Sept. 6, 1927. 1,641,237

W. T. B. ROBERTS

MACHINE FOR SHAPING UPPERS OVER LASTS

Filed Feb. 7, 1923 2 Sheets-Sheet 1

Fig. 2.

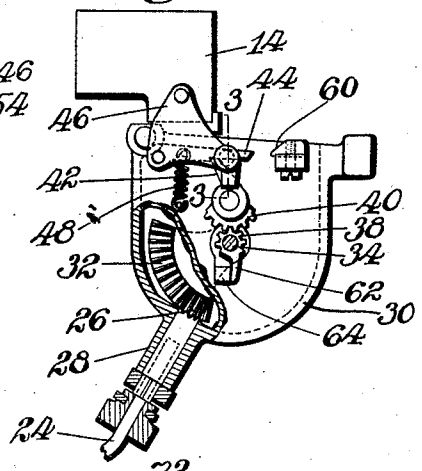


Fig. 3.

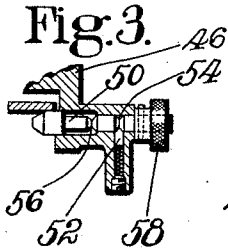
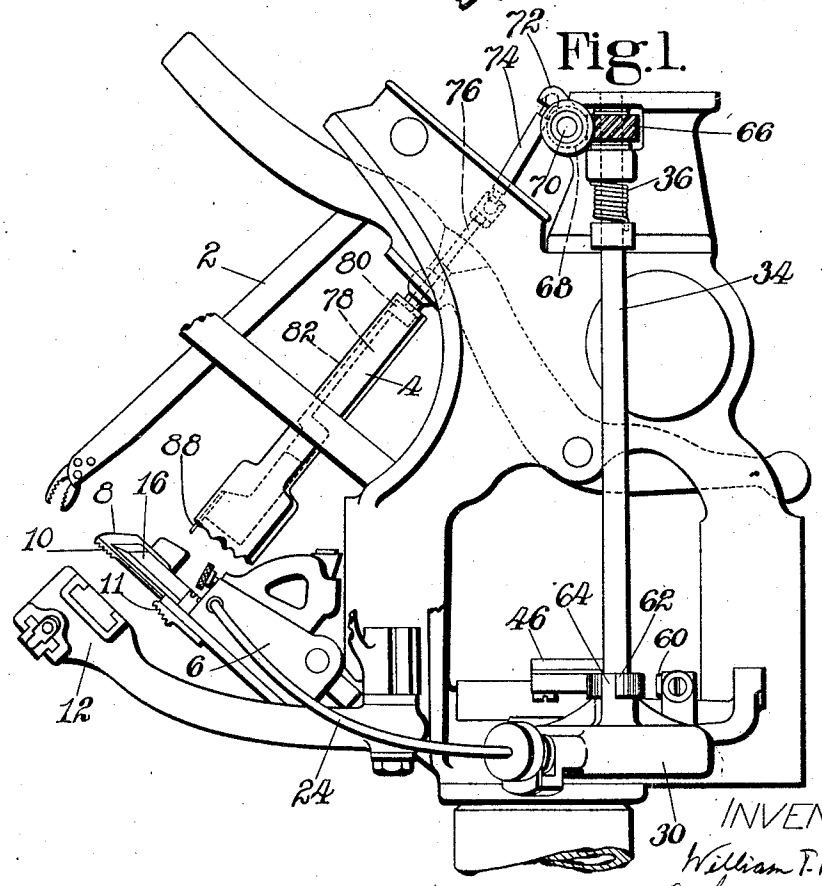


Fig. 1.



INVENTOR.
William T. B. Roberts
By his Attorney
Nelson W. Howard

Sept. 6, 1927. 1,641,237

W. T. B. ROBERTS

MACHINE FOR SHAPING UPPERS OVER LASTS

Filed Feb. 7, 1923 2 Sheets-Sheet 2

Fig. 6.

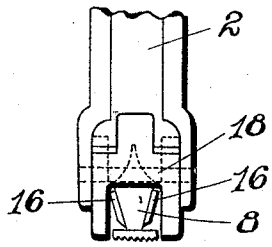


Fig. 11.

