Dec. 11, 1934. L. J. BAZZONI 1,983,591

MACHINE FOR SHAPING HEEL BREAST COVERING FLAPS

Filed May 23, 1932 2 Sheets-Sheet 1

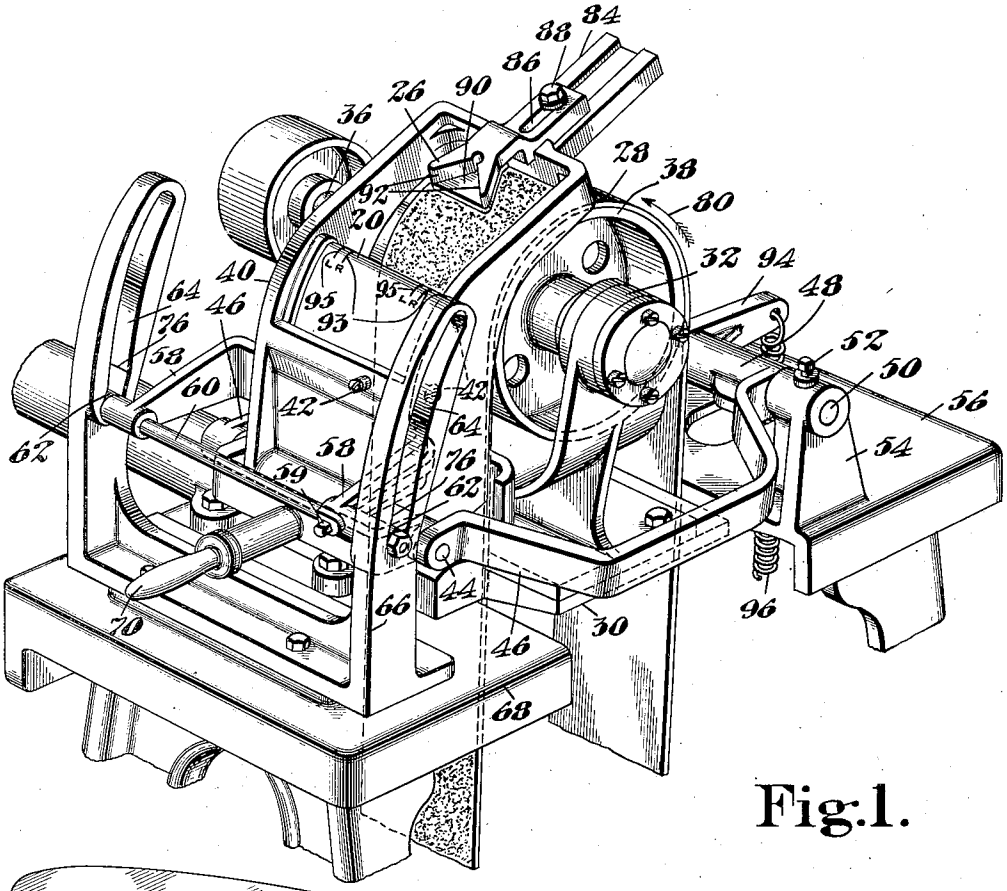


Fig.1.

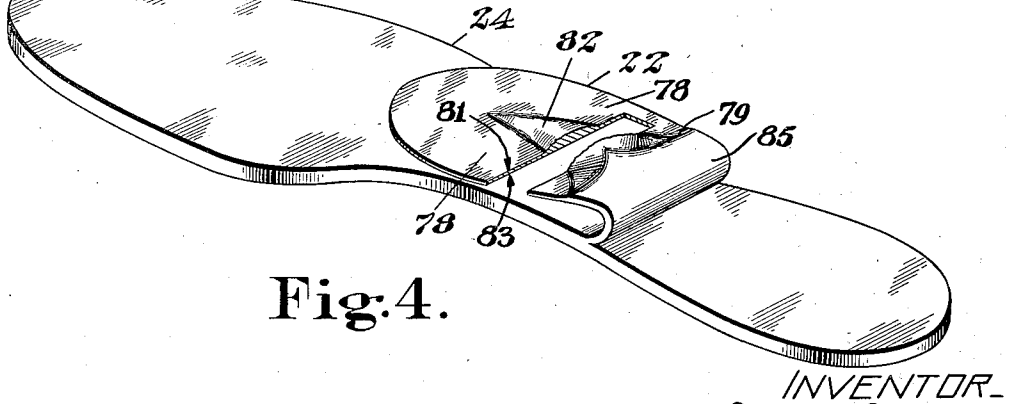


Fig.4.

