portion of the upper presents a neat and finished appearance in the completed shoe. In the illustrated embodiment of the invention hereinafter described a rotary tool is employed, provided with a series of beaters which deliver a series of blows upon the lower edge of the upper and at the same time exert a rubbing or wiping action upon the upper from the edge of the insole toward the medial line of the sole, which tends to smooth out the upper and polish the upper at the edge of the insole as well as to draw the upper toward the medial line of the sole.

In the machine hereinafter described as embodying the preferred form of the invention two rotary tools are provided arranged to act respectively upon the shoe upper at opposite sides of the shoe, each tool being provided with a series of beaters. By this

arrangement of the beating out tools two series of rotating beaters are provided which act simultaneously to beat out the lower edge of the upper upon the insole at opposite sides of the shoe, and the provision of these beaters is considered to constitute a feature of the invention regardless of the specific manner in which the beaters are supported and actuated. To produce the best results, however, it is desirable that the beaters should be so mounted as to be capable of accommodating themselves to the shape of the sole being operated upon, and particularly to the varying curvatures of the edge of the sole, and in the preferred embodiment of the invention the beaters are so mounted.

The features of invention above referred to may be embodied in a machine in which the beating out tool or tools are alone relied upon to beat out the lower edge of the upper and impart a finished appearance to the upper at the point where it bends over the edge of the insole. In the preferred embodiment of the invention, however, two upper finishing tools are also provided arranged to act upon the upper at the edge of the insole. These tools are yieldingly pressed toward each other and are thus allowed to automatically conform to the varying curvatures of the edge of the sole. While these tools cooperate with the beating out tools in smoothing out the upper and imparting a finished appearance to the upper at the point where it bends over the edge of the insole, it will be apparent from the specific description hereinafter contained that they are also capable of being used alone or in connection with other devices for acting upon the shoe upper, and it is accordingly considered that a feature of the invention consists in the provision of upper finishing tools arranged to act simultaneously upon the upper at opposite edges of the insole, and to automatically conform to the varying curvatures of the edge of the sole.

In addition to the features of invention above referred to, the present invention also consists in certain devices, combinations and arrangements of parts hereinafter described and claimed, the advantages of which will be obvious to those skilled in the art from the following description.

Referring now to the drawings accompanying this application, Figure 1 is a view in side elevation of a machine for beating

out shoe uppers embodying the various features of the present invention in their preferred form. Fig. 2 is a plan view with the belt pulley at the front of the machine removed; Fig. 3 is a view in front elevation of the head of the machine; Fig. 4 is a plan view taken on the line 4—4 of Fig. 1; Fig. 5 is a plan view similar to Fig. 4 but showing the parts in a different position; Fig. 6 is a plan view of one of the beating out tools removed from the machine; and Fig. 7 is an end view of the beating out tool illustrated in Fig. 6.

The beating out tools are indicated at 1 and 2. As is clearly illustrated in Figs. 6 and 7, each tool is triangular in shape so as to present at its periphery a series of working surfaces in the form of projections or blades 3 which, as the tool is rotated, deliver a series of blows upon the lower edge of the upper and pass over the upper with a rubbing or wiping action. The beating out tools are mounted adjacent to each other upon the inner ends of studs 4 and 5 and are removably secured to bevel gears 6 and 7 mounted to rotate upon the studs 4 and 5 respectively. Bevel gears 8 and 9 secured upon the lower ends of vertical shafts 10 and 11 mesh respectively with the bevel gears 6 and 7 and through these bevel gears a rapid rotation is imparted to the beating out tools during the operation of the machine. When in normal position, that is, when there is no work in the machine, the studs 4 and 5 are in alinement with each other and the beating out tools are in close proximity to each other as illustrated in Fig. 4. When in this position the tools are adapted to act upon the edge of a shoe upper at the rear end of the heel and beat out the upper upon the insole, the wiping action of the working surfaces 3 across the turned edge of the upper also tending to pull the upper over the edge of the sole. In order to enable the beating out tools to act to the best advantage upon the upper at the sides of the heel the tools are moved outwardly and their angular position with relation to the medial line of the shoe changed as indicated in Fig. 5. To allow the tools to be so moved the studs 4 and 5 are secured in the lower ends of brackets or arms 12 and 13 which are pivotally mounted upon a vertical stud 14 secured in an overhanging arm 15 of the machine frame. The arms 12 and 13 extend outwardly and rearwardly from the stud 14 so that the axes of the studs 4 and 5 are located in a vertical plane at the rear of the vertical stud 14. By reason of this arrangement a swinging movement of the arms 12 and 13 about the stud 14 changes the angular position of the beating out tools with relation to the medial line of the sole, and at the same time moves the tools bodily toward or

from each other. The shafts 10 and 11 are mounted in the arms 12 and 13 and are provided at their upper ends with pinions 16 and 17. Upon the upper end of the stud 14 is mounted a gear 18 which drives the pinion 17 directly and the pinion 16 indirectly through an intermediate pinion 19 mounted on the arm 12. During the swinging movements of the arms 12 and 13 the pinions 16, 17 and 19 move bodily about the axis of the stud 14 as a center and thus remain in operative position with relation to the gear 18 so that the beating out tools are continuously rotated regardless of any swinging movements which are imparted to the arms 12 and 13. A continuous rotation is imparted to the gear 18 by means of a belt pulley 20 secured to the gear, which pulley is driven by a belt passing over guiding pulleys 21 and 22 at the rear upper portion of the machine, and over a pulley 23 secured to the driving shaft 24.