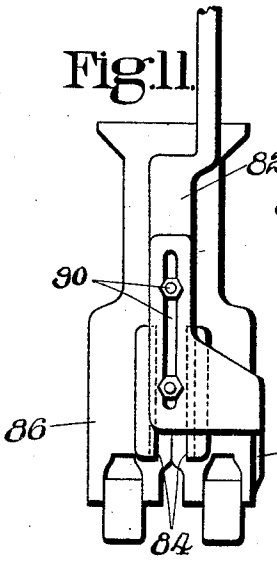


Fig. 10.

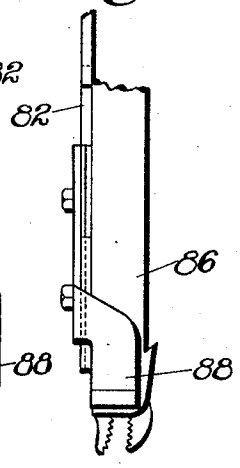


Fig. 5.

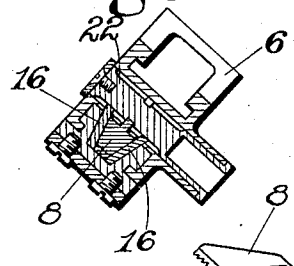


Fig. 4.

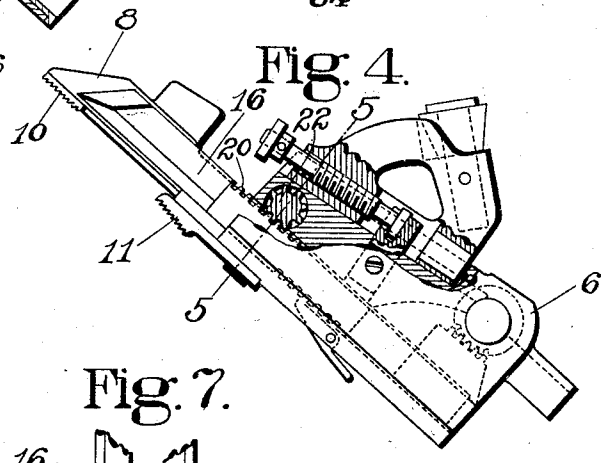


Fig. 7.

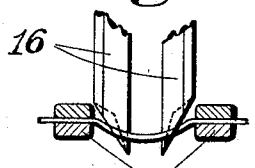
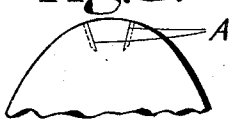


Fig. 9.

Fig. 8.



INVENTOR.

William T. B. Roberts

By his Attorney

Nelson Rothwell

Patented Sept. 6, 1927. 1,641,237

UNITED STATES PATENT OFFICE.

WILLIAM THOMAS BUCKINGHAM ROBERTS, OF LEICESTER, ENGLAND, ASSIGNOR TO UNITED SHOE MACHINERY CORPORATION, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

MACHINE FOR SHAPING UPPERS OVER LASTS.

Application filed February 7, 1923, Serial No. 617,537, and in Great Britain March 15, 1922.

This invention relates to machines for shaping uppers over lasts, and more particularly to means for cutting or slitting the margin of the upper to facilitate the proper lasting of the shoe, as is frequently the practice, for example, in lasting the toes of McKay shoes. The slitting of the upper may be conveniently effected as a part of the pulling-over operation preparatory to lasting, and the invention is herein illustrated in its application to a well-known type of pulling-over machine the principal characteristic features of which are shown and described in Letters Patent No. 1,029,387, granted on June 11, 1912, upon an application of R. F. McFeely. It will be recognized, however, that in many of its features the invention is not limited to machines of that particular type nor to machines for performing the operation commonly known as "pulling-over".

