

Jan. 27, 1953

F. ASHWORTH ET AL

2,626,410

COMBINATION FORM AND CLAMP FOR SHAPING SHOE UPPERS

Filed June 12, 1951

Fig. 1

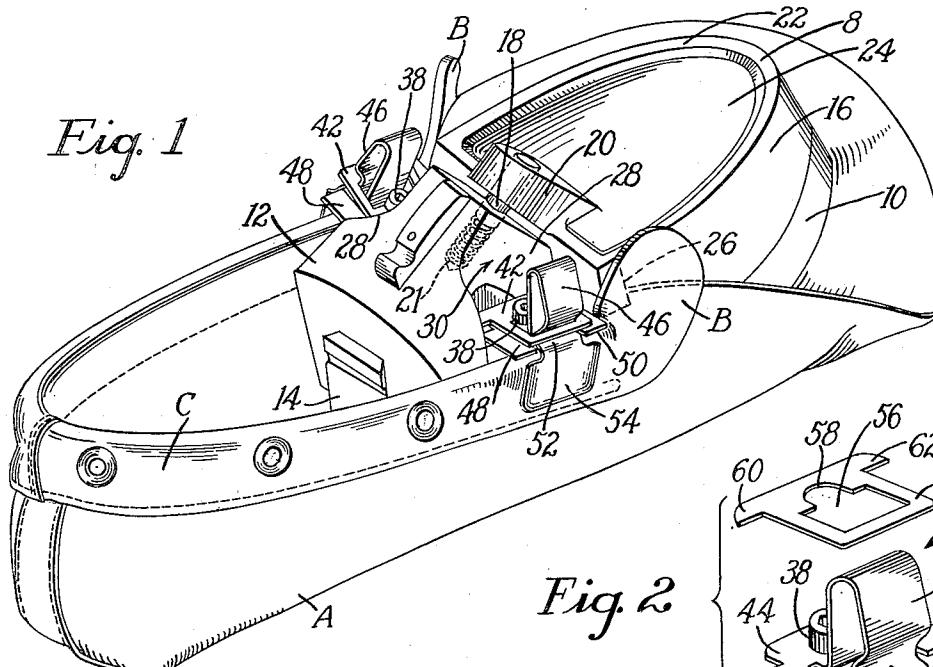


Fig. 2

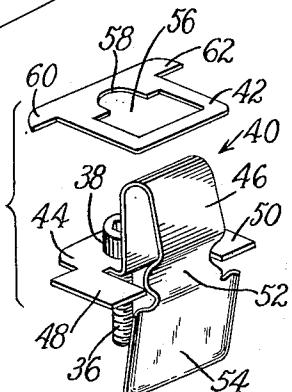


Fig. 3

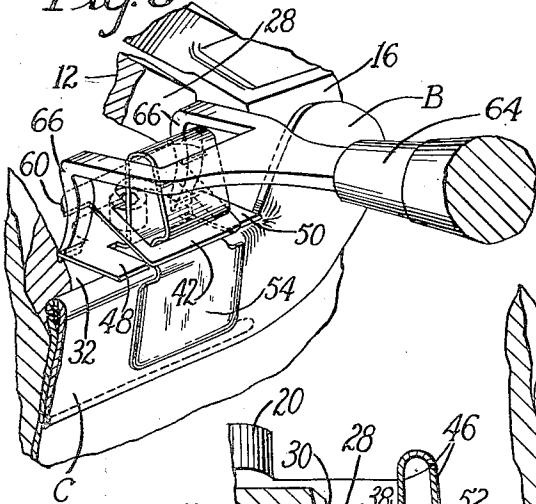


Fig. 4

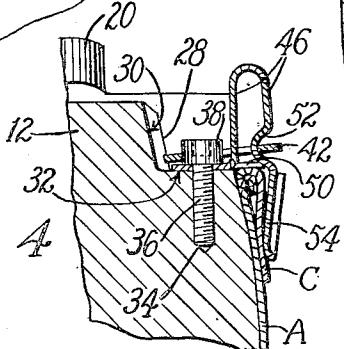
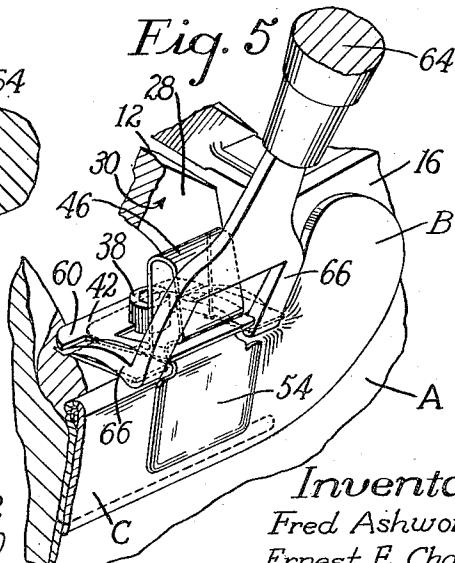


Fig. 5



Inventors
Fred Ashworth
Ernest E. Chase
By their Attorney
Wm. J. Kelly

UNITED STATES PATENT OFFICE

2,626,410

COMBINATION FORM AND CLAMP FOR
SHAPING SHOE UPPERS

Fred Ashworth, Wenham, and Ernest E. Chase,
Beverly, Mass., assignors to United Shoe Ma-
chinery Corporation, Flemington, N. J., a cor-
poration of New Jersey

Application June 12, 1951, Serial No. 231,144

10 Claims. (Cl. 12—103)

1

This invention relates to the manufacture of moccasins and is illustrated herein as embodied in shoemaking apparatus of the type disclosed in United States Letters Patent No. 2,274,578, granted February 24, 1942, on an application filed in the names of Fred Ashworth and Paul W. Senfleben, this apparatus being particularly adapted for use in the practice of the method of making moccasins disclosed in United States Letters Patent No. 2,274,576, granted on the same date to the same inventors.

As disclosed in Patent No. 2,274,576, the method referred to involves the use of a hollow metal shaping form or last such as that disclosed in Patent No. 2,274,578, for shaping an upper or moccasin bottom, this form comprising a forepart shaping member adapted to fit onto a number of complementary heel part forms. The moccasin bottom is mounted on the forepart form and is temporarily attached thereto so that the form can be mounted successively on a series of heel part forms in carrying out the various steps of the method. Heretofore, the upper has been temporarily secured in position on the forepart form by fastenings, such as tacks, driven through the upper into blocks or plugs of wood, plastic or similar material which had previously been provided at opposite sides of the form in holes formed therein for receiving the plugs.

