No. 706,615. Patented Aug. 12, 1902.

G. E. WARREN.

MACHINE FOR MAKING PIECED SOLES.

(Application filed Apr. 29, 1901.)

(No Model.) 3 Sheets—Sheet 1.

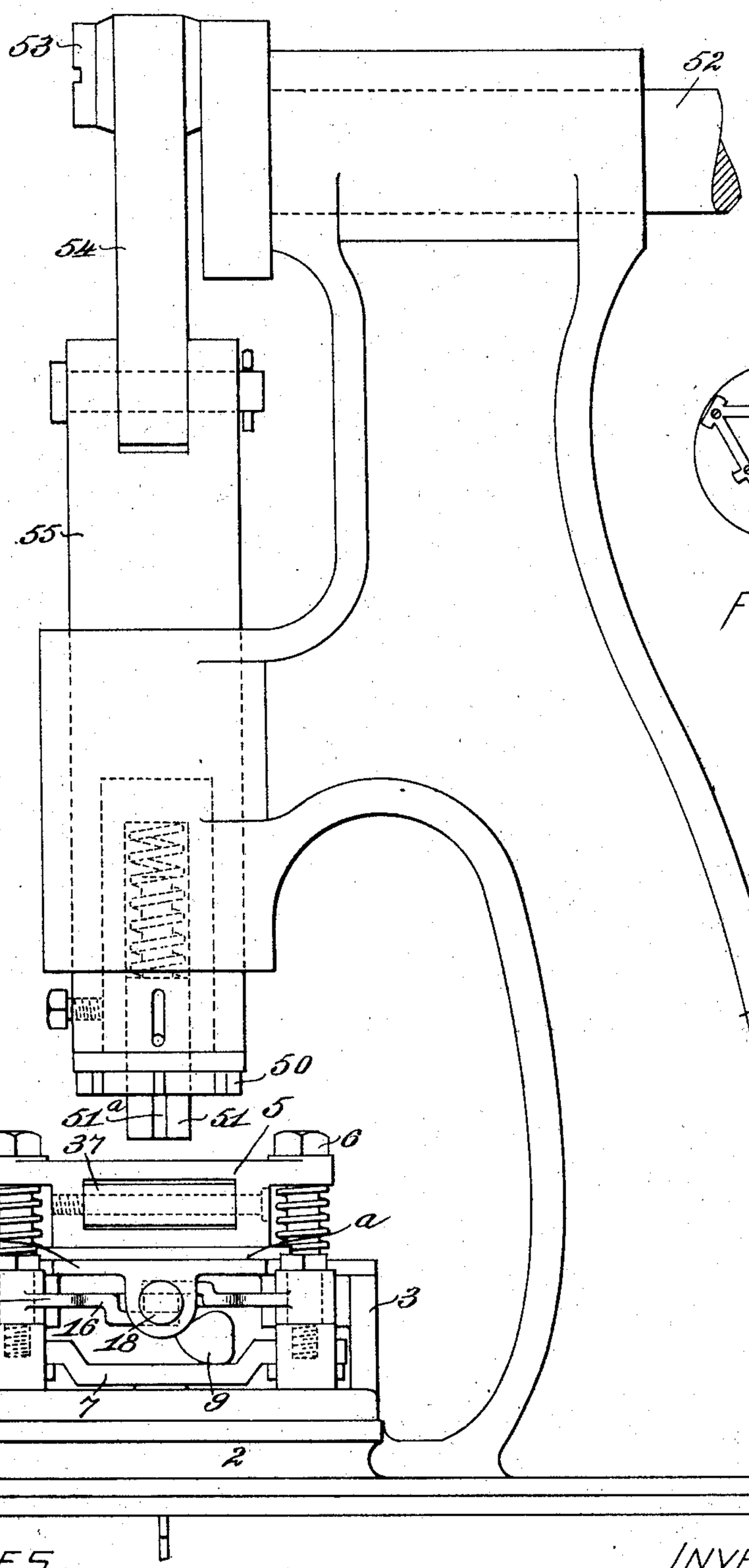

FIG. 1.

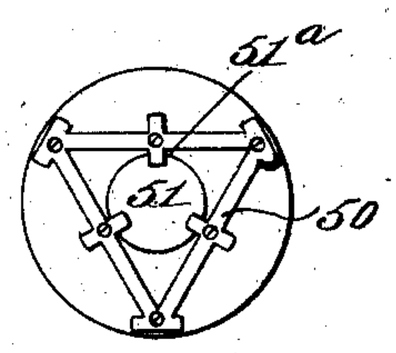

FIG. 7.

