This invention relates to the manufacture of shoes and more particularly to improvements in methods of and means for adhesively securing shoe parts together. The invention is herein illustrated by reference to the fastening of the upper of Goodyear felt shoes in lasted position in the lasting operation, but it is to be understood that it is applicable to operations on other parts of shoes.

In lasting shoes of the above-mentioned type, the upper is first tensioned to conform it to the contour of the last and its edge portion is wiped inwardly over the feather or margin of an insole and into engagement with a lip or rib of the insole, after which the upper is secured to the insole in lasted position while the edge portion of the upper is maintained in that relation to the feather and lip under pressure of the lasting means. It has been contemplated that the use of an adhesive which can be quickly set to secure the upper in lasted position without requiring that the margin of the upper remain under pressure of the lasting means an undue length of time would effect substantial economies in the manufacture of the shoe and, in addition, would improve the quality of the shoe making, especially with respect to the effectiveness of the lasting and the condition of the shoe preparatory to subsequent operations such as the insole sewing and trimming operations.

The invention, in one aspect, provides a novel method whereby a thermoactive adhesive, and preferably a thermosetting adhesive, previously applied between the upper and the insole is quickly activated and set while the upper is held in lasted position under the pressure of the lasting means by passing a high frequency electrostatic field through the adhesive. The upper is thus securely bonded to the insole and its margin in effect is molded to the shape of the feather and the outer face of the lip of the insole. In the practice of the method, in the manner herein illustrated, the lasting means includes electrodes for wiping the marginal portion of the shoe upper inwardly over the insole and against the outer face of the lip and for supporting the lip, the electrodes being utilized to set up an alternating electrostatic field in the adhesive. In the location adjacent to the electrodes, therefore, the adhesive is quickly activated and consolidated so that the electrodes may be quickly withdrawn or retracted from the shoe without any danger that the upper will be displaced from its properly lasted position. Preferably, and as shown, the lasting of the shoe may be effected progressively along the sides, and in a single operation at each end portion of the shoe. There may be thus produced a shoe of the electrode-mentioned type which is free from lasting fastenings and the upper of which is secured in lasted relation to the insole along the sides and around the end portions of the shoe only by means of adhesive.

The invention further provides, in a lasting machine, novel means for implementing the practice of the method. In the construction shown, the lasting means includes electrodes for wiping the marginal portion of the upper inwardly over an insole on a last and against a rib of the insole and for supporting the rib in the overwiping operation, and means for applying an alternating electrical potential to the electrodes to produce a high frequency electrostatic field in the adhesive previously applied between the upper and the insole. In operating along the sides of the shoe, the electrode for wiping the upper inwardly over the insole is operated in timed relation to a gripper for pulling different portions of the upper successively in different locations, the electrode being preferably movable in a direction inclined relatively to the plane of the shoe bottom and being so shaped as to force the edge portion of the upper firmly into the angle between the feather and the lip of the insole. Conveniendy, and as illustrated, the electrodes for wiping the upper inwardly over the insole around the end portions of the shoe are formed in pairs mounted for bodily movement lengthwise of the shoe and for swinging movement toward each other laterally of the shoe, each pair of end electrodes having its acting edge faces shaped to conform substantially to the contour of the end portion of the last on which they operate. Cooperating with the electrodes for wiping the margin of the upper inwardly around the toe end of the shoe is another electrode arranged to support the lip of the insole at the toe end. At the heel end of the shoe, the heel plate on the bottom of a last is utilized as the other electrode in conjunction with the pair of electrodes for wiping the upper inwardly over the insole around the heel end. In lasting the toe and heel end portions of the shoe it is the usual practice to wipe the marginal portion of the upper inwardly over the insole a plurality of times and then to apply compacting pressure to the overlasted margin before fastening it in lasted position. Accordingly, the electrostatic high frequency circuit connecting the electrodes at the end of the shoe includes a switch which is normally open and, in accordance with a further
feature of the invention, novel means is provided for closing the switch after the electrodes have completed their overlapping movements, this means, preferably and as shown, being controlled by the usual member movable to increase the pressure of the electrodes on the overlapped margin of the upper, thus insuring against any accidental premature activation and setting of the adhesive.