One important object of the invention is to insure uniform results in slitting the uppers of different shoes, irrespective of varying conditions such as may affect, for example, the extent of relative pulling movement of the upper gripping means and the last, and the invention accordingly provides, as one feature, a novel construction and arrangement of means for slitting the margin of the upper at a uniform distance from the edge of the shoe bottom in operating on different shoes. For the accomplishment of this and other objects, the construction herein shown comprises upper slitting means which, for slitting the upper at the end of the toe, is mounted on the sole rest to cut outwardly through the margin of the upper in automatically determined relation to the plane of the insole. In the illustrative embodiment of the invention this toe slitting means comprises a pair of slitting knives or cutters which are advanced along the plane of the shoe bottom to slit the upper in spaced locations, thereby forming a flap to lie on the bottom of the insole.

A further object of the invention is to provide means for slitting the margin of the upper in different locations, as herein shown at the sides of the forepart as well as at the toe end, and for this purpose the machine illustrated includes cutters which are mounted on the opposite side grippers and are moved toward the plane of the insole to slit the upper. Further to insure uniformity in operating on different shoes, the operating means for the side cutters is so constructed as to terminate the operative movement of these cutters at a predetermined distance from the plane of the insole irrespective of the extent of the relative pulling movement of the last and the grippers. It is a further advantageous characteristic of the construction shown that operating mechanism common to the different cutters is provided for operating them in unison.

A further feature of the invention consists in novel means for forming slits in predetermined relation to each other, one of the objects in view being to form slits extending substantially radially of the curved edge of the upper, and for this purpose the toe slitting knives of the machine shown, which are moved along the plane of the insole, are relatively inclined in planes which converge toward the plane of the insole. It is also an object to bevel the edges of the flap which is turned down on the bottom of the insole, to facilitate the overlapping of adjacent portions of the margin of the upper, and for this purpose the toe slitting knives in the construction shown are arranged to bulge the margin of the upper outwardly in their cutting movement so that the slits are inclined to the surface of the upper and converge toward its outer surface. For this and other purposes, the invention further provides a novel arrangement of upper gripping means and slitting means, comprising in the illustrative embodiment of the invention a toe gripper having bifurcated gripping jaws and upper slitting means which is movable between the bifurcations of the jaws.

The above and other features of the invention, including also novel means for slitting the upper progressively by a draw cut, a novel organization of operating and controlling mechanism for the slitting means, novel means for rendering the slitting means either operative or inoperative at will, and various details of construction and combinations of parts, will now be more particularly described by reference to the accompanying drawings and pointed out in the claims.

In the drawings

Fig. 1 is a side elevation of the head portion of a pulling-over machine in which the invention is embodied, with parts of the machine broken away to illustrate more clearly features of the present invention;

Fig. 2 is a plan view, partly in section, of a portion of the mechanism provided for operating the upper slitting cutters;

Fig. 3 is a section on the line 3—3 of Fig. 2, showing the parts on an enlarged scale and in a different position;

Fig. 4 is a side elevation, with parts in section, showing the sole rest and a portion of the toe slitting mechanism;

Fig. 5 is a section on the line 5—5 of Fig. 4;

Fig. 6 is a front elevation of the toe gripper and of the end of the sole rest with its toe slitting knives;

Fig. 7 is a plan view of the toe slitting knives as they appear in the operation of slitting an upper held by the toe gripper;

Fig. 8 is a plan view of the toe portion of an upper illustrating the angular relation of the slits;

Fig. 9 is a section of the toe portion of the upper illustrating the manner in which the edges of the flap are beveled by the slitting operation illustrated in Fig. 7;

Fig. 10 is an end elevation of one of the side grippers with a side slitting knife mounted thereon, and

Fig. 11 is a side elevation of the gripper and knife shown in Fig. 10.

It will be understood that in the well-known type of machine illustrated a toe gripper 2 and opposite side grippers 4 are operated to grip and to pull the upper at the toe end and at opposite sides of the forepart against the resistance of a sole rest which receives a short rocking movement as the upper is pulled, the sole rest comprising a carrier 6 on which is mounted a bar 8 provided with an adjustable foot piece 10 for engaging the insole near the toe, and having also other foot pieces 11 cooperating with the foot 10 to determine the plane in which the forepart of the insole is presented. After pulling the upper the machine comes automatically to a stop, and when it is again started side clamp arms, one of which is shown at 12, are swung inwardly into clamping engagement with the shoe at its opposite sides by mechanism including a cam operated slide 14 (Fig. 2), and thereafter the margin of the upper is wiped inwardly and fastened by tacks through the operation of overlaying and fastening means not shown in the drawings.

