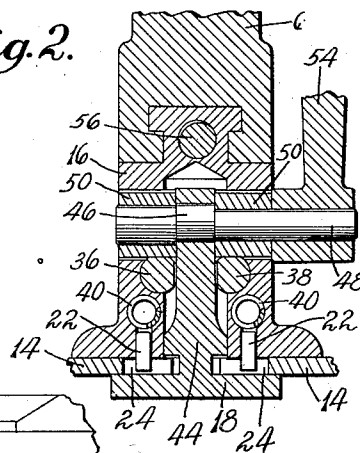
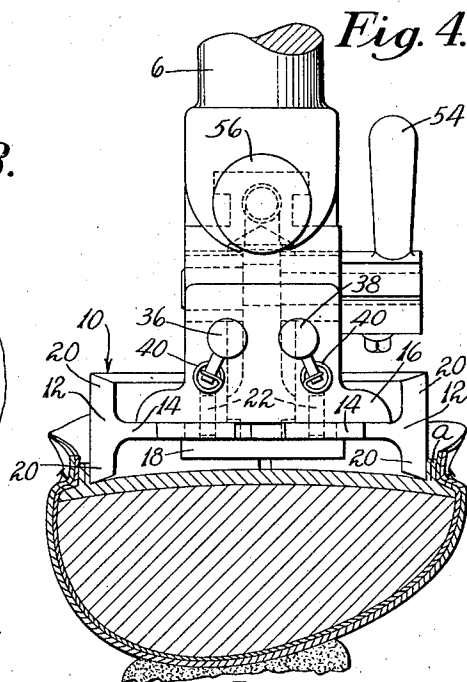
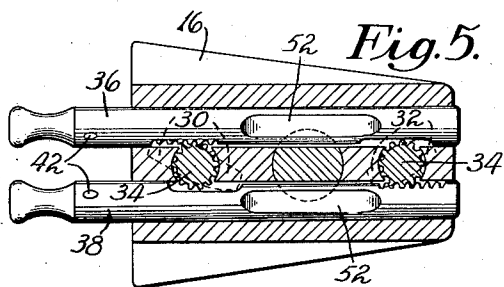


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LASTING MACHINE

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By his Attorney

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LASTING MACHINE

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This invention relates to lasting machines, and more particularly to means whereby shoes are properly positioned and controlled in such machines during the lasting operation. The invention is herein illustrated as applied to a power-operated toe-lasting machine which, except as hereinafter noted, is constructed generally as disclosed in United States Letters Patent No. 2,160,846, granted on June 6, 1939, on an application of F. C. Eastman's and A. F. Pym's. It will be understood, however, that the invention is applicable to various machines.

The machine shown in the above-mentioned Letters Patent is provided with wipers which, after wiping the toe-end portion of an upper heightwise of a last, are advanced and closed to wipe the marginal portion of the upper inwardly over the feather and against the lip of a welt shoe insole on the last. The last and the shoe materials thereon, hereinafter sometimes referred to inclusively as the shoe, are positioned in proper relation to the wipers by a plate formed to engage the inner face of the lip of the insole about the end and along the sides of the toe and having a flange extending heightwise of the shoe to engage also the bottom face of the insole adjacent to the lip, the edge of the flange being contoured lengthwise substantially in accordance with the contour of the bottom of the last. By such engagement with the insole the plate determines in all respects the position of the shoe during the toe-lasting operation, and it also serves to support the lip of the insole against the inwardly directed pressure of the wipers. For satisfactory results, therefore, it is necessary to provide differently formed shoe-positioning plates not only for right and left shoes, respectively, but also for shoes differing substantially in size, the term "size" being herein used generically as applicable to width as well as length. Three or four pairs of right and left plates may thus be required for the usual range of sizes of a class of shoes, as men's or women's shoes, of a given style. Different sets of plates also may be required for shoes of different styles.