The necessity of providing wooden plugs in the opposite sides of the metal forms entailed extra operations in constructing the forms and thus involved additional expense. Since the forms were hollow, the plugs could not always be secured in the forms as strongly as might be required for repeated use in making moccasin type shoes. Moreover, continuous use of the forms caused the plugs to become so badly worn or deteriorated by the repeated driving of tacks therein that in a relatively short time the plugs would not hold the tacks firmly and the moccasin bottom could not be fastened securely enough to the form to permit the subsequent shoemaking operations to be performed.

An object of the present invention is to provide improved apparatus for use in practicing the method above referred to whereby the foregoing difficulties will be eliminated. A further object of the invention is to provide improved means for securing and also positioning an upper or moccasin bottom on a shaping form so that the subsequent operations of constructing the shoe may be performed in accordance with the method referred to above.

To the attainment of these objects, the inven-

tion provides, in accordance with one feature, the combination with an upper shaping form of a resilient member arranged to overhang the edge or marginal portion of an upper mounted on the form, together with means cooperating with said member for forcing its overhanging portion toward the form to clamp the upper thereto. As herein illustrated, the resilient member overhanging the upper preferably comprises a clamping device arranged to be secured rigidly to the form and having a lateral portion or arm thereon overhanging the marginal portion of the upper. The means cooperating with said overhanging means to force it into clamping relation to the upper comprises a relatively flat frame member or plate perforated at its interior by a large opening and adapted to engage the resilient arm of the clamping member and bend it into clamping relation with the upper, said plate being adapted also to engage a fixed portion or element of the clamping device to maintain the resilient arm in clamping position as long as required or until released by an operator.

