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J. FOSSA

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EDGING MACHINE

Filed June 9, 1934

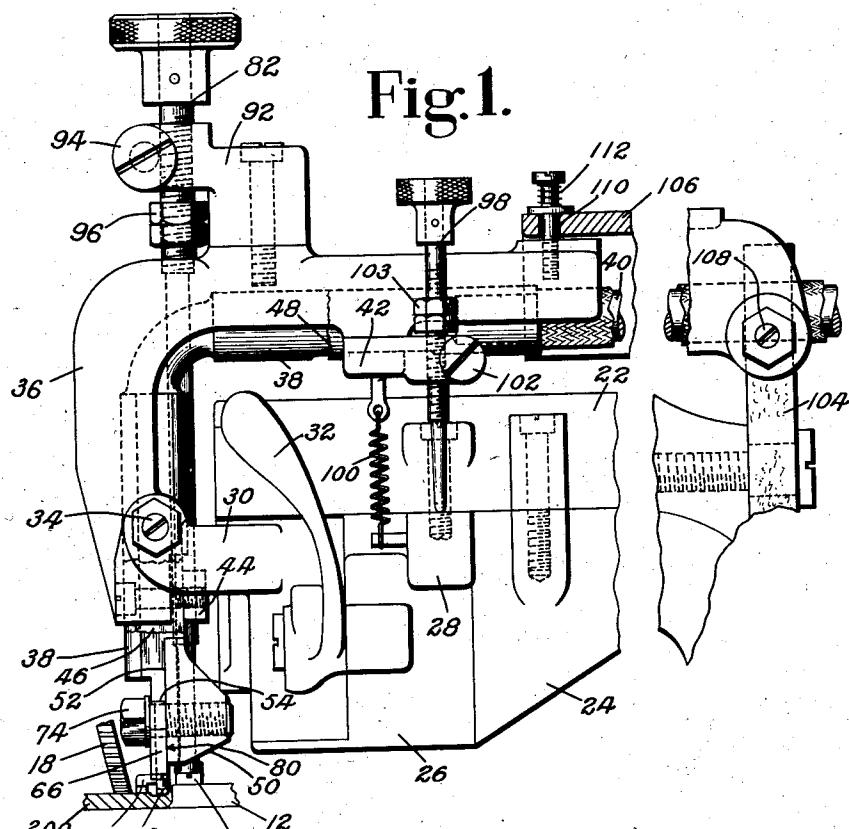


Fig.3.

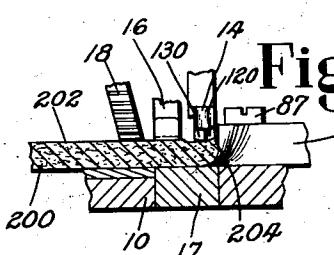


Fig. 4

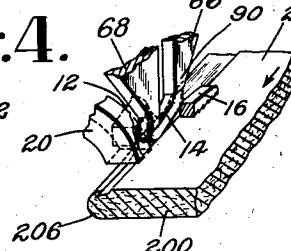


Fig. 5.

INVENTOR—

Joseph Foss
By his Attorney,
Harlow M. Davis

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EDGING MACHINE

Joseph Fossa, Salem, Mass., assignor to United Shoe Machinery Corporation, Paterson, N. J., a corporation of New Jersey

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8 Claims. (Cl. 69—1)

This invention relates to edging machines and is herein illustrated as embodied in an electrically heated searing tool of the type illustrated in Letters Patent of the United States No. 1,599,518, granted September 14, 1926, on my application.

In machines of the type of that shown in the above mentioned patent, a heated shrinking or searing tool is applied to the flesh side of a piece 10 of upper leather and by coaction with a plow and suitable feeding mechanism, the grain side of the leather is caused to curl over the flesh side and is hammered to provide a finished edge. In heating such a searing tool electrically, currents of the order of 100 amperes are utilized. It is necessary, therefore, in order to avoid undue heating of the machine as a whole, to conduct the current to the searing tool by means of heavy supply conductors. The tool itself is 20 a U-shaped member of suitable metal such, for example, as the metal known as nichrome or chromel. This tool is pressed against the work under substantial pressure and is heated approximately to white heat (more or less according to the character of the work) and, being of relatively small cross section because it is only desired to apply heat to a narrow band adjacent to the edge of the leather, is bound to deteriorate rapidly.

