MACHINE FOR OPERATING UPON INSOLES AND METHOD WHICH MAY BE PERFORMED THEREBY
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My invention relates to the production of insoles for shoes, it being especially concerned with the formation thereon of the rib to which the shoe-upper is attached during the lasting operation.

A known form of insole is made by channeling a blank, as of leather, about its edge with one portion of the divided material thicker than the other, the thinner portion, or lip, being at the flesh side; trimming the portion at the grain side, so a margin of the lip extends beyond it, and, finally, folding this wider portion upon itself to furnish a lasting-rib. The rib thus formed is integral with the body of the blank and may be held in place by an adhesive connection between the adjacent faces of the divided portions. An object of the invention is to produce such an insole rapidly and effectively, and it includes both a machine and a method in the performance of which such machine may be employed.

The machine of my invention, by which the above object is attained, has a support which may be in the form of a table for a blank being operated upon, co-operating means, as a wall over which the lip of the blank is formed or molded to furnish a rib and by which the blank may be located for such formation, together with means for pressing the lip upon the forming means and the opposite sides of the thus-formed rib toward each other. The wall may be a part of a lower former, and the pressure applied by a co-operating, movable upper former. There is preferably a member acting to wipe or position the lip across the wall or forming means. The operation upon the blank occurs in successive steps, alternating with feeding steps, during which the work is advanced by movement of an oscillatory carrier, upon which the blank-engaging elements are movable in their forming action. A presser-foot acts to clamp the work upon the table during the idle or return travel of the carrier, with the engaging elements separated from the blank. In connection with these principal instrumentalities and their actuating, driving and controlling means, the following features are among the improvements which I have made. The means through which the blank-engaging and blank-feeding elements are operated are so arranged in their enclosing casing as to permit easy access to them. A simple mounting for the blank-supporting table is provided, by which its direction of blank-presenting movement is maintained vertical. The elements by which the lasting-rib is formed are constructed and arranged to most effectively perform their functions and, together with the blank-clamping member, are actuated by compact, durable and readily adjustable mechanism which will impart the various movements in the correct time relation. The feeding mechanism by which the blank is advanced for the operations upon it and which acts in alternation with the forming means, is conveniently arranged for adjustment as to the rate of feed while the machine is in operation. Motion is transmitted from the driving mechanisms to the mechanisms for actuating the blank-engaging elements and for advancing the blank, by similar means, strong and free from complication, which gives for the two actuating mechanisms their alternate periods of activity and rest. As the driving mechanisms best operate constantly, while movement is communicated to the actuating mechanisms belonging respectively to the engaging and feeding means only when an insole-blank is in place and ready for the formation of its rib, there is coupling means between the two pairs of mechanisms which is controlled by the introduction of the blank into the machine. In this connection, when the actuating mechanisms and driving mechanisms are uncoupled upon the removal of the formed insole, all the driven elements are brought to rest in predetermined positions, ready for the succeeding operation. The carrier for the blank-engaging elements, which carrier is moved to effect the feed, is itself movable under the influence of said engaging elements to a position in which it governs the coupling of the actuating and driving mechanisms and is there temporarily secured. It is released at the termination of an operating cycle as an incident to another act on the part of the operator. The method of this invention concerns the formation of the lasting-rib of an insole from a blank having its edge divided into a body-portion and lip. In accordance with this method, the lip of the blank is positioned over a wall, formed upon said wall and pressed at its margin against the divided body-portion. There is produced an insole having a lasting-rib of great stability, which consists of a double thickness of the material integral with the body of the blank. In alternation with the rib-forming steps, the blank is advanced along the wall for the succeeding forming steps. By operating upon a blank the adjacent divided surfaces of which have been coated with an adhesive, the pressure of the marginal portions together will cause them to adhere and retain permanently the form which has been imparted to the rib. In the preferred
procedure, the body-portion of the blank is inserted between the wall and a support spaced therefrom and located by contact of the lip with the wall, said lip then being positioned over the wall and molded to form.

Certain of the claims of this application are generic to features disclosed in an application for an invention in Insole-covering machines, filed in my name in the United States Patent Office on June 3, 1938, and bearing the Serial Number 211,509.

In the accompanying drawings,

Fig. 1 is a top plan view of a particular embodiment of my invention;

Fig. 2, a horizontal sectional detail through the feed-varying mechanism;

Fig. 3, a broken front elevation;

Fig. 4, a similar view from the rear;

Fig. 5, a like view, looking from the right in

Fig. 3;

Fig. 6, an enlarged broken detail in side elevation of the position-controlling means for the actuating mechanism;

Fig. 7, a vertical section on the line VII—VII of

Fig. 4;

Fig. 8, a side elevation, viewed from the left in Fig. 3 and including the elements operating upon the work and those more closely associated therewith;

Fig. 9, an enlarged detail in front elevation of the upper former and its mounting;

Fig. 10, an inclined plan of the position-controlling means of Fig. 6;

Fig. 11, an enlarged sectional detail on the line XI—XI of Fig. 8;

Fig. 12, an enlarged detail in side elevation of the work-engaging elements in their positions at the time of application of the work and looking from the right in Fig. 9;

Fig. 13, a like view of the same parts in their operating positions;

Fig. 14, a view similar to Fig. 13 but on a larger scale and seen from the opposite side;

Fig. 15, a perspective view of the elements in the relations of Fig. 13;

Figs. 16 and 17, horizontal sections on the line XVI—XVI of Fig. 13, illustrating the elements, respectively, at the beginning and at the end of the work-advancing movement;

Fig. 18, a perspective view of an insole-blank adapted for forming by the machine of the present invention, and

Fig. 19, a like view of the formed insole.

The work performed by the machine of this invention will be understood by reference to Figs. 18 and 19 of the drawings. In Fig. 18, an insole-blank \( i \) is illustrated, this being preferably of leather. It is divided or channeled at \( a \) in its edge about the shank and forepart from the breast-line, thus forming a relatively thin lip or flap \( b \) and a thicker marginal body-portion \( c \), the lip being wider than the body-portion. An adhesive, such as latex, having been applied to the adjacent surfaces of the portions \( b \) and \( c \), this extending over the full width of the lip, said lip is folded up itself, as appears at \( d \) in Fig. 19, while the remainder of the excess of width of the lips is pressed down upon the body-portion. The adhesive ensures the opposed surfaces to each other, and there results an insole \( I \) having the lasting-rib \( d \), while the margin outside the rib is of substantially the same thickness as the remainder of the insole.

The illustrated machine includes a column \( 10 \) upon which are carried, one upon another, a lower casing section \( 12 \), an upper casing-section \( 14 \) and a cover \( 16 \). Depending from the upper section into the lower are opposite site brackets \( 18, 18 \) (Fig. 4). Upon these brackets and upon the upper section itself, the major portion of the driving and actuating elements of the machine are supported. By removing the securing screws \( 19 \), which pass through the cover and into an intersection of the lower into the lower, and the making of a limited number of disconnections, the upper casing-section with the supported elements may be removed as a unit. This gives easy access to all these parts for inspection or repair. The lower section of the casing is adapted to contain mounting bolts and to lubricate the various connections by splash-effect. Arranged at the front of the casing for vertical oscillation in parallel planes are arms \( 20, 20 \) pivoted at \( 21, 21 \) upon the casing-section \( 22 \) and carrying at their outer extremities a holder member \( 22 \). The pivots are supported from each other vertically to give a parallel motion, thus maintaining the axis of the member \( 22 \) against angular displacement. Upon the upper extremity of the holder member, a work-supporting table \( 24 \) is rotatable upon ball-bearings \( 26 \). From the holder depends a rod \( 28 \), extending through an opening in a bracket \( 30 \) projecting from the casing. Surrounding the rod, and abutting at its upper end against the holder and at its lower against a screw \( 32 \) threaded vertically into the under side of the bracket, is a spring \( 34 \). The screw \( 32 \) has a longitudinal passage to receive the rod. The spring holds the table normally raised by a force dependent upon the adjustment of the screws and to an extent determined by a collar \( 36 \) threaded upon the rod and contacting with the lower end of the screw. The table may be lowered through a connection \( 38 \) between the rod and an unillustrated treadle.

Rising from the casing-section \( 12 \) is a spindle \( 40 \), about which is mounted to oscillate horizontally a carrier \( 42 \) stepped upon a bearing \( 44 \) on the section \( 12 \) (Fig. 7). The carrier may be raised against the expansive force of a spring \( 45 \) interposed between it and the section \( 14 \) and surrounding the spindle \( 40 \). Upon the carrier the forming elements of the machine are movable, and they are also oscillated by the carrier to effect the feed of the work. These elements consist of a lower former \( 46 \), an upper former \( 48 \) and a wiper \( 50 \) (Figs. 12 and 13). In addition to these, there is a presser-foot \( 52 \) supported upon the casing-section \( 14 \) to move toward and from the table \( 24 \) and acting to retain the work against displacement oppositely to the direction of feed.

