Aug. 14, 1923. 1,464,504

J. FOSSA

EDGE FINISHING MACHINE

Filed Jan. 21, 1922 2 Sheets-Sheet 1

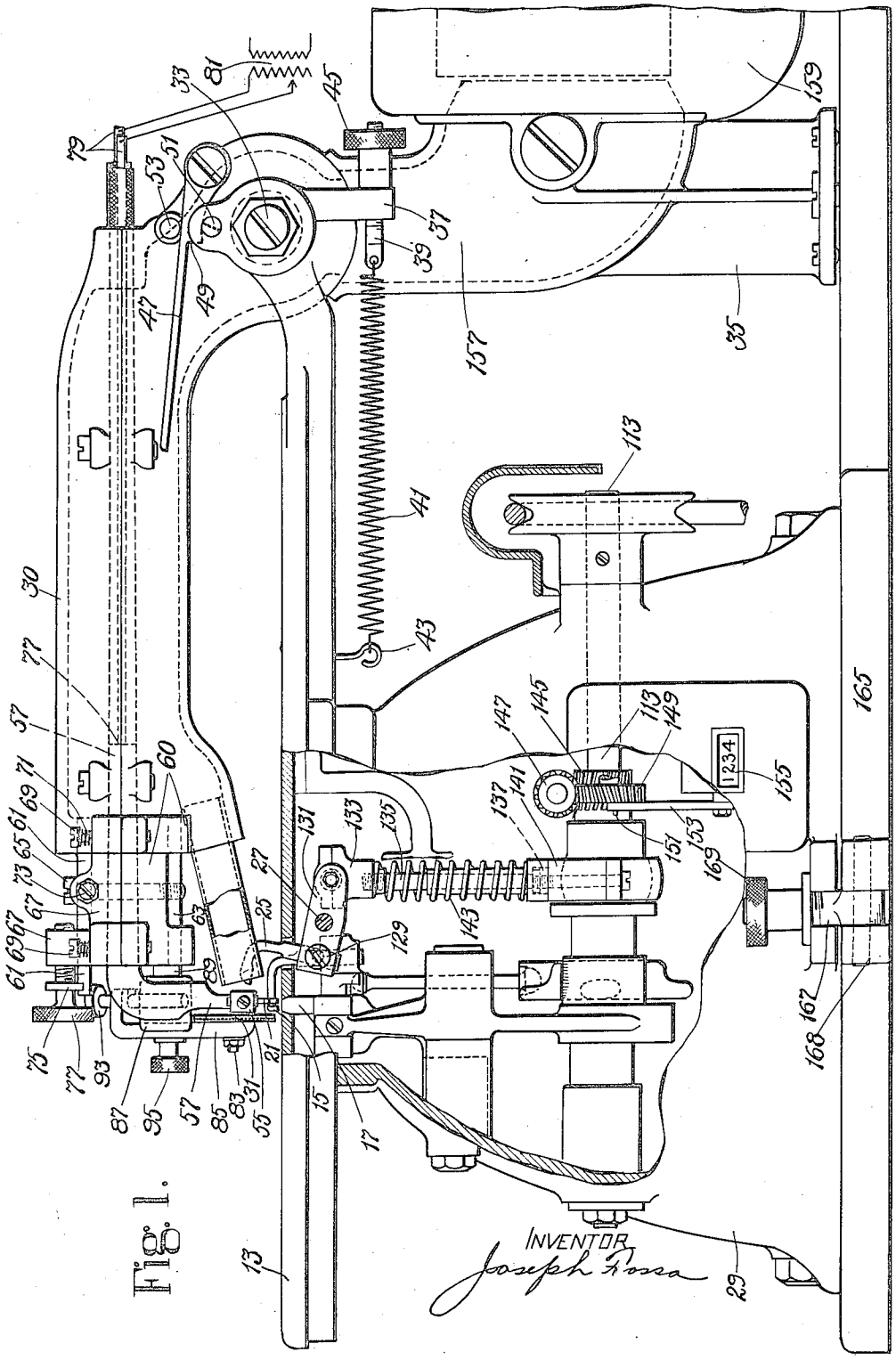


Fig. 1.

