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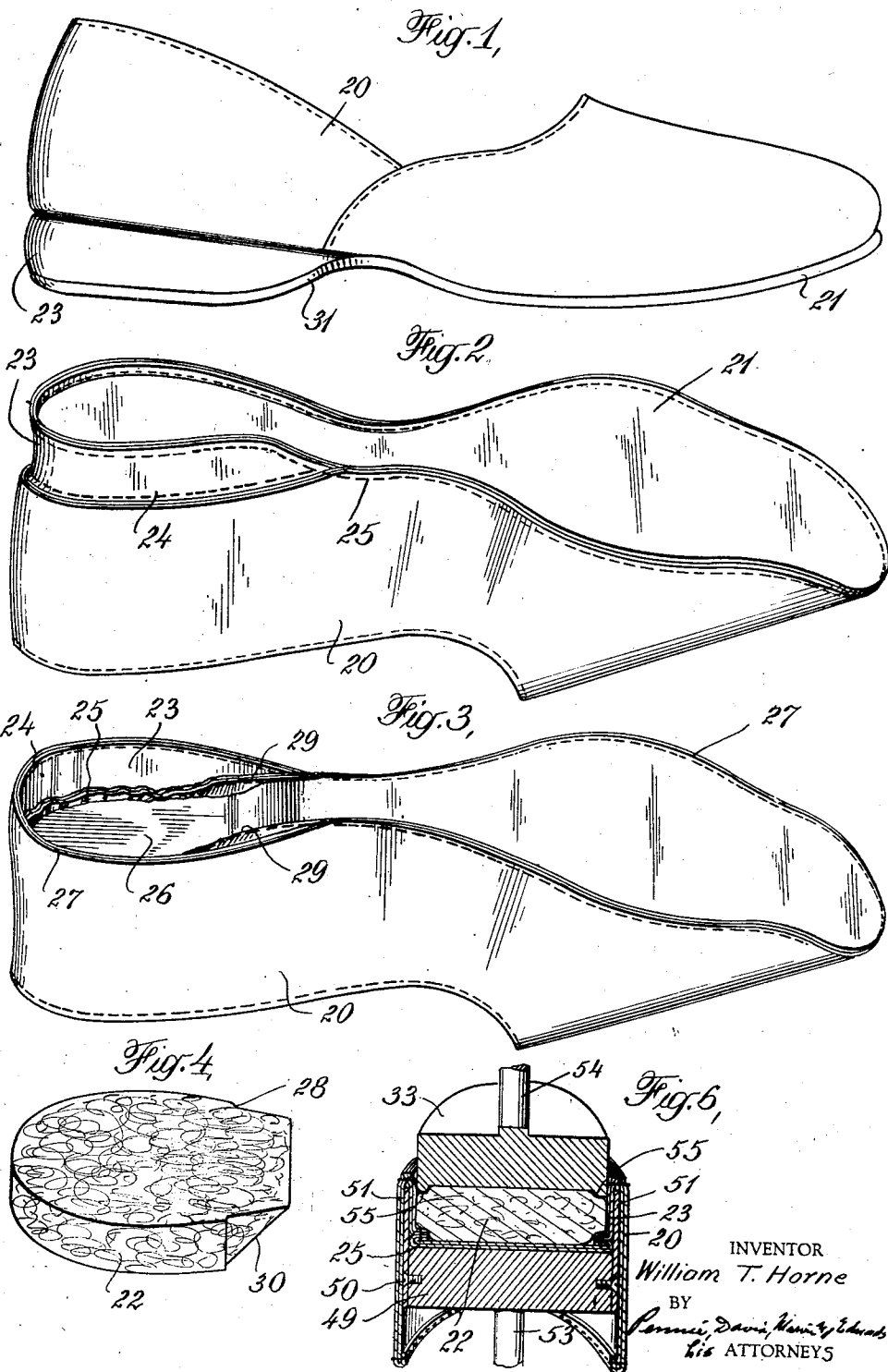
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APPARATUS FOR PLACING HEEL PADS IN SLIPPERS