Considering the lower former \( 46 \), this projects over the table from a slide \( 54 \) guided for vertical movement in an arm \( 56 \) upon the carrier \( 42 \). It is drawn normally down into contact with the table by a tension-spring \( 58 \) joining the slide to its mounting. It is thus arranged to follow the table in its vertical movement. As best shown in Figs. 12 to 17, the former \( 46 \) consists of a plate which is joined to the slide \( 54 \) and lies parallel to the work-supporting member of the table \( 24 \). There is an upwardly rounded deflector \( 60 \) at the end of the plate from which the work approaches, and a vertical forming wall \( 62 \) extends from the deflector along the outer edge of the plate. The wall serves not only as a form over which the rib \( 6 \) of the insole is molded, but also as a gage to which the
under side of the lip b is presented to determine the transverse relation of the blank i to the operating instrumentalities. The upper former 48 and the wiper 50, with their immediate mountings, are shown in detail in Figs. 9 and 12 to 15. Their actuating mechanism is best illustrated in Figs. 3, 5, 7 and 8. Referring now to Fig. 2, horizontal spindle 10, to one extremity of which is secured an upwardly and outwardly extending arm 72, while, upon the opposite end of the spindle, a short, generally vertical arm 74 is fast. Between these two arms there projects from the carrier an arm 75, which has clamped at its upper end a horizontal spindle 71. At one side of the carrier-arm 76, a depending arm 78 is free to swing upon the spindle 71, this having the wiper 50 clamped at its lower end by a screw 79 for vertical adjustment. Upon the spindle 71, at the side of the arm 18 opposite the wiper-arm, a lever 80 oscillates, the upper arm of this lever being con nected to an actuating link 82. A downwardly extending arm of the lever has an opening furnishing ways in which a block 84 may reciprocate, this block being joined by a pin 86 to the arm 72, which is parallel to it. Movement of the lever is just controlled so that the lower end of the upper former 48 into and out of co-operation with the lower former 46. At the same time, the oc cillation is being transmitted to the arm 74 for the purpose of yieldably actuating the wiper-arm 78. Pivoted to the arm 74 at 88 is a rod 89 passing through an opening in a rearward angular ex tension 92 of the wiper-arm. Surrounding the rod is an expansion-spring 94, abutting at its lower extremity against a collar 95 fast upon the rod and at its upper extremity against the arm extension. A collar 98 upon the rod limits the outward movement of the extension. It will be seen that as the arm 74 swings to the left, as viewed in Fig. 7, the spring 94, acting upon the extension of the arm 78, will move the wiper yieldably toward the wall 62 of the lower former, and that, upon opposite movement of the arm 74, the collar 98 will positively withdraw the wiper. This wiper acts in advance of the upper former 48 to correctly position the blank i, and par ticularly the lip b, for the forming action. It has a horizontal portion 100, which, at its inner edge, is journaled transversely to the outer end of the lip, and thereupon to preliminarily fold the lip of the blank over the wall. The wall-portion 100 has depending from it a vertical portion 102, which holds the lip against the wall. As to the construction of the upper former 48, upon a depending portion 104 of the arm 72, a block 108 is mounted by a tongue-and-groove connection 105 (Fig. 9), being retained adjust ably in place by a slot-and-screw connection 110. Its position may be varied to obtain the correct relation to the lower former-wall 62 by a screw 112 threaded into the arm and having a flange rotatable between lugs 114, 114 at the top of the block. Attached to the block for co-operation with the outer face of the wall 62 of the lower former is a wall 115. Opposite this is a yieldable pressure-slide 118 movable in ways 120 of the block (Fig. 15) and urged toward the wall 116 by a spring 119 fixed in the lower extremity and secured to the block. The slide is cut away at 123 to furnish a space of minimum width, determined by the contact of the slide above the space with the inner face of the wall 116. This limits the travel of the slide under the influence of the spring. When the upper former is lowered by the arm 72, the insole-lip b, already turned down over the lower former-wall 62 by the wiper 50, is molded over said wall by the pressure upon its opposite sides between the wall 116 of the upper former and its slide 118. The yield of the latter allows it to accommodate itself to the vertically disposed lip-surface as this is approached in an inclined condition and adapt it to stock of different thicknesses, thus avoiding crushing the lip. The presser-foot 52 is arranged to engage the work upon the table 24 just in advance and at the outer side of the path of the wiper 50. It is shown (Figs. 5 and 6) as mounted in ways 124 for horizontal adjustment under the control of a clamping screw 125 upon a vertical end-section 126 of a lever 121 fulcrumed at 128 at one side of the casing-section 14. The section 126 is tongued into a horizontal end-section 129 of the lever and is adjustable thereon vertically by the engagement of the head of a screw 130 (Figs. 1 and 3) threaded into the section 129, its position being fixed by a slot-and-screw connection 131. The section 129 is, in turn, tongued into the lever 121 to be varied in position from front to rear of the machine by a screw 132, threaded into the end of the lever that extends circumferential groove receiving a projection from the section 129. A slot-and-screw connection 134 fixes the position obtained by the screw 132. By this arrangement, there is furnished for the presser-foot a universal adjustment to locate it to the best advantage with respect to the isolated work-engaging elements. For example, it may be brought close to these when the machine is to operate about curves of small radii, such as occur in insoles with pointed toes. The lever is oscillated to lower and raise the presser-foot into and out of engagement with the work upon the table by a cam-slot 144 at the inner end of the lever. This slot receives a roll 146 forming a part of the actuating mechanism A, which, with its companion mechanism B, will now be described. Referring particularly to Figs. 1, 4 and 5 as most clearly illustrating the actuating mechanism A, which imparts to the upper former 48 and the wiper 50 their work-forming movements and to the presser-foot 52 its work-clamping effect, there is shown at 150 a casing-bracket 18 a crank-shaft 151 rotatable in a bracket 152 secured to the outside of the casing-section 12. The shaft is shown as driven by belt-gearing. The removal of the shaft 151 prepares for the separation from the machine of the casing-section 14, with the various elements which it carries. The shaft 145 rotates continuously during the operation of the machine two cranks 153, 154 within the casing. The crank 153 is joined by a connecting rod 156 to the lower end of a lever 150 fulcrumed at 159 upon one of the casing-brackets 18. The upper arm of the lever, together with a link 160, furnishes a vertically ex tending toggle which transmits power to a horizontally extending toggle-lever 162, 162. The rear extremity of this toggle is fast upon a spindle 162 fixed across the rear of the casing-section 14. The forward end of the toggle 162 was ar ticulated to a substantially vertical arm 164 ar ranged to turn about a sleeve 165 (Fig. 10) sur rounding a horizontal spindle 163 fixed in the casing-brackets. The arm 164 oscillates unint erruptedly while the shaft 149 is in rotation. Se-
cured to the upper extremity of the arm 164 is a contact-piece 182, which has a downward projection 178. To intermittently communicate the movement of the arm to the operating elements, there is an arm 172 arranged to oscillate about the spindle 166. As illustrated, the sleeve 165 is in the form of a lateral extension from this arm. To an upward and rearward extension 176 of the arm 172 is joined the link 82 for actuating the wiper and the upper former. Pivoted upon a spindle 178 fixed in the arm 172 is a connecting arm 180, in the upper rear portion of which is a depression 182 for the reception of the projection 178. Beyond the depression, toward the end of the connecting arm, is a curved surface 183. This surface may be swung against the projection and ride upon it, until, as the arm 164 oscillates, the depression comes into registration with said projection. Then, when the depression is seated upon the projection as a result of upward movement of the arm 160 under the influence of a tension-spring 184 joining its outer extremity to the arm-extension 176, the arm 164 will be coupled to and will drive the arm 172 and the link 82. It will be observed that as the crank 153 turns through 360° in the direction of the arrow in Fig. 5, the slanting surface of the toggle 162, thrown in a broken position slightly at the lower side of the center will give a considerable rest-period, during which occurs the coupling action between the depression and the projection. Then, the toggle is broken upwardly through a substantial angle to swing the arm 164 to the right to actuate the upper former and wiper, the presser-foot at this time rising from the work under the influence of the cam-slot 144. After this, the toggle is maintained broken to hold the engagement of the elements with the work, while the feeding movement of the carrier 42 takes place. Then the toggle is again straightened to widen the upper former and the wiper, while the presser-foot descends to its work-clamping position. This allows the reverse movement of the carrier 42 in preparation for the succeeding operating cycle.