The novel method and the novel mechanical features of the invention will now be more particularly described with reference to the accompanying drawings and thereafter pointed out in the claims.

In the drawings,

Fig. 1 is a perspective view of a shoe after the insole and upper have been assembled upon a last and the upper pulled over;

Fig. 2 is a sectional view of a shoe illustrating the side lasting operation, the lasting instrumentalities being shown in side elevation;

Fig. 3 is a view in front elevation of a bed lasting machine of well-known type in which features of the invention are embodied;

Figs. 4 and 5 are perspective views of portions of the machine shown in Fig. 3 and illustrating the manner of lasting the toe and heel end portions of a shoe in accordance with the objects of the present invention, the parts being shown in the positions they assume at the end of the toe and heel end lasting operations;

Fig. 6 is a perspective view of a shoe after the lasting operations along the sides and around the toe and heel ends have been completed;

Fig. 7 is a vertical section through a portion of a lasted shoe of the type illustrated in other figures after a welt has been attached to the shoe by stitches; and

Fig. 8 is a vertical section through a side portion of a completed shoe in the production of which the invention has been utilized.

The invention is herein illustrated and described with reference to the manufacture of a Goodwin welt shoe, although it will be understood that it is not limited in its application to shoes of that particular type.

The shoe upper, as herein illustrated, comprises the usual upper leather 26, doubler 22, lining 24, box toe 25 and heel 20, all of which are shown in Fig. 1, the shoe upper and an insole 30 having a feather 32 and a lip or rib 34 have been assembled on a last 36 and the upper pulled over in the usual manner. Thus, the insole is secured to the bottom of the last by tacks 38 and the toe portion of the upper is held by tacks 40 inserted by the pulling-over machine.

The shoe is now ready for the lasting operations to be performed along the sides and around the toe and heel end portions of the shoe. In performing the lasting operations, in accordance with the present invention, a film of thermoplastic adhesive is disposed between the marginal portions of the upper material and the insole. Preferably the adhesive is applied to the margin or feather 32 and to the outer face of the lip 34 of the insole and to the various layers of the shoe upper before the parts are assembled on the last. While any thermoplastic vinyl resin composition may be used, it is contemplated that, because of its quick setting properties, a thermostable resin composition of urea or phenol formaldehyde may be preferable, particularly in side lasting, such adhesive insuring a sufficiently strong bond to hold the upper materials firmly in lasted position until they are permanently united to the insole by stitches in the subsequent inseam sewing operation.

The opposite sides of the shoe between the toe and heel end portions are lasted in the manner illustrated in different locations successively along the edge of the shoe bottom. In the practice of the method the aid of the instrumentalities shown in the drawings the shoe is presented and held by the operator in different positions for the lasting of the different portions of the upper with the bottom face of the insole and the inner face of the lip 34 in engagement with an electrode 42. With the shoe thus positioned the upper is pulled by a gripper 44 first in a direction heightwise of the last, then in a direction inwardly from the edge of the last bottom over the feather 32 of the insole. Thereafter, the margin of the upper, while held yieldingly by the gripper, is laid inwardly over the insole and pressed into the angle formed by the feather and the outer face of the lip by the action of a second electrode 46 which is movable in the overlaying operation in a direction inclined downwardly toward the bottom face of the insole and inwardly from the edge of the latter, the upper being released by the gripper as its edge portion is thus pressed into engagement with the feather of the insole and the outer face of the lip 34. The electrodes 42 and 46 are connected to the opposite sides of a high frequency oscillator (not shown) and, accordingly, as the electrode 46 thus acts on the edge portion of the upper, the alternating electrostatic field between the two electrodes passes through the adhesive previously applied between the upper materials, the feather, and the outer face of the lip, causing the adhesive to become activated and set to secure the upper materials in lasted position.