In accordance with another feature of the invention, the clamping member or device is also provided with means for positioning the upper or moccasin bottom heightwise of the form, this latter means, as herein illustrated, preferably comprising a pair of ears or ledges integral with the body portion of the clamping device and arranged to overlie the edge portion of the form and of an upper mounted thereon, the ledges being thus in position to be engaged by said edge portion when the upper is assembled on the form and thereby position the upper heightwise of the form.

With the above and other objects and features in view, the invention will now be described in detail in connection with the accompanying drawings and will thereafter be pointed out in the claims.

In the drawings:

Fig. 1 is a perspective view of an upper or moccasin bottom secured in position on a forepart shaping form by means of clamping devices which form the subject matter of the present invention;

Fig. 2 is an "exploded" perspective view of one of the clamping devices, including means for securing it to the form;

Fig. 3 is a perspective view of the clamping device being operated with the aid of a special tool to clamp the moccasin bottom to the form;

Fig. 4 is a transverse sectional view of a portion of the form showing the clamping device

located in an operated position thereon; and Fig. 5 is a perspective view, similar to Fig. 3, showing the clamping device being released from its operated position by the tool.

The method of manufacturing moccasins disclosed in Patent No. 2,274,576 above referred to utilizes a metal forepart shaping form 8 (Fig. 1) which may be attached to any one of a number of complementary heel parts (not shown) to produce a complete last. The heel parts are permanently mounted in various pieces of shoemaking apparatus and constitute a portion of the work supports thereof. In practicing the method, the forepart form is attached to a complementary heel part in one of such machines and one or more of the various steps in the manufacture of the moccasin are performed on the upper or moccasin bottom mounted on the complete form. The forepart form and upper are then detached from the complementary heel part and removed from that machine. This process is repeated for subsequent shoemaking operations, the forepart form and shoe being attached to successive complementary heel parts in the various machines.

In the manufacture of moccasins in accordance with the foregoing method, the heel portion of the upper or moccasin bottom is first completely finished and, when in this condition, it is positioned on the forepart shaping form 8 by means of registration marks provided on the form. The upper has been heretofore secured in such position on the form by some sort of temporary fastening means, such as tacks, preparatory to lasting the shoe.

As illustrated in Patent No. 2,274,578 referred to, the forepart shaping form comprises a hollow, metal body portion 10 which is relatively shallow but has a rear or left-hand portion 12 (Fig. 1) which is considerably thicker than the forward portion and is shaped to conform generally to the curvature of the cone portion of a regular last. The thick portion 12 has a dovetail tongue 14 extending heightwise of its rear surface arranged to fit into a corresponding slot provided in the forward face of a heel part form secured in one of the various pieces of shoemaking apparatus referred to above. The upper portion of the forward end of the forepart form comprises a separate member or block 16 which, during the lasting of the shoe, is rigidly secured to the lower portion 10 by a spring-compressed pin 18 mounted in the thick portion 12 and extending upwardly and forwardly at an angle which registers with a hole formed in a projection 20 provided at the rear end of the block 16, the pin 18 having a sliding fit into this hole and being urged outwardly by a spring 21 seated in the hole. As illustrated in Fig. 1, the upper surface of the block 16 is depressed or dished to provide an upstanding rim 22 and a flat interior surface 24. The block 16 is held rigidly in position on the body portion 10 by the pin 18 and by interengaging lugs (not shown) located at the forward ends of the members 10 and 16. The block 16 may be removed from the portion 10 by depressing the pin 20 and then moving the block rearwardly to disengage the lugs.

As indicated above, in practicing the method of Patent No. 2,274,576, a shoe upper A, referred to in the patent as a "moccasin bottom," is mounted on the forepart shaping form 8 and is located thereon by bringing predetermined portions of the moccasin bottom into registration with predetermined points on the forepart form.