Filed July 13, 1927

2 Sheets-Sheet 1



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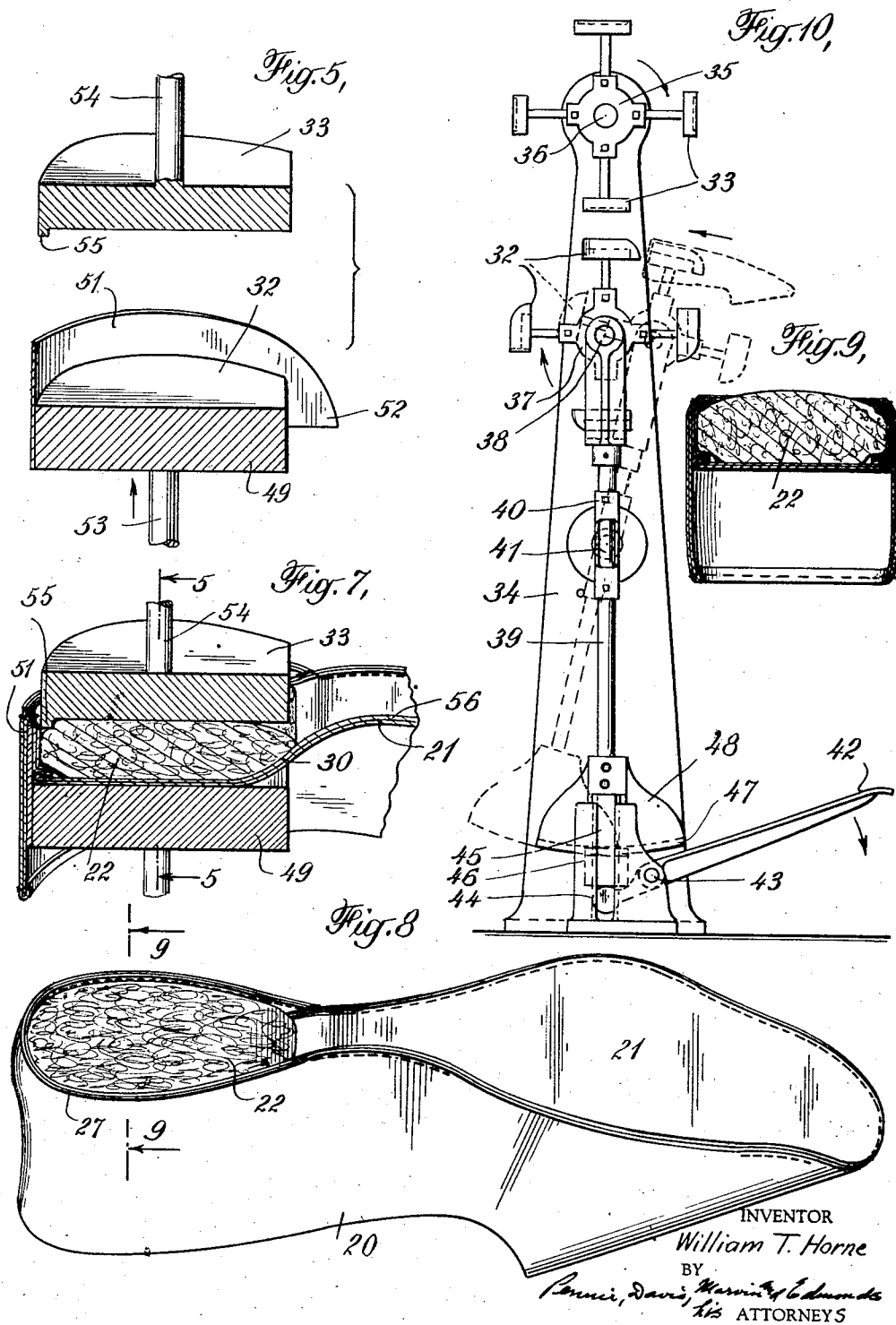
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UNITED STATES PATENT OFFICE

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APPARATUS FOR PLACING HEEL PADS IN SLIPPERS

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This invention relates to the manufacture of slippers or shoes, and particularly to the manufacture of house slippers having flexible soles and heels as well as uppers. More especially the present invention relates to the manufacture of a house shoe or slipper in which the heel is composed of a pad or resilient material, such as felt, inserted in a cavity provided in the shoe between the sole of the lining and the out-sole of the shoe which is extended back of the instep and to the rear of the heel so as to form the wearing surface of the heel.

The objects of the present invention are to provide an improved method of carrying out certain of the steps in the manufacture of slippers, an improved apparatus for carrying out these steps, and to reduce the cost of manufacture.