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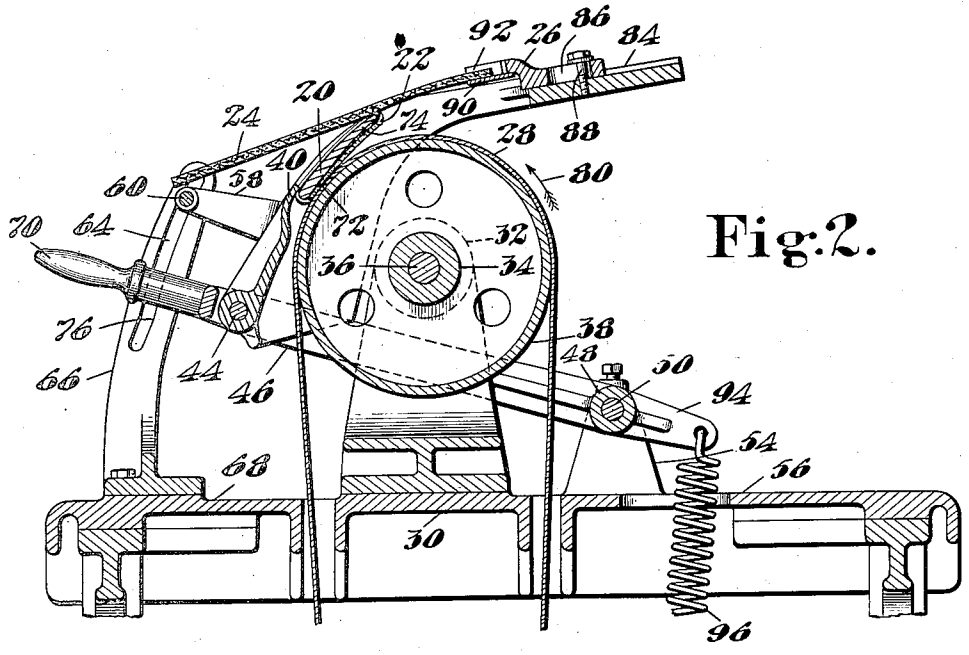


Fig. 2.

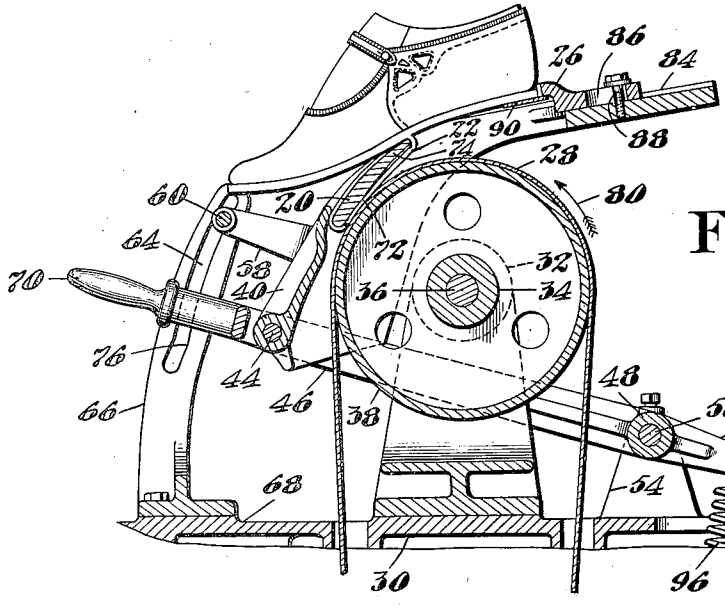


Fig. 3.

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UNITED STATES PATENT OFFICE

1,983,591

MACHINE FOR SHAPING HEEL BREAST COVERING FLAPS

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Application May 23, 1932, Serial No. 613,008

26 Claims. (Cl. 51—135)

This invention relates to the manufacture of shoes and is illustrated with reference to a sole provided with an improved heel-breast covering flap and to a machine which may be effectively used to produce the improved flap.