It will be understood that the electrodes 42 and 46 should be so shaped as to avoid any danger of arcing or corona discharge such as would occur if the electrodes were provided with sharp edges or relatively thin projections. Any such sparking would, of course, tend to mar or scorch the work, particularly the outer layer 20 of the shoe upper materials. Accordingly, the electrodes 42, 46 are formed of blocks of suitable electrical conducting material, preferably cast copper or bronze, and rounded edges to eliminate any such possibility. Preferably, the electrode 45 is connected to the high tension side of the oscillator and is insulated from its operating slide 46. The end and bottom surfaces of the electrode 46 are preferably also flattened in order that the upper materials will be pressed flat against the feather of the insole and against the outer face of the lip 34 in the overlaying operation, the end face of the electrode being parallel to the slanted end face of the electrode 42 which is preferably grounded to the frame of the machine. The electrode 42 is a stationary machine element arranged by engagement with the bottom face of the insole to determine the heightwise position of the shoe in the machine and to assist in supporting the shoe against the inwardly directed pull of the electrode 46 and also by engagement with the inner face of the lip 34 to support the lip against the inwardly directed pressure of the electrode 45. The mechanisms for operating the gripper 44 and for reciprocating the electrode 46 in time relation to the movements of the gripper may be and preferably are substantially the same as similar mechanisms fully shown and described in United States Letters Patent No. 1,796,451, granted March 17, 1929.
2,879,059

1871, upon an application of George Goddu, for operating the gripper, comprising the jaws 196, 200, and the overlaying member 358 that is disclosed, the illustrated machine being a machine of the same general type as that shown in the said Goddu patent.

It will be understood that the operation described will be performed successively in different locations along the sides of the shoe, the last margin of the upper in each location being secured by the adhesive to the feather of the insole and to the outer face of the lip 34. It will be evident that with the upper thus secured to the insole it is effectively locked under tension in the last position without any strain on the lip 34 such as might tend to bend it outwardly toward the edge of the insole, the inner portion of the upper and the lip remaining in upstanding relation to the bottom face of the insole in convenient position for a subsequent trimming operation.

While some manufacturers may prefer to continue the lasting operations above described about the toe end of the shoe, it is usually preferable to perform the lasting of the toe portion of the upper in a single operation. In accordance with the illustrated practice, the side member is next placed in a lasting machine of the bed type and the pulling-over stacks 40 are removed. The last and shoe are supported in the machine by means of a jack 56, including a last pin 54 (Fig. 4) for engaging the heel end of the last in the last hole, and a toe rest 54 for engaging the top of the forepart of the shoe. For purposes of the present invention the illustrated machine is provided with an electrode 55, of suitable electrical conducting material, arranged to engage the bottom face of the inner margin at the toe end inside the lip 34 and having an edge face 56 shaped to engage the inner face of the lip around the toe end portion of the insole. For lasting the toe there are provided a pair of pivoted electrodes 60, 62 (Fig. 4) the actuating edge faces of which are shaped to conform substantially to the contour of the toe end of the shoe. The electrodes 60, 62, also of suitable electrical conducting material, are so mounted and arranged that they may be advanced bodily lengthwise of the shoe and simultaneously swung toward and away from each other laterally of the shoe. The mechanism including a hand lever 52 (Fig. 3) to wipe the edge portion of the upper around the toe end inwardly over the feather of the insole and against the outer face of the lip 34. The electrodes are carried by a toe lasting head 84 which may include also a toe band 86 for embracing the shoe about the toe and for clamping the upper materials to the end and sides of the last at the time when the electrode 60, 62 and operative to wipe the edge portion of the upper inwardly over the insole. The toe lasting head, including the electrodes 60, 62 and the toe band 86, is movable heightwise of the shoe by means of a treadle 85 and the electrodes are utilized in this movement to wipe the upper heightwise of the last to conform it to the contour of the toe end of the last before wiping it inwardly over the insole. As shown, particularly in Fig. 3, the treadle 85 is a double acting treadle connected by a link 91 to a slide 89 on which the toe lasting head 84 is supported. The upward movement of the electrodes 60, 62 is effected by counterclockwise swinging movement of the treadle 85, after which by swinging the treadle reversely the operator may force the electrodes down upon the shoe bottom during or after their inward wiping movement.