In the manufacture of house shoes or slippers of this type, appropriate pieces of material, preferably leather are sewed together inside out to form the upper and out-sole, and including sufficient material at the heel between the lower margin of the upper and the out-sole to form a covering for the heel pad. Suitable lining pieces of felt, fabric or leather, for example, may also be sewed in place during these operations, if desired. This completes the assembly of the shoe aside from the insertion of the heel, the sewing on of the mid-lining of the sole and the pasting in of the sock lining. The present invention concerns particularly an improved method of, and apparatus for, associating the heel pads with the parts of the shoe assembled as just described. However, to fully complete the manufacture of the shoe after the heel pad and lining sole have been secured in place, the entire shoe is turned right side out, preferably by the aid of a device constructed for this purpose, and then the completely assembled shoe is lasted and steamed so as to give it the desired size and shape.

Returning to the application of the heel pad, with which the present invention is particularly concerned, after the upper, the sole, including lining material, if desired, and the heel cover inserted between the lower edge

of the upper and the sole, have been sewed together, as previously described, these parts all being inside out, the outwardly protruding heel cover is turned in, forming a cavity for the reception of the heel pad.

In inserting the heel pad within this cavity, it is important that the pad be of proper size to fit snugly within the cavity so as to completely fill this cavity without leaving spaces at any point that would be apt to cause depressions in the exterior surface of the heel when completed. It is also important that the edges of the pad be placed on top of the seam between the heel and the heel cover instead of fitting into the interior of the periphery of this seam, for otherwise depressions will be left in the finished heel which greatly injure its neat appearance. On the other hand, the corners or edges of the pad should be forced outwardly into the corners of the cavity so as to hold out or stretch the covering material for the pad so as to produce a neatly shaped heel, nicely formed and regular in contour. Moreover, the heel pad should be of a thickness which will well fill the cavity and the pad should be forced down into the cavity especially around its edges so as to facilitate the next operation of sewing on the sole of the lining which extends over the heel pad and holds it in place. If the heel pad is not pressed down around its edges in this way, it will tend to bulge outwardly and make it difficult to stitch this seam, thus increasing the cost of this stitching operation.

Heretofore in the manufacture of these house shoes the heel pads have been put in as a part of the operation of sewing on the lining sole, that is, they have been inserted by hand by the mid-lining stitcher just before he sews on the mid-lining, usually on an overcast stitch machine. This procedure has been found to be highly undesirable, however, because of the fact that this operator usually is paid on a piece rate basis and hence it is to his advantage to insert the pad with as little effort and time as possible. Consequently there has been a marked tendency for this operator to select a heel pad cut to a size smaller than intended for the particular shoe upon which he was working, and to

insert the pad with its edges inside of the seam above referred to instead of on top of it. Such a practice almost invariably results in the production of a heel which does not come up to the requirements as to appearance, and the operators have attempted to partially remedy this by picking the exterior surface of the heel with an awl and then trying to work the heel pad into position with the fingers. The awl is apt to injure the surface of the shoe, or to even break some of the stitching, and even if the heel pad is finally worked into place, the appearance of the shoe is not up to the desired standard. This practice increases the number of shoes which must be sold as "seconds" and hence increases the cost of manufacture. Furthermore, the operators who do the stitching of the mid-linings receive relatively high pay, and it is undesirable to consume their time with the insertion of the heel pads.

By my present invention I have overcome these difficulties to a marked extent. The invention will be better understood by consideration of the accompanying drawings, but it should be understood that these drawings are merely illustrative of the invention and that the invention is not limited thereto.

In these drawings

Fig. 1 is a side view of a slipper of the type to which this invention relates;

Fig. 2 is a side view of a partially completed slipper consisting of upper, sole, and heel-covering insert, all stitched together. The irregular contour is the result of the unfinished condition of the shoe, none of the parts having as yet been lasted;

Fig. 3 is a view similar to Fig. 2 with the heel-covering insert turned inwardly forming the cavity for the reception of the heel pad;

Fig. 4 is a perspective view of a heel pad ready for insertion in the cavity shown in Fig. 3;

Fig. 5 is a view partially in perspective and partially in central vertical section of a pair of coacting devices for holding the heel portion of the partially completed shoe shown in Fig. 3 in stretched condition for the insertion of the heel pad, and for forcing the heel pad into place;

Figs. 6 and 7 are respectively, a transverse and a longitudinal section, partly in perspective, of the devices shown in Fig. 5 with slipper and heel pad in compressed position therebetween;

Fig. 8 is a perspective view of the partially completed shoe after the heel pad has been inserted into its proper position;

Fig. 9 is a transverse sectional view taken on line 9—9 of Fig. 8 to better illustrate how the pad is held in position within the heel cavity; and

Fig. 10 is a side elevation of a machine having a plurality of pressure devices shown in

Fig. 5 mounted thereon in operative position.