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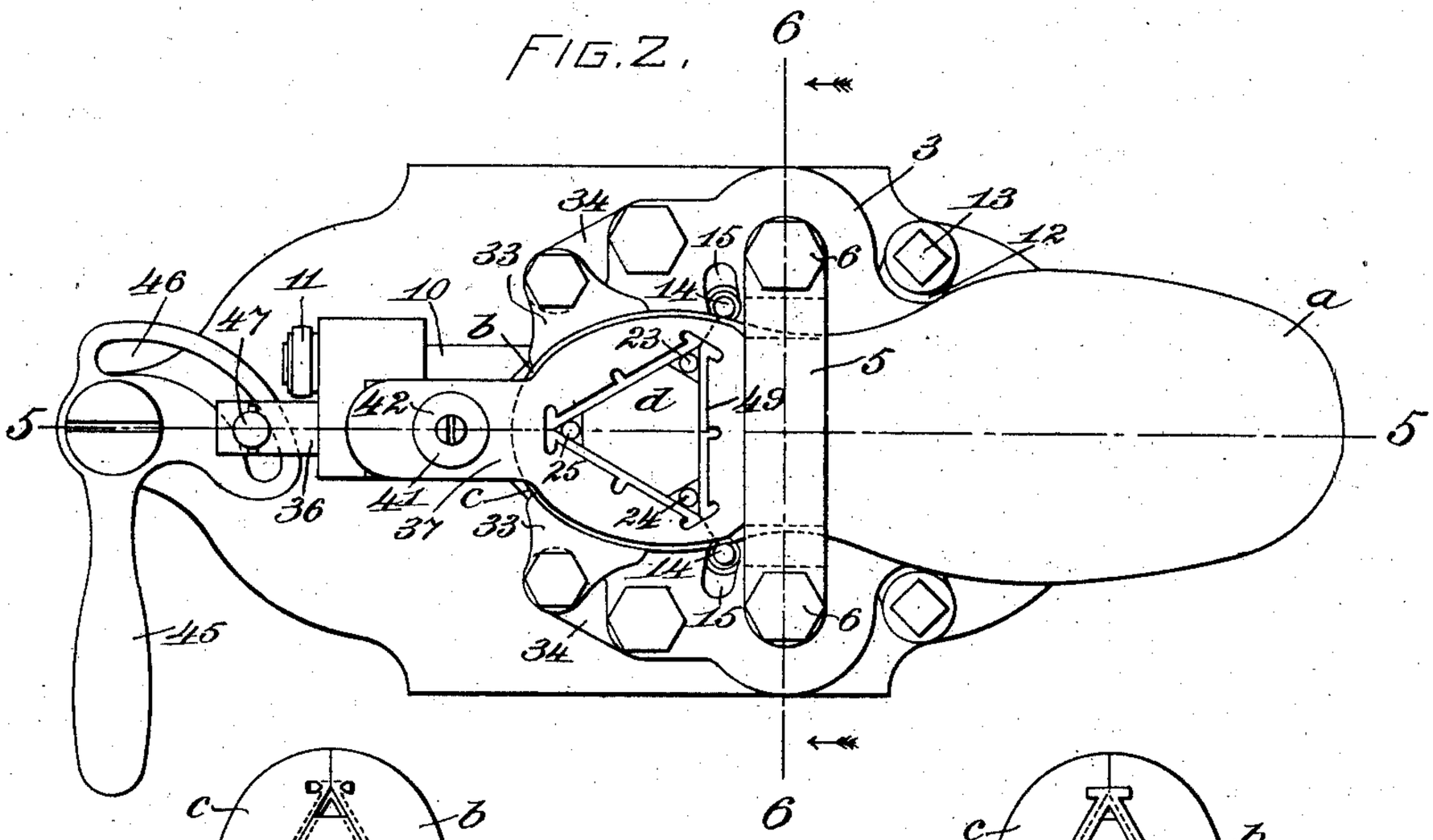
FIG. 2.



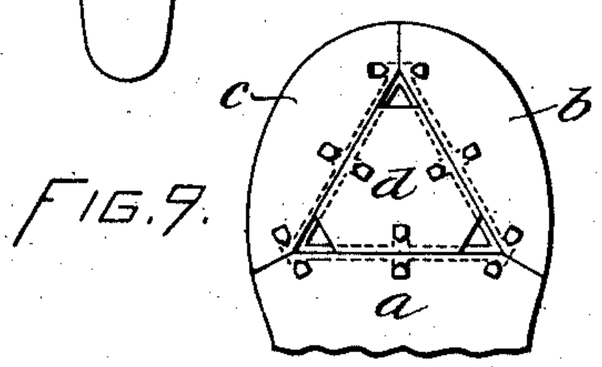


FIG. 9.

