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ROUGHING MACHINE

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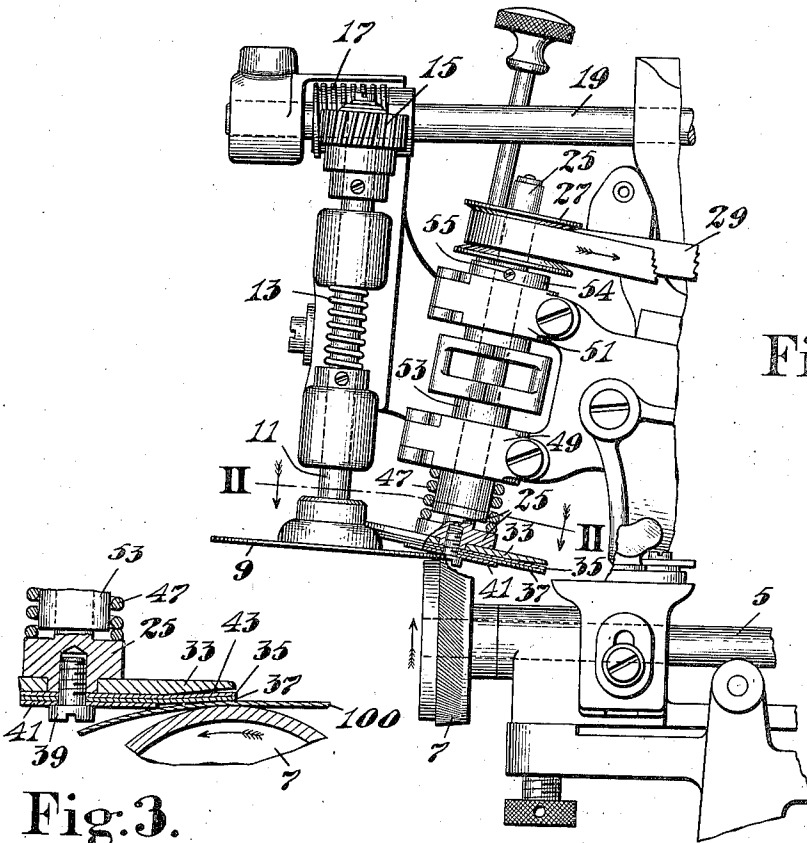


Fig. 1.

Fig. 3.

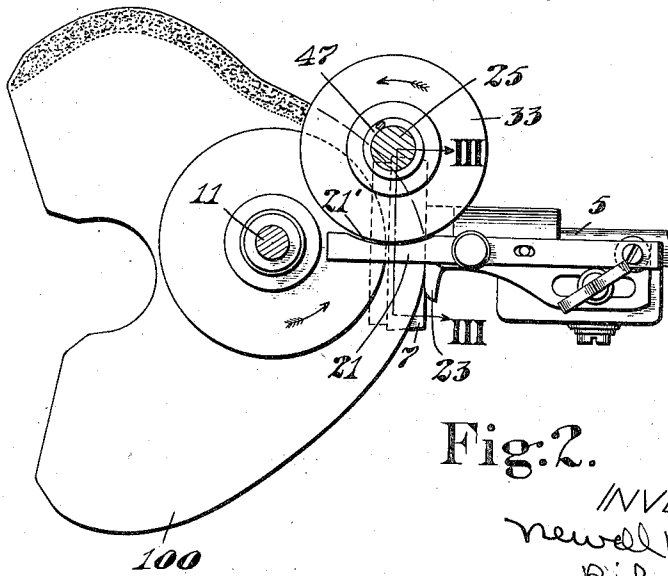


Fig. 2.

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UNITED STATES PATENT OFFICE

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ROUGHING MACHINE

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8 Claims. (Cl. 51-110)

This invention relates to abrading machines and is herein illustrated as embodied in a machine for roughing the margins of thin pieces of leather which are used for linings of boots and shoes.