As illustrated in Fig. 1, the predetermined portions of the upper may advantageously be ears B integral with a collar C attached to the moccasin bottom, and the predetermined points on the form may be marks or lines 26 provided on opposite sides of the top piece or block 16 on the forepart form. When these points and portions have been brought into proper registration with each other, the upper is temporarily secured to the form to hold it in position thereon. As indicated above, this has been accomplished heretofore by driving tacks through the collar C at the opposite sides of the form into circular plugs of wood, plastic or similar material provided in the metal form adjacent to the ears B. This procedure produced tack holes in the collar C which could never be entirely eliminated and were visible in the finished moccasin, thereby detracting from its appearance. The plugs in the form also become so worn or deteriorated by successive tack holes that the tacks would not hold during the lasting operation. Moreover, such procedure required that each metal forepart form be provided at its opposite sides with the circular plugs for receiving the tacks which entailed additional expense in constructing the forms.

In accordance with the present invention, the upper or moccasin bottom A is temporarily secured in position on the forepart shaping form 8, preparatory to the lasting operation, by clamping the moccasin bottom to the form. As herein illustrated, the thick rear portion 12 of the lower member 10 of the form is provided at its opposite sides with flat-bottomed recesses 28 of considerable size, each recess having a rear wall 30 and a flat horizontal bottom surface 32 (Fig. 4). The flat bottom surface 32 of each recess is provided at its central portion with a hole 34 (Fig. 4) extending heightwise of the form and tapped to receive a threaded fastening, such as a screw 36 having a cylindrical head 38 with a hexagonal socket formed therein for turning the screw.

The screw 36 secures a clamping member or device 40 rigidly in each recess 28. The clamping member 40 is illustrated in Fig. 2, separate from the form 8, together with the screw 36 and further means 42, associated with each clamping member, for causing the latter to clamp the moccasin bottom against the form. As illustrated in Fig. 2, the clamping member comprises a relatively thin plate or base portion 44 preferably composed of spring steel and provided at its outer edge with a resilient arm 46 which extends upwardly a short distance and is then bent over and downwardly again to form a looped portion and a lower clamping portion which projects downwardly therefrom below the base portion 44 between two forwardly extending arms or ledges 48 and 50 formed on the base. The arm 46 is provided with a horizontal notch or depression 52 substantially opposite the ledges 48, 50 and it projects downwardly below these ledges to form an enlarged rectangular clamping portion 54 which is arranged to overhang the edge portion of the upper mounted on the form and is dished or concave on its outer surface to prevent sharp edges from cutting the upper. The lower portion 54 of the arm 46 is inclined slightly inwardly relatively to the upper portion of the arm, the outer side of this upper portion slanting outwardly from top to bottom, as shown in Figs. 2 and 4.

The means 42 referred to as being associated with the clamping member 40 for operating the

5

same comprises a thin, flat plate which is perforated by an opening 56 which is straight at its forward edge but has a rear edge with a notch 58 formed therein complementary in size and shape to the cylindrical head on the screw 36. The 5 plate 42 also has a pair of ears 60 and 62 extending laterally from the opposite sides of its inner end, as illustrated in Fig. 2. As stated above, each clamping member 40 is rigidly secured by its screw 36 to the surface 32 of each recess 28 formed in the opposite sides of the thick portion 12 of the member 10 of the forepart shaping form, the resilient arm 46 being thus located in a position to overhang the edge or marginal portion of an upper or moccasin bottom positioned lengthwise on the form by the positioning marks 26. The upper is positioned heightwise of the form by the ledges 48 and 50 which, as illustrated in the drawings, extend outwardly beyond the form to overlie the top edge or collar C on the upper. The perforate plate 42 is normally located on the clamping device 40 with the straight front edge of the perforation positioned in the horizontal notch 52 in the arm 46 and with its inner portion resting on the head of the screw 36. The side 25 edges of the perforation 56 are slightly shorter than the distance separating the two upper sections of the resilient arm 46 immediately above the notch 52 so that the plate 42 will remain attached loosely to the clamping device without separating therefrom unless the arm 46 is pressed inwardly to permit the plate to be removed. Consequently, the forepart form can be handled conveniently by an operator with the clamping devices secured in the recesses 28 without the plates 35 42 dropping off.