An object of the present invention is to eliminate the need for the large number of plates thus required heretofore for positioning shoes and supporting the lips of the insoles. To this and other ends, the construction herein shown comprises a pair of members arranged to engage the inner face of the lip of an insole along the opposite side portions of the toe respectively, and novel means for adjusting these members in directions widthwise of the shoe as required, for

example, for shoes of different sizes, the members having different portions formed for engagement with the insoles of right and left shoes respectively and being invertible to present these different portions in positions for use. In the illustrative embodiment of the invention the construction is such that the members are moved outwardly by spring-operated means to positions determined by their engagement with the lip of the insole of a shoe presented to the machine, after which they are secured in the positions thus determined for use on a plurality of shoes of the same size and style. The members are thus adjustable both bodily and angularly to the lip of the insole, and in the construction shown they are moved equal distances outwardly as above described by cams interposed between them and arranged to act independently of each other on portions of the members located respectively at different distances from the end of the toe. The same members may thus be used on all shoes of a class and of a given style within the range of sizes for that class, and it is contemplated also that the same members may be used on shoes of different styles except where the differences are pronounced.

The above and other features of the invention, including various novel details of construction and combinations of parts, will now be more particularly described with reference to the accompanying drawing and thereafter pointed out in the claims.

In the drawing,

Fig. 1 is a view mainly in left-hand side elevation, showing shoe-positioning means embodying this invention as applied to a machine constructed generally as disclosed in the above-mentioned Letters Patent;

Fig. 2 is a section on the line II—II of Fig. 1;

Fig. 3 is mainly a plan view of the shoe-positioning members in their relation to a shoe;

Fig. 4 shows the shoe-positioning means as it appears in elevation from the front of the machine; and

Fig. 5 is a section on the line V—V of Fig. 1.

As disclosed in the above-mentioned Letters Patent, the machine to which the invention is shown as applied is provided with a pair of toe-embracing wipers 2, only one of which is visible in the present drawing, these wipers being moved upwardly to wipe the toe-end portion of an upper heightwise of a last and being thereafter advanced and closed lengthwise and widthwise of the last to wipe the marginal portion of the upper around the toe inwardly over the feather

and against the lip *a* of a welt shoe insole on the last. Instead of the grippers shown in the above-mentioned Letters Patent for gripping and pulling the upper, there is herein shown a retarder 4 which clamps the margin of the upper outspread on the wipers to assist in controlling it during a portion of the lasting operation, this retarder being constructed and operated as disclosed in Letters Patent No. 2,371,146, granted on March 13, 1945, on an application of P. E. Burby. In Fig. 1 the retarder is shown as it starts to release the margin of the upper just after the wipers have begun their movements to wipe the upper inwardly over the insole.

For positioning a shoe in proper relation to the wipers and for supporting the lip of the insole against the inward pressure of the wipers, such a machine, as hereinabove explained, has been provided heretofore with a plate formed to engage the inner face of the lip of the insole about the end and along the sides of the toe and also to engage the bottom face of the insole adjacent to the lip. Such a plate has been detachably supported on the lower end of a rod corresponding to the rod 6 herein shown, to permit different plates to be substituted for right and left shoes and for shoes of different sizes and styles. The shoe has been clamped against the plate by a toe rest 8 movable upwardly at the beginning of the power operation of the machine. Instead of such a plate, there is herein shown, for purposes of the present invention, a shoe-positioning device indicated generally by the reference character 10, this device comprising a pair of shoe-positioning members 12 adjustably movable relatively to each other in direction widthwise of the shoe for shoes of different sizes. Each of the members 12 has a central web 14 arranged to be clamped against the lower face of a holder 16 by an underlying clamp 18, as hereinafter more fully explained, to hold the member in adjusted position. Extending in opposite directions respectively from the web 14 of each member are flanges 20, these flanges being so formed that when the members are positioned as shown the lower flanges will engage and conform substantially to the contour of the inner face of the lip of the insole of one shoe of a pair and when the members are inverted and occupy reversed positions widthwise of the holder 16 the other flanges will engage and similarly conform substantially to the contour of the lip of the other shoe of the pair. For the purpose of such inversion the members may be withdrawn from between the holder and the clamp 18 when released by the clamp, and then inserted in the proper positions again to be secured by the clamp. To guide them when they are thus inserted and to determine their proper positions relatively to each other lengthwise of the shoe, there are provided two pins 22, one for each member, arranged to extend downwardly from the holder 16 into open slots 24 in the webs 14. In addition to their curvature to conform substantially to the contour of the inner face of the lip, the flanges 20 are also curved lengthwise of the lip on their insole-engaging edges to conform at least approximately to the convex curvature of the bottom of the forepart of the shoe in operating on shoes of styles having such bottom curvature. The edges of the flanges are, moreover, beveled widthwise to facilitate engagement of the flanges with the insole close to the base of the lip.