For purposes of the present invention, there are slidingly mounted in the sole rest carrier 6 at opposite sides of the bar 8 a pair of upper slitting cutters or knives 16, these knives converging toward the plane of the insole (Fig. 6) and having on their ends cutting edges which are inclined to the direction of movement of the knives and terminate in points near the plane of the insole (Fig. 4), so that upon forward movement of the knives to slit the upper held by the toe gripper they are made to penetrate the upper first near the plane of the insole and then progressively to lengthen the slits by a draw-cut until the slits extend through the edge of the upper. By reason of the angular relation of the knives to the plane of the insole, they produce a flap which is widest at its marginal portion, as illustrated in Fig. 8, the slits A, A extending substantially radially of the curve of the edge of the upper.

By reference to Figs. 6 and 7 it will be seen that the toe gripper jaws 18 are recessed or bifurcated to provide an opening through which the knives 16 are advanced to act on a free portion of the margin of the upper presented between the bifurcations of the jaws. When the knives engage the inner surface of the upper they bulge it outwardly, as illustrated in Fig. 7, so that the slits are inclined relatively to the surface of the upper and converge toward the outer surface, the central flap thus being provided with beveled or skived edges on its outer surface which facilitates the overlapping thereon of the adjacent portions of the margin of the upper in the lasting of the toe. It is contemplated that the flap produced by the knives 16 will be fastened to the insole by a pair of tacks arranged as shown in Letters Patent No. 1,125,094, granted on Jan. 19, 1915, upon an application of Harris and Bates, although the invention is not limited in respect to the manner in which the margin of the upper is fastened.

For operating the knives 16, each knife on its upper edge is provided with rack teeth 20, and both sets of rack teeth are engaged by a horizontal pinion 22 mounted in bearings in the sole rest carrier 6 and driven by a flexible shaft 24 the opposite end of which has fast thereon a beveled pinion 26 rotatable in a bearing 28 formed in a bracket 30 which is fast on the frame of the machine. The pinion 26 is driven by a gear segment 32 on the lower end of a vertical shaft 34 which is mounted to turn in a bearing in the bracket 30 and in a bearing on the frame and is acted upon by a coiled spring 36 to hold the knives 16 normally in retracted position. Fast on the shaft 34 is a gear segment 38 which is in mesh with a gear segment 40 pivotally mounted on the bracket 30 and provided with a tail 42. For turning the shaft 34 to impart operative movement to the knives 16 the tail 42 is engaged by a device which is carried by the slide 14 by movement of which

toward the right (Fig. 2) the side clamp arms 12 are swung inwardly toward the shoe as hereinbefore explained. This device comprises a pawl 44 pivoted on a bracket 46 which is fast on the slide 14, the pawl having a projection on one side for engaging the tail 42, as shown in Fig. 2, and being held normally in such engaging position by a spring 48. If desired, the pawl 44 may be held in inoperative position by a pin 50 which is slidingly mounted in the bracket 46 and is maintained either in position to permit the pawl to engage the tail 42 or in position to hold the pawl out of engagement with the tail, as illustrated in Fig. 3, by means of a spring plunger 52 which engages one or the other of two grooves 54 and 56 in the pin. On its outer end the pin 50 is provided with a knob 58 by which it may be moved from one position to the other.

For limiting the extent of forward movement of the knives 16, a cam member 60 is provided which is engaged by the end of the pawl at a predetermined point in the operative movement of the slide 14 and which acts to disconnect the pawl from the tail 42 and thereby to release the slitting knives for retractive movement by the action of the spring 36. A tail 62 on the gear segment 38 is arranged to engage a lug 64 on the bracket 30 to limit the retractive movement of the knives.