The above-described action by the arm 180 between the arms 164 and 172 is preferably under the control of the work when this is in operating position. Pivoted upon the casing-section 14 is a latch 190 (Figs. 1, 5 and 7), which normally engages at its inner end a short upward extension 192 of the connecting-arm 180. This latch holds the arm down, so the depression 182 is spaced from the projection 170, and the driving arm 164 and driven arm 172 are disconnected.

The latch 190 is geared at 198 to a short lever 196 fulcrummed at the top of the case. Upon a forward extension of this lever a block 199 is pivoted, this lying within a horizontal slot in an arm 200 projecting from a rod 202 rising above the carrier.

Considering the release of the latch so the operating elements may be actuated, the lower end 198 of the wiper 59 is normally spaced from the work-supporting surface of the table 24, so there is no lifting effect upon either the wiper or the carrier, to which the former is joined through the carrier-arm 76. The operator lowers the table by the traverse-connection 38, introduces an insole-blank over the table beneath the wiper and releases the traverse 24, both by forcing the blank against the end of the wiper, thereby elevating the arm 76 and the carrier 42 upon its spindle 40. Consequently, the carrier-arm 200 rises, swinging the lever 195 to lift the latch 190. This frees the connecting arm 180, and, drawn up by the spring 184, its depression 182 engages the projection 178, either directly or as a result of the travel of the surface 183 upon the projection. The act of the surface 183 and the upper former 48 at once begins, because of power applied by way of the link 82 from the driving connection thus established. The wiper starts its lip-folding movement, followed at once by the upper former. As soon as said upper former descends and presses against the work, the force which it receives reacts upwardly upon the carrier through the spindle 70 to complete the elevation of the carrier. In consequence of this, the wiper is separated somewhat from the face of the blank, leaving it free to hold the lip 80 against the wall 82. In its raised operating relation, the carrier is temporarily maintained by a latch 206 pivoted upon the frame and urged in by a tension-spring 208 joining it to the arm 30. It passes beneath a shoulder 210 upon the carrier. An eccentric-mounting 212, upon which the latch is pivoted, facilitates the adjustment of its engaging end with relation to the shoulder. When, upon completion of the operation upon the insole, the table 24 is lowered to remove the work, a projection 214 from one of the supporting arms 28 (Figs. 3 and 5) strikes a contact- easing of the toggle 162, tending to raise the tail 216 of the latch 206. The carrier 42 is thereby released, to be returned to its initial position by gravity and by the spring 45. Attention has already been directed to the cam-slot 144 in the lever 127 carrying the presser-foot 52 and to the actuating roll 146 lying in said slot. The roll is arranged to turn upon the spindle 178 fixed in the arm 172, so as this arm is oscillated under the control of the connecting arm 180, the presser-foot-lever is rocked.

The contour of the cam-slot is such that the presser-foot is alternately lowered and raised to clamp the work upon the table and to release it for feeding, this occurring in the proper time-relation to the movements of the forming members, as already pointed out. The carrier 42 is oscillated to feed the work forward for successive forming while the forming instrumentalities are in engagement with said work. This movement of the carrier is produced by the actuating mechanism B, which is driven from the crank 154. Since this crank is 90° behind the crank 153, which has already been described, the operation of the mechanism B is the same as that of mechanism A, the more exactly corresponding parts in the two mechanisms are designated by the same numerals, those forming 38 for means 39. The other parts, from the superscript b. From Fig. 1, it will be seen that the latch 190 is common to the two mechanisms, so the elevation of the carrier under the control of the work renders both effective. When the latch is released, and driving engagement is established for the mechanism B, a link 220 ac-
tuated by the toggle 162 transmits movement to an arm 222 pivoted at 224 upon the casing-section 14 (Figs. 2, 7 and 11). Oscillating with and below the arm 222 is an arm 226, which at its under side has a guide-channel to receive a block 228. Turning in a vertical bore in this block is a pin 230, rising from a plate 232 supported for reciprocation along an arm 234 projecting from the carrier 42 parallel to the arm 226. As the arm 222 is oscillated by the actuating mechanism B, so too will be the arms 226 and 234, the latter imparting the feeding movement to the carrier and the oscillating elements. It will be obvious that the arc through which said operating elements are swung by the carrier, and therefore the length of the feeding steps, will vary according to the position of the slide 232 upon the arm 224 and the corresponding location of the block 228 in the arm 226. To enable the operator to govern the feed, I provide means by which these connecting elements between the two arms may be shifted readily, while the machine is in operation. Pulverummed about a spindle 240 fixed near the bottom of the carrier is a vertically disposed bell-crank-lever 242, an upwardly extending arm of which is united by a link 244 to the slide 232. To an outwardly extending arm of the bell-crank is joined a link 246 arranged for convenient actuation by the operator, as through a treading. A torsion-spring 248 secured at its ends to the fulcrum-spindle and the lever 242 so holds the connecting elements that the slide and block are normally in proximity to the outer ends of their arms, giving feeding steps of the maximum length. If there is some condition making desirable a less rapid advance of the work, a portion of the horizontal arm of the lever 242 and of the elements which it controls may be adjustably determined by a lateral pin 245 movable with the lever between opposite stop-screws 245, 245. These screws are threaded through a two-armed bracket 247 fixed upon the carrier 42.

After the machine has been in operation and is stopped by the lowering of the table 24, with the consequent release of the lever 256 and the connecting arms 150 and 150 of both actuating mechanisms A and B from the lever 190, the arms 154, 160 should be brought to rest in predetermined angular positions. This is to cause the elements which operate upon the work to be in the correct positions for the initiation of the machine-cycle when actuating engagement of the connecting arms 180, 180 and the driving arms 164, 160 of mechanism A, and the driven arms 172, 172 should be at their extreme forward positions as the toggles 152, 152 are strengthened and are substantially at rest. This relation allows the proper engagement of the depression 125 with the projection 170. Considering the foregoing and referring to Figs. 5, 6, 7 and 10, this arm has projecting downwardly and forwardly from it a short extension 256, which is provided at its end with a surface 256 of considerable area. Guided in a bracket 254 secured to the casing-bracket 18 is a plunger 256 provided upon its head with an end-surface 256 arranged for engagement with the lever-surface 252. The plunger is urged upwardly by an expansion-spring 256 encircling its stem and abutting against a screw 256 threaded into the bracket at the lower end of the plunger passage. Turning in the bracket is a horizontal spindle 256, and about this spindle is an eccentric-sleeve 256. Clamped upon the sleeve by a screw 256 is a latch 260 having a hooked end urged toward the edge of the head of the plunger 256 by a spring 256 interposed between the bracket and a depending tail of the latch. The relation between the plunger-head and the angular end of the latch may be adjusted by altering the position of said latch about the eccentric-sleeve. It will be observed that when the arm 125 is in rest, its position is always maintained by contact between the surfaces 252 and 256, caused by the spring 256. As soon as oscillation of the arm 125 begins, its extension 256 is rocked, and one edge of the surface 252 camms down the plunger-surface to allow the hooked end of the latch to pass over the head of the plunger. This is now held away from the extension 256, save for a slight contact at the extreme position of the arm which caused the latching. The latched relation continues during the operation of the machine. Upon depression of the table 24 and consequering of the latch 190 to engage the arm 185 and disconnect the arm 172 from the driving means, the spindle 256 is rotated anticlockwise (Fig. 5).

This is accomplished by a link 274 which joins the latch 190 to an arm 276 fast upon the spindle. Also secured to the spindle between the head of mechanism A and the latch 276 of mechanism B is a bell-crank-lever 278 (Figs. 7 and 10). Upon rotation of the spindle, an upwardly extending arm of this lever presses against a pin 280 projecting from one side of the latch 226. Then as the force exerted by the plunger 256 against said latch is relieved by the previously mentioned depression of the plunger at one extreme of movement of the lever-extension 256, the latch releases the plunger and resumes its place against the side of the head, ready for the initiation of the next operation. Since the timing of the actuating mechanisms A and B is different, the releasing movement which the link 274 imparts to the latch 278 of mechanism A is yieldably transmitted to the latch 260 of mechanism B. A horizontal arm of the bell-crank-lever 278 is connected by a spring 262 to a horizontally extending arm of a bell-crank-lever 284 arranged to turn upon the spindle 283. The spring holds the forward end of the lever 278 in normal contact with the opposite portion of the lever 264. An upwardly extending arm of this lever 284 engages the pin 260 upon the latch 260 of mechanism B (Fig. 10). During the earlier portion of this unlatching movement of the lever 278, the latch of mechanism B will resist actuation on account of the pressure of its plunger, and the spring 282 will not have yielded. But when the extension 260 of mechanism B attains an angle at which the opposite plunger is lowered to the maximum extent, the force applied through the spring is sufficient to unlatch the plunger 260, which establishes the normal position of its lever 172, as has been explained in connection with the head of the plunger.