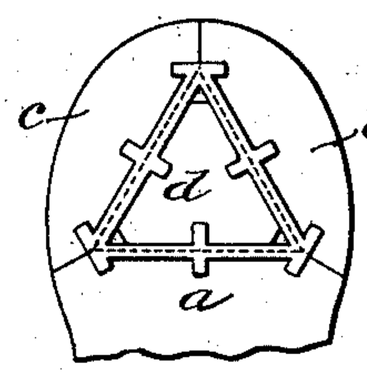


FIG. 8.

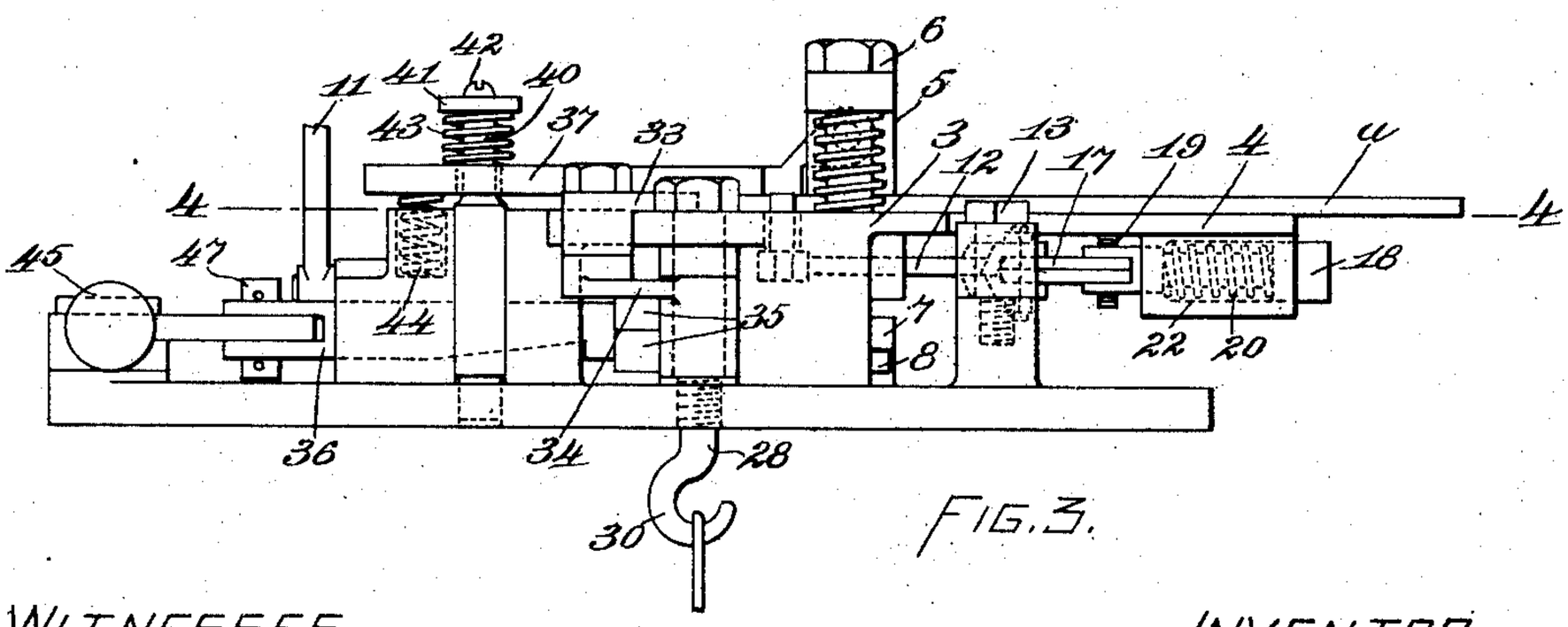


FIG. 3.

WITNESSES

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MACHINE FOR MAKING PIECED SOLES.

(Application filed Apr. 29, 1901.)

(No Model.) 3 Sheets—Sheet 3.