In the manufacture of shoes it is customary to cover the breasts of heels such, for example, as wood heels of the Louis type, after the heels have been attached to their respective shoes, by covering material split from the grain side of the rear portion of the sole and attached to the shank portion thereof. After the covering material, which is commonly known as a breast flap, has been adhesively secured to the breast of the heel, the lateral edges thereof are trimmed flush with the respective lateral breast edges of the heel.

In order that the heels of finished shoes may be of pleasing appearance along their breast edges, the lateral flesh surfaces of the flaps should not be noticeable and should also be of uniform thickness. Accordingly, in the better grades of shoes the operator reduces the thickness of the lateral marginal portions of the flap and trims the flap to an outline substantially similar to but slightly greater than that of the breast of the heel by skiving cuts preparatory to cementing the flap to the heel. Moreover, when Louis heels are strained, there is a tendency for the lips of the heels to split the flaps and for this reason and also because of the fact that the upper parts of the breasts of heels are subjected to constant rubbing action, it is desirable for the operator in skiving the flap to leave sufficient material at the base of the flap to form a portion of substantial thickness.

The above-mentioned flap skiving operation, when performed by hand, is slow and tedious since it is necessary for the operator accurately to locate the skiving cuts and to remove only a certain amount of material from the flap. Moreover, it frequently happens that the knife of the operator cuts through the flap within the area which is to cover the breast of the heel. Accordingly, there is disclosed in United States Letters Patent No. 1,864,791, granted June 28, 1932, on an application filed in my name, a machine which may be used effectively to shape breast covering flaps preparatory to laying such flaps upon the breasts of heels.

It is an object of the present invention to provide an improved machine for quickly and effectively shaping heel breast covering flaps. With the above object in view, the illustrated machine, in accordance with a feature of this invention, is provided with abrading means, and a matrix constructed and arranged to support a heel breast covering flap attached to a sole, the abrading means and the matrix being mounted for relative movement, and the matrix being formed to vary the thickness of the flap at selected localities upon relative movement of the abrading means and the matrix.

In the illustrated machine the abrading means comprises an endless belt and the matrix has the form of a plate, provided with a cylindrical flap engaging surface having therein a recess of a predetermined shape, arranged for positioning between the shank portion of a sole and a flap split therefrom. The sole being operated upon may be attached to a shoe upper or may be unattached and is positioned with respect to the matrix by an adjustable gage mounted upon a carrier which is constructed and arranged interchangeably to receive one of a plurality of matrix plates having flap engaging surfaces of various shapes. In order to move the breast flap of the sole positioned upon the matrix past the abrasive belt, the matrix carrier is mounted for pivotal movement about two axes, the matrix being moved about one only of said axes in a curved path to cause the flap engaging surface of the matrix progressively to move the flap supported thereby into engagement with the abrasive belt thereby to reduce the thickness of the flap at selected localities in accordance with the shape of the matrix, and being moved simultaneously about both axes during another portion of the operation to cause the matrix to swing away from the abrasive belt thereby to permit work to be inserted in the machine and to swing toward the abrasive belt for bringing the work into engagement with the same.

These and other features of the invention will now be more particularly described by reference to the accompanying drawings and pointed out in the appended claims.

In the drawings,

Fig. 1 is a perspective view of the illustrated machine;

Fig. 2 shows a vertical central section of the machine in the process of skiving the heel breast covering flap of a sole;

Fig. 3 is a sectional view similar to that illustrated in Fig. 2 but showing the machine in the process of skiving the heel breast covering flap of a sole which has been attached to a shoe upper; and

Fig. 4 is a perspective view of a sole the breast

flap of which has been skived in the above machine.

The illustrated machine comprises a matrix or matrix plate 20 constructed and arranged for engagement with a heel breast covering flap 22 of a sole 24, a gage 26 to position the sole relatively to the matrix plate 20 and a rotary abrasive roll or tool 28, the matrix plate 20 being mounted for movement past the roll 28 to skive the flap 22 (Fig. 4) to a shape determined by the matrix plate.