In using the apparatus of this invention, the operator lowers the table 24 through the treading-connection 38 and places upon said table the under face of a channeled insole-blank 4, which has received a coat of adhesive over its divided surfaces, between the lip b and the marginal body-portion c. This body-portion is inserted between the lower former 46 and the table, with
the inner or divided surface of the lip at one end of the breast-line against the wall 62 of the former. The work is thus located for beginning the operation upon it. The table is then permitted to be raised by the spring 34, forcing the upper face of the blank against the lower extremity of the wiper 59 (Fig. 12). This, through the pivotal connection to its carrier 42 at 77, elevates this carrier along the supporting spindle 40 and, by its connection to the latch 190, swings this up to release the connecting arm 180. Under the influence of the spring 164, the depression 162 of the arm is caused to seat itself upon the projection 170 of the driving arm 164, which is thereby joined to the arm 172 to be driven. This movement of the arm 172 is effected, with alternate periods of activity and rest, through the double toggle devices 160, 150 and 152, 154 of the driving and actuating mechanism A. Through the link 82 and the intermediate connecting arms and levers and their pivotal connections to the carrier at 70 and 77, the wiper 80 is first caused to move inwardly, its horizontal portion 100 carrying the lip b of the blank over the top of the former-wall 62 and its vertical portion 102 holding the base of the lip against the outer side of the wall. The upper former 48 descends upon the folded-over lip and presses down the two margins against the wall 62 and against the upper face of the body-portions c of the blank (Figs. 13 and 14). At the same time, the opposed surfaces of the lip are urged toward each other between the former-wall 116 and its spring-actuated slide 118 (Figs. 13 to 16), molding it to the contour of the rib d. The downward forming applied to the lip by the upper former reacted upon the carrier 42 to lift it with the wiper, so that the latter, somewhat removed vertically from the work, may act freely thereon. In this elevation of the carrier, its shoulder 210 was positioned above the latch 206, which engaged and temporarily retained the carrier in operating position. A forming step has been completed, during which the presser-foot 52, which has been holding the work upon the table (Fig. 16), is raised to free it for advance in preparation for the next forming operation. This presser-foot movement results from the action of the cam 144 of the presser-foot-lever 127. A period of rest of the mechanism A now occurs, while the mechanism B is made active by connection between the arms 160 and 172 through the arm 180; the last-mentioned arm being released by the latch 190 at the same time as the arm 180 of mechanism A. But the driving and driven arms of mechanism B are coupled later in the cycle, because of the ninety degrees separation of the driving cranks 153 and 154 of the respective mechanisms. Through the link 220, the cam 224 is swung to advance a step work grasped by the forming elements (Fig. 17). The operator may vary the rate of feed, while the operation is progressing, so as to reduce it, as when rounding the sharply curved toe-portion of a blank. This is accomplished by shortening the connecting 222 and 232 through depression of the breast-connection 246. Following the action of mechanism B to produce this feed, mechanism A again becomes effective to carry the forming elements away from the work and to lower the presser-foot to hold said work against the table. As the last stage of the cycle, the remaining forming elements to their initial positions. There is produced in this manner alternate forming and feed-
upon the support while the reverse of the feeding movement occurs.

6. In a machine for forming a lasting-rib in an insole-blank having its edge divided into a body-
portion and lip wider than said body-portion, a table for supporting the blank, a former mounted
situated above the table and yieldable under the influence thereof, the body-portion of the blank
being received between the table and the lower former and the lip extending over such former,
and an upper former movable into engagement with the lip to press it upon the lower former.

7. In a machine for forming a lasting-rib in an insole-blank having its edge divided into a body-
portion and lip wider than said body-portion, a table for supporting the blank, a former mounted
situated above the table and yieldable under the influence thereof, the body-portion of the blank
being received between the table and the lower former and the lip extending over such former,
a wiper movable over the lower former to position the lip thereon, and an upper former movable
downwardly upon the thus-positioned lip to mold it over the lower former.

8. In a machine for forming a lasting-rib in an insole-blank having its edge divided into a body-
portion and lip wider than said body-portion, a table for supporting the blank, an oscillatory car-
rier associated with the table, a lower former mounted upon the carrier and extending over the
body-portion of the blank being received between the table and the lower former and the lip extending over such former, and an upper former movable upon the herein-specified carrier into engagement with the lip to press it upon the lower former.

9. In a machine for forming a lasting-rib in an insole-blank having its edge divided into a body-
portion and lip, a table for supporting the blank, an oscillatory carrier associated with the table,
a lower former mounted upon the carrier and extending over the table, the body-portion of the blank being received between the table and the lower former and the lip extending over such former, a wiper movable upon the carrier over the lower former to position the lip thereon, and an upper former movable upon the carrier into en-
gagement with the thus-positioned lip to press it upon the lower former, and a presser foot movable about a point fixed relatively to the carrier to clamp the work upon the table.

10. In a machine for operating upon insole-blanks, a casing comprising separable lower and upper sections, the upper section having portions extending into the lower section, blank-engaging elements movable upon the upper section, actuating elements for the blank-engaging elements movable in the upper section, and means mounted in the lower section upon the portions extending from the upper section and connected to the actuating elements for applying power to said actuating elements.

11. In a machine for operating upon insole-blanks, a casing comprising separable lower and upper sections, the upper section having portions extending into the lower section, blank-engaging elements movable upon the lower section, a shaft journaled in the lower section upon the brackets, and actuating elements pivoted upon the brackets and upon the upper section and connecting the shaft to the blank-engaging elements.

12. In a machine for operating upon insole-blanks, a casing comprising separable lower and upper sections, the upper section having portions extending into the lower section, blank-engaging elements movable upon the upper section, a shaft journaled in the lower section upon the brackets, and actuating elements pivoted upon the brackets and upon the upper section and connecting the shaft to the blank-engaging elements.

13. In a machine for operating upon insole-blanks, a casing comprising separable lower and upper sections, the upper section having spaced brackets extending into the lower section, blank-engaging elements movable upon the upper sec-
tion, a shaft journaled in the lower section upon the brackets, and actuating elements pivoted upon the brackets and upon the upper section and connecting the shaft to the blank-engaging elements.

14. In a machine for operating upon insole-blanks, a casing comprising separable lower and upper sections, the upper section having spaced brackets extending into the lower section, blank-
engaging elements movable upon the upper section, a shaft journaled in the lower section upon the
brackets, and actuating elements pivoted upon the brackets and upon the upper section and connecting the shaft to the blank-engaging elements.

15. In a machine for operating upon insole-blanks, a casing comprising separable lower and upper sections, the upper section having spaced brackets extending into the lower section, blank-
engaging elements movable upon the upper section, a shaft journaled in the lower section upon the
brackets, a lever fulcrumed upon the brackets and joined to the shaft, a lever fulcrumed upon the upper section and joined to the blank-engaging elements, said levers being connected to each other, and means for rotating the shaft.

16. In a machine for operating upon insole-blanks, a casing comprising separable lower and upper sections, the upper section having portions extending into the lower section, blank-
engaging elements movable upon the upper section, actuating elements for the blank-engaging elements movable in the upper section, means mounted in the lower section and connected therein to the actuating elements for applying power to said actuating elements, a cover for the upper section, and means common to the cover and sections for securing all together.

17. In a machine for operating upon insole-blanks, a casing comprising separable lower and upper sections, the upper section having portions extending into the lower section, blank-engaging elements movable upon the upper section, actuating elements for the blank-engaging elements movable in the upper section, a shaft rotate-
able upon the lower section, and driving connections between the shaft and actuating elements, the lower section being adapted to contain oil to be thrown up by the driving connections to lubricate the elements throughout the casing.

18. In a machine for operating upon insole-blanks, a support for a blank, a former co-operating with the support and provided with a wall over which a portion of the blank may be molded, means for pressing the work upon the wall, and means for advancing the work under the influ-
ence of the former and the pressing means step.
by step along the wall to receive successive molding effects.

19. In a machine for operating upon insole-blanks, a support for a blank, a former yieldable under the influence of the work upon the support and provided with a wall over which a portion of the blank may be molded, means for pressing the work upon the wall, and means for advancing the work step by step along the wall to receive successive molding effects.