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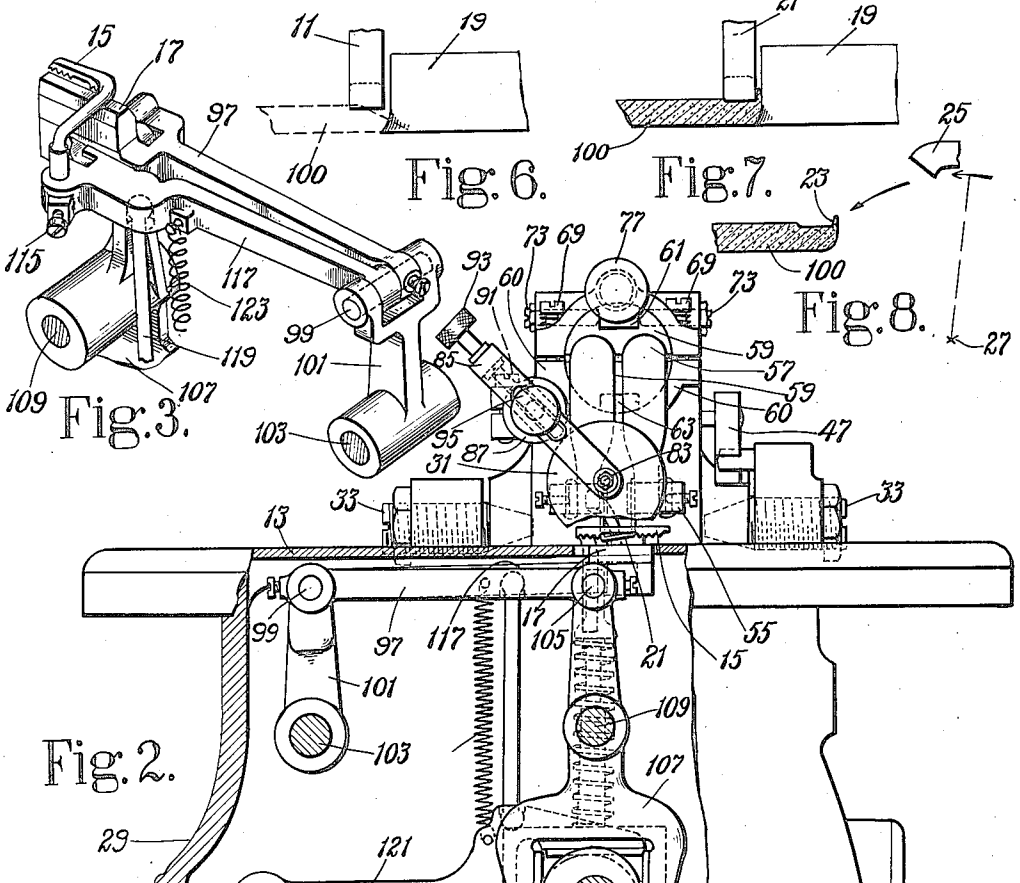


Fig. 2.

Fig. 6.

Fig. 7.

Fig. 8.

Fig. 3.

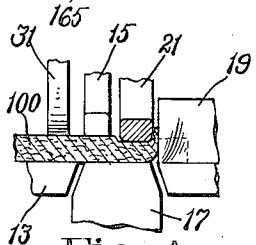


Fig. 4.

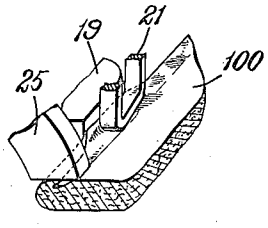


Fig. 5.

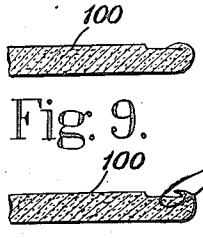


Fig. 9.

Fig. 10.

INVENTOR.
Joseph Fossa

Patented Aug. 14, 1923. 1,464,504

UNITED STATES PATENT OFFICE.

JOSEPH FOSSA, OF DANVERS, MASSACHUSETTS, ASSIGNOR TO UNITED SHOE MACHINERY CORPORATION, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

EDGE-FINISHING MACHINE.

Application filed January 21, 1922. Serial No. 530,972.

