April 5, 1932. A. J. BRAUER ET AL 1,852,288

PROCESS AND APPARATUS FOR FORMING THE HEEL END OF A SOLE

Filed June 22, 1929

Fig. 8.

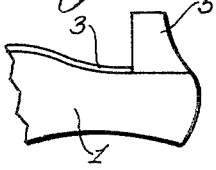


Fig. 1.

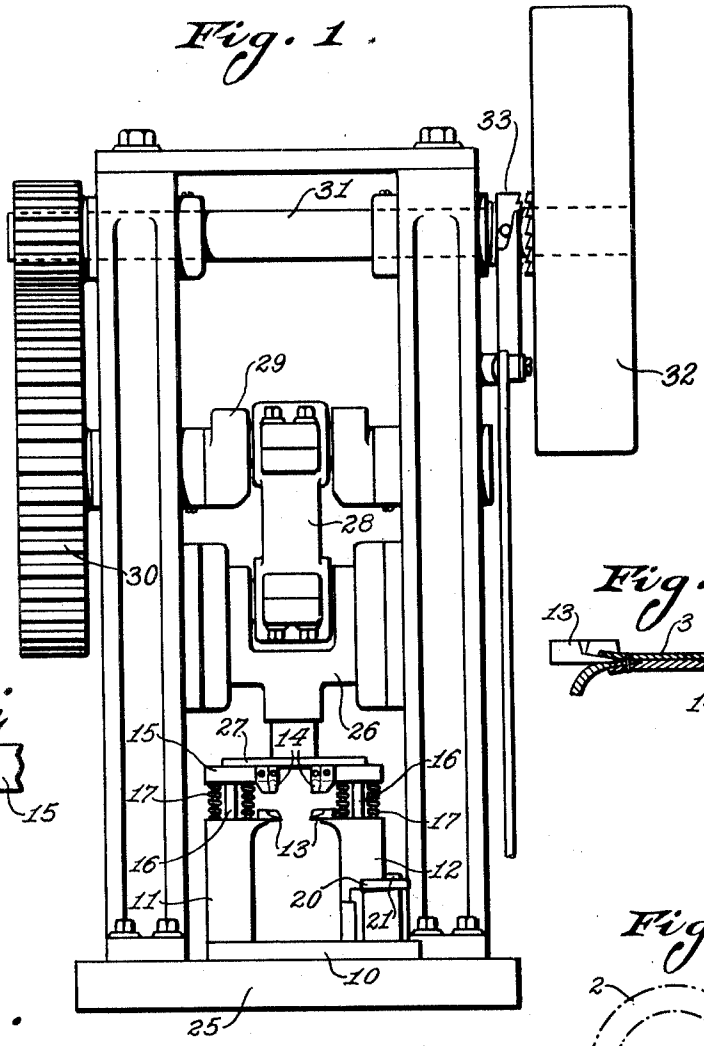


Fig. 4.

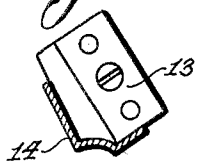


Fig. 5.

Fig. 3.

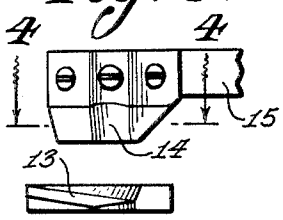


Fig. 6.

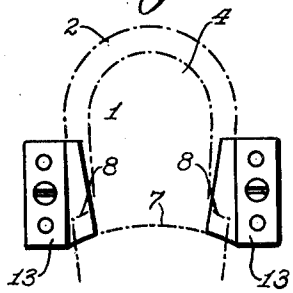


Fig. 2.