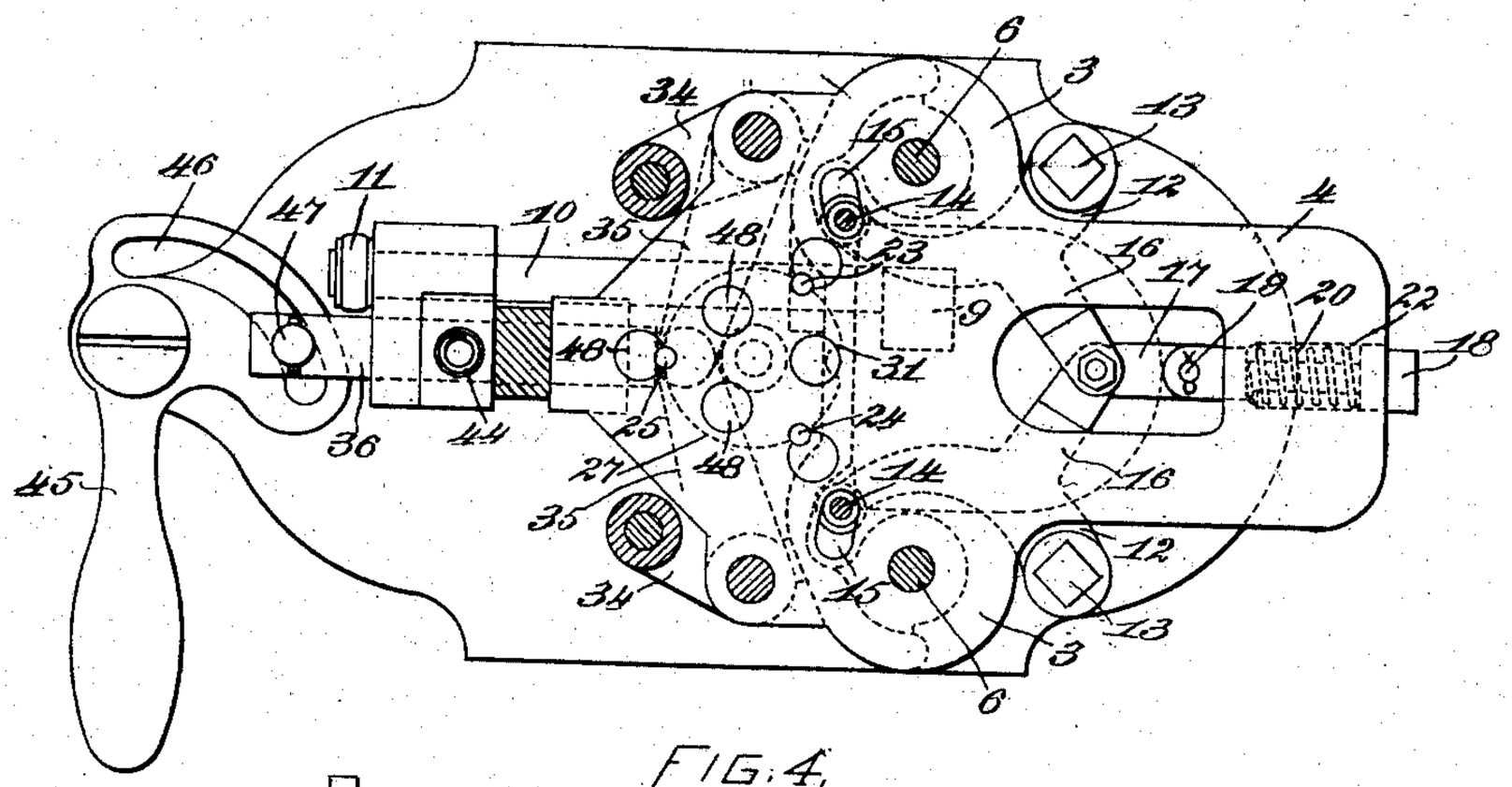

FIG. 4.