To all whom it may concern:

Be it known that I, JOSEPH FOSSA, a citizen of the United States, residing at Danvers, in the county of Essex and State of Massachusetts, have invented certain Improvements in Edge-Finishing Machines, of which the following description, in connection with the accompanying drawings, is a specification, like reference characters on the drawings indicating like parts in the several figures.

This invention relates to finishing the edges of pieces of sheet material such as leather parts of uppers of boots and shoes in which a shrinking agent such as heat is employed, a machine for accomplishing such finishing being shown in the patent to Halsey and Perkins No. 1,195,574, the present application being a continuation so far as common subject-matter is concerned of application Serial No. 355,609, filed February 2, 1920, abandoned July 6, 1922.

In the patented machine the stock, which for brevity will be referred to as a piece of leather, is fed grain side downward over a table with the margin on the flesh side subjected progressively to the action of a hot searing or shrinking tool, the result accomplished being that the margin of the flesh side is shrunk and the margin of the grain side curled toward the flesh side so that in the finished piece the edge presents a grain surface instead of the flesh surface which resulted when the piece was originally cut out of the skin. The patented machine and certain later ones of the same general type have proved satisfactory with many kinds of leather but with certain kinds of leather, such for example as comparatively thick cow-hide splits which are refractory, the amount of curl imparted to the grain side of the edge has been either insufficient or not permanent enough to resist subsequent strain.

The purpose of treating parts of uppers of shoes in the manner of the patented machine is to produce edges which will take the place of the usual folded edges. These edges are visible in the finished shoe, a familiar example being the edge of the tip which extends across the toe of a shoe. Referring then, to the tip by way of example, it is customary to fasten the rear edge of the tip to the vamp by a row of stitches which is located as near as possible to the edge of the tip. These stitches pull the tip down tightly upon the vamp. If the edge of the tip has not been sufficiently curled so as to present an edge which is all grain surface, of course a certain amount of flesh surface will still be visible after the stitching operation. And even though the edge of the treated leather before the stitching operation has been sufficiently curled so that the edge presents a surface which is all grain, it sometimes happens that the pull of the stitches straightens out the curl to a greater or less degree and thereby brings to view some of the flesh surface. In either case the result in the finished shoe is undesirable.

The general object of the invention is to increase the curl imparted to the edge of the stock. In one aspect of the invention, after the margin of the stock has been shrunk on one side and the margin of the unshrunken side thereby caused to curl toward the shrunken side, the curled edge is struck a blow or a succession of blows in a manner to increase the curl thereof. In another aspect of the invention an upstanding fin is produced on the edge of the stock, and then this fin is bent over toward the shrunken side. Although the procedure may be practised by means of hand tools it will preferably be carried out commercially by a machine in which the work is fed over a support first past a hot tool which curls the edge of the work and then past a hammer which strikes the curled edge in such manner as to increase the curl thereof.

Referring now to the accompanying drawings,

Figure 1 is a front elevation of a machine for finishing the edge of a piece of leather;

Fig. 2 is an end elevation of the machine;

Fig. 3 is a perspective showing the upper and lower feed members and the manner in which they are mounted;

Fig. 4 is a detail partly in section and partly in elevation showing a piece of leather in process of being operated upon;

Fig. 5 is a detail in perspective also showing the leather being operated upon; and

Figs. 6 to 10 inclusive show progressive steps in the formation of the finished edge.

Before proceeding to a detailed description of the machine a general description of its mode of operation will be given. Referring first to Figures 4 and 5, the work is fed intermittently over a table 13 by an

upper feed member 15 and a lower feed member 17, the direction of feed movement being away from the operator as viewed in Fig. 4 and toward the operator as viewed in Fig. 5. The leather piece rests with its grain side upon the table 13 and upon the lower feed member 17 with its edge in engagement with and bent upwardly by a plow or turning post 19. Commonly the leather is skived on its flesh side although whether the leather is skived before being presented to the machine depends upon the nature of the leather. Soft leather of moderate thickness need not be skived, but thick leather or hard, refractory leather, such as cow-hide splits, which is now much used, requires prior skiving in order to facilitate the edge finishing operation.