It will be evident that the pin-and-slot connections between the members 12 and the holder

16 permit the members to be adjusted not only bodily in directions widthwise of a shoe, but also angularly, i. e., by swinging movements about axes extending heightwise of the shoe, to positions required by different shoes. It is contemplated that the members will thus be moved in outward directions to positions determined by their engagement with the lip of the insole of a shoe of a size and style on which the machine is to operate upon the presentation of such a shoe to the machine, after which they will be secured in the positions thus determined for use on a plurality of shoes of that size and style. For thus adjusting the members there are provided two cams 26 and 28 interposed between them in different locations respectively lengthwise of the shoe, the cam 26 having a pair of projections 30 arranged to engage the inner edges of the webs 14 in locations comparatively remote from the end of the toe and the cam 28 having projections 32 arranged to engage the edges of the webs in locations nearer the end of the toe. Upwardly extending stems on the cams are mounted to turn in bearings in the holder 16 and have pinions 34 formed thereon, the pinion associated with the cam 26 being engaged by teeth formed on a rack bar 36 and the other pinion being engaged by teeth formed on a rack bar 38. The two racks bars are movable lengthwise in the holder 16, and in the construction herein shown are each controlled by a separate spring 40 connected at one end to a pin 42 thereon and at the other end to the holder 16. It will be seen that the springs thus tend to move the rack bars in the directions to cause the cams 26 and 28 to impart outward movements to the shoe-positioning members 12. If it be assumed, therefore, that the members are nearer together than required by a shoe presented to the machine, the springs 40 will, upon release of the members by the clamp 18, cause the cams to force them outward equal distances to the positions determined by the lip of the insole, each cam being operated independently of the other to effect such angular adjustment of the members as may be required. Prior to such adjustment of the members to the first shoe of a given size and style the operator will, if the members are not already nearer together than required by such a shoe, move them inwardly by hand after releasing them from the pressure of the clamp 18, the rack bars 36 and 38 being moved in outward directions against the resistance of the springs 40. He will then secure the members in their inner positions by the clamp before presenting the shoe in position for the members to be adjusted to it in the manner above described. It will be understood that since the opposite members, whenever thus adjusted, are moved outward equal distances by the cams, they assume such positions that the lip of the insole at the sides of the toe will be in proper relation to the edges of the wipers appropriate for the given style and size of shoe when the wipers are closed to positions for pressing the margin of the upper against the lip.

The previously mentioned clamp 18, which is a plate-like member extending under portions of the webs 14, has an upwardly extending stem 44 movable upwardly and downwardly in a socket in the holder 16 and having in its upper end a bearing in which is mounted an eccentric 46 fast on a shaft 48. Mounted also on this shaft in such manner as to permit the shaft to turn relatively to them are bushings 50 located re-