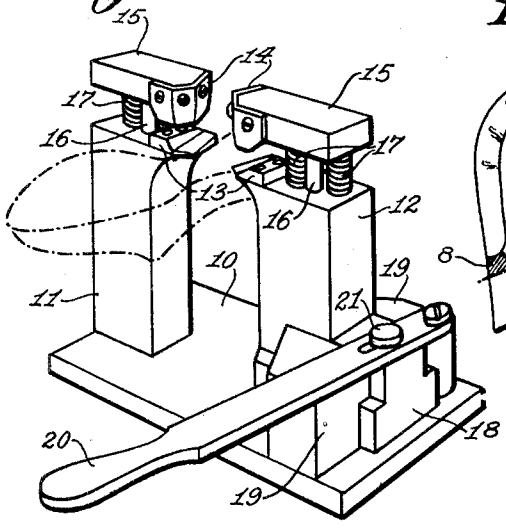
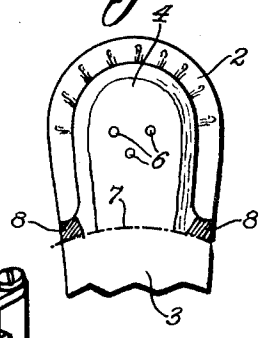


Fig. 7.



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UNITED STATES PATENT OFFICE

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PROCESS AND APPARATUS FOR FORMING THE HEEL END OF A SOLE

Application filed June 22, 1929. Serial No. 372,845.

This invention relates to process and mechanism for operating on shoe soles, and more particularly for the purpose of forming the heel end of a sole.

In the manufacture of shoes and more particularly ladies' shoes, it is the practice to marginally recess the sole at the heel end and to even chamfer the same in order to provide a seat for the heel. It is desirable, however, that the sole abut the heel at the breast, particularly at the ends of the breast line. Accordingly, it is the practice, after the formation of the heel seat as described, to position the heel on the shoe, mark the breast line thereon and then to trim the sole edges where they are to abut against the heel breast at the marginal portions extending beyond the marginal recess. This is usually performed by hand in cases where the marginally reduced sole portion at the heel has been tacked in place. This latter is essential to a well made and artistic shoe, for if the heel portion is left loose, a proper fit cannot be secured; furthermore, the line of stitches attaching the outsole to the shoe extends at this time even beyond the shoulders, abutting against the heel breast.

One of the objects of this invention, therefore, is to provide method and means of forming the heel end of the sole, in which the operation of cutting through the sole margin at the ends of the breast line is accomplished while the sole is attached to the upper at the heel end, and whereby this operation is performed in an expeditious, accurate and neat manner.

Further objects will appear from the detail description, taken in connection with the accompanying drawings, in which—

Figure 1 is a general front elevation of a machine embodying this invention and susceptible of carrying out the process embodying this invention;

Figure 2 is a perspective view of the cutting mechanism;

Figure 3 is a detail showing a set of co-operating cutting elements;

Figure 4 is a section on the line 4—4 of Figure 3;

Figure 5 is a detail showing the lower supporting or cutting elements and the shoe in section;

Figure 6 is a view showing the sole positioned on these elements, Figure 5;

Figure 7 is a view of the heel end, illustrating the operation; and

Figure 8 is a side elevation of the heel end of the shoe.

In accordance with this invention, the sole is supported at its margin adjacent the breast line and back of the breast line, while the sole is attached to the upper (including the insole where employed) at the heel end; the sole margin is then cut through against its supporting backing, at the ends of the breast line and along lines extending back from the breast line while the sole is so supported. The sole may, if desired, be marginally recessed and even chamfered at the heel end, this recessing, however, terminating adjacent the breast line. In proceeding to prepare a heel seat, the heel is preliminarily placed on the heel seat and the breast line as it will appear marked on the sole. The sole is then supported at its margin, as heretofore described, with the breast line at the points where the cuts are to be made; and while the sole is thus supported at its margin adjacent the breast line, the cutting operation is performed.