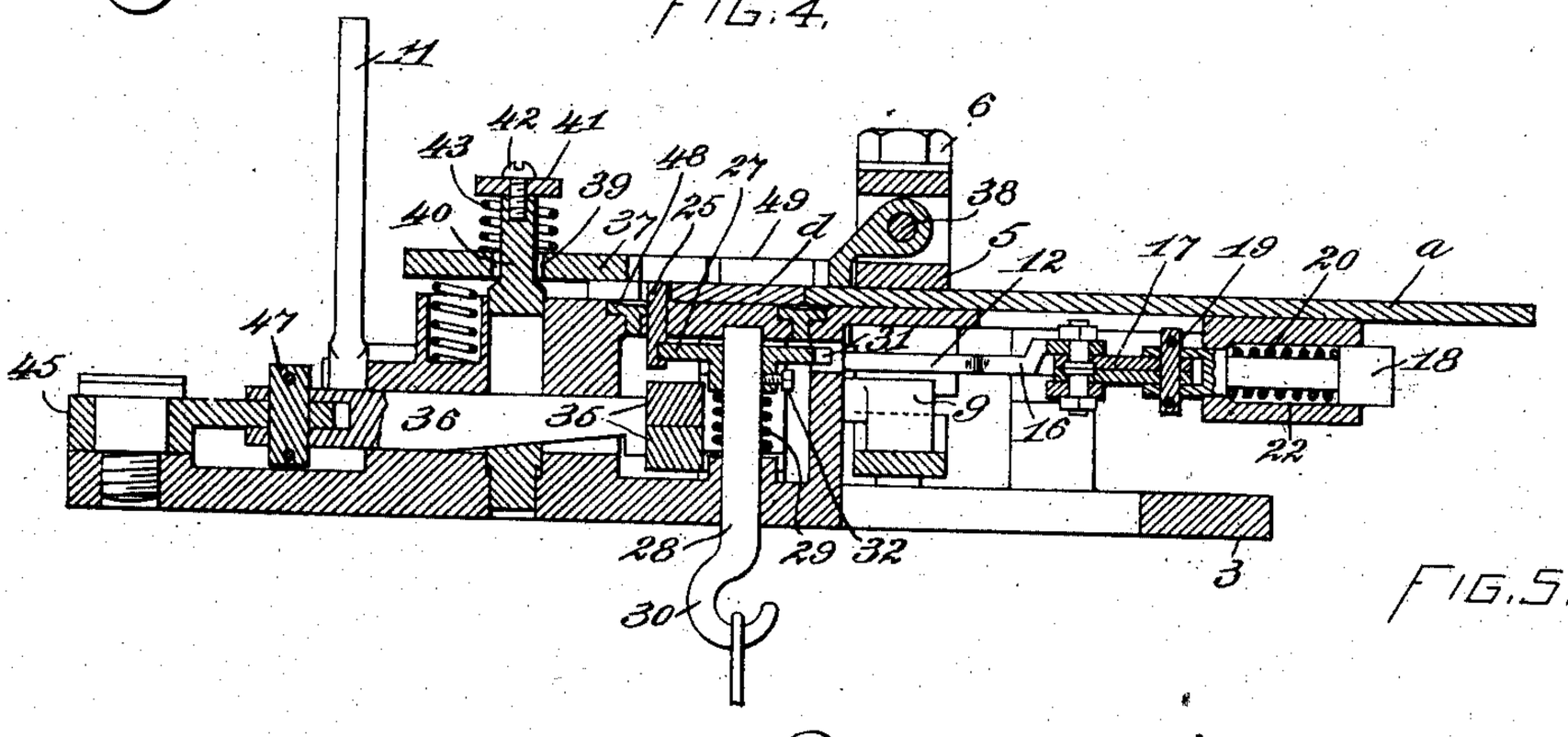

FIG. 5.

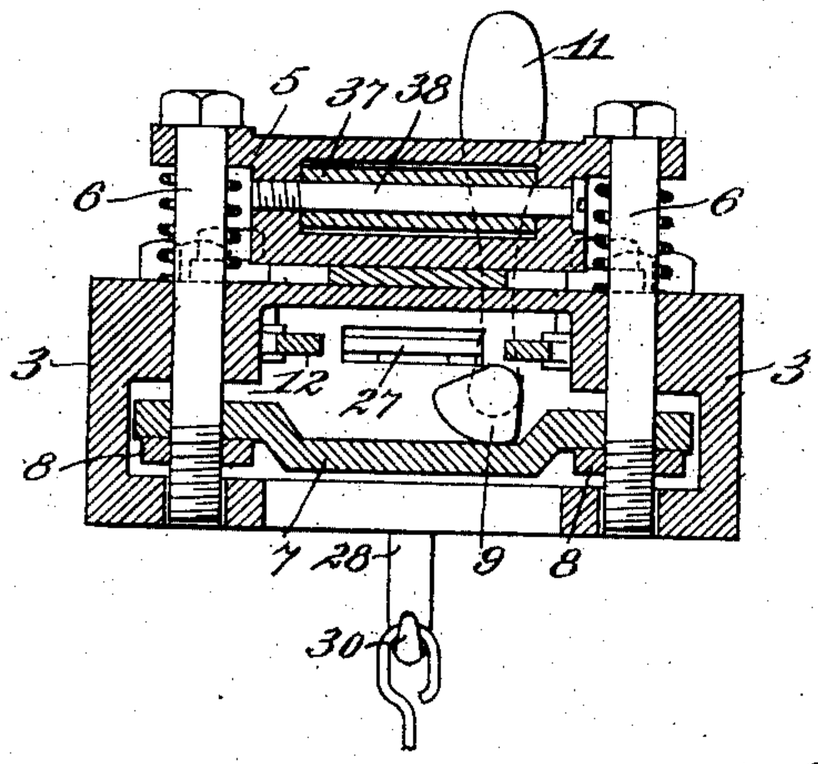

FIG. 6.

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UNITED STATES PATENT OFFICE.

GEORGE E. WARREN, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO METALLIC HEEL AND COUNTER COMPANY, OF KITTERY, MAINE, A CORPORATION OF MAINE.

MACHINE FOR MAKING PIECED SOLES.

SPECIFICATION forming part of Letters Patent No. 706,615, dated August 12, 1902.

Application filed April 29, 1901. Serial No. 57,982. (No model.)

To all whom it may concern:

Be it known that I, GEORGE E. WARREN, 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 Making Pieced Soles; 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 an improvement in machines for making pieced soles.

The object of my invention is to produce a machine to hold the pieces for a pieced sole in proper position with relation to each other in the same plane, so that they may be secured together by a uniting device or uniting devices.