The operative parts of the machine are supported upon a table provided with a central portion 30 bolted to standards 32 having bearings 34 which are constructed and arranged to receive a shaft 36 of a pulley 38 upon which the abrasive roll 28 is mounted. In order that the abrasive roll 28 may not become overheated, it has the form of an endless abrasive belt, the bottom portion of which rides upon a pulley (not shown), adjustably mounted relatively to the pulley 38 in order to regulate the proper amount of tension upon the abrasive belt.

In order to position the matrix plate 20 and to guide the same past the abrasive roll 28, the illustrated machine is provided with a carrier 40 constructed and arranged interchangeably to receive one of a plurality of the plates 20 which may be secured to the carrier by screws 42. Extending from the opposite sides of the carrier 40 is a pair of pins 44 each of which is shaped to receive one of a pair of longitudinally extending arms 46 formed integral with a sleeve 48 which is pivotally mounted upon a rod 50 clamped by screws 52 in bearings 54 of a rear portion 56 of the table.

In order to control the pivotal movement of the carrier 40 about the pins 44, as the carrier is moved about the axis of the rod 50 the carrier is provided with extensions 58 the right extension (Fig. 1) being secured by a screw 59 to a bar 60 the opposite end portions of which support cam follower rolls 62 shaped and arranged respectively to engage in camways 64 of an upright member 66 bolted to a forward portion 68 of the table. The carrier 40 may be conveniently operated by a forwardly extending handle 70 which is secured thereto.

The inner face 72 (Figs. 2 and 3) of the matrix plate 20 mounted on the carrier 40 has the general shape of a cylinder of revolution generated about the axis of the rod 50 and has a V-shaped recess 74 formed at its rear end. The upper portions of the camway 64 are concentric with respect to the axis of the rod 50 and the lower portions are constructed to rotate the carrier 40 and the matrix plate 20 relatively to the arms 46 when the cam follower rolls 62 engage the portion of the camways 64 below points 76, respectively, to move the plate 20 either away from the abrasive roll 28 for positioning work to be operated upon in the machine or for swinging the plate 20 toward the abrasive roll to bring the work into engagement with the same.

As already stated, it is desirable to reinforce the portion of the flap (Fig. 4) which covers the projecting part of the breast of a Louis heel in order to give added strength to that part and it is also desirable that the lateral marginal portions 78 of the flap be thinned down. The distance between the abrasive roll 28 and the surface 72 of the matrix plate 20 at its nearest point of approach to the abrasive roll (Figs. 2 and 3) determines the thickness of the portions 78, the central base portion of the flap 22 during the movement of the matrix plate past the abrasive roll being forced into the V-shaped recess by the abrasive roll 28, which rotates in a direction opposite to the direction of movement of the carrier as shown by arrow 80, to form the thickened base portion 82. It will be noted that the base portion 82 extends substantially from one side of the flap to the other at the top of the V and diminishes in thickness as it approaches the end of the flap and also diminishes in thickness from its longitudinal medium portion to its lateral portions. When it is desired to change the size or the shape of the thickened base portion 82, the operator substitutes for the matrix plate 20 another plate having a recess 74 corresponding in size and shape to the base portion 82 it is desired to form.

The marginal portions 78 extend from the heel-breast line 79 of the flap 22 to the end of the flap and have their inner or flesh surfaces 81 disposed in substantially parallel relation with respect to their outer or grain surfaces 83. The shank portion 85 of the sole is thicker than the marginal portions 78 and has inner and outer surfaces which are approximately parallel. Since the margins of the thickened base portions 82 are reduced in thickness or skived it will be clear that the marginal portions 78 and the heel-engaging surface of the thickened base portion 82 form a substantially continuous surface.

The sole 24 may be quickly and accurately positioned relatively to the plate 20 by the gage 26, mounted for adjustment relatively to the carrier 40 along a guide plate 84 of the carrier, and having a slot 86 for receiving a screw 88 which is in threaded relation with the guide plate 84. The forward end of the gage 26 is provided with a ledge 90 to support the rear portion of the sole 24 and a pair of diverging shoulders 92 for centralizing the rear portion of the sole and for locating the same lengthwise in the machine. In order that the operator may quickly and accurately position the shank portion of the sole widthwise in the machine, the matrix plate may be provided with marks 93, 95 (Fig. 1) for use with right and left shoes respectively, or with a series of such marks where soles of different styles are to be operated upon.