Various mechanisms may be employed for performing this process, and it may even be performed by elemental devices or simple manipulations; the process is, however, best performed by suitable mechanism. In accordance with one embodiment, a pair of supports extend inwardly and are shaped to enter the crease between the upper and the sole margin adjacent the breast line; these supports are thus positioned and arrested by the lines of stitches connecting the sole and the upper. These supports are preferably in the form of cutting elements and are for that purpose provided with cutting edges. Co-operating with the supports is cutting means comprising a pair of cutters arranged, by co-operation with the cutting edges on the supports, to cut through the sole margin at the ends of the breast line while so supported. The cutters and the supports, if provided with

cutting edges, are shaped to conform to the breast line; for instance, in a curved breast line, these cutters are arranged on a curve. Means is provided for relatively adjusting the cutters and also the supports, especially when provided with cutting edges, so as not only to adapt the mechanism for various size shoes, but also to permit more ready insertion of the shoe for operation thereon by the mechanism.

Referring now to the accompanying drawings, and more particularly to Figures 7 and 8, 1 designates a shoe having its upper turned in over the heel seat as shown at 2, and 3 indicates the sole which is provided with a marginally reduced end 4 providing a heel seat for the heel 5. This operation is performed in any suitable manner, and the heel end of the outsole is secured by tacks 6, the heel seat also being chamfered as usual. The heel is then placed on the heel seat and the breast line marked as shown at 7, this breast line being in this embodiment shown curved, corresponding to a concave breast. It is the purpose of the mechanism embodying this invention to cut out the pieces 8, shown shaded in Figure 7, so as to permit the heel breast to be placed in abutting relation with the shoulders formed by the margin of the sole extending beyond the marginally reduced portion 4. Mechanism for accomplishing this operation will now be described.

Mounted on a suitable base 10 are supports 11 and 12. Each of these supports has mounted thereon an element 13 arranged to enter the crease between the outsole and the upper, as shown in Figure 5, and also to provide cutting edges for co-operation with cutters 14. These cutters, as shown in Figures 3 and 4, have their cutting edges formed to cut out the pieces 8 (Figure 7). In order to permit the shoe to be readily slipped on the supporting and cutting elements 13, the tips thereof are tapering or wedge shaped, as shown in Figure 3, so as to take into the crease between the upper and the sole and against their connecting line of stitches. The elements 13 thus form each a supporting backing, adapted to support the sole at its margin adjacent and back of the breast line. The cutters 14 have each a pair of cutting edges in angular relation, with one edge along the breast line and with the other edge in a line extending back from the breast line. The edges of the elements 13 have a similar relation where, as shown, they co-operate with the edges of the elements 14.

The cutters 14 are accurately alined with the cutters 13 by being mounted on blocks 15 guided for movement on supports 11 and 12 by pins 16 and also by pins within the springs 17, which serve to hold the blocks 15 in raised position, it being understood that the pins 16, as well as the pins within the springs 17, are guided in holes within the supports 11 and 12, so that when pressure is applied to the blocks 15, the cutters 14 will co-operate with the cutters 13 to cut out the portions 8.

In order to adapt the mechanism to different size shoes and also to permit more ready placement, the support 12 is guided for movement on the base 10 so as to move toward and from the support 11 as by an inverted T-shaped slide 18 movable between guides 19 on the base. A handle 20 is pivoted on one of the guides 19 and has a pin and slot connection 21 with the slide, so as to permit ready manipulation.

Any suitable power mechanism may be provided for operating the cutters. Figure 1 illustrates a conventional punch press provided with a base 25, a suitable ram 26 having a plate 27 arranged to engage the blocks 15 and operated through a pitman 28, a crank 29 and gears 30 from a power shaft 31 provided with a flywheel and belt pulley 32 and controlled by any suitable single revolution clutch 33 shifted by a suitable treadle, not shown.

In the operation of this machine, the sole, after having been prepared as previously described, is placed with its margins adjacent the breast line on the supporting and cutting elements 13, as shown in Figures 5 and 6, and with the breast line 7 marked thereon in a position to aline with the edges of the cutters which are to cut along this breast line. In practice the operator can insert the shoe, without manipulation of the handle 20, after the support 12 has once been positioned with respect to the support 11 for the size and style of shoe to be operated on; for the tapering or wedge shaped construction of the supporting and cutting elements 13 permits such positioning. It is, however, advantageous that the operator manipulate the handle 20 to more closely insert the edges of the supporting and cutting elements 16 within the crease between the outsole and the upper in order to bring the edges thereof against the lines of stitching between the sole and the upper. After the sole has been thus positioned, the operator, by a simple depression of the treadle, can cause the ram 26—27 to press the blocks 15 down so as to cause the cutters 14 to co-operate with the supporting and cutting elements 13 in order to cut the pieces 8 out of the sole margin.