In clamping the moccasin bottom A against the forepart form 8, the plate 42 is forced rearwardly to locate the notch 58 in the rear edge of the perforation 56 over the head 38 of the screw 36, thereby bending the arm 46 inwardly toward the form to force the lower rectangular portion 54 against the upper and thereby clamp the upper tightly against the form.

The notch 58 is then pressed downwardly, as shown in Fig. 3, into engagement with a lower portion of the cylindrical head on the screw 36, this operation preferably being performed with the aid of a special forked tool 64 (Figs. 3 and 5) which engages the ears 60, 62 on the plate 42. The tool 64 has teeth or tines 66 thereon which are bent at substantially right angles about midway of their lengths and are tapered to thin edges at their lower ends. As illustrated in Fig. 3, the tines 66 are placed behind the ledges 48 and 50 on the flat portion 44 of the clamping device and are moved rearwardly against the lateral ears 60, 62 on the perforate plate 42. The handle of the tool 64 is then elevated to force the plate 42 rearwardly and downwardly until the notch 58 passes over the head of the screw 36 as shown in Fig. 4, thereby bending the resilient arm 46, 54 inwardly to clamp the moccasin bottom firmly against the side of the thick portion 12 of the form below the recess 28. Since the plate 42 is retained in position by the pressure of the resilient arm 46 holding it in engagement with the head of the screw 36, the portion 54 of the arm will remain in operative position relatively to the form to maintain the clamping device in clamping relation to the moccasin bottom until released by the operator.

In order to release the clamping device from operative engagement with the moccasin bottom A, the operator reverses the position of the 75

6

forked tool 64, as illustrated in Fig. 5, and inserts the thin ends of the tines 66 between the rear ends of the ledges 48, 50 and the lateral ears 60, 62 on the plate 42. He then moves the handle of the tool downwardly to pry the plate upwardly relatively to the head of the screw 36 and thereby release the plate from its operative position on the clamping device, thereby permitting removal of the upper from the form 8 at the end of the various operations on the shoe. The clamping devices 8 may, however, be permitted to remain in clamping position relatively to the moccasin bottom while the subsequent operations referred to are being performed and it need not be released until the operations are completed and the upper is ready to be removed from the forepart form, this point in the method being the same as when the temporary tacks would have been removed from the upper and form in accordance with the previous method of making shoes referred to above. The clamping devices 8 will not interfere with the subsequent operations upon the shoe but will hold the upper securely in position on the form until these operations have been completed. Moreover, the use of the clamps avoids the necessity of forming tack holes in the collar C of the moccasin bottom and thereby avoids marring the upper in places that would show in the finished shoe. In addition, as stated above, the use of the clamping devices 8 make it unnecessary to provide wooden plugs in each metal form for receiving the tacks and thereby decreases the cost of constructing such forms. Since the clamping devices do not deteriorate from constant use as do the plugs, they will always hold the upper firmly in position, whereas the tacks do not hold properly after the plugs have become worn by continued use.

Having thus described our invention, what we claim as new and desire to secure by Letters Patent of the United States is:

1. The combination of a form for shaping a shoe upper, a resilient clamping member mounted on said form and having a base portion, a looped portion extending heightwise thereof, and an arm arranged to overhang an upper mounted on the form, and means cooperating with said resilient member for bending said looped portion to force its overhanging portion toward the form to clamp the upper against said form.

2. The combination of a form for shaping an end portion of a shoe upper, a member rigidly secured to said form and having a looped portion and an arm arranged to overhang the marginal portion of an upper mounted on the form, and means separate from said member but cooperating therewith to bend said looped portion along an axis extending in a plane parallel to a portion of the bottom of the form to force its overhanging arm toward the form to clamp the upper thereagainst, said separate means being retained loosely on said member when the upper is released.

3. The combination of a form having bottom and side walls for receiving and shaping an end portion of a shoe upper, said form having recesses formed in its side wall, a member secured in each recess and having a resilient arm thereon arranged to overhang the edge portion of an upper mounted on the form, and separate means cooperating with said member for bending said resilient arm toward the form to clamp the upper thereto.