spectively at opposite sides of the eccentric 46 in recesses in the holder 16 which are of slightly larger diameter than the bushings to allow for some play. These bushings are arranged to engage flat faces 52 (Fig. 5) formed on the rack bars 36 and 38. Fast on one end of the shaft 48 is a handle 54 for turning it. It will thus be seen that in response to turning movement of the shaft the eccentric 46 moves the clamp member 18 upwardly to clamp the webs 14 against the lower face of the holder 16, and that the eccentric serves upon further turning of the shaft to cause the latter to apply force in a downward direction through the bushings 50 to the rack bars 36 and 38. The effect accordingly is to lock the members 12 frictionally through the clamp member 18 and also to lock the rack bars frictionally through the bushings 50 to cause the cams 26 and 28 to assist in preventing inward movements of the members 12 in response to the pressure applied to the lip of the insole by the wipers. It will be understood that the locking position of the eccentric 46 is approximately its uppermost position, so that the parts will remain locked without the necessity for any additional means to prevent reverse movement of the shaft 48.

The holder 16 in the construction shown is guided for adjusting movements in directions lengthwise of the shoe in a head on the lower end of the rod 6, and it may thus be adjusted by a screw 56 which is threaded in the holder and is held against lengthwise movement by an arm 58 on the head.

Since the manner of use of the illustrative embodiment of the invention will be fully understood from the foregoing description, no further explanation thereof is necessary.

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

1. In a lasting machine, the combination with means for lasting the marginal portion of an upper about the toe end of a last inwardly over an insole on the last and against a lip on the insole, of means for positioning the shoe relatively to said lasting means, said shoe-positioning means comprising a pair of shoe-positioning members arranged to engage the inner face of the lip of the insole at the opposite sides of the toe respectively to determine the position of the shoe laterally and adjustable relatively to each other in directions widthwise of the shoe, and rotatable means interposed between said members for moving them bodily outward to different lip-engaging positions required by shoes of different sizes.

2. In a lasting machine, the combination with means for lasting the marginal portion of an upper about the toe end of a last inwardly over an insole on the last and against a lip on the insole, of means for positioning the shoe relatively to said lasting means, said shoe-positioning means comprising a pair of shoe-positioning members arranged to engage the inner face of the lip of the insole at the opposite sides of the toe respectively to determine the position of the shoe laterally and adjustable relatively to each other in directions widthwise of the shoe, a holder opposite the bottom of the shoe for supporting said members, and cam means on said holder for moving the members outwardly to different lip-engaging positions required by shoes of different sizes.

3. In a lasting machine, the combination with means for lasting the marginal portion of an

upper about the toe end of a last inwardly over an insole on the last and against a lip on the insole, of means for positioning the shoe relatively to said lasting means, said shoe-positioning means comprising a pair of shoe-positioning members arranged to engage the inner face of the lip of the insole at the opposite sides of the toe respectively to determine the position of the shoe laterally and adjustable relatively to each other in directions widthwise of the shoe, and cam means located between said members for moving them equal distances outwardly to different lip-engaging positions required by shoes of different sizes.

4. In a lasting machine, the combination with means for lasting the marginal portion of an upper about the toe end of a last inwardly over an insole on the last and against a lip on the insole, of means for positioning the shoe relatively to said lasting means, said shoe-positioning means comprising a pair of shoe-positioning members arranged to engage the inner face of the lip of the insole at the opposite sides of the toe respectively and adjustable relatively to each other both bodily and angularly in directions widthwise of the shoe, and devices movable independently of each other and arranged to act respectively on portions of said members located at different distances from the end of the toe thus to adjust them.

5. In a lasting machine, the combination with means for lasting the marginal portion of an upper about the toe end of a last inwardly over an insole on the last and against a lip on the insole, of means for positioning the shoe relatively to said lasting means, said shoe-positioning means comprising a pair of shoe-positioning members arranged to engage the inner face of the lip of the insole at the opposite sides of the toe respectively and adjustable relatively to each other both bodily and angularly in directions widthwise of the shoe, and cams arranged to act on said members in different locations lengthwise of the shoe respectively for moving them outwardly to different lip-engaging positions required by shoes of different sizes.