Located opposite the plow is a shrinking tool 21, this being in the illustrated machine a U-shaped member of suitable metal, such for example as the alloy known as nichrome, heated to the desired temperature by an electric current. The temperature of the tool may be controlled, as will presently appear, and is varied according to the leather which is to be operated upon, but in any case is maintained at a degree high enough to sear and to shrink the leather on one side so that the unshrunken side will curl toward the shrunken side. The shrinking tool is spaced slightly from the adjacent face of the plow, the width of this space being commonly only a few thousandths of an inch. In this connection it should be noted that Figs. 4 to 10 inclusive are all upon a greatly exaggerated scale.

As the leather passes beneath the tool, it is seared and shrunk so that the grain side curls toward the flesh side, and during this action a thin fin is forced up into the space between the tool 21 and the plow 19. In Fig. 6 a piece of leather 100 the flesh side of which has been skived is shown lying flat in the position it occupies before it has been presented to the plow. As the leather piece is moved along, its edge presently rides up on the curved front portion of the plow, and its upper margin comes into contact with the lower face of the hot tool. The shrinking and searing action then begins with the result that a thin upstanding fin 23 is produced.

In order to bend this fin over toward or upon the shrunken flesh side of the leather while the fin is still more or less plastic from the heat, a reciprocating member in the form of a hammer 25 is provided. This hammer (Fig. 5) is just in the rear of the plow and shrinking tool and strikes the upstanding fin at an angle in such manner as to bend it inwardly. In Fig. 8 the direction of movement of the hammer is shown, the pivot about which the hammer is oscillated being indicated at 27, and the direction of movement of the hammer being indicated by the arrow.

In Figs. 9 and 10 two possible results are shown. With certain kinds of leather, the heat causes the treated surface of the leather to become sticky so that the fin, when bent over and pressed upon the body of the leather adheres to it as shown in Fig. 9. With other kinds of leather no stickiness (or at least not sufficient stickiness) is caused to produce this result, and in such case the final position of the fin is about as shown in Fig. 10. In any case, however, the extreme edge of the leather is bent over the shrunken side.

The illustrative machine comprises a hollow frame 29, which supports the work table 13, the upper and lower feed members 15, 17, and their operating parts, and an overhanging arm 30 which supports the shrinking tool 21 and a presser 31. The arm 30 is pivoted at 33 upon a standard 35 and is provided at one end with a depending lug 37 through which passes a rod 39. One end of this rod has an eye to receive one end of a tension spring 41, the other end of which is fastened to a stationary hook 43. The other end of the rod 39 is threaded to receive a thumb-nut 45. The arm 30 is thus spring-balanced and may be raised and lowered by manipulating the nut 45. In order that the arm 30 may be held with its tool-carrying end raised considerably from the table when desired, a latch 47 pivoted to the arm has a shoulder 49 which, when the arm is raised sufficiently, engages a stationary pin 51. A second pin 53, which is carried by the arm, serves merely to prevent the latch from being accidentally swung into a position in which it would not function automatically.

The searing or shrinking tool 21, as has been explained, consists of a U-shaped piece of metal. Its ends are adjustably fastened by clamps 55 to the downwardly bent ends of copper rods 57. The horizontal portions of the copper rods pass through holes in a split fibre holder 59 the lower half of which rests in a semi-cylindrical socket member 60 formed as part of the overhanging arm 30. Set into the top of the upper half of the fibre holder is a rod 61 having a rounded top, and set into the bottom of the lower half is a second rod 63, having a rounded bottom. A screw 65, passing through the upper rod and threaded into the lower one, causes the halves of the fibre holder 59 to hold the copper rods 57 firmly.

The upper and the lower middle portions of the fibre holder 59 are cut away so as to expose the rods 61, 63, as shown in Fig. 1. As has been stated, the fibre holder rests in a semi-cylindrical socket member 60. Fitting over the fibre holder and cut away at its upper middle portion is a semi-cy-

lindrical clamping member 67 which is fastened to the semi-cylindrical socket member 60 by screws 69. Beneath the head of each screw is a spring 71 so that by turning the screws more or less the fibre holder 59 may be gripped with more or less force as may be desired. Threaded through ears formed on the clamping member 67 are adjusting screws 73, the ends of which contact with opposite flat sides of the rod 61, so that, when one adjusting screw is withdrawn and the other advanced, the fibre holder 59 and with it the shrinking tool 21 may be adjusted angularly. In order to adjust the fibre holder 59, and with it the tool, to the right or left as viewed in Fig. 1, so as to vary the space between the shrinking tool and the blow, a groove is cut in the outer end of the rod 61 to receive a collar 75 which is fast to an adjusting screw 77, said screw being threaded through an ear on the member 67.