It will, therefore, be seen that the invention accomplishes its objects. Process and mechanism are provided whereby the operation of cutting the sole margin accurately at the ends of the breast line can be performed in a convenient and expeditious, but nevertheless in an accurate manner. The heel can, therefore, be positioned so that its breast will abut against the shoulders at the ends of the sole margins projecting beyond the marginal recess.

While the invention is particularly applicable for performing the operations described, it will be understood that this invention, as far as process and mechanism are concerned, is applicable for the performance of other operations, as will become apparent to those skilled in the art. It will furthermore be understood that certain features, steps and sub-combinations are of utility and may be employed without reference to other features, steps and sub-combinations; that is contemplated by and is within the scope of the appended claims. It is further obvious that various changes may be made in details of procedure and mechanism within the scope of the appended claims, without departing from the spirit of this invention; it is, therefore, to be understood that this invention is not to be limited to the details described and/or shown.

Having thus described the invention, what is claimed is:

1. The process of forming the heel end of a sole while on the shoe, comprising, supporting the sole concurrently on both sides of the shoe but only at the sole end margin adjacent and back of the breast line while the sole is attached to the upper at the heel end, and cutting through the sole margin against its supporting backing concurrently at the ends of the breast line and along lines extending back from the breast line while the sole is so supported.

2. The process of forming the heel end of a sole while on the shoe, comprising, marking on the sole margin the breast line, positioning the sole by the marking while the sole is attached to the upper at the heel end, supporting the sole concurrently on both sides of the shoe but only at the sole end margin adjacent and back of the breast line, and cutting through the sole margin against its supporting backing at the marking and along lines extending back from the marking while the sole is so supported.

3. The process of forming the heel end of a sole while on the shoe, comprising marginally recessing the sole at the heel end, supporting the sole concurrently on both sides of the shoe but only at the sole end margin adjacent and back of the breast line while the sole is attached to the upper at the heel end, and cutting through the sole margin against its supporting backing concurrently at the ends of the breast line and along lines extending back from the breast line while the sole is so supported.

4. The process of forming the heel end of a sole while on the shoe, comprising, supporting the sole concurrently on both sides of the shoe but only at the sole end margin adjacent and back of the breast line and to the lines of stitches connecting the sole and the upper while the sole is attached to the upper at the heel end, and cutting through the sole margin against its supporting backing concurrently at the ends of the breast line and along lines extending back from the breast line while the sole is so supported.

5. The process of forming the heel end of a sole while on the shoe, comprising, supporting the sole concurrently on both sides of the shoe but only at the sole end margin adjacent and back of the breast line while the sole is attached to the upper at the heel end by positioning the supporting backing against the lines of stitches connecting the sole and the upper, and cutting through the sole margin against its supporting backing concurrently at the ends of the breast line and along lines extending back from the breast line while the sole is so supported.

6. A machine for forming the heel end of a sole while attached to the upper at the heel seat, comprising, backing means for supporting the sole concurrently on both sides of the shoe but only at the sole end margin adjacent and back of the breast line, and means for cutting through the sole margin against said backing means concurrently at the ends of the breast line and along lines extending back from the breast line while so supported.

7. A machine for forming the heel end of a sole while attached to the upper at the heel seat, comprising, a pair of backing supports extending inwardly from the margin of the sole adjacent and back of the breast line, and means for cutting through the sole margin against said backing supports at the ends of the breast line and along lines extending back from the breast line while the sole is so supported.