In addition to the beating out tools 1 and 2 the machine illustrated in the drawings is also provided with upper finishing tools 25 and 26 which as shown are in the form of rolls shaped to bear against the upper at the edge of the sole and smooth and iron the upper. At their upper ends these rolls flare outwardly so as to fit snugly against the edge of the insole and the counter portion of the upper. The rolls are yieldingly pressed toward each other and are thus allowed to move toward and from the medial line of the sole so as to conform automatically to the varying curves of the sole. In addition to allowing the tools 25 and 26 to conform automatically to the curves of the sole the movements of these tools toward and from each other are also utilized to change the position of the beating out tools. To this end the tool 25 is mounted upon an arm 27 which is rigidly secured to a vertical pin 28 mounted to rotate in suitable bearings in the frame of the machine, and the tool 26 is mounted upon an arm 29 mounted to swing freely on the pin 28 as a pivot. An arm 30 is rigidly connected to or made integral with the arm 29, and is connected at its outer end by a link 31 to the swinging arm 12. A similar arm 32 and link 33 connect the pin 28 and the swinging arm 13. The tool 25 is thus connected to the arm 13 and the tool 26 to the arm 12 so that swinging movements are imparted to the arms whenever the tools 25 and 26 move toward and from each other. The arms 12 and 13 are normally held in a position in which the axes of the studs 4 and 5 are in alinement by means of coiled springs 34 and 35 connecting the arms with the frame of the machine. In order to cause the tools 25 and 26 and the swinging arms 12 and 13 to move in unison and to the same extent, the arms 27 and 29 are provided with rear-

ward extensions 36 and 37 which are connected by links 38 and 39 to a horizontal slide 40 mounted to reciprocate in a guideway on the machine frame.

5 The shoe to be operated upon by the beating out and upper finishing tools may be presented to the tools while held in the hand of an operator. To relieve the operator of this work, however, the machine illustrated in the drawings is provided with a shoe support or jack arranged to support a lasted shoe while being subjected to the operation of the tools. This jack consists of a sleeve 10 41 mounted upon the upper end of a rod 42 and provided with a last pin 43. The sleeve 41 is prevented from turning on the rod 42 by means of a pin 43' projecting from the rod through a slot in the sleeve. A spring 44 coiled around the rod 42 and interposed 15 between a fixed collar on the rod and the lower end of the sleeve 41 serves as a yielding support for the sleeve and allows the shoe to be depressed slightly during the action of the beating out tools. The rod 20 42 is pivotally mounted at its lower end in the base of the machine frame so that the shoe can be moved beneath the beating out tools. A chain 45 connecting the rod 42 with the frame of the machine limits the 25 outward movement of the rod.

The machine illustrated in the drawings and above described is designed particularly for operation upon the upper at the heel portion of a shoe. The shoe is presented to the machine as indicated in Figs. 1 and 4, 35 the tools 25 and 26 bearing against the upper at the rear end of the heel of the insole and the beating out tools engaging the lower edge of the upper and beating it out against the surface of the insole. As the shoe is forced toward the rear the upper finishing tools 25 and 26 are separated, and 40 simultaneously the beating out tools are moved bodily away from each other and their angular position with relation to the medial line of the shoe changed as indicated in Fig. 5. The work engaging surfaces of the beating out tools deliver a series of blows upon the lower edge of the upper and 45 wipe across the upper from the edge of the upper toward the medial line of the shoe, so that the upper is pressed smoothly against the surface of the insole, and at the same time the upper is stretched tightly and 50 smoothly over the edge of the insole, a permanent sharp bend being formed in the upper at the point where it passes over the edge of the sole. Simultaneously with the beating out operation the upper finishing 55 tools 25 and 26 smooth and iron the upper at the edge of the insole and assist the beating out tools in imparting a neat and finished appearance to the upper at this point. To assist the operator in presenting the shoe 60 properly to the beating out and finishing

tool a guide 46 is provided adjustably secured to a block 47 which is secured upon the lower end of the vertical stud 14.

The machine illustrated in the drawings may be used to beat out the lower edge of 70 the upper upon an insole after the upper has been drawn over the last, but before it has been lasted over the insole, or, it may be used upon the shoe after the upper has been lasted. In the latter case the drawing 75 action of the beating out tools upon the upper is less marked, but the movement of the working surfaces of the tools over the upper act in the same manner as when the beating out operation is performed before 80 the shoe is lasted to press the upper closely against the surface of the insole and to smooth and finish the upper at the point where it passes over the edge of the insole. The machine is also adapted for op- 85 eration upon the toe portion of a shoe either before or after the upper is lasted over the insole.