6. In a lasting machine, the combination with means for lasting the marginal portion of an upper about the toe end of a last inwardly over an insole on the last and against a lip on the insole, of means for positioning the shoe relatively to said lasting means, said shoe-positioning means comprising a pair of shoe-positioning members arranged to engage the inner face of the lip of the insole at the opposite sides of the toe respectively and adjustable relatively to each other in directions widthwise of the shoe, a holder opposite the bottom of the shoe for supporting said members, devices rotatable on said holder for thus adjusting the members, pinions rotatable with said devices, and rack bars on the holder engaging said pinions for operating them.

7. In a lasting machine, the combination with means for lasting the marginal portion of an upper about the toe end of a last inwardly over an insole on the last and against a lip on the insole, of means for positioning the shoe relatively to said lasting means, said shoe-positioning means comprising a pair of shoe-positioning members arranged to engage the inner face of the lip of the insole at the opposite sides of the toe respectively and adjustable relatively to each other in directions widthwise of the shoe, rotatable cams interposed between said members for moving them outwardly to different lip-engaging

positions required by shoes of different sizes, pinions rotatable with said cams, and rack bars engaging said pinions for operating them.

8. In a lasting machine, the combination with means for lasting the marginal portion of an upper about the toe end of a last inwardly over an insole on the last and against a lip on the insole, of means for positioning the shoe relatively to said lasting means, said shoe-positioning means comprising a pair of shoe-positioning members arranged to engage the inner face of the lip of the insole at the opposite sides of the toe respectively, a holder supporting said members and having pin-and-slot connections therewith to guide the members for bodily adjustments in directions widthwise of the shoe while permitting them also to swing about axes extending heightwise of the shoe, and means on said holder for moving said members both bodily and angularly in outward directions to different lip-engaging positions required by shoes of different sizes.

9. In a lasting machine, the combination with means for lasting the marginal portion of an upper about the toe end of a last inwardly over an insole on the last and against a lip on the insole, of means for positioning the shoe relatively to said lasting means, said shoe-positioning means comprising a pair of shoe-positioning members arranged to engage the inner face of the lip of the insole at the opposite sides of the toe respectively and shaped to conform substantially to the contour of the lip lengthwise of the latter, said members being adjustable relatively to each other in directions widthwise of the shoe for shoes of different sizes, and means movable to secure the members in adjusted relation after they have thus been adjusted.

10. In a lasting machine, the combination with means for lasting the marginal portion of an upper about the toe end of a last inwardly over an insole on the last and against a lip on the insole, of means for positioning the shoe relatively to said lasting means, said shoe-positioning means comprising a pair of shoe-positioning members arranged to engage the inner face of the lip of the insole at the opposite sides of the toe respectively and shaped to conform substantially to the contour of the lip lengthwise of the latter, said members being adjustable relatively to each other in directions widthwise of the shoe for shoes of different sizes, a holder supporting said members, and means movable to clamp the members against said holder to secure them in adjusted relation.

11. In a lasting machine, the combination with means for lasting the marginal portion of an upper about the toe end of a last inwardly over an insole on the last and against a lip on the insole, of means for positioning the shoe relatively to said lasting means, said shoe-positioning means comprising a pair of shoe-positioning members arranged to engage the inner face of the lip of the insole at the opposite sides of the toe respectively and shaped to conform substantially to the contour of the lip lengthwise of the latter, said members being bodily adjustable relatively to each other in directions widthwise of the shoe for shoes of different sizes, a holder supporting said members, a clamping device movable to clamp the members against said holder to secure them in adjusted relation, and an eccentric on the holder for thus operating said clamping device.

12. In a lasting machine, the combination with means for lasting the marginal portion of an upper about the toe end of a last inwardly over an

insole on the last and against a lip on the insole, of means for positioning the shoe relatively to said lasting means, said shoe-positioning means comprising a pair of shoe-positioning members arranged to engage the inner face of the lip of the insole at the opposite sides of the toe respectively and adjustable relatively to each other in directions widthwise of the shoe for shoes of different sizes, means for thus adjusting said members, and means movable to secure said members in adjusted relation by frictional engagement both with the members and with said adjusting means.