The inner ends of the horizontal portions of the copper rods 57 are soldered at about the locality indicated at 77 to insulated conductors 79 which in turn are attached to wires which lead to an adjustable transformer indicated conventionally at 81. By manipulating the transformer the temperature of the tool may be varied.

The presser-wheel 31, which as has been stated, is also carried by the overhanging arm 30, is freely rotatable about a pin 83 carried at the lower end of a bar 85 which is slidable in an oblique guideway formed in the outer end of the cylindrical head 87 of a rod 89, the rod being held in adjusted position in a split bearing formed in a part of the socket member 60 by a pinch-screw 91 (Fig. 2). The bar 85 has a bent upper portion, and through this bent portion extends an adjusting screw 93 which is threaded into the cylindrical head 87 but held from lengthwise movement with respect to the bar 85. By turning the screw 93 the bar may be adjusted in the guideway in the cylindrical head 87. In order to hold the bar, and with it the presser wheel 31, in adjusted position, a set-screw 95 passes through a slot in the bar and is screwed into the head 87. With this construction the presser wheel 31 may be adjusted toward or from the upper feed member 15, toward or from the table, and along the line of feed in either direction.

The upper and lower feed members 15, 17 are driven by mechanism located in the frame 29 of the machine. The lower feed member is caused to move back and forth in a slot formed in the work table 13. The upper feed member 15 has a four-motion movement. When these members are operated, the upper member descends to clamp the work to the lower member, then the two members move forward in unison to feed the work, then the upper member rises to free the work, and finally the members return in unison but in spaced relation ready to begin the cycle again. The lower feed member 17 is fast to one end of a link 97, the other end of which is fastened to a stud 99 loosely carried by the forked upper end of an arm 101 the hub at the lower end of the arm being loosely mounted on a rod 103. That end of the link 97 which carries the lower feed member 17 is pivoted on a stud 105 carried at the upper end of a lever 107, said lever being pivoted to the frame at 109 and having at its lower end a fork which embraces a cam 111 on the drive shaft 113. Rotation of the drive shaft, therefore, imparts to the lower feed member to and fro movement in the line of feed. The stem of the upper feed member 15 is adjustably held by a set screw 115 in one end of a link 117 the other end of which is pivoted about the stud 99 so that substantially the same to and fro movement is imparted to the upper feed member 15 in the line of feed as is imparted to the lower feed member. In order to raise and lower the upper feed member 15 at the proper times to cause it to grip the work at the beginning of a feed movement and to release it at the end of the movement, a rod 119 has at its upper end a ball which is received in a socket in the lower side of the link 117 and at its lower end a second ball, which is received in a socket in the upper side of a rocker arm 121, the lever 117 and rocker arm 121 being connected by a tension spring 123 to hold the rod in place. The rocker arm is pivoted at one end on a rod 125 and has at its other end a fork to embrace an eccentric 127 on the drive shaft 113. The construction and arrangement of all these parts is such that the work is fed intermittently from right to left as viewed in Fig. 2.

The stem of the hammer 25 (see Fig. 1) is adjustably fastened by a screw 129 to a lever 131, the lever being pivoted to a block 133. The block has threaded into it the upper end of a pin 135 which has a head at its lower end. The head of the pin is slidable in a socket or guideway 137 formed in a part of an eccentric strap 141 which surrounds a spherical eccentric on the driving shaft 113. The pin extends up through an elongated sleeve which is rigid with the eccentric strap, and surrounding the sleeve is a coiled spring 143 the upper end of which bears against the block 133. In the position of parts shown in Fig. 1 the hammer 25 is in raised position, the head of the pin 135 being in contact with the upper wall of the socket 137. When the eccentric strap 141 rises, its movement is transmitted to the hammer through the spring 143, and, after the hammer comes down upon the work, the spring is compressed, so that the blow struck

by the hammer is a yielding one, since the head at the lower end of the pin 135 can at this time remain stationary while the eccentric strap 141 is moving upwardly.