20. In a machine for forming a lasting-rib in an insole-blank having its edge divided into a body-portion and lip, a support for the blank, a former extending along the support to furnish a space to receive the body-portion of the blank, said former being provided with a wall against which the blank may be gaged and over which the lip of said blank may be molded, and means for pressing the lip upon the wall.

21. In a machine for forming a lasting-rib in an insole-blank having its edge divided into an integral body-portion and lip wider than said body-portion, a support for the blank, a former extending along the support to furnish a space to receive the body-portion of the blank, said former providing a wall over which the lip of the blank may be molded, a mounting upon which the former yields under the influence of the body-portion of the blank, and means for pressing the lip upon the wall.

22. In a machine for forming a lasting-rib in an insole-blank having its edge divided into a body-portion and lip wider than said body-portion, a table for supporting the blank, an oscillatory arm, a former for the lip of the blank yieldable upon the carrier and extending over the table, and means for pressing the lip upon the former.

23. In a machine for operating upon insole-blanks, a support for a blank, a former co-operating with the support, and a wiper engaging a portion of the support blank to carry it over the former to be molded thereon, said wiper having plural walls which engage different portions of the blank to present them to the former.

24. In a machine for forming a lasting-rib in an insole-blank having its edge divided into an integral body-portion and lip wider than said body-portion, a support for the blank, a former extending along the support to furnish a space to receive the body-portion of the blank, said former providing a wall over which the lip of the blank may be molded, a wiper movable into engagement with the lip to position it over the wall, and means for pressing the thus-positioned lip upon the wall.

25. In a machine for forming a lasting-rib in an insole-blank having its edge divided into a body-portion and lip, a support for the blank, a former extending along the support to furnish a space to receive the body-portion of the blank, said former providing a wall over which the lip of the blank may be molded, a wiper movable into engagement with the lip and provided with a portion for laying the lip over the wall and a portion for forcing the lip toward the wall, and means for molding the lip upon the wall.

26. In a machine for forming a lasting-rib in an insole-blank having its edge divided into an integral body-portion and lip wider than said body-portion, a support for the blank, a former extending along the support to furnish a space to receive the body-portion of the blank, said former providing a wall over which the lip of the blank may be molded, a wiper movable into engagement with the lip and provided with a horizontal surface passing over the wall and a vertical surface acting toward the side of the wall, and means for molding the lip upon the wall.

27. In a machine for operating upon insoles, a wall over which an insole-part may be molded, and a former movable toward and from the wall and having a portion for engagement with the insole-part at opposite sides of said wall, one of such former-portions being yieldable.

28. In a machine for operating upon insoles, a wall over which an insole-part may be molded, a former movable toward and from the wall and having a portion for engagement with the insole-part at opposite sides of said wall, one of such former-portions being yieldable, and a former movable toward and from the yieldable portion for positioning the insole-part across the wall.

29. In a machine for operating upon insoles, a wall over which an insole-part may be molded, and a former movable toward and from the wall in an inclined direction and having a portion for engagement with the insole at opposite sides of said wall, a fragmentary portion of the wall from which the former approaches being arranged to yield from said wall.

30. In a machine for operating upon insoles, a wall over which an insole-part may be molded, an oscillatory arm, a block movable by the arm into and out of co-operation with the opposite sides of the wall, and means arranged to vary the position of the former upon the arm.

31. In a machine for operating upon insoles, a wall over which an insole-part may be molded, an oscillatory arm, a block mounted upon the arm and provided with a portion for engagement with the insole-part at one side of the wall, a slide movable upon the block toward and from the block-portion to engage the insole-part at the opposite side of the wall, and a spring acting upon the slide.

32. In a machine for operating upon insoles, a wall over which an insole-part may be molded, an oscillatory arm, a block mounted upon the arm and provided with a portion for engagement with the insole-part at one side of the wall, a slide movable upon the block toward and from the block-portion to engage the insole-part at the opposite side of the wall, and a spring acting upon the slide, and means arranged to move the block longitudinally of the arm.

33. In a machine for forming a lasting-rib in an insole-blank having its edge divided into a body-portion and a lip, a support for the blank, a lower former projecting over the support and provided with a wall over which the lip is molded, and an upper former co-operating with the lower former and having portions relatively movable toward and from each portion at opposite sides of the wall.

34. In a machine for forming a lasting-rib in an insole-blank having its edge divided into a body-portion and a lip wider than said body-portion, a support for the blank, a lower former projecting over the support and provided with a wall over which the lip is molded, and an upper former co-operating with the lower former and having portions acting upon the lip at opposite sides of the wall, the portion at the outer side of the wall being yieldable.

35. In a machine for forming a lasting-rib in an insole-blank having its edge divided into a body-portion and a lip wider than said body-portion, a support for the blank, a lower former projecting over the support and provided with a wall over which the lip is molded, and an upper former co-operating with the lower former and having portions acting upon the lip at opposite sides of the wall, the portion at the outer side of the wall being yieldable.
a wall over which the lip is molded, an upper former coop erating with the lower former and having portions acting upon the lip at opposite sides of the wall, the portion at the outer side of the wall being yieldable, and means arranged to vary together the relation of the portions of the upper former transversely of the lower former.

36. In a machine for operating upon insole-blanks, a former for a blank, a second former movable into co-operation therewith, a wiper movable to position the blank with respect to the first former, means acting upon the second former to move it, and means for transmitting the movement thus produced to the other movable element.

37. In a machine for operating upon insole-blanks, a former for a blank, a second former movable into co-operation therewith, a wiper movable to position the blank with respect to the first former, means acting upon the second former to move it, and means for transmitting the movement of such second former to the wiper.

38. In a machine for operating upon insole-blanks, a former for a blank, a second former movable into co-operation therewith, a wiper movable to position the blank with respect to the first former, means acting upon the second former to move it, and yieldable means for transmitting the movement of such second former to the wiper.

39. In a machine for operating upon insole-blanks, a former for a blank, a second former movable into co-operation therewith, a wiper movable to position the blank with respect to the first former, an actuating lever for one of such movable elements, and means for transmitting the movement of the actuated element to the other movable element.

40. In a machine for operating upon insole-blanks, a former for a blank, a second former movable into co-operation therewith, an arm upon which the second former is carried, means for oscillating the arm, a spindle to which the arm is secured, a second arm fixed to the spindle, an oscillatory blank-positioning wiper, and connections to the second arm to oscillate the wiper.

41. In a machine for operating upon insole-blanks, a former for a blank, a second former movable into co-operation therewith, an arm upon which the second former is carried, means for oscillating the arm, a spindle to which the arm is secured, a second arm fixed to the spindle, an oscillatory blank-positioning wiper, and connections to the second arm and including a spring to oscillate the wiper.

42. In a machine for operating upon insole-blanks, a former for a blank, a second former movable into co-operation therewith, an arm upon which the second former is carried, a spindle to which the arm is secured, an oscillatory lever acting upon the arm, a second arm fixed to the spindle, an oscillatory blank-positioning wiper, a rod pivoted to the second arm and guided by the wiper, and a spring surrounding the rod and acting upon the wiper.

43. In a machine for forming a lasting-rib in an insole-blank having its edge divided into a body-portion and a lip wider than said body-portion, a table upon which the blank is supported, a carrier mounted to oscillate beside the table, a lower former extending from the carrier over the table, a lower spindle rotatable in the carrier, an upper spindle fixed to the carrier, a lever fulcrumed about the upper spindle, a wiper oscillating about said upper spindle, two arms fixed to the lower spindle, one of which arms is actuated by the lever, an upper former mounted upon the lever-actuated arm and cooperating with the lower former, and means for connecting the other arm to the wiper.

44. In a machine for forming a lasting-rib in an insole-blank having its edge divided into a body-portion and a lip wider than said body-portion, a table upon which the blank is supported, a carrier mounted to oscillate beside the table, a lower former extending from the carrier over the table, a lower spindle rotatable in the carrier, an upper spindle fixed to the carrier, a lever fulcrumed about the upper spindle, a wiper oscillating about said upper spindle and having an extension, two arms fixed to the lower spindle, one of which arms is actuated by the lever, an upper former mounted upon the lever-actuated arm and cooperating with the lower former, a rod pivoted to the second arm and passing through the wiper-extension, a collar surrounding the rod, and a spring interposed between the collar and the wiper-extension.

45. In a machine for forming a lasting-rib in an insole-blank having its edge divided into a body-portion and a lip wider than said body-portion, a frame, a table rotatable upon the frame and upon which the blank is supported, a carrier mounted to oscillate upon the frame beside the table, a lower former extending from the carrier over the table and over which the lip is molded, an upper former movable upon the carrier to force the lip upon the lower former, and a presser-foot oscillating upon the carrier into and out of engagement with the blank.