In the manufacture of cement-lasted shoes, the overlapped margin of the lining is attached to the insole by cement; and it is desirable to rough the margin of a leather lining before cement is applied thereto so as to ensure a firm bond between the overlapped margin of such a lining and the insole. Such a lining is commonly made of thin, very flexible leather having a glaze on that face which will contact with the foot of the wearer in the finished shoe; and the roughing operation is sufficient to remove this glaze from a narrow marginal portion of the lining and thereby expose a slightly roughened surface to the action of the cement.

Because of the nature of the material to be operated upon this roughing operation is a rather delicate one which has hitherto been performed by hand, the general object of the present invention being to provide a machine by which this operation may be quickly and accurately carried out.

According to the present invention, the work is engaged on both sides and fed past a rotary abrasive disk. In the illustrated machine the work is engaged on the under side by a feed roll and on the upper side by a feed disk and a presser and fed past a rotary abrasive disk carried at the lower end of a rotary shaft, the construction being such that the operative portion of the body of the work outwardly to the edge thereof.

These and other features of the invention will be described as embodied in an illustrated machine and pointed out in the appended claims.

Referring now to the accompanying drawing, Fig. 1 is a front elevation of a portion of a machine in which the present invention is embodied;

Fig. 2 is a section on the line II—II of Fig. 1, showing a vamp lining in process of being operated upon; and

Fig. 3 is a detail in section on the line III—III of Fig. 2.

Certain parts of the machine are or may be the same as those of the skiving machine disclosed in United States Letters Patent No. 823,578, granted June 19, 1906, upon an application filed in the name of Charles H. Bayley, and these parts will be briefly described, reference being made to the patent for details of construc-

tion. A horizontal rotary shaft 5 has fast to its outer end a feed roll 7 which has a frusto-conical portion at its inner end and a cylindrical portion at its outer end. Cooperating with the cylindrical portion is a feed disk 9 mounted at the lower end of an upwardly extending rotary shaft 11 which is normally held down in the position shown by a coiled spring 13 but may yield upward, said shaft being rotated through a spiral gear 15 fast to the upper end of the shaft 11 which meshes with a spiral gear 17 on a rotary shaft 19. The margin of the work is held down upon the frusto-conical portion of the feed roll 7 by a yielding presser 21 with its edge in engagement with an edge guide 23, the construction of this presser and edge guide being the same as that disclosed in the patent referred to above except that the presser is cut away at 21' on a curve to correspond to the curved edge of a disk 33 later to be described. A rotary shaft 25, inclined, as shown, has a pulley 27 fast to its upper end which is rotated by a belt 29 running in the direction shown, said shaft being rotatably and slidably mounted in a sleeve 53 which is adjustably held in two brackets 49, 51. As thus far described, except for the shape of the enlargement at the lower end of the shaft 25 and except for the shape of the presser referred to above, the machine is or may be the same as that disclosed in the patent, reference being made to the patent for details including the driving mechanism not herein shown.

The machine of the patent is a skiving machine, and to the lower end of the shaft which corresponds to the inclined shaft 25 there is fastened a knife. In the present machine there is fastened to the lower end of the shaft 25 a rigid supporting disk 33, a flexible cushioning disk 35, and a flexible abrasive disk 37. A headed screw 39, which is threaded into the enlarged lower end of the shaft 25 and a washer 41, clamp the three disks firmly to the lower end of the shaft and to each other. The margin on the lower face of the rigid disk 33 is beveled at 43, as best shown in Fig. 3, so that the outer margins of the flexible disks 35, 37 may be bent upward by pressure against the work 100. In order to cause the abrasive disk 37 to engage the work yieldingly, the shaft 25 is slidable as well as rotatable in its bearing sleeve 53, its downward movement, when there is no work in the machine, being limited by a collar 54 which is adjustably fastened to the shaft by a set screw 55 and rests upon the top of the bracket 51. If desired a coiled spring 47 may be provided to supplement the weight of the shaft,

said spring being located between the enlarged lower end of the shaft 25 and the under side of the bracket 49. In either case, when the shaft is raised by insertion of a piece of work in the machine, the work-engaging marginal portion of the abrasive disk is held yieldingly against the work.