Referring now to the accompanying drawings, the slipper with which the present invention is concerned is illustrated in completed condition in Fig. 1. This slipper consists of an upper 20 which may conveniently be made in vamp and quarter sections sewed together as indicated, and which has a sole portion 21 extending from the toe to the extremity of the heel. The upper and sole may be made of the same or different materials, and any suitable material may be employed, although leather is preferred for both upper and sole. The heel of the shoe consists of a pad 22 (Fig. 4) of resilient material, such for example as cartridge felt, which in Fig. 1 is hidden by the heel cover 23. This heel cover consists of a comparatively narrow strip of the same material as the upper positioned between the upper and sole. This heel cover is preferably tapered at its front and so as to permit the sole 21 to join the upper just in front of the heel in a smooth curve. The sole 21 is preferably made in one piece, extending from the toe of the shoe rearwardly beneath the heel. The interior of the slipper is lined in any desired manner, but a particular form will be described below by way of example in explaining the invention.

Referring now to Fig. 2 in making the slipper just described, the upper 20 first has a sheet of lining material such as felt, sewed thereto on the side of the upper which is to be the inside of the shoe. This upper is then turned wrong side out so that the outer surface of Fig. 2 is that of the felt lining. A heel cover 23 is sewed to the upper 20 along the seam 24, and after this the sole 21 is sewed along the seam 25 to the upper and heel cover 23.

Then the heel cover 23, and the rear portion of the sole 21 which is sewed to the heel cover is reversed or turned inwardly as shown in Fig. 3, forming a cavity 26. In doing this the heel cover is turned so as to lie flat against the inner surface of the upper, and the heel cover 23 and the sole 21 both having been cut to the same size as the upper, offer some resistance to this turning movement. In other words, when the heel cover and sole which are the same size as the outer are forced into the interior of the outer in forming the pocket, the material of the heel cover, and particularly the seam 25 tends to pucker or gather and occupy considerable space in the cavity. This tendency is illustrated to a certain extent in Fig. 3. The interior dimensions of this cavity in its natural shape therefore are smaller than the size of the upper by the double thickness of heel cover at each side.

Heretofore the placing of the felt heel pad 22 in the cavity 26 has been done by hand and it is extremely difficult, if not impossible, to sufficiently stretch with the fingers the

side walls of the cavity 26 to receive a heel pad of the proper size, that is, the proper width for the shoe. This insertion of the heel pad has been done by the mid-lining stitcher just before he performed the next operation in making the slipper which consists of sewing on a mid-lining of felt or other suitable material, not shown, along the edge 27 after the insertion of the heel pad, this mid-lining serving to hold the heel pad in placing in the cavity 26. The result has been that this operator has usually chosen a heel pad of a size smaller than intended in order to save time in inserting it in the cavity, and as previously pointed out, such a small heel pad will not properly fill out the heel cover 23 so as to give the desired smooth plump effect indicated in Fig. 1.

In accordance with the present invention, just before the insertion of the heel pad 22, the upper 20 is stretched at the sides and rear of the heel so as to allow the interior of the cavity 26 to expand to the normal width of the heel after the shoe is finished. Then the seam 25 is smoothed down parallel with the sole of the slipper as indicated in Figs. 6 and 7, the heel pad is placed in position in the cavity, and is forced down into the cavity under pressure. The bottom edge of the pad is made to lie on top of the smoothed out seam 25 as shown in Figs. 6 and 7, the corners of the pad being forced into the corners of the cavity, also as shown in these figures by the pressure which is applied, and the upper edge or periphery of the pad is compressed to a point just below the upper edge 27 around the heel.

This edge which is formed into a sort of bead by the elasticity of the material securely holds the pad in position so that the mid-lining can be sewed in place without difficulty. This bead is formed partly by the extra thickness caused by the stitching of seam 24 and partly by the fact that the presence of this stitching makes the edge 27 more elastic than the material just below it so that the material is bulged out below the seam by the pad 22 after the pad is in place. This may be seen by comparing Figs. 3 and 8, Fig. 8 showing by the curve at the rear of the heel, the outward pressure exerted by the heel pad, and also showing the crimping effect of the bead at edge 27 in holding the pad 22 in place.