An important object of the invention is to provide an improved organization including a searing tool in which, by reason of its novel construction, the tool will have increased mechanical strength, there will be less tendency to arc-ing between adjacent parts, and which will at the same time be simple in construction so that the tool may easily be replaced.

In the illustrated construction, the searing tool, like those of the earlier machines, comprises a U-shaped work contacting member which is bridged across supply conductors. As now improved, this tool is removably secured to the conductor by lugs having grooves into which the legs of the U-shaped member are forced to secure them in tight frictional engagement. These lugs are constructed and arranged to engage the major portion of the legs along three faces thereof. At the extreme lower end of the U near the crossbar forming the bottom of the U, the legs are supported along their adjacent surfaces and their outer surfaces by flanges on the lugs. As illustrated, the supply conductors are arranged in a substantially vertical position and have horizontal shoulders against which the tops of the 56 U-shaped member rest, thereby to forestall verti-

cal displacement. Simple, easily operated clamping means are provided to hold the lugs upon the searing tool in firm current-carrying relation to the supply conductors.

These and other features of the invention are described in the following specification taken in connection with the accompanying drawing, in which

Fig. 1 is a side elevation of the head of the machine, parts being broken away, and in section;

Fig. 2 is a perspective view upon an enlarged scale of the inner face of the searing tool in detached relation;

Fig. 3 shows the searing tool, approximately full sized, clamped to the supply conductors;

Fig. 4 is a section through a piece of the work upon an enlarged scale showing fragments of the work engaging tools of the edging machine; and

Fig. 5 is a perspective upon an enlarged scale taken from the rear showing a piece of work, the tools associated therewith and the character of the finished work.

In utilizing a machine of this type, the general construction of which will be understood to be like that of the machine shown in the Fossa Patent No. 1,599,518, to which reference has been made above, a piece of work, such as upper leather 200, is positioned upon a work supporting table 10 with the flesh surface 202 upward. This work 200, the edge of which has preferably been skived on an abrupt angle, is fed intermittently past a plow 12 and beneath a searing or shrinking tool 14 by means of feed feet 16 and 17 and is held firmly against the table by means of an idle presser wheel 18. The margin of the work is shrunk by the hot tool 14 so as to cause the unshrunken or grain side of the work to curve toward the shrunken side. During this action, a thin fin 204 is forced up into the space between the tool 14 and the plow 12. As the work progresses, this upstanding fin 204 is bent over toward or upon the shrunken side of the work by means of an oscillating hammer 20 thereby forming a finished edge 206 upon the work.

The tool 14 is supported upon a hollow arm 22 having a detachable bottom portion 24, which arm is utilized as an exhaust pipe for the smoke caused by the searing of the leather. This arm is completed by an end cap 26, having a projecting shoulder 28, for a purpose to be later described, and a pair of outstanding arms 30. Pivoted upon this cap is a hand lever 32 which is arranged by mechanism, not shown, to raise

and lower the presser wheel 18 in order to facilitate the presentation of a new piece of work.

Mounted upon the arms 30 by means of pivot screws 34 is an L-shaped carrier 36 beneath which are supported heavy copper conductors 38 adapted to be connected through suitable insulated cables 40 to a source of supply of electrical current. These conductors are held within the carrier 36 by clamp bars 42 and 44, and are insulated from the carrier and the clamp bars by pieces 46 and 48 of thin mica which are wrapped around the individual conductors. The lower ends of the vertical portions of these conductors 38 are enlarged at 50, the enlarged portions being cut back upon a bevel from the corner 52 to insure the minimum of interference with the operator's vision, and each conductor is provided with a substantially horizontal shoulder 54.