The mechanism for slitting the upper at the sides of the forepart is also operated by the vertical shaft 34, the latter having fast upon its upper end a spiral gear 66 which drives a spiral gear 68 fast on one end of a horizontal shaft 70 mounted in bearings in the upper portion of the frame of the machine. The shaft 70 has fast thereon two parallel arms 72, one for each side gripper, and each arm has a ball-and-socket connection with a link 74 the lower end of which has a similar connection with the upper end of a rod 76 guided for lengthwise movement in the side gripper bar 78. On its lower end the rod 76 carries a pin 80 which projects through a slot in the gripper bar and is coupled on the outside of the bar to the end of a slide 82 (Figs. 10 and 11). The slide 82 is movable in a guideway 84 on the inner face of the gripper casing 86 and on its lower end carries a cutter 88 which is formed of sheet metal bent so as to hug closely and be guided by the inner face of the casing 86 and by that face of the casing which is at right angles to its inner face and is nearest to the toe end of the shoe. The cutter 88 is secured to the slide 82 by a screw and slot connection 90 which permits adjustment of the cutter lengthwise of the slide to vary the limit of operative movement of the cutter toward the plane of the insole. That portion of the cutter which overlaps the end face of the gripper casing is extended in the direction of the shoe bottom and has a cutting edge formed on its lower end.

It will be evident that simultaneously with the operation of the toe slitting knives 16, operative movement is imparted to the side slitting knives or cutters 88 through downward movement imparted to the rods 76 by the arms 72, the extent of movement of the knives 88, as well as that of the knives 16, being determined by engagement of the pawl 44 with the cam member 60. The slits produced by the knives 88 in the margin of the upper are thus terminated invariably at the same distance from the plane of the insole in operating on different shoes irrespective of the extent of the previous upper pulling movement of the grippers and of their position relatively to the plane of the insole. It will also be understood that the slits made by the cutters 16 at the end of the toe are likewise located at the same distance from the plane of the insole or from the edge of the shoe bottom on the different shoes, irrespective of the extent of the pull of the toe gripper, since the path of movement of these cutters bears a fixed relation to the sole rest which determines the plane of the insole. When the member 42 is tripped, as hereinbefore explained, the side cutters as well as the toe cutters are retracted by the spring 36, to afford clearance for the operation of the overlaying and fastening means.

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

1. In a machine of the class described, the combination with upper pulling means, of upper slitting means movable along the plane of the shoe bottom to slit the margin of the upper, and automatic means for relatively positioning said upper slitting means and the work irrespective of the size of the shoe to locate the slits in the uppers of different shoes at the same distance from the edge of the shoe bottom.

2. In a machine of the class described, the combination with upper gripping means for pulling an upper over a last, of upper slitting means movable along the plane of the shoe bottom to slit the margin of the upper, and automatic means for determining independently of the upper gripping means the distance from the edge of the shoe bottom at which the upper is slit.

3. In a machine of the class described, the combination with means for pulling an upper over a last, of upper slitting means movable along the plane of the shoe bottom to slit the margin of the upper, and means for determining automatically by engagement with the insole of each shoe irrespective of its size the distance from the edge of the shoe bottom at which the upper is slit.

4. In a machine of the class described, the combination with upper gripping means for

pulling an upper over a last, of means for determining automatically the plane in which the insole of the shoe is presented in the upper pulling operation, and upper slitting means movable along the plane of the insole in a relation to said plane automatically determined independently of the upper gripping means.

5. In a machine of the class described, the combination with upper gripping means for pulling an upper over a last, of means for engaging the insole of the shoe in different spaced locations to determine the plane in which the insole is presented, and means positioned relatively to the shoe by such engagement for slitting the margin of the upper.

6. In a machine of the class described, the combination with upper gripping means for pulling an upper over a last, of means for slitting the margin of the upper comprising a cutter mounted independently of said upper gripping means for movement along the plane of the shoe bottom to slit the upper from its inner surface outwardly.

7. In a machine of the class described, the combination with grippers for gripping and pulling an upper respectively at the toe end and at opposite sides of the fore-part, of upper slitting means mounted independently of said grippers for slitting the margin of the upper adjacent to the toe gripper.

8. In a machine of the class described, the combination with a toe gripper, side grippers, and a sole rest, of upper slitting means mounted on the sole rest for slitting the margin of the upper in a predetermined relation to the plane of the shoe bottom.