The pad 22 itself which is shown in Fig. 4 is cut preferably by means of a die from a sheet of material having an appropriate degree of resiliency to give the desired resiliency or springiness to the heel after the slipper is finished. The material which I preferably use is cartridge felt. The forward corners of the heel are narrowed, as for example by means of notches 28 so as to make room for the portions 29 of the seam 25 at the front of the heel where the slipper is

narrowed under the arch of the foot. The forward edge is also tapered off, as indicated in Fig. 4, at 30 so that the front of the finished heel will gradually taper off as indicated at 31 in Fig. 1.

It is practically impossible to assemble the slipper and heel by hand in the manner described above, and for this purpose I have provided the apparatus shown in Figs. 5 to 7 inclusive and 10. Referring particularly to Fig. 5, this apparatus comprises a pair of pressure elements, namely the heel holder 32 and the anvil 33 which are mounted in suitable mechanism by which they can be made to be brought toward one another with a considerable amount of pressure, and then moved in the opposite direction away from each other so as to separate them.

The mechanism which I employ for mounting the heel holder and anvil is illustrated in Fig. 10, and provision is made for mounting a plurality of pairs of coacting pressure elements of different sizes so as to accommodate as many different sized slippers in a single machine. The machine illustrated in Fig. 10 comprises an upright frame having a rotary head 35 mounted on the top on which there are removably positioned 4 anvils 33 of various sizes. The rotary head 35 can be rotated on its axis 36 which is fixed to the frame and means are provided for fixing the position of the rotary head with any one of the anvils 33 lowermost. A rotary head 37 similar to head 35 is provided for mounting 4 heel holders 32 in appropriate position below the head 35. The axis 38 for head 37, however, instead of being mounted directly on frame 34, is carried upon the upper end of an arm 39 which is mounted for swinging in a vertical plane, and also for vertical reciprocation.

Both of these movements are made possible through the construction of the mounting 40 which is pivoted to the frame 34 at 41, and which has a longitudinal guideway through which arm 39 slidably passes. By taking hold of the arm 39 with the hand it may be swung in a vertical plane about the pivot 41 through a limited angular movement to the dotted position shown in Fig. 10, thereby bringing the heel holder 32 forward so that a slipper can be more readily placed upon the heel holder.

At the bottom of frame 34 a foot lever 42 is pivoted at 43 and its inner end 44 coacts with the underside of a member 45 which is mounted in vertically slidable relation in suitable ways in the frame 34. The member 45 has a saddle surface 46 which is curved upwardly against the arcuate bottom surface 47 of a member 48 which is secured at the lower end of arm 39. Hence by pressing downwardly on the outer end of foot lever 42 the arm 39 is caused to move upwardly sliding in the guideways in the pivoted mounting 40.

In using this apparatus in accordance with the invention the operator stands at the front of the machine which is the right hand side, as viewed in Fig. 10, grasps the upper end of arm 39 and pulls it toward him so as to bring the heel holder 32 out from beneath the anvil 33. He then presses the partially completed slipper, as shown in Fig. 3, that is, having its heel cover and adjacent sole portion turned inwardly, against the side walls of the upper, upon the heel holder 32.

The heel holder 32 comprises a body portion, which in its top view is approximately the shape of the heel pad 22 with its tapered front end cut off, but is somewhat larger than the heel pad as will presently appear. On the outer periphery of the sides and around the rim of the heel, there is secured as by means of the screws 50 (Fig. 6) an upper-stretching and supporting member 51 which consists of a relatively thin metallic blade as may be seen best in Fig. 5. This upper-stretching member 51 is curved down to a point 52 in front of the body 49 and extends rearwardly along the side of the body member 49 around the rear thereof and forward on the opposite side of the body. Just one-half of the upper-stretching member 51 is illustrated in Fig. 5 as this is a central longitudinal section, and member 51 being symmetrical to this center line, the member is the same shape on both sides. The body portion 49 is provided with a shank 53 by which the heel holder is removably secured in the rotary head 37.

When the operator places the partially completed slipper upon the heel holder 32 the heel-stretching and supporting member 51 is forced into the space between the heel cover 23 and the upper 20 (see Figs. 6 and 7). This operation causes the upper 20 to be stretched laterally at the sides and rear of the heel by an amount which depends upon the width of the body portion 49. This dimension is so chosen that the cavity 26 will be of the proper dimensions to receive a full sized pad 22, that is, a pad of such size that when the slipper is finished the cavity will be completely filled with the pad and the heel cover neatly stretched.