Another object of my invention is to produce a machine to hold the pieces for a pieced sole in proper position with relation to each other in the same plane and which will at one operation secure in such pieces a uniting device or uniting devices.

To the above ends the present invention consists in the machine for making pieced soles hereinafter described and claimed.

In the accompanying drawings, illustrating the preferred form of my invention, Figure 1 is a side elevation of my machine. Fig. 2 is a plan of the machine with the means for securing the uniting devices in place removed. Fig. 3 is a front elevation of the same. Fig. 4 is a sectional plan on the line 4 4 of Fig. 3. Fig. 5 is a sectional front elevation on the line 5 5, Fig. 2. Fig. 6 is a sectional side elevation on line 6–6 looking in the direction of the arrow. Fig. 7 is a bottom plan of the means for securing the uniting device or uniting devices in the pieces of the sole, and Figs. 8 and 9 are obverse and reverse plans of the pieced sole made on my machine.

The present invention contemplates the employment of means for holding the pieces for a pieced sole in proper relative position to each other in the same plane, in combination with means for securing a uniting device or uniting devices in the pieces of the sole.

My invention also contemplates devices for holding the pieces for a pieced sole in the proper relative position to each other in the same plane, so that they may be secured together by a suitable uniting device or uniting devices irrespective of whether securing means or mechanism is embodied in the machine or not.

My invention also consists in certain details of construction hereinafter pointed out, and particularly defined in the claims.

In the accompanying drawings the frame 1 of the machine is provided with a base-plate 2, to which latter is secured the devices for holding the pieces of the sole in proper relative position to each other. A suitable frame 3 for the operative parts of the devices for holding the sole is provided, which carries a sole-support 4, on which the main piece *a* of the sole is adapted to be laid and to which it is adapted to be clamped by the clamp 5, which extends across the support, being normally supported by the springs 5^a, adapted when depressed to engage the upper surface of the main piece of the sole and hold the same in its adjusted position. The clamp 5 is adapted to be depressed through means of the bolts 6, working in vertical holes in the frame 3, connected together below the support by the bar 7, which is held in the adjusted position by means of the nuts 8 upon the screw-threaded bolts 6. A cam 9, mounted upon the rock-shaft 10, carrying upon its outer end the hand-lever 11, is adapted when oscillated to depress the bar 7 and to press the clamp 5 down against the main piece of the sole. Suitable centering devices are provided to center the main piece of the sole upon the support which, acting in conjunction with suitable stops, accurately determines the position of the main piece of the sole upon the support. These centering devices consist of arms 12, pivoted at 13 upon the base of the frame 3, provided with centering-pins 14 at their ends which project upward through slots 15 in the support 4. The arms 12 are provided with lugs 16, which are respectively connected to straps 17, running to the spring-pressed pin 18, to which they are pivoted at 19. The pin 18 is normally

pressed to the right, as seen in Fig. 5, by the spring 20, which surrounds it and presses against the enlarged head of the pin 18 on the one side and the bottom of the cavity 22, within which said spring and pin are received.

The heel-pieces of the sole are preferably three in number, as shown in Fig. 9, being lettered for convenience *b c d*. The pieces *b* and *c* are similar in form, right and left, and the piece *d* is an equilateral triangle, preferably with the corners cut off at right angles to the line bisecting the angles of the triangle. The holes thus made in the sole afford a convenient means to receive the stops 23, 24, and 25. These stops, it will be seen, engage internal edges of the pieces of the sole; but it is not necessary that they should engage the edges of the pieces of the sole throughout the whole thickness. These edges are exactly regular, and thus afford an accurate means of positioning the pieces. The stops 23, 24, and 25 are alike and consist of pins each provided with a notch to receive a stop-carrying plate 27, which is adapted when depressed to depress the three stops in unison. The stop-plate 27 is mounted upon a shaft 28 and normally supported by the springs 29, adapted to be depressed by a foot-lever, which is attached to the hook 30. At one point in the periphery of the plate 27 is provided a notch 31, which when brought opposite the hole which is to contain one of the stops 23, 24, or 25 will permit the insertion of the pin through the support 4. Then upon the revolution of the plate 27 the latter will pass into the notch in the pin constructed to receive it by turning the plate. The successive pins may thus be introduced, and when all of the pins have been introduced the plate will be secured to the shaft 28 by means of the set-screws 32.

In order to press the heel-pieces of the sole together, press-plates 33 are provided, which are pivotally mounted upon the ends of levers 34, also pivotally mounted in the frame 3 of the machine. Second levers 35 are secured to the levers 34 and project toward and overlap each other, as seen in Fig. 5. The slide-pin 36 is adapted to engage the levers 35 and to turn them upon their fulcrums to cause the press-plates to engage the outside edges of the heel-pieces *b* and *c*, thereby to press them against the stops 23, 24, and 25.