9. In a machine of the class described, the combination with upper gripping means, and a sole rest having spaced insole engaging feet for determining the plane in which the insole is presented, of an upper slitting cutter mounted on the sole rest for movement in a path bearing a fixed relation to said feet for slitting the margin of the upper.

10. In a machine of the class described, the combination with a toe gripper, side grippers, and a sole rest, of an upper slitting cutter mounted on the sole rest for forward movement to slit the margin of the upper at the end of the toe, and means for imparting operative movement to said cutter while the upper is held by the grippers.

11. In a machine of the class described, the combination with upper gripping means and a sole rest, of an upper slitting cutter mounted on the sole rest for movement to slit the margin of the upper from its inner surface outwardly while the upper is held by the gripping means.

12. In a machine of the class described, the combination with upper gripping means, a sole rest, and operating means for imparting to the sole rest movement heightwise of the shoe in the upper pulling operation, of an upper slitting cutter mounted on the sole rest, and mechanism including a flexible shaft connected to said cutter for operating it to slit the margin of the upper.

13. In a machine of the class described, the combination with upper pulling means and a sole rest, of an upper slitting cutter mounted on the sole rest, an operating slide, a gear sector operated by said slide, and a flexible shaft connecting said gear sector to the cutter.

14. In a machine of the class described, the combination with means for pulling an upper over a last, of an upper slitting cutter, an operating slide, a pawl carried by said slide, connections to said cutter including a member arranged to be engaged and operated by said pawl, and a device for disconnecting the pawl from said member automatically at a predetermined point in the movement of the slide.

15. In a machine of the class described, the combination with upper gripping means and a sole rest, of a cutter movably mounted on the sole rest for slitting the margin of the upper, operating means for said cutter including a member arranged to be tripped at a predetermined point in the movement of the cutter, and a spring for retracting the cutter when said member is tripped.

16. In a machine of the class described, the combination with means for pulling an upper over a last, of an upper slitting cutter, an operating slide, a pawl carried by said slide, connections to said cutter including a member arranged to be engaged and operated by said pawl, and a controlling device movable at the will of the operator into position to prevent the pawl from operating said member.

17. In a machine of the class described, the combination with upper gripping means, of upper slitting means comprising a pair of knives mounted independently of said upper gripping means for slitting the upper in spaced locations to provide a flap to lie on the bottom of the insole, and means for operating said knives simultaneously to slit the upper.

18. In a machine of the class described, the combination with upper gripping means and a sole rest, of a pair of upper slitting knives mounted on the sole rest for movement as a unit to slit the margin of the upper in spaced locations at the end of the toe.

19. In a machine of the class described, the combination with upper gripping means, of upper slitting means comprising a pair of knives mounted independently of said upper gripping means and arranged in planes that converge toward the plane of the insole, said knives being movable along the plane of the insole to form in the margin of the up-

per, in each upper-slitting operation, a pair of slits that converge inwardly from the edge of the upper.

20. In a machine of the class described, the combination with upper pulling means and a sole rest, of a pair of upper slitting knives mounted on the sole rest for movement along the plane of the insole to slit the margin of the upper substantially simultaneously in spaced locations, said knives being inclined relatively to each other in planes that converge toward the plane of the insole.

21. In a machine of the class described, the combination with means for pulling an upper over a last, of a pair of upper slitting cutters spaced from each other and arranged relatively to the upper pulling means each to make a single slit in the margin of the upper from its inner surface outwardly in inclined relation to said margin to form a flap with beveled edges on its outer surface.

22. In a machine of the class described, the combination with upper gripping means, of upper slitting means movable to slit the margin of the upper in spaced locations from its inner surface outwardly, said upper gripping means being constructed to hold the margin of the upper in such relation to the slitting means as to cause the margin to be bulged outwardly by the slitting means to form slits in inclined relation to the surface of the upper.

23. A machine of the class described having, in combination, means for gripping an upper in spaced locations at the end of the toe, and upper slitting means movable to slit the margin of the upper between the locations where it is engaged by the upper gripping means.

24. A machine of the class described having, in combination, means for gripping an upper in spaced locations, and a pair of upper slitting cutters movable to slit the margin of the upper from its inner surface outwardly between the locations where it is engaged by the upper gripping means.