46. In a machine for forming a lasting-rib in an insole-blank having its edge divided into a body-portion and a lip wider than said body-portion, a frame, a table rotatable upon the frame and upon which the blank is supported, a carrier mounted to oscillate upon the frame beside the table, a lower former extending from the carrier over the table and upon which the blank is supported, a lever fulcrumed upon the frame and provided with a cam-slot, means operating in the cam-slot to actuate the lever, and a presser-foot secured to the lever and movable toward and from the table.

47. In a machine for forming a lasting-rib in an insole-blank having its edge divided into a body-portion and a lip, a frame, a table rotatable upon the frame and upon which the blank is supported, a carrier mounted to oscillate upon the frame beside the table, a lower former extending from the carrier over the table and over which the lip is molded, an upper former movable upon the carrier to force the lip upon the lower former, a lever fulcrumed upon the frame, means for actuating the lever, a presser-foot secured to the lever and movable toward and from the table, and means arranged to move the presser-foot longitudinally of the lever.

48. In a machine for forming a lasting-rib in an insole-blank having its edge divided into a body-portion and a lip wider than said body-portion, a frame, a table rotatable upon the frame and upon which the blank is supported, a carrier mounted to oscillate upon the frame beside the table, a lower former extending from the carrier over the table and over which the lip is molded, an upper former movable upon the carrier to force the lip upon the lower former, a lever fulcrumed upon the frame and provided
with two end-sections, one section being variable in position horizontally and the other section vertically, and a presser-foot secured to one of these sections and being movable by the lever toward and from the table.

49. In a machine for forming a lasting-rig in an insole-blank having its edge divided into an integral body-portion and a lip wider than said body-portion, a frame, a table rotatable upon the frame and upon which the blank is supported, a carrier mounted to oscillate upon the frame beside the table, a lower former extending from the carrier over the table and over which the lip is molded, an upper former movable upon the carrier to force the lip upon the lower former, a lever fulcrumed upon the frame, there being an end-section secured to the lever and variable in position thereon, a second end-section secured to the first and variable in position thereon, and a presser-foot variable in position upon the second end-section and co-operating with the table.

50. In a machine for operating upon insole-blanks, a movable blank-engaging member, a toggle-lever, means arranged to connect the toggle-lever to and disconnect it from the engaging member, and a rotatable driving shaft connected to the toggle-lever and acting to break and straighten said toggle-lever twice during each rotation of the shaft, the connection between the toggle-lever and engaging member being effected during one of the periods in which the lever is broken.

51. In a machine for operating upon insole-blanks, a movable blank-engaging member, a toggle-lever connected to the engaging member, and a rotatable driving shaft having a crank connected to the toggle-lever and arranged to break said lever oppositely through different angles.

52. In a machine for operating upon insole-blanks, a movable blank-engaging member, a toggle-lever connected to the engaging member, a rotatable driving shaft having a crank, and a toggle-lever connecting the crank to the center of the previously mentioned toggle-lever.

53. In a machine for operating upon insole-blanks, a movable blank-engaging member, a substantially horizontal toggle-lever connected to the blank-engaging member, a substantially vertical toggle-lever connected to the center of the horizontal toggle-lever, and a rotatable crank-shaft acting upon the vertical toggle-lever.

54. In a machine for operating upon insole-blanks, a movable blank-engaging member, a substantially horizontal toggle-lever connected to the blank-engaging member, a substantially vertical toggle-lever connected to the center of the horizontal toggle-lever and having one of its arms extending beyond the pivotal point, a driving shaft provided with a crank, and a link joining the crank to the arm-extension.

55. In a machine for operating upon insole-blanks, a member movable into engagement with a blank, means for moving the member in engagement with the blank to feed it in successive steps, a toggle-lever connected to the blank-engaging member, a toggle-lever connected to the feed-creating means, a rotatable driving shaft having two cranks separated about the shaft by ninety degrees, and means for connecting each crank to one of the toggles.

56. In a machine for operating upon insole-blanks, a blank-forming member which is at rest at the beginning of an operating cycle, actuating means for the member, constantly operating driving means, and means controlled by the blank for connecting the driving means and actuating means.

57. In a machine for operating upon insole-blanks, a blank-forming member which is at rest at the beginning of an operating cycle, actuating means for the member, constantly operating driving means, and means controlled by the blank for connecting the driving means and actuating means.

58. In a machine for operating upon insole-blanks, a blank-forming member, means for moving the member to feed the blank, actuating means for the forming member and the feeding means, constantly operating driving means, and means controlled by the blank for connecting the driving means to the actuating means for both the forming member and the feeding means.

59. In a machine for operating upon insole-blanks, a movable member engaging a blank, said member being at rest at the beginning of an operating cycle and being movable by said blank, actuating means for the member, constantly operating driving means, and means controlled by the member upon its movement by the blank for determining the connection between the driving means and the actuating means.

60. In a machine for forming a lasting-rig in an insole-blank having its edge divided into a body-portion and a lip, members movable into engagement with the blank to form the rib, actuating means for the members, constantly operating driving means, and means controlled by the blank for connecting the driving means to the actuating means.

61. In a machine for forming a lasting-rig in an insole-blank having its edge divided into a body-portion and a lip wider than said body-portion, members movable into engagement with the blank to form the rib, means for moving the members in engagement with the blank to advance it, actuating means for the forming members and advancing means, constantly operating driving means, and means controlled by the blank for connecting the driving means to the actuating means for both the forming members and the advancing means.

62. In a machine for operating upon insole-blanks, a work-supporting table, a former cooperating with the table, a wiper movable to position a blank with respect to the former, an actuating member for the wiper, a driving member for the actuating member, a member movable to connect the driving member to the actuating member, and means controlled by the wiper to govern the movement of the connecting member.

63. In a machine for operating upon insole-blanks, a work-supporting table, a former cooperating with the table, a wiper movable to position a blank with respect to the former, an actuating member for the wiper, a driving member for the actuating member, a member movable to connect the driving member to the actuating member, and a latch for the connecting member released by movement of the wiper.

64. In a machine for operating upon insole-blanks, a work-supporting table, means arranged to lower and raise the table, a member movable into engagement with a blank upon the table and movable under the influence of the blank when the table is raised, means for actuating the member...
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in a machine for forming a lasting-rib in an insole-blank having its edge divided into a body-portion and a lip, a vertically movable table for supporting an insole-blank, a carrier mounted for oscillation adjacent to the table and to move vertically, a member movable upon the carrier into engagement with the blank upon the table and being movable by the blank under the influence of the table, such movement being communicated to the carrier, an oscillatory actuating member for the engaging member, an oscillatory driving member for the actuating member, a connecting member carried by one of such oscillatory members and being arranged to be coupled to the other, and means governed by the carrier for controlling the connecting member.

67. In a machine for forming a lasting-rib in an insole-blank having its edge divided into an integral body-portion and a lip wider than said body-portion, a vertically movable table for supporting an insole-blank, a carrier mounted for oscillation adjacent to the table and to move vertically, an arm projecting from the carrier, a member movable upon the carrier into engagement with the blank upon the table and being movable by the blank under the influence of the table, an actuating member for the engaging member, a driving member for the actuating member, a connecting member carried by one of said actuating and driving members and being arranged to be coupled to the other, a latch for the connecting member, and means moved by the carrier for controlling the latch.

68. In a machine for operating upon insole-blanks, a support for a blank, a blank-engaging member co-operating therewith, a carrier for the engaging member movable by said engaging member, and means for temporarily retaining the carrier in the position to which it is moved.

69. In a machine for operating upon insole-blanks, a support for a blank, a blank-engaging member co-operating therewith, a carrier for the engaging member movable by said engaging member, means for retaining the carrier in the position to which it is moved, and means acting as an incident to the control of the machine by the operator for freeing the carrier from the retaining means.

70. In a machine for operating upon insole-blanks, a movable support for a blank, a blank-engaging member co-operating therewith, a movable carrier for the engaging member, means for retaining the carrier in the position to which it is moved, and means acting in the movement of the support for freeing the carrier from the retaining means.

71. In a machine for operating upon insole-blanks, a support for a blank, movable blank-engaging members co-operating therewith, a carrier for the engaging members to which a preliminary movement is imparted by one of such engaging members, the carrier being further moved by a second engaging member, and means for temporarily retaining the carrier in the position to which it is moved by the second member.