The sole is positioned in the machine by the operator as illustrated in Fig. 2 the rear portion of the sole being supported as well as positioned widthwise and lengthwise by the gage 26, the shank portion of the sole resting against the upper edge of the plate 20 and being located at equal distances from corresponding marks 93 or 95 according to whether the operator is working on right or left soles. It will be noted that the plate 20 is constructed for positioning between the shank portion of the sole 24 and the breast flap 22 split therefrom and has its upper surface formed to accommodate soles which have been attached to shoe uppers (Fig. 3).

In order to vary the thickness of the flap 22 at selected localities the sole is positioned flap side down upon the carrier 40 when the carrier is in its lowered position illustrated in Fig. 1, the rear end of the heel portion of the sole being in engagement with the gage 26 and the shank portion of the sole being equally spaced from corresponding marks 93 or 95. As the operator raises the handle 70 the carrier 40 (Fig. 1) is also raised and swings toward the abrasive roll 28. When the cam follower rolls 62 mounted on the carriage 40 reach the points 76, the matrix plate 20 ceases to move toward the

abrasive roll 28 and instead travels in a curved path which is substantially tangential to the surface of the abrasive roll 28, the flap being forced into the V-shaped recess 74 against the surface 72 of the plate by the abrasive roll 28 as the carrier 40 is moved past the roll. The operator removes from the machine the sole, the flap of which has been skived, when the carriage is in its raised position and then lowers the carriage to the loading position illustrated in Fig. 1, the matrix plate being moved away from the abrasive roll to permit the operator to position another sole in the machine.

In order to assist the operator in raising the carrier 40 to skive heel breast covering flaps and to prevent the carriage from dropping suddenly against the machine frame should the operator lose his grip on the handle 70, the sleeve 48 is provided with a rearwardly extending projection 94 to the end portion of which a strong spring 96 is attached, the spring being flexed when the carrier 40 is in its lowered position.

Although the machine has been described with reference to the shaping of the flaps of unattached soles it will be understood that the machine can be used effectively to shape flaps of soles attached to shoe uppers. While the matrix plate 20 has been described as having a V-shaped recess 74 formed therein it will be clear that matrix plates having matrices of various shapes may be used in place of the illustrated plate.

For features disclosed but not claimed herein, reference will be had to the above-mentioned United States Letters Patent No. 1,864,791, and also to United States Letters Patent No. 1,956,556, granted May 1, 1934, on an application filed in my name.

The heel-breast covering flap 22 of the sole 24 is disclosed and claimed in a copending application for United States Letters Patent Serial No. 719,343, filed April 6, 1934, in my name.

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

1. A machine of the class described having, in combination, abrading means, and a support for a sole having a heel-breast covering flap split therefrom, said abrading means and said support being mounted for relative movement, said support comprising a concave face for supporting the flap and being constructed and arranged to permit relative movement of the abrading means and the support without interference with the sole and also to cause the flap supported by said face to have its thickness reduced at selected localities during such relative movement in accordance with the shape of said face.

2. A machine of the class described having, in combination, a matrix plate, means to position a sole having a breast covering flap split therefrom relatively to the plate, and abrasive means, said plate and said abrasive means being mounted for relative movement lengthwise of the positioned flap to remove material from the inner side of the flap at selected localities.

3. In a machine of the class described, a matrix plate having a recess formed therein and constructed and arranged for positioning between a sole and a breast flap split therefrom, and abrading means, said matrix and said abrading means being mounted for relative movement to cause the abrading means to remove material from the inner side of the flap at selected localities.

4. An abrading machine having, in combination, a matrix constructed and arranged to support a flap of a sole attached to a shoe, a gage to position the shoe relatively to the matrix, and an abrasive tool, said matrix and said tool being mounted for relative movement to cause the tool to vary the thickness of the flap at localities determined by the form of the matrix.

5. In a machine of the class described, a matrix plate constructed and arranged to support a heel breast covering flap split from and attached to a sole, and an abrading tool, said matrix plate being mounted for movement past the tool in a path extending generally lengthwise of the flap supported by the matrix plate to remove material progressively from the heel breast line to the end of the inner side of the flap at selected localities.