As shown diagrammatically in Fig. 3, the electrodes 60, 62 are connected to the high side of a high frequency oscillator 87 to the opposite side of which is connected electrode 66. The oscillator is supported adjacent to an end portion of the machine on a pedestal 98. As herein illustrated, the high frequency circuit is closed by means of a switch 67 which is normally open but which is closed in response to the further depression of the above-mentioned treadle 85 to increase the pressure of the electrodes 60, 62 on the overlapped margin of the upper after the electrodes have completed their upwiping and overwiping movements.

For this purpose, the link 61 is formed in two parts, the lower portion extending upwardly into an enlarged central bore in the upper portion 71 of the link. Fast to the upper end of the lower portion of the link is a collar 73 that is held normally in engagement with the upper portion 71 at the upper end of the central bore by means of a relatively heavy spring 75. The spring surrounds the lower portion of the link 61 within the central bore between the collar 73 and a washer 77 threaded into the lower end of the central bore. The construction is such that as the treadle 85 is swung in a counterclockwise direction (Fig. 3) to elevate the slide 69 and to raise the electrodes, the link 61 acts as a self-biasing member. However, as the treadle 85 is swung reversely to increase the pressure of the electrodes on the overlapped margin of the upper, the lower portion of the link moves relatively to the upper portion 71 against the resistance of the spring 75. As shown, the switch 67 is secured to the upper portion 71 of the link and adjustable secured to the lower portion of the link is a cam 79 which acts to close the switch after the desired compacting pressure has been applied to the overlapped margin of the upper. Accordingly, after effective shaping and clamping pressure has been applied to the upper materials and while they are thus held in last position, an alternating electrical potential is applied to said electrodes 60, 62 and electrode 66 to set up an alternating electrostatic field in the adhesive applied to the margins of the upper material end to the feather and the outer face of the lip 34 to activate and set the adhesive to cause the different layers of the upper material to be bonded together and to the insole.

Electrode 66 is supported on the end of an arm or carrier 95 by means of which it may be moved by the operator into and out of position over the toe end portion of the insole and then downwardly into engagement with the toe end portion of the insole. The arm 95 is secured to the upper end of a rod 91 which is vertically movable in a bearing in the frame of the machine and at its lower end is connected by means of a link 83 (Fig. 5) to a treadle 95 which is normally held in upraised position by a spring (not shown) and is locked in depressed condition by a ratchet and pawl mechanism 97. It will be understood that by depression of the treadle 95 the electrode 66 is pressed firmly against the bottom face of the insole and is maintained in that position by the ratchet and pawl mechanism during the toe lasting operation. Since the heating and resulting setting of the thermosetting resin occurs at a very rapid rate, the operator may almost immediately operate the treadle 95 to open the switch 67 and to raise the electrodes 60, 62 and by means of the handle 63 remove the electrodes from over the bottom of the shoe. He will also release the treadle 95 to permit the arm 95 to be moved upwardly and then swung outwardly to carry the
electrode 55 into an out-of-the-way position from over the shoe bottom.

Next, the heel part of the upper is lasted over the heel part of the insode and the different layers of the upper materials bonded to each other and to the insode with the upper materials in lasted position by the activating and setting of the previously applied thermosetting adhesive. For this operation, the illustrated machine is provided with a pair of pivoted electrodes 70, 72 (Fig. 5) having their acting edge faces shaped to conform substantially to the curve of the heel end of the shoe. The electrodes 70, 72 are also so mounted and arranged that they may be advanced bodily lengthwise of the shoe and simultaneously swung toward each other laterally to the shoe by mechanism including a hand lever 74 (Fig. 3) to wipe the marginal portions of the upper materials inwardly over the insode around the heel end. The electrodes 70, 72, of electrical conducting material, are mounted in a heel lasting head 76 which may also include a heel band 78 for shaping the upper to the last around the heel end portion of the shoe. It will be understood that as is usual in heel lasting machines of the illustrated type the operator by turning a hand wheel 80 will move the jack 59 to the right (Fig. 3) to carry the shoe lengthwise into engagement with the heel band 78 and simultaneously to raise the last pin 52 to position the shoe in the proper heightwise relation to the electrodes 70, 72. In lasting the heel end, the operator advances and closes the electrodes 70, 72 by the hand lever 74 to wipe the marginal portion of the upper materials inwardly over the bottom face of the insode.