25. A machine of the class described having, in combination, means for gripping the margin of an upper in spaced locations while leaving a portion of the margin free between said locations, and upper slitting cutters movable to form a pair of slits between the locations where the upper is gripped to provide in said free portion of the margin a flap to lie on the bottom of the insole.

26. A machine of the class described having, in combination, upper slitting means movable to slit the margin of an upper from its inner surface outwardly, and means for gripping the margin of the upper at opposite sides of said slitting means while leaving free that portion of the margin which is engaged by the slitting means.

27. A machine of the class described having, in combinations, a pair of upper slitting cutters movable to slit the margin of an upper from its inner surface outwardly, and upper gripping means arranged to hold the margin of the upper at opposite sides of the pair of cutters adjacent to their paths of movement while leaving the intermediate portion of the margin free to be bulged outwardly by the cutters to form slits inclined to the surface of the upper.

28. In a machine of the class described, the combination with a sole rest, of upper slitting means mounted on the sole rest for movement lengthwise of the shoe to slit the margin of the upper at the toe, and means for gripping the margin of the upper at opposite sides of the slitting means while leaving free the portion of the margin engaged by the slitting means.

29. In a machine of the class described, a gripper having bifurcated jaws for gripping an upper in spaced locations, and upper slitting means movable to slit the margin of the upper between the bifurcations of said jaws.

30. In a machine of the class described, a toe gripper having bifurcated jaws for gripping the toe of an upper in spaced locations, and a pair of upper slitting cutters movable to slit the margin of the upper in spaced locations between the bifurcations of said jaws.

31. In a machine of the class described, a toe gripper having bifurcated jaws for gripping the toe of an upper in spaced locations, and a pair of upper slitting cutters movable along the plane of the shoe bottom to engage and bulge outwardly the portion of the margin of the upper between the bifurcations of said jaws and to form in the outwardly bulged portions slits inclined to the surface of said margin.

32. In a machine of the class described, a toe gripper having bifurcated jaws for gripping the margin of an upper at the toe in spaced locations, a sole rest, and upper slitting means mounted on the sole rest for outward movement to slit the margin of the upper between the bifurcations of said jaws.

33. In a machine of the class described, the combination with upper gripping means, of an upper slitting cutter mounted independently of said upper gripping means for movement in one direction along the plane of the shoe bottom to slit the margin of the upper, said cutter having a cutting edge inclined to the direction of its movement for penetrating the upper first at a distance from its marginal edge and for then enlarging the slit progressively toward the edge of the upper.

34. In a machine of the class described, the combination with upper gripping means and a sole rest, of a cutter mounted on the sole rest for outward movement to slit the margin of the upper held by the gripping

means, said cutter having on its end a cutting edge inclined to the direction of its movement and terminating in a point for penetrating the upper first near the plane of the insole and for completing the slitting operation by a draw-cut approaching the edge of the upper.

35. In a machine of the class described, the combination with means for gripping and pulling an upper over a last, of upper slitting means comprising cutters for slitting the upper respectively at the opposite sides of the forepart at the rear of the toe end, while the upper is held by the gripping means.

36. In a machine of the class described, the combination with means for gripping and pulling an upper at the toe end and at the sides of the forepart, of a plurality of upper slitting cutters arranged to slit the margin of the upper respectively at the toe end and at the sides while the upper is held by the gripping means.

37. In a machine of the class described, the combination with a toe gripper and opposite side grippers for pulling an upper over a last, of upper slitting means comprising a plurality of cutters arranged to slit the margin of the upper in locations adjacent to the different respective grippers.

38. In a machine of the class described, the combination with means for gripping and pulling an upper over a last, of a plurality of cutters for slitting the margin of the upper respectively at the toe end and at the sides of the forepart while the upper is held by the gripping means, and mechanism common to the different cutters for operating them in time relation to one another.

39. In a machine of the class described, the combination with means for pulling an upper over a last, of a plurality of cutters for slitting the margin of the upper respectively in different locations, one of said cutters being movable to slit the upper from its inner surface outwardly and another to slit it from its edge inwardly.