4. The combination of a form adapted to re-

ceive the end portion of an upper to shape the same, said form having recesses in its opposite sides with horizontal surfaces thereon, a member secured to each surface and having a resilient arm forming a leaf spring arranged to be bent inwardly toward the form to clamp the upper thereto, said arm normally overhanging the upper on the form, means separate from said member but held loosely thereon for engaging said arm and forcing it inwardly toward the form until it clamps the upper against said form, and means for engaging said separate means and preventing it from releasing said arm after it has bent the arm into clamping relation with said upper.

5. The combination of a form for shaping an end portion of a shoe upper, said form having recesses formed in its opposite sides, a resilient member secured in each recess and arranged to hang downwardly over the edge portion of an upper mounted on the form, and a rigid perforate plate associated with each resilient member and arranged to be moved relatively to the same to bend the overhanging portion of said member inwardly toward the form to clamp the edge portion of the upper against said form, said resilient member having a notch therein for receiving said plate and maintaining it in position to hold said overhanging portion against the upper until said plate is released by an operator.

6. The combination of a form adapted to be inserted into the forepart of a shoe upper to shape the same, said form being provided with flat-bottomed recesses in its opposite sides, a clamping device in each recess having a resilient arm extending above the recess and then downwardly in position to overlie the edge portion of an upper mounted on said form, a headed fastening securing each clamping device in its recess, and means separate from said member and engaging said resilient arm constructed and arranged to be moved over the head on said fastening and to be pressed downward relatively thereto to bend the resilient arm inwardly toward the form and thereby bring it into clamping relation with the upper, said arm having a depression therein which retains said separate means during its downward movement over said head and thereafter assists in maintaining said separate means in operative position relatively to said arm until released by an operator.

7. The combination of a form adapted to shape the forepart of a moccasin bottom, said form having recesses formed in its opposite sides, a clamping member secured in each recess and provided with a resilient arm normally overhanging the edge portion of the moccasin bottom but spaced outwardly therefrom, said arm being arranged to be bent toward the form to clamp the moccasin bottom thereon, a rigid perforate plate separate from said clamping member but engaging said arm, said plate being constructed and arranged to be moved inwardly relatively to said resilient arm to bend the latter into clamping relation with said moccasin bottom, and fixed

65

means associated with each clamping member and arranged to be engaged by said plate after the latter has been moved inwardly and thereby hold said plate against movement laterally of the form, said resilient arm having means thereon for holding said plate against movement heightwise of said arm, thereby causing the plate to maintain the arm in clamping relation to the moccasin bottom until released by an operator.

8. The combination of a form for receiving and shaping the forepart of a shoe upper, clamping members secured to opposite sides of said form, each clamping member having a resilient arm thereon arranged to overhang the marginal portion

15 of an upper mounted on the form, means integral with each clamping member for engaging the edge portion of the upper and positioning the latter heightwise of the form, and a perforate member loosely mounted on each clamping mem-

20 ber and arranged to be moved relatively thereto to force the resilient arm toward the form until said arm clamps the upper against said form, said arm having means thereon for retaining said plate in operative position relatively thereto so

25 that the arm will clamp the upper until released by an operator.

9. The combination of a form for shaping a shoe upper, said form having recesses formed in its opposite sides, a resilient clamping member secured in each recess and arranged to hang downwardly over the edge portion of an upper mounted on the form, and a rigid perforate plate embracing each clamping member and provided with means arranged to be engaged by a tool

35 for moving said plate relatively to said clamping member to bend the same and cause it to clamp the upper against said form.

10. The combination of a form for shaping a shoe upper, said form having recesses formed in its opposite sides, a resilient clamping member secured in each recess and arranged to hang downwardly over the edge portion of an upper mounted on the form, and a rigid perforate plate embracing each clamping member, said plate having ears extending laterally therefrom and arranged to be engaged by a forked tool for actuating said plate, movement of the plate by said tool in one direction relatively to the clamping member causing the same to be bent to clamp the upper against the form, and movement of said plate by said tool in another direction causing the clamping member to release the upper.

55

FRED ASHWORTH.
ERNEST E. CHASE.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,444,675	Eddins et al.	Feb. 6, 1923
2,301,295	Lafferty	Nov. 10, 1942
2,449,216	Gordon et al.	Sept. 14, 1948