A clamp is provided for clamping the heel-pieces against the support after they have been brought into position by the pressers 33. In the illustrated embodiment of my invention this clamp consists of the clamp-plate 37, pivoted at 38 in the clamp 5 and projected over the heel-pieces, as shown. The end of the clamp-plate 37 is provided with a hole 39, through which passes the vertical pin 40, carrying upon its upper end the washer 41, secured thereto by the screw 42, which when the pin 40 is depressed presses down upon the spring 43 and presses it against the clamp-plate 37 to cause it to bear upon the heel-pieces and to hold them in adjusted position. A spring 44 is provided under the clamp-plate 37, acting normally to lift the clamp-plate when the pin 40 permits it to rise. A hole is provided in the pin 40, which is adapted to receive the slide-pin 36. The lower edge of the hole is beveled to correspond to the bevel on the under side of the slide-pin 36, so that when the slide-pin 36 is moved inward to cause the press-plates to press the heel-pieces together it will at the same time depress the pin 40 and cause the clamp-plate 37 to hold the heel-pieces in adjusted position. The hand-lever 45, carrying an eccentric slot 46, adapted to be engaged by a pin 47, mounted in the end of the slide-pin 36, is used to actuate the slide-pin 36.

Suitable removable hardened-steel riveting-blocks 48 are provided, as shown in Fig. 4 and Fig. 5, against which the ends of the uniting device are adapted to be riveted. When the riveting-blocks are worn, new ones may be substituted therefor. The clamp-plate 37 is provided with a triangular opening 49, as shown in Fig. 2, preferably shaped to receive and support a unitary fastening device, such as shown in Fig. 8. A riveting-punch 50 is provided for securing the fastening device in the pieces of the sole. The center of the riveting-punch is provided with a spring-pressed holding-pin 51, adapted on the descent of the punch first to engage the heel-piece *d* to hold it in position during the descent of the riveting-punch, which at a single blow rivets the fastening device in position. The pin 51 is provided with grooves 51ª, which receive and support prongs of the fastening devices during the descent of the punch 50.

Any suitable means may be employed to actuate the riveting-punch, as the rotating shaft 52, the eccentric-pin 53, mounted on its end, connected by means of the pitman 54 with the punch-slide 55.

The operation of my machine for making pieced soles is as follows: The main piece *a* of the sole will be laid upon the support 4 and pushed in between the centering-pins 14 against the stops 23 and 24, and thus brought to its correct position in the machine. The clamp 5 will then be clamped down on the main piece by rocking the handle 11, thus securely holding the main piece in place with its internal edge against the stops 23 and 24. The outside heel-piece *b* will be slipped in against the stops 23 and 25 under the clamp-plate 37, which will at this time be in its raised position, being supported by the spring 44. The other outside heel-piece *c* will be similarly inserted on the other side. The pressers 33 are loose at this time. Then the central heel-piece *d* will be dropped through the hole 49 in the clamp-plate 37 and the handle 45 will be turned to force the slide-pin 36 in, thus moving the pressers 33 into engagement with the outside heel-pieces *b* and *c* and pressing the heel-pieces against the

stops 23, 24, and 25, and against each other and the main piece *a* and at the same time drawing down the clamp-plate 37 to hold them in their proper relative position. With the pieces of the sole thus held in position a fastening device, such, preferably, as is shown in Figs. 8 and 9, is dropped into the hole 49 in the clamp-plate 37, and the riveting-die 50 descends (the spring-pin 51 engaging the central heel-piece *d* and holding it firmly in position) and forces the prongs of the fastening device through the pieces of leather and rivets them on the under side, as shown in Fig. 9. With the riveting of the fastening or uniting devices in place the sole is completed. After the riveting of the uniting device in the pieces of the sole the handles 11 and 45 are turned to release it, and by depressing the treadle the stops 23, 24, and 25 are withdrawn. Then the sole is removed, the spring 29 returns the stops to their original position, and the machine is ready for the next sole.

It is to be noted that the mechanisms for adjusting and holding the pieces of the sole in their correct relative positions in the same plane constitute a complete and operative machine and that the mechanism for securing a uniting device or uniting devices in the pieces of the sole is not necessary to this feature of my invention, although I prefer to use these two sets of mechanism in coöperation with each other, as it contributes materially to rapidity with which the work can be performed. It is also to be noted that any suitable uniting device or uniting devices may be used, whether a plurality of separate uniting devices, located as are the prongs of the uniting device shown, or a single unitary device; but I prefer to use the unitary fastening or uniting device shown having the plurality of pairs of prongs, as this form of fastener makes a stronger and better sole. The particular kind of fastener, however, which is used is immaterial to my invention.