13. In a lasting machine, the combination with means for lasting the marginal portion of an upper about the toe end of a last inwardly over an insole on the last and against a lip on the insole, of means for positioning the shoe relatively to said lasting means, said shoe-positioning means comprising a pair of shoe-positioning members arranged to engage the inner face of the lip of the insole at the opposite sides of the shoe respectively and adjustable relatively to each other in directions widthwise of the shoe for shoes of different sizes, a holder opposite the bottom of the shoe for supporting said members, means on said holder for thus adjusting the members, a clamping device movable to clamp the members against said holder to maintain them in adjusted positions, a member for operating said clamping device, and additional means arranged to be operated by said member to lock said adjusting means against movement.

14. In a lasting machine, the combination with means for lasting the marginal portion of an upper about the toe end of a last inwardly over an insole on the last and against a lip on the insole, of means for positioning the shoe relatively to said lasting means, said shoe-positioning means comprising a pair of shoe-positioning members arranged to engage the inner face of the lip of the insole at the opposite sides of the toe respectively and adjustable relatively to each other in directions widthwise of the shoe for shoes of different sizes, a holder opposite the bottom of the shoe for supporting said members, devices rotatable on said holder for thus adjusting the members, pinions rotatable with said devices, rack bars on the holder engaging said pinions for operating them, and means movable to clamp the members against said holder and also to lock said rack bars frictionally against movement to maintain the members in adjusted positions.

15. In a lasting machine, the combination with means for lasting the marginal portion of an upper about the toe end of a last inwardly over an insole on the last and against a lip on the insole, of means for positioning the shoe relatively to said lasting means, said shoe-positioning means comprising a pair of shoe-positioning members arranged to engage the inner face of the lip of the insole at the opposite sides of the toe respectively and adjustably movable relatively to each other in directions widthwise of the shoe to positions required by shoes of different sizes, spring means for thus moving said members outwardly to positions determined by their engagement with the lip of the insole of a shoe presented to the machine, and means for securing the members in the positions thus determined for use on a plurality of shoes.

16. In a lasting machine, the combination with means for lasting the marginal portion of an upper about the toe end of a last inwardly over an insole on the last and against a lip on the insole, of means for positioning the shoe relatively

to said lasting means, said shoe-positioning means comprising a pair of shoe-positioning members arranged to engage the inner face of the lip of the insole at the opposite sides of the toe respectively and adjustably movable relatively to each other both bodily and angularly in directions widthwise of the shoe to positions required by shoes of different sizes, spring-operated devices movable independently of each other and arranged to act respectively on portions of said members located at different distances from the end of the toe thus to move them outwardly to positions determined by their engagement with the lip of the insole of a shoe presented to the machine, and means for securing the members in the positions thus determined for use on a plurality of shoes.

17. In a lasting machine, the combination with means for lasting the marginal portion of an upper about the toe end of a last inwardly over an insole on the last and against a lip on the insole, of means for positioning the shoe relatively to said lasting means, said shoe-positioning means comprising a pair of shoe-positioning members arranged to engage the inner face of the lip of the insole at the opposite sides of the toe respectively and adjustably movable relatively to each other both bodily and angularly in directions widthwise of the shoe to positions required by shoes of different sizes, rotatable cams arranged to act on said members in different locations lengthwise of the shoe respectively to move them outwardly to positions determined by their engagement with the lip of the insole of a shoe presented to the machine, pinions rotatable with said cams, rack bars engaging said pinions to operate them, spring means for operating the rack bars thus to move the members outwardly, and means for securing the members in the positions thus determined for use on a plurality of shoes.

18. In a lasting machine, the combination with means for lasting the marginal portion of an upper about the toe end of a last inwardly over an insole on the last and against a lip on the insole, of a pair of members arranged to engage the inner face of the lip of the insole along the opposite sides of the toe respectively to support the lip against the pressure of the lasting means, spring means for moving said members relatively to each other to positions determined by their engagement with the lip of the insole of a shoe presented to the machine, and additional means for preventing displacement of the members from the positions thus determined in response to the pressure of the lasting means on the lip of the insole in the operation of the machine thereafter on a plurality of shoes.