The nature and scope of the invention having been indicated and a machine embodying the invention in its preferred form having been specifically described, what is claimed is:—

1. A machine for beating out shoe uppers, having, in combination, two independent series of rotating beaters arranged to act simultaneously upon the lower edge of a shoe upper at opposite sides of the shoe and beat out the lower edge of the upper upon the insole, means for supporting the beaters arranged to permit a change in the relative positions of the two series and means for actuating said beaters. 95 100

2. A machine for beating out shoe uppers, having, in combination, two independent series of rotating beaters acting simultaneously to beat out the lower edge of a shoe upper upon the insole at opposite sides of the shoe and to draw the upper over the edge of the insole toward the medial line of the insole, means for supporting the beaters arranged to permit a change in the relative positions of the two series and means for actuating said beaters. 105 110

3. A machine for beating out shoe uppers, having, in combination, two series of rotating beaters arranged to act respectively upon the lower edge of a shoe upper at opposite sides of the shoe and beat out the lower edge of the upper upon the insole, and means for supporting said beaters having provision for allowing said beaters to accommodate themselves to the shape of the sole. 115 120

4. A machine for beating out shoe uppers, having, in combination, two rotary tools arranged to act simultaneously upon the lower edge of a shoe upper at opposite sides of the shoe, each of said tools being provided with a series of beaters for beating out the lower 125 130

edge of the shoe upper upon the insole, and means for varying the angular position of said tools with relation to the medial line of the sole.

5 5. A machine for beating out shoe uppers, having, in combination, two tools arranged to act simultaneously upon the lower edge of a shoe upper at opposite sides of the shoe, means for actuating said tools to beat out
10 the lower edge of the upper upon the insole and means for moving said tools toward and from the medial line of the sole.

6. A machine for beating out shoe uppers, having, in combination, two rotary tools arranged to act simultaneously upon the lower
15 edge of a shoe upper at opposite sides of the shoe, each of said tools being provided with a series of beaters for beating out the lower edge of the shoe upper upon the insole, and
20 means for moving said tools toward and from the medial line of the sole and for varying their angular position with relation to said line.

7. A machine for beating out shoe uppers, having, in combination, two tools mounted to move toward and from each other and arranged to bear against the upper at the edge
25 of the insole on opposite sides of the shoe, two beating-out tools arranged to act upon
30 opposite sides of the shoe and beat out the lower edge of the upper upon the insole, means for actuating said beating-out tools, and connections between said beating-out tools and said first mentioned tools for vary-
35 ing the position of said beating-out tools.

8. A machine for beating out shoe uppers, having, in combination, two independent series of rotating beaters acting simultaneously to beat out the lower edge of a shoe
40 upper upon the insole at opposite sides of the shoe and arranged to exert a wiping action on the upper from the edge of the sole toward the medial line of the sole, means for supporting the beaters arranged to permit a
45 change in the relative positions of the two series and means for actuating said beaters.

9. A machine for beating out shoe uppers, having, in combination, upper finishing tools arranged to act simultaneously on a shoe
50 upper at opposite sides of edge of the insole and means for yieldingly supporting said tools to allow the tools to automatically conform to the varying curvatures of the edge of the sole.

55 10. A machine for beating out shoe uppers, having, in combination, two series of rotating beaters arranged to act respectively

upon the lower edge of a shoe upper at opposite sides of the shoe and beat out the lower edge of the upper upon the insole, 60 and means for supporting said beaters constructed and arranged to allow said beaters to change their angular position during the beating out operation.

11. In a machine of the class described, 65 the combination with operating tools adapted to act simultaneously upon a shoe at opposite sides, and supported for relative bodily movement, of guiding means operatively
70 connected with the tools and adapted to engage opposite sides of the shoe for positioning the tools relatively as the shoe is advanced between the tools to present different portions thereof to the action of the tools and driving mechanism directly con-
75 nected to the tools acting continuously to impart operating movements to the tools regardless of their relative bodily movements.

12. In a machine of the class described 80 the combination with tools adapted to act simultaneously upon a shoe at opposite sides, of pivotally mounted tool carrying arms, means acting on the arms to press
85 the tools yieldingly toward each other, and guides connected to the tool carrying arms and adapted to engage opposite sides of the shoe for positioning the tools relatively as the shoe is advanced between the tools.

13. In a machine of the class described the 90 combination with tools adapted to act simultaneously upon a shoe at opposite sides, and supported for relative movement, of guides adapted to engage opposite sides of the shoe and connections between the guides and tools
95 acting to separate the tools and change their angular position with relation to the medial line of the shoe sole as the shoe is advanced between the tools.

14. In a machine of the class described the 100 combination with tools adapted to act simultaneously upon a shoe at opposite sides, of pivotally mounted tool carrying arms, guides adapted to engage opposite sides of the shoe and connections between the guides
105 and tool carrying arms for swinging the arms to position the tools relatively as the shoe is advanced between the tools.

In testimony whereof I affix my signature, in presence of two witnesses.

WILLIAM GORDON.

Witnesses:

FRED O. FISH,
FARNUM F. DORSEY.