The electrodes 70, 72 are connected to the high side of a high frequency oscillator 90 the opposite side of which is connected to the last pin 52. A pedestal 100 serves to support the oscillator in a convenient position adjacent to the right-hand end portion of the machine (Fig. 3). The last pin 52 is provided with a motor 102 having a switch 88 which is normaly open but which may be closed at the proper time in the heel end lasting operation to cause the circuit to be closed between the electrodes 70, 72 and the plate electrode 86. Conveniently, and as herein shown, the switch 88 is closed in response to the depression of a treadle 82 commonly provided in machines of the illustrated type to impart further upward movement to the jack pin 52. This raises the last and shoe to compact the overwiped marginal portions of the upper materials against the electrodes 70, 72 after they have completed their overwiping movements and while they are in closed position over the heel end portion of the shoe. As usual, the treadle 82 has connected to it a rod 91 which at its upper end abuts against a pivoted wedge plate (not shown) for raising the last pin 52. The upward movement of the rod 91 by depression of the treadle. The rod 91, as herein shown, is formed in two parts connected by a sleeve 93 fast to the upper portion of the rod and having an enlarged central bore to receive the upper portion of the lower portion of the rod. Seated within the central bore in the sleeve 93 is a relatively heavy compression spring 95 which bears at its lower end against a collar 97 pinned to the upper end of the lower portion of the rod 91, and threaded into the central bore in the sleeve is a nut 99 for holding the parts in assembled relation. Upon initial depression of the treadle 82, the spring 95 acts substantially as a solid member but is arranged to be held and compression spring 95 is applied to the overlasted margin of the upper around the heel end against the bottom faces of the electrodes 70, 72. Adjustably secured to the lower portion of the rod 91 is a cam finger 101 which acts, as the lower portion of the rod moves relatively to the upper portion against the resistance of the spring 95, to close the switch 88. An alternating electrostatic field is thereby set up betwwen the electrodes 70, 72 and the plate electrode 86, passing through the adhesive previously applied to the marginal portions of the layers of the upper materials and to the insode. The adhesive will accordingly be activated and set to bond the layers of the upper materials together and to the insode. The operator may then lower the jack 59, thereby opening the switch 88, retract the electrodes 70, 72 from over the shoe bottom, unjack the shoe and remove it from the machine.

The bed-lasting machine illustrated in the drawings is of a well-known type, features of which are disclosed in various United States Letters Patent including Letters Patent No. 1,200,259 granted November 12, 1918, upon an application of Matthias Brock. The construction of parts of the machine other than the means for operating the switches 67 and 88 have therefore not been herein illustrated and described in detail.

Fig. 6 illustrates the shoe after it has been lasted along the sides and around the toe and heel end portions. In addition to such advantages as arise from the absence of any lasting fastenings in or adjacent to the line of in-seam stitches in the subsequent welt sewing operation, there are also other important advantages resulting from treatment such as above described. With the edge portion of the upper materials pressed firmly into the angle formed by the edge of the insole and the outer edge thereof, all of the insode is shown as fastened to the insole in the proper position and with the insole in the position which it will assume in the finished shoe. This may be accomplished without any further troublesome shaping or trimming on the insode, or fastening thereof to the insole. The insole, such as usually occurs when the upper is secured to the insole by spaced fastenings in the lasting operation.