19. In a lasting machine, the combination with means for lasting the marginal portion of an upper about the toe end of a last inwardly over an insole on the last and against a lip on the insole, of a pair of members arranged to engage the inner face of the lip of the insole along the opposite sides of the toe respectively to support the lip against the pressure of the lasting means, means for moving said members relatively to each other both bodily and angularly widthwise of a shoe presented to the machine to positions determined by their engagement with the lip of the insole, and means movable to secure the members against displacement from the positions thus determined in response to the pressure of the lasting means on the lip of the insole in the operation of the machine thereafter on a plurality of shoes.

20. In a lasting machine, the combination with means for lasting the marginal portion of an upper about the toe end of a last inwardly over an insole on the last and against a lip on the insole, of a pair of members arranged to engage the inner face of the lip of the insole along the opposite sides of the toe respectively to support the lip against the pressure of the lasting means, a holder supporting said members and relatively to which they are adjustably movable in different directions respectively to positions required by shoes of different sizes, and means movable to clamp the members against said holder to prevent their displacement by the pressure of the lasting means on the lip of the insole.

21. In a lasting machine, the combination with means for lasting the marginal portion of an upper about the toe end of a last inwardly over an insole on the last and against a lip on the insole, of a pair of members arranged to engage the inner face of the lip of the insole along the opposite sides of the toe respectively to support the lip against the pressure of the lasting means, a holder opposite the bottom of the shoe for supporting said members, means for maintaining said holder in a fixed position as successive shoes are presented to the machine, and rotatable cam means on the holder between said members for moving them outwardly to different adjusted positions.

22. In a lasting machine, the combination with means for lasting the marginal portion of an upper about the toe end of a last inwardly over an insole on the last and against a lip on the insole, of a device for positioning the shoe relatively to said lasting means by engaging the inner face of the lip of the insole around the toe and by engaging also the bottom face of the insole adjacent to the lip, said device having a flange portion arranged to extend heightwise of the shoe thus to engage the insole and having also another flange portion for similarly engaging the insole of the other shoe of a pair when the device is inverted.

23. In a lasting machine, the combination with means for lasting the marginal portion of an upper about the toe end of a last inwardly over an insole on the last and against a lip on the insole, of a device for positioning the shoe relatively to said lasting means by engaging the inner face of the lip of the insole around the toe and by engaging also the bottom face of the insole adjacent to the lip, said device having a flange portion arranged to extend heightwise of the shoe thus to engage the insole and having also another flange portion for similarly engaging the insole of the other shoe of a pair when the device is inverted, the edge of each of said flange portions being curved lengthwise to conform substantially to the curvature of the bottom of the shoe and being beveled widthwise to insure contact with the insole at the base of the lip.

24. In a lasting machine, the combination with means for lasting the marginal portion of an upper about the toe end of a last inwardly over an insole on the the last and against a lip on the insole, of a device for positioning the shoe relatively to said lasting means by engaging the inner face of the lip of the insole around the toe and by engaging also the bottom face of the insole adjacent to the lip, said device having a flange portion arranged to extend heightwise of the shoe thus to engage the insole and having also another flange portion for similarly engaging the insole of the other shoe of a pair when

the device is inverted, the device also being divided to provide two parts relatively adjustable widthwise of a shoe.

25. In a lasting machine, the combination with means for lasting the marginal portion of an upper about the toe end of a last inwardly over an insole on the last and against a lip on the insole, of a device for supporting said lip against the pressure of the lasting means by engaging

the inner face of the lip, said device having a central web portion and flanges extending in opposite directions from said web portion for thus supporting the lips of the insoles of right and left shoes respectively, the device further comprising two parts relatively adjustable widthwise of a shoe.

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