One of the important features of my invention consists in the employment of the stops which engage the internal edges of the pieces of the sole. Heretofore these accurate and finished surfaces have not been availed of, so far as I am aware, as the edges by which the pieces of the sole have been brought to their correct relative positions, and thus while the outside edges of the pieces of the sole may vary in shape and form the relative positions of the pieces are not dependent thereon.

My invention is not limited to the employment of any particular form of stops 23, 24, and 25, as any desired form of stops may be employed.

It will also be observed that, if desired, the heel-pieces may be first assembled in position and the position of the main piece of the sole determined by their position and by the stops 23 and 24. In this aspect of my invention the centering devices for the main piece of the sole may be dispensed with. I have therefore omitted these elements from some of the claims.

My invention is not limited to a machine for making pieced soles of the form shown in the drawings, as other forms of soles may be made thereon by such changes in the construction of the machine as may be necessary for the purpose. Thus, for instance, my invention is adapted for use in making pieced soles in which the heel part is made of one, two, three, or more parts; nor is my invention limited in other respects to the machine of the drawings, as various changes may be made therein without departure therefrom.

Having thus described my invention, I claim—

1. A machine for making pieced soles, having, in combination, means for holding the main piece and heel piece or pieces of the sole in proper relative position to each other in the same plane, and means for securing a uniting device or uniting devices in the abutting edges of the pieces of the sole, substantially as described.

2. A machine for making pieced soles, having, in combination, means for holding the main piece of the sole and means for holding the heel piece or pieces of the sole in proper relative positions to each other in the same plane, and means for securing a uniting device or uniting devices in the abutting edges of the pieces of the sole, substantially as described.

3. A machine for making pieced soles, having, in combination, devices for bringing the heel piece or pieces of the sole into a correct predetermined position with relation to the machine, and devices for bringing the main piece of the sole into correct position with relation to the heel piece or pieces in the same plane, substantially as described.

4. A machine for making pieced soles, having, in combination, a support, stops for determining the positions of the lines of juncture of the pieces of the sole, and means for securing a uniting device or uniting devices in the pieces of the sole, substantially as described.

5. A machine for making pieced soles, having, in combination, a support, stops for determining the positions of the lines of juncture of the pieces of the sole, and means for pressing the pieces of the sole against the stops, substantially as described.

6. A machine for making pieced soles, having, in combination, a support, and stops for determining the position of the lines of juncture of the pieces of the sole constructed to engage internal edges of such pieces, substantially as described.

7. A machine for making pieced soles, having, in combination, a support, stops for determining the positions of the lines of juncture of the pieces of the sole, means for securing a uniting device or uniting devices in the pieces of the sole, and means for withdrawing the stops, substantially as described.

8. A machine for making pieced soles, having, in combination, a support, stops for determining the positions of the lines of juncture of the pieces of the sole, clamping means for clamping the pieces of the sole on the support, substantially as described.

9. A machine for making pieced soles, having, in combination, a support, clamping means for clamping the main piece and heel piece or pieces of the sole on the support and in the same plane, and means for securing a uniting device or uniting devices in the pieces of the sole, substantially as described.

10. A machine for making pieced soles, having, in combination, a support, means for holding the main piece of the sole on the support, means for pressing the heel piece or pieces of the sole against the main pieces, and means for holding the heel piece or pieces on the support, substantially as described.

11. A machine for making pieced soles, having, in combination, a support, stops for determining the positions of the lines of juncture of the pieces of the sole, means for pressing the heel piece or pieces against the stops and against each other and the main piece and means for clamping the pieces to the support, substantially as described.

12. A machine for making pieced soles, having, in combination, a support, stops for determining the positions of the lines of juncture, clamping means for clamping the pieces of the sole against the support, and means for withdrawing the stops, substantially as described.

13. A machine for making pieced soles, having, in combination, a support, clamping means for clamping the main piece of the sole on the support, means for pressing the heel piece or pieces together, clamping means for clamping the heel piece or pieces on the support and mechanism for actuating both the heel-piece pressing and clamping means, substantially as described.

14. A machine for making pieced soles, having, in combination, means for pressing the pieces together in the same plane, means for clamping them in position and connected mechanism for actuating the pressing and clamping means, substantially as described.

15. A machine for making pieced soles, having, in combination, devices for bringing the heel piece or pieces of the sole into correct position with relation to the machine, centering devices for bringing the main piece of the sole into correct position with relation to the heel piece or pieces, and clamping means for holding said pieces in position, substantially as described.

16. A machine for making pieced soles, having, in combination, devices for bringing and holding the pieces of the sole into correct position with relation to each other in the same plane and means for securing a uniting device or uniting devices in the abutting edges of the pieces of the sole, substantially as described.

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

GEORGE E. WARREN.

Witnesses:
HORACE VAN EVEREN,
ALFRED H. HILDRETH.