In order to record the number of revolutions of the driving shaft 113, a gear 145 on the shaft meshes with a worm gear 147, said worm gear also meshing with a gear 149. The gear 149 carries at one side a crank-pin 151 upon which is pivoted the upper end of a connecting-rod 153, the lower end of the rod being connected with suitable mechanism for operating an indicator 155.

In order to carry away the fumes caused by the action of the hot tool upon the leather, the overhanging arm 30 has a passageway leading through it, the rear end of which communicates, when the arm is in the operative position shown, with the intake passageway 157 of a suction fan 159. The forward end of the passageway is connected with a tube 161 the mouth or open end of which is in proximity to the searing tool 21. The suction fan 159 and the driving shaft 113 may be driven from any suitable source of power such as an electric motor (not shown).

The hollow frame 29 is pivoted at 163 to a base 165 so that the frame may be tipped to give access to the working parts carried by it. In order to hold the frame firmly down upon the base, a latch comprising a short rod 167 having threaded upon its upper end a thumb-nut 169 is provided. The lower end of the rod extends into a slot in the base 165 and is pivoted on a pin 168 which is driven into the base. A collar on the thumb-nut engages the upper face of a lug 170 formed on the frame 29. After the nut 169 has been loosened and the rod 167 swung forwardly about its pivot the frame 29 may be tipped back to give access to the driving shaft 113 and the parts connected to it. In the operation of the machine the leather piece the edge of which will be assumed to have been skived is pushed along the top of the table 13 until its leading end is seized by the upper and lower feed members whereupon it is fed intermittently past the hot tool, the plow and the hammer. The edge of the piece rides upon the curved portion of the plow into the narrow space between the hot tool and the plow so that an upstanding fin is formed, and while this fin is more or less plastic, the hammer descends with a wiping action upon it and bends it over the shrunken side of the leather. The extent of the fin which will be formed can be controlled by adjusting the tool 21 toward or from the plow 19, it being noted (see Fig. 5) that a considerable portion of the plow 19 is provided with a substantially vertical face between which and the tool is the space to receive the fin. The farther the tool is adjusted away from the plow, the greater the extent of the fin which may be produced. The formation of a fin can be practically prevented by adjusting the tool into contact with the vertical face of the plow; and by leaving a very narrow space between the plow and the tool a very short fin can be produced. It should be noted, however, that irrespective of the length of the fin or its presence the hammer, because of its shape and the path of its travel will operate to increase the curl of the edge.

By referring to Fig. 1 it will be noted that the operative portion of the shrinking tool 21 slopes downwardly in the direction of feed of the work so that the portion of the tool which first engages the work is located at a higher level than is the remaining portion of the tool. This high portion of the tool is adjacent the curved portion of the plow 19, which holds the work up to the high portion of the tool. Then, as the work is fed along, it is engaged by the remaining portion of the tool, the space between the lower face of the tool and the table growing progressively less in the direction of feed. The hot tool not only shrinks the work on one side but burns it away more or less on that side; and with this construction the action of the tool is rendered substantially uniform at all points.

The method which has been disclosed is not claimed herein but forms the subject-matter of a divisional application Ser. No. 571,660.

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

1. A machine for finishing the edge of a piece of stock having, in combination, a support for the stock, means for shrinking the margin of the stock on one side to cause the edge of the stock to curl, and means for hammering the curled edge.

2. A machine for finishing the edge of a piece of stock having, in combination, a support for the stock, means for applying heat to the margin of the stock on one side to cause the edge of the stock to curl, and means for hammering the curled edge.

3. A machine for finishing the edge of a piece of stock having, in combination, a support for the stock, means for shrinking the margin of the stock on one side to cause the edge of the stock to curl, and means for striking a blow on the curled edge in such manner as to increase the curl thereof.

4. A machine for finishing the edge of a piece of stock having, in combination, a support for the stock, means for applying heat to the margin of the stock on one side to cause the edge of the stock to curl, and means for striking a blow on the curled edge in such manner as to increase the curl thereof.

5. A machine for finishing the edge of a piece of leather, having, in combination, a searing tool, means for heating the tool to a temperature at which it will sear leather, means for presenting a piece of leather with a portion of its edge in operative relation to the tool to sear and curl the edge, and means for thereafter hammering the edge.