8. A machine for forming the heel end of a sole while attached to the upper at the heel seat, comprising, a pair of backing supports extending inwardly from the margin of the sole adjacent and back of the breast line, means for relatively adjusting said supports, and means for cutting through the sole margin against said backing supports at the ends of the breast line and along lines extending back from the breast line while the sole is so supported.

9. A machine for forming the heel end of a sole while attached to the upper at the heel seat, comprising, a pair of backing supports extending inwardly from the margin of the sole adjacent and back of the breast line, and a pair of cutters adapted to cut through the sole margin against said backing supports, said cutters each having cutting edges extending along and back from the breast line.

10. A machine for forming the heel end of a sole while attached to the upper at the heel seat, comprising, a pair of backing supports extending inwardly from the margin of the sole adjacent and back of the breast line, a pair of cutters adapted to cut through the sole margin against said backing supports, said cutters each having cutting edges extending

along and back from the breast line, and means for relatively adjusting a co-operating support and cutter relative the other co-operating support and cutter.

11. A machine for forming the heel end of a sole while attached to the upper at the heel seat, comprising, a pair of cutting elements extending inwardly in position to support the margin of the sole and having cutting edges extending along and back of the breast line, and a pair of cutting elements having cutting edges corresponding to and adapted for co-operation with said first pair.

12. A machine for forming the heel end of a sole while attached to the upper at the heel seat, comprising, a pair of cutting elements extending inwardly in position to support the margin of the sole and having cutting edges extending along and back of the breast line, a pair of cutting elements having cutting edges corresponding to and adapted for co-operation with said first pair, and means for relatively adjusting a co-operating set of cutting elements relative the other co-operating set of cutting elements.

13. A machine for forming the heel end of a sole while attached to the upper at the heel seat, comprising, a pair of backing supports extending inwardly from the margin of the sole adjacent and back of the breast line, and means conforming to the breast line and lines extending back from the breast line for cutting through the sole margin against said backing supports at the ends of and back of the breast line while the sole is so supported.

14. A machine for forming the heel end of a sole while attached to the upper at the heel seat, comprising, a pair of cutting elements extending inwardly in position to support the margin of the sole and having cutting edges conforming to the breast line and lines extending back from the breast line, and a pair of cutting elements having cutting edges corresponding to and adapted for co-operation with said first pair.

15. A machine for forming the heel end of a sole while on the upper, comprising, sole supporting and backing means constructed and arranged to enter the crease between the upper and the sole margin adjacent and back of the breast line concurrently on both sides of the shoe, and means for cutting through the sole margin and against said backing means concurrently at the ends of the breast line and along lines extending back of the breast line while the sole is so supported.

16. A machine for forming the heel end of a sole while on the upper, comprising, a pair of inwardly extending backing supports formed to enter the crease between the upper and the sole adjacent and back of the breast line, and means for cutting through the sole margin and against said backing supports at the ends of the breast line and along lines extending back of the breast line while the sole is so supported.

17. A machine for forming the heel end of a sole while on the upper, comprising, a pair of inwardly extending backing supports formed to enter the crease between the upper and the sole adjacent and back of the breast line, means for cutting through the sole margin and against said backing supports at the ends of the breast line and along lines extending back of the breast line while so supported, and means for relatively adjusting said supports.

18. A machine for forming the heel end of a sole while on the upper, comprising, a pair of inwardly extending cutting elements formed to enter the crease between the upper and the sole adjacent the breast line and having cutting edges extending along and back of the breast line, and a pair of cutting elements having cutting edges corresponding to and adapted for co-operation with said first pair.

19. A machine for forming the heel end of a sole while on the upper, comprising, a pair of inwardly extending cutting elements formed to enter the crease between the upper and the sole adjacent the breast line and having cutting edges extending along and back of the breast line, a pair of cutting elements having cutting edges corresponding to and adapted for co-operation with said first pair, and means for relatively adjusting a co-operating set of cutting elements relative the other co-operating set of cutting elements.

In testimony whereof we affix our signatures this 19th day of June, 1929.

ARTHUR J. BRAUER.
FREDERICK P. WAGNER.