40. In a machine of the class described, the combination with means for pulling an upper over a last, of a cutter movable along the plane of the shoe bottom to slit the margin of the upper at the end of the toe, and additional cutters movable transversely of said plane to slit the upper at the sides of the forepart.

41. In a machine of the class described, the combination with a toe gripper and opposite side grippers, of upper slitting means movable along the plane of the shoe bottom to slit the upper adjacent to the toe gripper from its inner surface outwardly, and additional upper slitting means movable toward the plane of the shoe bottom to slit the margin of the upper from its edge inwardly in locations adjacent to the side grippers.

42. In a machine of the class described, the combination with a toe gripper, opposite side grippers and a sole rest, of an upper slitting cutter mounted on the sole rest for slitting the margin of the upper at the end of the toe, and cutters mounted on the side grippers for slitting the upper at the sides of the forepart.

43. In a machine of the class described, the combination with a toe gripper, opposite side grippers and a sole rest, of an upper slitting cutter mounted on the sole rest for slitting the upper at the toe from its inner surface outwardly, cutters mounted on the side grippers for slitting the upper from its edge inwardly, and mechanism common to the different cutters for operating them in unison.

44. In a machine of the class described, the combination with upper pulling means, of an upper slitting cutter movable along the plane of the shoe bottom to slit the margin of the upper, automatic means for relatively positioning said cutter and the work to locate the slits in the uppers of different shoes at the same distance from the edge of the shoe bottom, a cutter movable toward the plane of the shoe bottom to slit the margin of the upper in a different location, and automatic means for terminating the movement of said last named cutter at the same distance from the plane of the shoe bottom in operating on different shoes.

45. In a machine of the class described, the combination with a toe gripper, opposite side grippers and a sole rest, of a cutter mounted on the sole rest for slitting the upper at the toe end at the same distance from the edge of the shoe bottom in operating on different shoes, cutters mounted on the side grippers for slitting the upper at the sides of the forepart, and automatic means for controlling said last named cutters to locate their slits at the same distance from the edge of the shoe bottom on the different shoes.

46. In a machine of the class described, the combination with upper pulling means, of a plurality of cutters for slitting the margin of the upper respectively at the toe end and at the sides of the forepart, and automatic controlling means for said cutters to locate the slits in the upper at the same distance from the edge of the shoe bottom on different shoes presented for treatment.

47. In a machine of the class described, the combination with opposite side grippers for gripping and pulling an upper over a last, of upper slitting cutters mounted on said grippers, a rock shaft, and arms on said rock shaft for imparting operative movements respectively to the different cutters.

48. In a machine of the class described, the combination with opposite side grippers, of upper slitting cutters mounted on said

grippers, mechanism common to said cutters for operating them including a member arranged to be tripped automatically at a predetermined point in the operative movement of the cutters, and spring means for retracting the cutters when said member is tripped.

49. In a machine of the class described, the combination with a toe gripper, side grippers and a sole rest, of an upper slitting cutter mounted on the sole rest, upper slitting cutters mounted on the side grippers, and operating mechanism common to said different cutters comprising a connection arranged to be broken automatically at a predetermined time to stop the movement of the cutters.

50. In a machine of the class described, the combination with a toe gripper, side grippers and a sole rest, of an upper slitting cutter mounted on the sole rest, upper slitting cutters mounted on the side grippers, and operating mechanism common to said different cutters comprising a slide, a pawl carried by the slide, a member engaged by the pawl for imparting operative movements to the cutters, and automatic means for disconnecting the pawl from said member at a predetermined point in the movement of the slide.

51. In a machine of the class described, the combination with upper pulling means, of cutters for slitting the margin of the upper respectively at the toe end and at the sides of the forepart, operating means for said cutters, and a member movable at the will of the operator to render said operating means either operative or inoperative to impart movement to the cutters.

52. In a machine of the class described, the combination with a gripper, of an upper slitting cutter mounted on said gripper for operative movement in a direction substantially parallel to the direction of the pull of the gripper, and means on the gripper for positioning said cutter in different adjusted relations to the gripper to terminate its cut at different distances from the plane of the shoe bottom.

In testimony whereof I have signed my name to this specification.

WILLIAM THOMAS BUCKINGHAM ROBERTS.