6. A machine of the class described having, in combination, a matrix constructed and arranged to support a heel breast covering flap split from and attached to a sole, a gage arranged to engage the rear portion of the sole to position the same relatively to the matrix, and abrading mechanism, said matrix and said gage being mounted for movement past said mechanism to skive the cover to a shape determined by the matrix.

7. A machine of the class described having, in combination, a matrix plate constructed and arranged for positioning between a sole and a heel-breast covering flap split therefrom, and a tool provided with a curved abrasive surface, said matrix plate being mounted for simultaneous pivotal movement about two axes to cause the flap supported by the plate to move along the surface of the tool as it is moved toward the same thereby to prevent a shoulder being formed upon the flap where the flap first engages the tool.

8. In a machine for reducing heel breast covering flaps, a matrix plate, and a rotary abrading tool, said matrix plate being mounted for pivotal movement in a path arranged substantially tangent to the tool to vary the thickness of a breast flap supported by the matrix at localities determined by the form of the matrix plate.

9. A machine for operating upon heel breast covering flaps having, in combination, a matrix provided with a concave flap-supporting surface having a recess formed therein, and a rotary abrasive member, said matrix being mounted for pivotal movement in a path disposed substantially at right angles to elements of its surface and in a path extending generally circumferentially of the abrasive member to cause the flap supported by said surface to be reduced in thickness at selected localities.

10. In a skiving machine, a rotary abrasive member, and a matrix provided with a concave flap-supporting surface having a recess formed therein, said matrix being mounted for pivotal movement about an axis disposed substantially parallel to the axis of rotation of the abrasive member to cause said member upon movement of the matrix past the same to skive a flap supported by said surface to a shape determined by the matrix.

11. A skiving machine having, in combination, a rotary abrasive member, a matrix constructed and arranged for positioning between a sole and a breast flap split therefrom, and a gage to position the sole and the flap relatively to the matrix, said matrix being mounted for pivotal movement about an axis disposed substantially parallel to the axis of rotation of the abrasive member thereby to vary the thickness of the flap at selected localities.

12. In a skiving machine, a rotary abrasive member, a matrix constructed and arranged for

positioning between the shank portion of a sole and a breast flap split therefrom, said matrix being mounted for movement past the abrasive member about an axis disposed substantially parallel to the axis of rotation of the member to reduce material from the inside face of the flap, and means to move the matrix toward and away from the axis of the roll.

13. A skiving machine having, in combination, a matrix, a gage to position a sole having a breast flap split therefrom relatively to the matrix, an abrasive belt, and a cam-controlled means constructed and arranged to move the matrix toward and along the belt and then to move the matrix in a curved path disposed substantially tangent to the belt to skive the breast flap to a shape determined by the matrix.

14. A skiving machine having, in combination, a matrix to support a breast flap split from and attached to the sole of a shoe, a rotary abrasive member, said matrix being mounted for movement about two axes, and a cam constructed and arranged to control the path of movement of the matrix about one of said axes for moving the matrix toward the abrasive member as it swings about the other axis thereby to bring the breast flap into engagement with the matrix preparatory to reducing the thickness of the breast flap at selected localities in accordance with the form of the matrix.

15. A skiving machine having, in combination, an endless abrasive belt, a carrier, a matrix plate comprising a concave surface mounted upon the carrier, and a gage adjustably mounted upon the carrier and shaped to engage the heel end of a sole which has a flap split therefrom and is in engagement with the plate to position the sole relatively to the plate, said carrier being mounted for movement past the belt to cause the flap to be forced against the surface of the matrix plate and to be skived by the belt to a shape determined by said plate.

16. A skiving machine having, in combination, an endless abrasive belt, a carrier, a camway, a matrix plate secured to the carrier and having a concave surface, cam rolls mounted upon the carrier, and a gage adjustably mounted upon the carrier and shaped to engage the heel end of a sole which has a flap split therefrom and is in engagement with the plate to position the sole relatively to the plate, said carrier being mounted for movement past the belt in a path determined by the camway to cause the flap to be forced against the surface of the matrix plate and to be skived by the belt to a shape determined by said plate.