6. A machine for finishing the edge of a piece of leather, having in combination, means for applying heat sufficient to sear or scorch a limited area of a leather piece adjacent to and at the edge thereof, and means for thereafter hammering the edge.

7. A machine for finishing the edge of a piece of leather, having in combination, a support upon which the leather rests, a searing tool, means for heating the tool at least to redness, means for presenting the edge of the stock to the tool to curl the edge, and means for thereafter pressing the edge against the support to increase the curl thereof.

8. A machine for finishing the edge of a piece of leather, having in combination, a support for the piece, means for progressively shrinking the margin on one side of the piece in such manner that the margin of the unshrunken side is caused to curl toward the shrunken side, and means for progressively hammering the curled edge.

9. A machine for finishing the edge of a piece of stock having, in combination, a support over which the stock may be fed, means for progressively shrinking the margin of the stock on one side to cause the edge of the stock to curl, and means for progressively hammering the curled edge.

10. A machine for finishing the edge of a piece of stock having, in combination, a support over which the stock may be fed, means for progressively applying heat to the margin of the stock on one side to cause the edge of the stock to curl, and means for progressively hammering the curled edge.

11. A machine for finishing the edge of a piece of stock, having in combination, a support over which the stock may be fed, means for progressively shrinking the margin of the stock on one side to cause the edge of the stock to curl, and means for striking a succession of blows on the curled edge in such manner as to increase the curl thereof.

12. A machine for finishing the edge of a piece of stock, having in combination, a support over which the stock may be fed, means for progressively applying heat to the margin of the stock on one side to cause the edge of the stock to curl, and means for striking a succession of blows on the curled edge in such manner as to increase the curl thereof.

13. A machine for finishing the edge of a piece of stock, having in combination, a support for the stock, a tool for shrinking one side of the margin of the stock, means for feeding the stock past the tool in operative relation thereto, a movable holder for the tool so mounted that its weight tends to move it and the tool toward the stock, a spring constructed and arranged to balance the weight of the holder and tool, and means for varying the tension of the spring to control the position of the tool with respect to the support.

14. A machine for finishing the edge of a piece of stock, having in combination, a support for the stock, means for imparting to the edge of the stock a permanent curl, a reciprocating member, and means for operating the member to contact with the edge of the stock and increase the curl thereof.

15. A machine for finishing the edge of a piece of stock, having in combination, a support over which the stock may be fed, a heated tool arranged to act upon the stock to curl the edge thereof, a hammer in the rear of the tool, and means for operating the hammer.

16. A machine for finishing the edge of a piece of stock, having in combination, a support over which the stock may be fed, a tool heated to a degree sufficient to sear the stock and arranged to contact with the stock at and adjacent to the edge thereof and thereby curl the edge, and a member movable in a path transverse to the line of feed and adapted to increase the curl.

17. A machine for finishing the edge of a piece of stock, having in combination, a support for the stock, means for feeding the stock intermittently along the support, a searing tool arranged to operate upon the margin of the stock to curl the edge thereof, and means acting upon the stock during the pauses in the intermittent feed movements for increasing the curl of the edge.

18. A machine for finishing the edge of a piece of stock, having in combination, a support for a piece of stock, a heated tool, means for bending the margin of the stock and holding it against the tool, means for feeding the stock intermittently along the support, and means for hammering the edge of the stock after said edge has been subjected to the action of the heated tool.

19. A machine for finishing the edge of a piece of stock, having in combination, a support for the work, means for feeding the work over the support, a shrinking tool, a plow or turning post for turning the margin of the work toward the tool, there being a space between the tool and post to receive the fin formed by the action of the tool and post, and means operating upon the fin directly after its formation to bend it toward the shrunken side of the work.

20. A machine for finishing the edge of a piece of stock, having in combination, a support for the work, means for feeding the

work over the support, a shrinking tool, a plow or turning post for turning the margin of the stock toward the tool, there being a space between the tool and post to receive the fin formed by the action of the tool and post, and means for hammering the fin to bend it toward the body of the work.

21. A machine for finishing the edge of a piece of stock, having in combination, a support for the work, means for feeding the work intermittently over the support, a shrinking tool, a plow or turning post for turning the margin of the stock toward the tool, there being a space between the tool and post to receive the fin formed by the action of the tool and post, and means for intermittently acting upon the fin to bend it toward the body of the stock.