The tool 14 which is U-shaped, being provided with a cross-bar 60 and upstanding legs 62, can be of any suitable metal. It has been found that an alloy known as chromel provides the desired mechanical strength and substantial resistance to oxidization. The legs 62 of the tool are substantially rectangular in cross section. They are received in grooves 64 provided in the inner faces of lugs 66, 68. The tool is held in the lugs by tight frictional engagement, seating in the grooves 64 so tightly that the tool must be forced into the lugs by the application of substantial pressure. The upper ends 70 of the legs are substantially flush with the top faces 72 of the lugs so that, when the tool is positioned upon the conductors 38, the upper ends 70 will rest against the horizontal shoulders 54 upon the respective conductors, being clamped in this position by screws 74. This arrangement provides mechanical support against vertical pressure and the lugs are cut away to form notches 76 deep enough so that the shanks of the screws 74 cannot seat against the bottom of the notches. It will be observed also that the conductors are provided with vertical faces 80 against which the inner faces of the lugs 66, 68 may be tightly clamped as the screws are tightened. The inner faces of the legs 62 are either flush with or project slightly beyond the inner faces of the lugs 66, 68. In the latter case, the legs 62 will be clamped in direct contact with the conductors. The conductors 38 are provided with enlargements 50 not only to provide ample current carrying capacity but also to provide threaded holes which are as long as possible for the reception of the clamp screws 74. It will be understood that the voltage drop across the tool is comparatively small, being of the nature of three or four volts and also that, because of the excessive current being carried, there is a tendency to arc between all faces which are not in firm contact. It is to be understood that it is not possible to make the threaded shanks of the clamp screws 74 fit the threaded openings in the conductors so tightly that they will be in contact throughout every portion of the shanks but by providing the enlargements 50 upon the conductors so as to thereby lengthen the shanks of the screws, this tendency to arc will be reduced to a minimum because sufficient current carrying contact area will be provided to care for all the current which is transmitted. Thus, overheating of the screws or any tendency for the screws to "freeze" in the conductors will be eliminated and a readily accessible, easily operated arrangement will be provided for securing the tool 14 in position upon

the conductors 38, the arrangement being such that an operator can easily replace the tool with its lugs when necessary and will have no difficulty in properly clamping another tool in position.

It will be observed from Figs. 2, 3, and 5 that the cross-bar 60 at the bottom of the U-shaped tool slopes downwardly in the direction of forward movement of the work as indicated by the arrow, i. e., toward the observer in Fig. 5. The position of the tool with respect to the work table is determined by adjusting a threaded rod 82, the lower end of which engages the head of a screw 87 which holds the plow 12 in position. In case of variations in the thickness of the work, however, or in case this threaded rod 82 is not properly adjusted, then a very considerable upward pressure may be exerted upon the searing tool which, in its heated condition would tend to distort it and force it forwardly in the direction of the movement of the work. At the same time, the fin 204 tending to crowd between the tool 14 and the plow 12 may by constant pressure tend to force the crossbar of the tool away from the plow, thus varying the setting of the machine and preventing the production of good work. To aid in mechanically supporting the tool in proper position, the lugs 66, 68 engage the legs 62 of the tool on three sides throughout the major portion of their lengths and have flanges 84 and 86 engaging the adjacent faces of the legs of the tool so as to give the maximum mechanical support against distortion. Because of the fact that there is a notable elongation of the crossbar 60 when the tool becomes heated, it is not desirable to provide support for the bottoms of the legs on all four sides. They are, however, supported on their adjacent faces as just described and upon their outer faces by flanges 88 and 90. The latter flanges support the tool against any lateral pressure caused by crowding of the fin 204 between the tool and the plow.

The threaded rod 82, provided for adjusting the tool vertically, is threaded in a bracket 92 secured upon the carrier 36 and the rod, once positioned, may be clamped by a screw 94. A stop nut 96 prevents the operator from lowering the tool far enough to bring it into engagement with the table.