From the foregoing description it will be seen that there is produced by the use of the invention a shoe which is not only tightly lasted but one which is entirely free from lasting fastenings such as staples, tacks and/or binding wire at both end portions and along the sides of the shoe. The lasting shoe, moreover, is in the best possible condition for the subsequent in-seam sewing and trimming operations. Fig. 7 shows the shoe after a welt W has been attached to the upper and the insode by stitches, and Fig. 8 illustrates the shoe after the in-seam trimming operation has been performed and an outsole O has been applied to the bottom of the shoe. Since the edge portion of the upper and the insode are bonded together in the angle formed by the feath-
er and the lip of the insole there will be provided a substantially watertight seam along the sides and around the toe end of the finished shoe. It will be understood that, as shown in Fig. 6, the seam may be continuous by impinging to the shoe feeding movements each of an extent less than the width of the effective field between the electrodes. Moreover, in the subsequent sole attaching operation, if an adhesive is used to secure the outside to the welt, an electrostatic field may be used by employing the adhesive because of the absence of any metallic fastenings in the bottom of the shoe such as might produce arcing or corona discharge and a resulting marking or burning of the shoe. Furthermore, the use of thermostatic adhesive in the lasting operation avoids any danger of the unlashing of the upper, particularly around the heel end of the shoe, in a subsequent sole attaching operation in which an electrostatic field is used to activate sole attaching cement.

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

1. That improvement in methods of making welt shoes which consists in working a portion of a shoe upper over a last, bending the edge portion of the upper inwardly over an insole on the last and clamping it to a lip of the insole with an adhesive between the upper and said lip, uniting the upper and lip while in that relation by passing an electrostatic field through said adhesive to activate it, and repeating said operations progressively along the sides of the shoe to complete the lasting of the shoe between its toe and heel end portions.

2. That improvement in methods of making shoes which consists in assembling a shoe upper and an insole on a last, applying a thermostatic adhesive to the marginal portions of the shoe upper materials and to the margin of the insole and the outer face of a lip of the insole, pulling different portions of the upper along the sides of the shoe over the last, laying the margin of each tensioned portion of the upper inwardly over the bottom face of the insole and pressing it into the angle formed by the margin and the lip of the insole, and while thus holding each overlaid portion passing an electrostatic field through the adhesive to activate it to fasten each portion of the upper in lasted position, and then lasting the toe and heel end portions of the shoe while the upper is thus adhesively secured in lasted position to the insole along the sides of the shoe.

3. That improvement in methods of making shoes which consists in assembling a shoe upper and an insole on a last, applying a thermostatic adhesive to the marginal portions of the shoe upper materials and to the margin of the insole and the outer face of the lip of the insole, pulling the upper over the last successively in different locations along the sides of the last and by the use of an electrode laying the margin of each of the tensioned portions of the upper in lasted position over the outer face of the margin of the insole and against the lip, supporting the lip adjacent to each of the overlaid portions of the upper in lasted position by means of a conductor presented in engagement with the different portions of the lip successively, and utilizing said electrodes to pass an electrostatic field through said adhesive to activate it to secure each of the overlaid portions of the margin of the upper to the insole before laying the upper over the insole in the next succeeding location.

4. In a machine for lasting shoes, means for working an upper into lasted relation to a last and to a ribbed insole on the last in different locations successively along the edge of the bottom with adhesive between the upper and the insole, said upper working means including electrodes arranged respectively to lay the edge portion of the upper inwardly over the bottom face of the insole and against said rib and to support the rib in each of said locations, and means for applying an alternating electrical potential to said electrodes to set up a high frequency electrostatic field traversing said rib and the edge portion of the upper.

5. In a machine for lasting shoes, means for conforming an upper to the shape of a last and for laying its edge portion inwardly over an insole on a last and against a lip of the insole in different locations successively along the edge of the last bottom with an adhesive between the upper and the insole, said means including an electrode movable in each of said locations in a direction inclined relatively to the plane of the last bottom to force the edge portion of the upper into the angle between the leather and the lip of the insole and a second electrode arranged to support the lip in each overlapping operation, and means for applying an alternating electrical potential to said electrodes to set up a high frequency electrostatic field substantially parallel to the plane of the shoe bottom.

6. A lasting machine having a gripper for pulling an upper over a last and inwardly over an insole on the last in different locations successively along the edge of the last bottom, a pair of members of electrical conducting material relatively movable in each location to bend the edge portion of the tensioned upper into the angle between the leather and a lip of the insole and to apply clamping pressure to the upper and said lip with an adhesive between the upper and the insole, and means for applying an alternating electrical potential to said members to cause a high frequency electrostatic field to be set up in said adhesive to heat and consolidate the adhesive.