22. A machine for finishing a piece of stock, having in combination, a support for the stock, means for feeding the stock over the support, an overhanging arm, a presser foot and a searing tool mounted on the arm, and a spring the tension of which controls the position of the arm with respect to the support.

23. A machine for finishing the edge of a piece of stock, having in combination, a support for the stock, means including upper and lower gripping members for feeding the stock intermittently over the support, a heated tool, a plow or turning post adapted to bend the margin of the stock toward the tool, a hammer located between the plow and the upper feed member, and means for operating the feed members and the hammer.

24. A machine for finishing the edge of a piece of stock, having in combination, a support for the stock, means for feeding the stock intermittently over the support, means for shrinking the margin of the stock on one side to cause the margin of the other side to curl toward the shrunken side, and means for pressing the edge to increase the curl thereof.

25. A machine for finishing the edge of a piece of stock having in combination, a support for the stock, a tool heated to a searing temperature and adapted to shrink the margin of the stock on one side to cause the edge of the stock to curl, a hammer, and means for causing the hammer to strike the curled edge of the stock, while it is still more or less plastic from the effect of the heat, in such manner as to increase the curl thereof.

26. A machine for finishing the edge of a piece of work having, in combination, means for applying heat to the work in such manner as to cause an upstanding fin to be formed in the edge thereof, and means for bending the fin over toward the body of the work on the side to which heat was applied.

27. A machine for finishing the edge of a piece of work, having in combination, a support for the work, means for feeding the work over the support, means for applying heat to the work in such manner as to cause an upstanding fin to be formed on the edge thereof, and means for bending the fin over toward the body of the work on the side to which heat was applied.

28. A machine for finishing the edge of a piece of work, having in combination, a support for the work, a shrinking tool, a plow spaced from the tool, means for feeding the work over the support in such manner that a fin is formed on the edge thereof and caused to extend into the space, and means operating upon the fin to bend it toward the shrunken side of the work.

29. A machine for finishing the edge of a piece of work, having in combination, a support for the work, a shrinking tool, a plow spaced from the tool, means for feeding the work intermittently over the support in such manner that a fin is formed on the edge thereof and caused to extend into the space, and means operating intermittently upon the fin to bend it toward the shrunken side of the work.

30. A machine for finishing the edge of a piece of work, having in combination, a support for the work, a shrinking tool, a plow spaced from the tool, means for feeding the work over the support in such manner that a fin is formed on the edge thereof by the action of the tool and plow in the space between the two, means for operating upon the fin after it has passed the plow for bending it toward the shrunken side of the work, and means whereby the space between the tool and plow may be varied to vary the extent of the fin produced.

31. A machine for finishing the edge of a piece of work, having in combination, a support for the work, a shrinking tool, a plow spaced from the tool, means for feeding the work over the support in such manner that a fin is formed on the edge thereof by the action of the tool and plow in the space between the two, means for operating upon the fin after it has passed the plow for hammering it toward the shrunken side of the work, and means whereby the space between the tool and plow may be varied to vary the extent of the fin produced.

32. A machine for finishing the edge of a piece of stock having, in combination, a support for the stock, means for feeding the stock along the support, a searing tool adapted to shrink the margin of the stock on one side to cause the edge of the stock to curl, a hammer, and means for causing the hammer to strike the edge of the stock during the pauses in the intermittent feed movements in such manner as to increase the curl thereof.

33. A machine for finishing the edge of a piece of work, having in combination, a support for the work, means for feeding the work over the support, a shrinking tool the operative face of which is inclined downwardly toward the support in the direction of the feed movement of the work so that the work encounters the high portion of the tool first, a turning post having a plow-shaped portion adjacent the high portion of the tool and a substantially vertical face adjacent the remaining portion of the tool, a hammer located to engage the edge of the work in the rear of the tool, and means for operating the hammer.

34. A machine for finishing the edge of a piece of upper leather having, in combination, a support for the piece, means for shrinking the margin of the piece on one side to cause the edge to curl, a movable member arranged to contact with the edge of the piece and increase the curl thereof, and means for operating said member.

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

JOSEPH FOSSA.