72. In a machine for operating upon insole-blanks, a support for a blank, movable blank-engaging members co-operating therewith, a carrier for the engaging members to which a preliminary movement is imparted by one of such engaging members, the carrier being further moved by a second engaging member, means for temporarily retaining the carrier in the position to which it is moved by the second member, and means acting upon movement of the support to free the carrier from the retaining means.

73. In a machine for operating upon insole-blanks, a support for a blank, movable blank-engaging members co-operating therewith, a movable carrier for the engaging members, means arranged to move the support to press a supported blank against one of the engaging members to move said engaging member and the carrier, and retaining means for the carrier.

74. In a machine for operating upon insole-blanks, a support for a blank, a movable carrier, a member movable on the carrier to exert pressure upon the supported blank, said member upon the application of such pressure moving the carrier, and means for temporarily retaining the carrier in the position to which it is moved by the pressure member.

75. In a machine for operating upon insole-blanks, a support for a blank, movable blank-engaging members co-operating therewith, a movable carrier for the engaging members, means arranged to move the support to press a supported blank against one of the engaging members to move said engaging member and the carrier, and retaining means for the carrier.

76. In a machine for operating upon insole-blanks, a movable support for a blank, movable blank-engaging members co-operating therewith, a movable carrier for the engaging members, means arranged to move the support to press a supported blank against one of the engaging members to move said engaging member and the carrier, and retaining means for the carrier, the retaining means being released upon reverse movement of the support.

77. In a machine for operating upon insole-blanks, a vertically movable blank-supporting table, a carrier movable vertically adjacent to the table, a blank-engaging member movable upon the carrier, means for elevating the table to force a supported blank against the member and to thereby elevate the carrier, and a latch for the carrier.

78. In a machine for operating upon insole-blanks, a vertically movable blank-supporting table, a carrier movable vertically adjacent to the table, a blank-engaging member movable upon the carrier, means for elevating the table to force a supported blank against the member and to thereby elevate the carrier, and a latch for the carrier released upon descent of the table.

79. In a machine for operating upon insole-blanks, a vertically movable blank-supporting table, a carrier movable vertically adjacent to the table, blank-engaging members movable upon the carrier, means for elevating the table to force
a supported blank against one of the members and thereby elevate the carrier, and means for thereafter pressing another member against a supported blank and thereby further elevating the carrier.

80. In a machine for forming a lasting-rib in an insole-blank having its edge divided into a body-portion and a lip, a vertically movable table upon which the blank is supported, a rib-forming member acting upon the lip of the supported blank, a wiper positioning the lip for forming, a carrier for the forming member and wiper, a spring for elevating the table and forcing the blank against the wiper, the wiper thereby elevating the carrier, and a latch for the carrier.

81. In a machine for forming a lasting-rib in an insole-blank having its edges divided into a body-portion and a lip, a vertically movable table upon which the blank is supported, a rib-forming member acting upon the lip of the supported blank, a wiper positioning the lip for forming, a carrier for the forming member and wiper, a spring for elevating the table and forcing the blank against the wiper, the wiper thereby elevating the carrier, and a latch for the carrier.

82. In a machine for forming a lasting-rib in an insole-blank having its edge divided into a body-portion and a lip, a vertically movable table upon which the blank is supported, a rib-forming member acting upon the lip of the supported blank, a wiper positioning the lip for forming, a carrier for the forming member and wiper, a spring for elevating the table and forcing the blank against the wiper, the wiper thereby elevating the carrier, and a latch for the carrier.

83. In a machine for forming a lasting-rib in an insole-blank having its edge divided into a body-portion and a lip, a vertically movable table upon which the blank is supported, a rib-forming member movable against the lip of the supported blank, a wiper positioning the lip for forming, a carrier for the forming member and wiper, a spring for elevating the table and forcing the blank against the wiper, the wiper thereby elevating the carrier, and a latch for the carrier.

84. In a machine for forming a lasting-rib in an insole-blank having its edge divided into a body-portion and a lip, a vertically movable table upon which the blank is supported, a vertically movable carrier adjacent to the table, a lever fulcrumed upon the carrier, an arm pivoted upon the carrier and oscillated by the lever, a rib-forming member carried by the arm and forced thereby against the lip of a blank supported upon the table, and a wiper pivoted upon the carrier and moved by the lever to position the lip for forming, movement of the wiper under the influence of the table and movement of the former against the blank serving to elevate the table.

85. In a machine for forming a lasting-rib in an insole-blank having its edge divided into a body-portion and a lip, a vertically movable table upon which the blank is supported, a vertically movable carrier adjacent to the table, a lever fulcrumed upon the carrier, an arm pivoted upon the carrier and oscillated by the lever, a rib-forming member carried by the arm and forced thereby against the lip of a blank supported upon the table, a wiper pivoted upon the carrier and moved by the lever to position the lip for forming, movement of the wiper under the influence of the table and movement of the former against the blank serving to elevate the table during an operating cycle, and means movable with the table and releasing the latch at the end of the cycle.

86. In a machine for forming a lasting-rib in an insole-blank having its edge divided into a body-portion and a lip, a vertically movable table upon which the blank is supported, a rib-forming member acting upon the lip of the supported blank, a wiper positioning the lip for forming, a carrier for the forming member and wiper, a spring for elevating the table and forcing the blank against the wiper, the wiper thereby elevating the carrier, and a latch for the carrier.

87. In a machine for forming a lasting-rib in an insole-blank having its edge divided into a body-portion and a lip, a vertically movable table upon which the blank is supported, a rib-forming member movable against the lip of the supported blank, a wiper positioning the lip for forming, a carrier for the forming member and wiper, a spring for elevating the table and forcing the blank against the wiper, the wiper thereby elevating the carrier, and a latch for the carrier.

88. In a machine for forming a lasting-rib in an insole-blank having its edge divided into an integral body-portion and a lip wider than said body-portion, a vertically movable table upon which the blank is supported, a rib-forming member movable against the lip of the supported blank, a wiper positioning the lip for forming, a carrier for the forming member and wiper, a spring for elevating the table and forcing the blank against the wiper, the wiper thereby elevating the carrier, and a latch for the carrier.

89. In a machine for forming a lasting-rib in an insole-blank having its edge divided into a body-portion and a lip wider than said body-portion, a vertically movable table upon which the blank is supported, a rib-forming member movable against the lip of the supported blank, a wiper positioning the lip for forming, a carrier for the forming member and wiper, a spring for elevating the table and forcing the blank against the wiper, the wiper thereby elevating the carrier, and a latch for the carrier.

90. In a machine for forming a lasting-rib in an insole-blank having its edge divided into a body-portion and a lip wider than said body-portion, a vertically movable table upon which the blank is supported, a rib-forming member movable against the lip of the supported blank, a wiper positioning the lip for forming, a carrier for the forming member and wiper, a spring for elevating the table and forcing the blank against the wiper, the wiper thereby elevating the carrier, and a latch for the carrier.
mechanism, and a latch for holding both arms normally inactive.

93. In a machine for operating upon insole-blanks, blank-forming and feeding mechanism, actuating mechanism for producing the forming effect, actuating mechanism for producing the feeding effect, continually operating driving mechanism individual to each actuating mechanism, a connecting arm individual to each actuating mechanism for connecting it to its driving mechanism, a latch for holding both arms normally inactive, and means movable by the blank to release the latch.

94. In a machine for forming a lasting-rib in an insole-blank having its edge divided into a body-portion and a lip, members movable into engagement with the blank to form the rib and to advance the blank for the forming operation, an oscillatory arm for producing the forming movement of the members, an oscillatory arm for the forming operation, an oscillatory arm for producing the forming movement of the members, an oscillatory arm for producing the forming movement of the members, a continuously oscillating driving arm corresponding to each actuating arm, a connecting arm pivoted upon each actuating arm for engagement with the driving arm, and a latch arranged to hold both the connecting arms normally inactive.

95. In a machine for forming a lasting-rib in an insole-blank having its edge divided into an integral body-portion and a lip wider than said body-portion, members movable into engagement with the blank to form the rib and to advance the blank for the forming operation, an oscillatory arm for producing the forming movement of the members, an oscillatory arm for producing the forming movement of the members, a continuously oscillating driving arm corresponding to each actuating arm, a connecting arm pivoted upon each actuating arm for engagement with the driving arm, and a latch arranged to hold both the connecting arms normally inactive, and means acting under the control of the blank being operated upon for moving the latch to release the arms.

96. In a machine for operating upon insole-blanks, means for forming a blank, means for moving the forming means into forming engagement with the blank, means for feeding the blank in successive steps for the forming, and means arranged for connecting the operator during the operation of the machine for changing the length of the feeding steps while the extent of forming movement of the forming means remains constant.