7. A lasting machine having a pair of electrodes the acting edge faces of which are shaped to conform substantially to the contour of the toe end of a last, said electrodes being mounted for bodily movement in directions both heightwise and lengthwise of the last and for swinging movements toward each other laterally of the last to shape the upper to the contour of the toe end of the last and to wipe the margin of the upper inwardly over an insole on the last and against a lip of the insole, an electrode for supporting the lip against the inwardly directed pressure of said pair of electrodes, said last-named electrode being arranged to engage the bottom face of the insole and having an edge face curved to engage the inner surface of a lip at the toe end of the last, said electrodes thus defining a direct electrostatic field uniformly spaced about the toe end, and means operative to apply an alternating electrical potential to said pair of electrodes and said last-named electrode when the margins of the upper is thus held in overwiped position.

8. In a machine for lasting shoes, a gripper for pulling an upper over a last successively in different locations along the edge of the last bottom, means for laying the margin of each
tensioned portion of the upper inwardly over an insole on a last and against a lip of the insole with an adhesive between the upper and the insole, means for connecting one side of a high frequency circuit to said overwiping means, means arranged by engagement with different portions of the lip successively to support it adjacent to each of the overlaid portions of the margin of the upper, and means for connecting said last-named means to the other side of said high frequency circuit.

9. In a machine for lasting shoes with cement, means for wiping the marginal portion of an upper inwardly over an insole on a last and against a rib of the insole, means for supporting the rib against the inwardly directed pressure of said overwiping means, means connecting said overwiping means and said rib supporting means to the opposite sides of a high frequency circuit, and operator-controlled means for closing said circuit at will.

10. In a machine for lasting shoes with cement, means for wiping the marginal portion of an upper inwardly over an insole on a last and against a rib of the insole, means for supporting the rib against the inwardly directed pressure of said overwiping means, means connecting said overwiping means and said rib supporting means to the opposite sides of a high frequency circuit including a normally open switch, and means for increasing the pressure of said overwiping means on the overlaid marginal portion of the upper and for closing said switch.

11. In a machine for lasting shoes with cement, means for wiping the marginal portion of an upper inwardly over an insole on a last, means for supporting the shoe for the overwiping operation, means connecting said overwiping means and said supporting means to the opposite sides of a high frequency circuit including a normally open switch, a member movable by the operator to increase the pressure of said overwiping means on the overlaid margin of the upper, and a second member for closing said switch at an adjustable variable time in the movement of said first-named member.

12. That improvement in methods of making shoes which consists in assembling shoe parts on a last with a thermoactive adhesive applied to the marginal portions of said parts, pressing different portions of the said parts together in different locations successively along the edge of the shoe bottom, and while applying pressure to the margins of the parts in each location passing an electrostatic field through the adhesive to activate it to fasten each portion of the parts together.

13. That improvement in methods of making shoes which consists in working different portions of a shoe upper in different locations successively along the edge of a shoe bottom into lasted relation to a last and to an insole on the last and in each location where the upper is thus worked into lasted relation to the last and insole clamping the margin of the upper against the insole, activating an adhesive previously applied between the upper and the insole to secure the upper in lasted position, and then releasing the upper from clamping pressure before working the upper into lasted relation to the last and insole in the next succeeding location.

14. In a machine for adhesively connecting shoe parts together along a line to form an adhesive seam, electrodes arranged to apply clamping pressure to the parts in different locations successively along said line, said electrodes being relatively movable while in each location to apply said clamping pressure and then to release the parts from pressure, and means for connecting said electrodes respectively to opposite sides of a high frequency circuit.

15. In a machine for lasting shoes, electrodes located exteriorly of a shoe on the opposite sides of a rib of an insole of the shoe and being relatively movable to clamp the marginal portion of the upper of the shoe and the rib of the insole together at the toe end of the shoe, said electrodes having their edge faces complementally curved to define between them a substantially uniform direct electrostatic field when in clamping position, and means for connecting the electrodes on the opposite sides of said rib respectively to the opposite sides of a high frequency oscillator.

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