Provision is also made for adjustment of the tool laterally toward and away from the plow 12. This movement is secured by reason of the pivotal mounting of the carrier 36 between the pivot screws 34 and its position is determined by a stop screw 98 engaging the shoulder 28 and threaded in the clamp bar 42. This operates against a spring 100 and may be held in adjusted position by a clamp screw 102. The operator is prevented by stop nuts 103 from bringing the iron against the plow. To support and protect the heavy conductors 40, these conductors are passed through holes in a fiber block 104 attached to the arm 22. An elongated open cover 106 above the conductors is pivoted upon the block 104 by pointed screws 108 and a loose joint between the carrier and the cover 106 is provided by a headed screw 110 and a spring 112 tending to hold the cover and the carrier yieldably together.

It will be seen that my novel arrangement of a searing tool, together with means for supporting and clamping it in position, provides a construction which will not readily become distorted and which makes it easy for the operator to replace the tool when that becomes necessary.

Ample current-carrying contact between the tool and the conductors enables the rapid dissemination of heat and avoids the formation of arcs. The tool is supported firmly in the desired relation to the plow 12 and may readily be adjusted both vertically or laterally with respect thereto. It is to be observed, furthermore, that the under surface of the crossbar 60 of the searing tool is beveled to provide an inner face 120 which gives room for the leather being turned upwardly by the plow and brings a ridged mid-portion of the crossbar into engagement with the work along a line at exactly the desired distance from the plow and gage member 12. Another face 130 of the crossbar is relieved slightly at a smaller angle than the face 120 to avoid excessive frictional contact with the work.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent 20 of the United States is:

1. In an edging machine, two current carrying conductors, a substantially U-shaped tool, lugs having grooves to receive the legs of said tool and in tight frictional engagement with these 25 legs, and means for clamping the lugs respectively one to each conductor.

2. In an edging machine, a searing tool adapted to be detachably secured to current carrying conductors to bridge the same, said tool comprising a substantially U-shaped conductor of relatively small cross section and provided with downwardly tapered flat terminal lugs of relatively large cross section with inner faces disposed in the same plane, said lugs being provided with 35 grooves to receive the major portion of the legs of the U-shaped member thereby to provide mechanical support for said legs, and means to clamp said lugs against said conductors.

3. In an edging machine, heavy conductors 40 adapted to be connected to a source of supply of electrical current, a searing tool detachably secured to said conductors, said tool comprising a substantially U-shaped work engaging conductor having a crossbar at the bottom of the U, lugs 45 on the legs of the U-shaped member adapted to be clamped to said first-mentioned conductors, said lugs having flanges engaging the adjacent

surfaces upon the two legs of the U approximately to the base of the U.

4. In an edging machine, a searing tool adapted to be detachably secured to current carrying conductors to bridge the same, said tool comprising a substantially U-shaped conductor of relatively small cross section, and lugs of relatively large cross section on the legs of the U-shaped member, said lugs having flanges coacting with the outer faces of the legs to support 10 the same.

5. In an edging machine, a searing tool adapted to be detachably secured to current carrying conductors to bridge the same, said tool comprising a substantially U-shaped conductor of 15 relatively small cross section, and lugs of relatively large cross section on the legs of the U-shaped member, said lugs having flanges coacting with three sides of each leg to support the same.

6. In an edging machine, heavy conductors 20 adapted to be connected to a source of supply of electrical current, said conductors having shoulders near their ends, a searing tool comprising a U-shaped work engaging conductor to bridge said supply conductors, lugs on the legs 25 of said tool, and means for securing said lugs to said conductors with the upper ends of the legs supported against heightwise pressure by the shoulders of the conductors.

7. In an edging machine, heavy supply conductors, a U-shaped searing tool bridging said conductors, lugs secured to the legs of said tool leaving the inner faces of the legs exposed, and means for clamping the lugs to the conductors thereby to press the legs of the tool against 35 upright faces on the conductors.

8. In an edging machine, heavy supply conductors disposed in upright position and provided with horizontal shoulders near their lower ends, a searing tool adapted to bridge said conductors 40 comprising a U-shaped work-engaging conductor, the legs of which are supported by said shoulders, lugs on the said legs, and means for clamping said lugs to said supply conductors thereby to force the inner faces of the legs 45 against the faces on the conductors.

JOSEPH FOSSA.