97. In a machine for forming a lasting-rib in an insole-blank having its edge divided into a body-portion and a lip, a member movable to form the lip of the blank into a rib, the member being movable to feed the blank in successive steps for forming, actuating mechanism for imparting to the member its blank-feeding movement and including variable connections between the forming and actuating elements of the feeding mechanism, and means movable by the operator to vary the connections and thereby the feeding steps.

98. In a machine for operating upon insole-blanks, blank-engaging members, a carrier upon which the members are movable, means for producing the engaging movement of the members upon the carrier, an actuating member for moving the carrier with the engaging members to advance the engaged blank, means for actuating the actuating member to move the carrier, and means arranged for movement by the operator during the operation of the machine to vary the relation of the connections to the elements joined and thereby change the rate of advance of the blank.

99. In a machine for operating upon insole-blanks, blank-engaging members, a movable carrier upon which the members are movable, said carrier being provided with an arm, a movable actuating arm, and a device connecting the arms and being variable in position longitudinally thereof.

100. In a machine for operating upon insole-blanks, blank-engaging members, a movable carrier upon which the members are movable, said carrier being provided with an arm, a movable actuating arm adjacent to the carrier-arm, a device connecting the arms and being variable in position longitudinally thereof, and an operator-actuated member for shifting the connecting device upon the arms during the operation of the machine.

101. In a machine for operating upon insole-blanks, blank-engaging members, a movable carrier upon which the members are movable, said carrier being provided with an arm, a movable actuating arm adjacent to the carrier-arm, a slide guided upon each arm, means connecting the slides to move together, and a member arranged for movement by the operator and joined to the slide of the carrier-arm.

102. In a machine for forming a rib in an insole-blank, a member movable to form the rib, means for moving the forming member, means for connecting the member to and disconnecting it from the moving means, and means for locating the disconnected member in a predetermined position.

103. In a machine for forming a rib in an insole-blank, a member movable to form the rib, an actuating member for the forming member, a driving member for the actuating member, means for connecting the actuating member to and disconnecting it from the driving member, and means for locating the disconnected actuating member and the rib-forming member in predetermined positions.

104. In a machine for forming a rib in an insole-blank, a member movable to form the rib, an actuating member for the forming member, a constantly operating driving member for the actuating member, means arranged for connecting the actuating member to and disconnecting it from the driving member, and means for locating the disconnected actuating member and the rib-forming member in predetermined positions.

105. In a machine for forming a rib in an insole-blank, a member movable to form the rib, a carrier upon which the member is movable, means for moving the carrier to advance the blank, means for moving the member upon the carrier, said member acting to move the carrier, means controlled by the last-mentioned movement of the carrier for connecting the forming member to and disconnecting it from the moving means, and means for locating the disconnected member in a predetermined position.

106. In a machine for forming a rib in an insole-blank, a member movable to form the rib, an actuating member for the forming member provided with a contact-surface, a driving member for the actuating member, means for connecting the actuating member to and disconnecting it from the driving member, and a plunger engaging the contact-surface of the disconnected actuating member to lock the actuating member to the driving member.

107. In a machine for forming a rib in an insole-blank, a member movable to form the rib,
an actuating member for the forming member provided with a contact surface, a constantly operating driving member for the actuating member, means for connecting the actuating member to and disconnecting it from the driving member, a plunger engaging the contact-surface of the disconnected actuating member to locate it, and a latch for holding the plunger in an ineffective position during the operation of the machine. 108. In a machine for forming a rib in an insole-blank, a member movable to form the rib, an actuating member for the forming member provided with a contact surface, a constantly operating driving member for the actuating member, means for connecting the actuating member to and disconnecting it from the driving member, a plunger engaging the contact-surface of the disconnected actuating member to locate it, a latch for holding the plunger in an ineffective position during the operation of the machine, and connections to the latch and acting to release said latch upon disconnection of the forming member. 109. In a machine for forming upon insole-blanks, a movable blank-forming and -feeding member, actuating mechanism for imparting to the member its forming movement, actuating mechanism by which the member is moved to feed the blank for forming, driving mechanism for each actuating mechanism, means for connecting the actuating mechanisms to and disconnecting them from their driving mechanisms, and means for locating the disconnected mechanisms in predetermined positions. 110. In a machine for operating upon insole-blanks, a movable blank-forming and -feeding member, actuating mechanism for imparting to the member its forming movement, actuating mechanism by which the member is moved to feed the blank for forming, driving mechanism for each actuating mechanism, means for connecting the actuating mechanisms to and disconnecting them from their driving mechanisms at different times, and means individual to each disconnected mechanism for locating it in a predetermined position. 111. In a machine for operating upon insole-blanks, a movable blank-forming and -feeding member, actuating mechanism for imparting to the member its forming movement, actuating mechanism by which the member is moved to feed the blank for forming, driving mechanism for each actuating mechanism, means for connecting the actuating mechanisms to and disconnecting them from their driving mechanisms, a member individual to each disconnected mechanism for locating it in a predetermined position, and means for holding each locating member ineffective during the operation of the machine. 112. In a machine for forming upon insole-blanks, a movable blank-forming and -feeding member, actuating mechanism for imparting to the member its forming movement, actuating mechanism by which the member is moved to feed the blank for forming, driving mechanism for each actuating mechanism, means for connecting the actuating mechanisms to and disconnecting them from their driving mechanisms, a member individual to each disconnected mechanism for locating it in a predetermined position, means for holding each locating member ineffective during the operation of the machine, means for releasing one of the holding means, and means for thereafter releasing the other holding means. 113. In a machine for operating upon insole-blanks, a movable blank-forming and -feeding member, actuating mechanism for imparting to the member its forming movement, actuating mechanism by which the member is moved to feed the blank for forming, driving mechanism for each actuating mechanism, means for connecting the actuating mechanisms to and disconnecting them from their driving mechanisms, a plunger individual to each disconnected mechanism for locating it in a predetermined position, a latch associated with each plunger for holding it ineffective during the operation of the machine, a lever for releasing each latch, means for moving one lever, and a spring communicating movement of this lever to the other lever. 114. The method of forming a lasting-rib upon an insole-blank having its edge divided into an integral body-portion and a lip wider than said body-portion, which consists in positioning the lip over a wall, forming the rib from the positioned lip upon said wall, and pressing the margin of the lip against the divided body-portion of the blank to furnish a margin of the integral body-portion of said blank to have substantially the same thickness as the body of the insole within the rib. 115. The method of forming a lasting-rib upon an insole-blank having its edge divided into an integral body-portion and a lip wider than said body-portion and being coated with an adhesive over the divided surfaces, which consists in positioning the lip over a wall, forcing the coated surfaces of the lip toward each other upon the wall to form the rib, and pressing the coated margin of the lip against the coated body-portion of the blank to furnish a margin of the integral body-portion of substantially the same thickness as the body of the insole within the rib, and advancing the blank along the wall alternately with the previously mentioned forming operations. 116. The method of forming a lasting-rib upon an insole-blank having its edge divided into an integral body-portion and a lip wider than said body-portion, which consists in positioning the lip over a wall, successively forming the rib from the positioned lip upon said wall, pressing the margin of the lip against the divided body-portion of the blank to furnish a margin of the integral insole-portions of substantially the same thickness as the body of the insole within the rib, and advancing the blank along the wall alternately with the previously mentioned forming operations. 117. The method of forming a lasting-rib upon an insole-blank having its edge divided into an integral body-portion and a lip wider than said body-portion, which consists in inserting the divided body-portion of the blank between a support and a wall spaced therefrom, locating the blank by contact of the lip with the wall, positioning the lip over the wall, molding the positioned lip upon the wall, and pressing the margin of the lip against the divided body-portion of the blank. 118. The method of forming a lasting-rib upon an insole-blank having its edge divided into an integral body-portion and a lip wider than said body-portion and being coated with an adhesive over the divided surfaces, which consists in inserting the divided body-portion of the blank between a support and a wall spaced therefrom, locating the blank by contact of the lip with the wall, positioning the lip over the wall, molding the positioned lip upon the wall, and pressing the
coated margin of the lip against the coated body-
portion of the blank.

119. The method of forming a lasting-rib upon
an insole-blank having its edge divided into an
integral body-portion and a lip wider than said
body-portion and being coated with an adhesive
over the divided surfaces, which consists in in-
serting the divided body-portion of the blank be-
tween a support and a wall spaced therefrom,
locating the blank by contact of the lip with the
wall, positioning the lip over the wall, successively
molding the positioned lip upon the wall, press-
ing the coated margin of the lip against the
coated body-portion of the blank, and advancing
the blank over the support and along the wall
alternately with the previously-mentioned mold-
ing operations.

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