17. In a skiving machine, an endless abrasive belt mounted for rotation and having a portion of predetermined curvature, and a matrix mounted for movement past and in a direction opposite to the direction of rotation of the belt in a path having a curvature flatter than the curvature of said portion to cause the belt to wipe the flap against the surface thereby to skive the same to a shape determined by the matrix.

18. A skiving machine having, in combination, a matrix plate having a recess, a gage to position the rear portion of a sole having a breast covering flap split therefrom lengthwise and widthwise of the plate, said plate having one or more marks to cooperate with the gage in positioning the sole widthwise, and abrasive means, said plate and said abrasive means being mounted for relative movement to skive the flap to a shape determined by the plate.

19. A skiving machine having, in combination, a rotary abrasive member, a carrier, a matrix plate provided with a concave surface mounted upon the carrier, and a gage adjustably mounted upon the carrier and shaped to engage the heel end of a sole which has a flap split therefrom and is in engagement with the plate to position the rear portion of the sole relatively to the plate, said plate having one or more marks to assist in positioning the sole widthwise and said carrier being mounted for movement past the abrasive member to cause the flap to be forced against the surface of the matrix plate and thereby to be skived to a shape determined by said plate.

20. A skiving machine having, in combination, a rotary abrasive member, a matrix plate having a recessed face and constructed and arranged for positioning between a sole and a breast covering flap split therefrom, and a carrier constructed and arranged to receive interchangeably one of a plurality of plates having recessed faces of various sizes and shapes, said carrier being mounted for movement past the roll to cause the flap to be forced against the surface of the plate thereby to remove material from the inner side of the flap at selected localities in accordance with the matrix plate being used.

21. A skiving machine having, in combination an endless abrasive belt, a matrix plate having a recessed face and constructed and arranged for positioning between a sole and a breast covering flap split therefrom, a carrier constructed and arranged interchangeably to receive one of a plurality of plates having recessed faces of various sizes and shapes, a camway, and cam rolls mounted upon the carrier and constructed and arranged for movement along said camway, said carrier being mounted for movement past the abrasive belt to cause the flap to be forced against the face of the plate and to be skived by the belt to a shape determined by said plate.

22. An abrading machine having, in combination, a matrix plate constructed and arranged to be positioned between the shank portion of a sole and a flap split therefrom, and an abrading tool, said matrix plate being mounted for pivotal movement past the abrading tool in a path extending substantially lengthwise of the flap supported by the plate to remove material at selected localities from the inner side of the flap.

23. A machine of the class described having, in combination, a matrix plate having a concave cylindrical surface for supporting a heel breast covering flap, said surface being provided with a recess, and a rotary abrasive member having a convex cylindrical portion, said matrix plate being mounted for movement past the convex cylindrical portion of said member in a curved path which is substantially tangent to said portion to remove material at selected localities from the inner side of the flap supported by said cylindrical surface.

24. A machine of the class described having, in combination, a rotary abrasive member, and a matrix plate constructed and arranged to be positioned between the shank portion of a sole and a flap split therefrom and to engage the grain side of the flap, said matrix plate being mounted for movement in a path which extends generally lengthwise of the flap and which is disposed in substantially tangential relation with respect to the abrasive member thereby to tension the flap lengthwise and to remove material progressively from the attached end to the free end of the inner side of the flap.

25. A machine of the class described having, in combination, an endless abrasive belt mounted for rotation and having a portion of predetermined curvature, and a matrix plate which is provided with a concave flap supporting surface and is constructed and arranged to be positioned between the shank portion of a sole and a flap split therefrom, said matrix plate being mounted for movement lengthwise of the flap positioned against said surface in a direction opposite to the direction of rotation of the belt and in a path having a curvature which is flatter than that of said portion of the belt, thereby to cause the belt to tension the flap against the pull of the sole and to force the flap against said surface for removing material at selected localities from the inner side of the flap.

26. A machine of the class described having, in combination, an abrasive member, a matrix plate constructed and arranged to be positioned between a sole and a flap split therefrom, said plate being provided with a surface for supporting the flap by engagement with its grain side, and means including said matrix plate mounted for movement to present the base portion of the flap supported by the plate to the abrasive member and then to move the flap past the abrasive member to force the flap supported by the plate against the abrasive member progressively from the base portion to the end portion of the flap, whereby material is removed at selected localities from the inner side of the flap while the flap is tensioned lengthwise.

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