The anvil 33 consists of a heel-shaped body of a size smaller than the body portion 49 so that when the anvil 33 and the heel stretcher 32 are properly centered and brought together, there will be sufficient room between the outer surface of the anvil, and the inner surface of the upper-stretching member 51, to accommodate the thickness of the heel cover 23, and the lining for the heel cover in case the heel cover is lined. A shank 54 provides means by which the anvil may be removably secured in the rotary head 35. The anvil is provided around the periphery of its sides and rear portion with a downwardly-project-

ing rim 55 for a purpose which will hereafter appear.

After the operator has placed the partially finished slipper upon the heel holder 32 as shown in dotted lines in Fig. 10, he smooths the folds of material at seam 25 downwardly with his fingers so that the folds will lie neatly and regularly against the sole in substantially parallel relation thereto instead of standing upwardly as they have a tendency to do. He then selects a heel pad 22 of a size which will fit snugly into the cavity 26, which has been enlarged to receive the pad by the stretching of the upper. In doing this the pad is preferably arched by squeezing in the fingers so that its bottom surface is somewhat concave just before inserting in the cavity. This arching of the pad assists in placing it in the cavity, because it slightly shortens the lengthwise dimension of the pad but its principal function is to cause the lower tapering surface 30 to lie snugly against the sole 21, or against the facing 56 of this sole as indicated in Fig. 7 when it is desired to provide the sole with facing material. The operator next presses backwardly on the upper end of arm 39, so as to return the arm to its vertical position, in which it is held by suitable means which are not shown in detail, in accurately aligned relation to the anvil 33.

The operator then presses downwardly on the outer end of foot lever 42, thus raising the heel holder 32, and the slipper carried thereon together with the pad which has been inserted in the cavity 26, vertically toward the anvil 33. This movement is continued until the inserted pad has come in contact with the bottom of the anvil and then considerable pressure is exerted by the operator upon the foot lever, and the pad is forced into the cavity 26, and the corners of the pad are forced outwardly into the corners of the cavity. The downwardly-projecting rim 55 of the anvil causes the outer periphery of the pad to be compressed somewhat more than the center of the pad, depending upon the thickness of the rim 55, and this extra compression of the edges of the pad brings them slightly below the bead formed by the upper edge 27 around the top of the heel cavity.

The stitching along the upper edge of the cavity which secures together the upper and heel cover renders the material relatively elastic along the bead. The material below this seam, however, tends to take a permanent set, particularly when leather is used. The heel pad is of such size that it forces this material below the seam outwardly, causing the heel to bulge and present a neat and plump appearance, and the resistance to stretching offered by the upper margin of the cavity at the bead causes the pad to tend to retain its original size, thus crimping the

bead over the upper edge of the heel pad. When the heel pad is forced into the cavity the relatively elastic rim of the cavity is stretched somewhat, and the edges of the pad are also compressed so as to permit the entrance of the pad.

These operations only require an instant and in fact are done substantially as a single operation, and the operator immediately releases lever 42, allowing the slipper holder 32 and the slipper to descend out of contact with anvil 33, pulls the arm 39 toward him again, and removes the slipper with the pad neatly packed into and held in place in the cavity 26, as shown in Fig. 8.

While I have described pressure element 33 as an anvil, it is to be understood that the elements 32 and 33 can be mounted and actuated in such a way as to make the heel holder 32 the stationary member, and anvil 33 the movable member.

What I claim is new and desire to secure by Letters Patent of the United States is:

1. An apparatus for placing a heel pad in a partially finished slipper having an upper, a sole and a heel cover, the sole and heel cover being inwardly turned to form a cavity for the heel pad, which comprises a heel holder, an anvil, and means for forcing said elements together, said heel holder having a substantially heel-shaped body having a member on the periphery of its sides and rear which is shaped to be received between the heel cover and upper of said partially finished slipper to stretch said upper and heel cover so as to enlarge said cavity, and said anvil having a substantially heel-shaped body for compressing a heel pad into said enlarged cavity when said elements are forced together.
2. An apparatus for placing a heel pad in a partially finished slipper having an upper, a sole and a heel cover, the sole and heel cover being inwardly turned to form a cavity for the heel pad, which comprises a heel holder, an anvil, and means for partially telescoping said anvil within the heel holder, said heel holder consisting of a substantially heel-shaped body having a member upon the periphery of its sides and rear which is shaped to be received between the heel cover and upper of said partially finished slipper to stretch said upper and heel cover so as to enlarge said cavity, and said anvil consisting of a substantially heel-shaped body having a rib along its periphery for compressing the outer edge of the heel pad to a position below the upper edge of said cavity when said elements are partially telescoped one within the other.

In testimony whereof I affix my signature.
WILLIAM T. HORNE.