With the construction which has been described above it will be noted that the thin and somewhat flimsy piece of work is engaged both on its upper and lower faces by the members which feed it, that by reason of the edge guide it may be guided accurately through the machine, and that the portion of the abrasive disk which is effective at any given moment to abrade the margin of the piece is moving in a direction from the body portion of the work toward the edge thereof. The cushioning disk, which may be made of leather or may be merely an abrasive disk which has been more or less worn, and the beveling of the margin of the rigid supporting disk 33 render the machine particularly effective to remove the glaze from light, flimsy material without damaging said material since the action of the abrasive disk is rendered less harsh when either or both of these features are present; but it should be understood that, if desired, the bevel may be omitted from the margin of the rigid disk 33 and the abrasive disk clamped directly to the rigid disk.

Although the invention has been set forth as embodied in a particular machine, it should be understood that the invention is not limited in the scope of its application to the particular machine which has been shown and described.

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 roughing the margin of a piece of sheet material having, in combination, means including a feed roll and a feed disk for feeding the work, an edge guide, a rotary abrasive disk arranged to engage the work and progressively abrade the margin thereof, said abrasive disk being bodily movable toward and from the feed roll, and a stop for limiting its movement toward the roll.

2. A machine for roughing the margin of a piece of sheet material having, in combination, means including a feed roll and a feed disk for feeding the work, an edge guide and presser for guiding the work and pressing it against the feed roll, a rotary abrasive disk arranged to engage the work and progressively abrade the margin thereof, said abrasive disk being bodily movable toward and from the feed roll, and a stop for limiting its movement toward the roll.

3. A machine for roughing the margin of a piece of flexible sheet material having, in combination, a rotary feed roll over which the work is fed, an edge guide, a yielding presser, a rotary abrasive tool extending over the feed roll in proximity to the presser, a rotary member engaging the upper face of the work, said abrasive tool being mounted for bodily movement toward and from the feed roll, and a stop for limiting its movement toward the roll while permitting it to be moved away from the roll by engagement with the work.

4. A machine for roughing the margin of a

piece of flexible sheet material having, in combination, a rotary feed roll over which the work is fed, an edge guide, a yielding presser, a rotary abrasive disk having its forward operative portion extending over the feed roll into proximity to the presser, a rotary member engaging the upper face of the work, said abrasive disk being mounted for bodily movement toward and from the feed roll, and a stop for limiting its movement toward the roll while permitting it to be moved away from the roll by engagement with the work.

5. A machine for roughing the margin of a piece of flexible sheet material having, in combination, a rotary feed roll, a yielding presser for holding the piece against the roll, an edge guide for engaging the edge of the work, a feed disk cooperating with the roll to feed the piece, a rotary abrasive disk arranged to engage the work and progressively abrade the margin thereof, said abrasive disk being movable toward and from the feed roll, a spring for urging the abrasive disk toward the feed roll, and a stop for limiting said last-named movement.

6. A machine for roughing the margin of a piece of flexible sheet material having, in combination, a rotary feed roll, a yielding presser for holding the piece against the roll, an edge guide for engaging the edge of the work, a feed disk cooperating with the roll to feed the piece, a rotary abrasive disk arranged to engage the work and progressively abrade the margin thereof, said abrasive disk being movable toward and from the feed roll, a spring for urging the abrasive disk toward the feed roll, and a stop for limiting said last-named movement, said stop being adjustable to provide for pieces of work of different thicknesses.

7. A machine for roughing the margin of a piece of limp leather having, in combination, a rotary feed roll over which the work is fed, a yielding presser, a rotary abrasive disk having its forward operative portion extending over the feed roll into proximity to the presser, said disk being movable toward and from the feed roll, means cooperating with the feed roll for feeding the work, an edge guide for engaging the edge of the work and guiding it so that the margin thereof is operated upon by the disk, a spring for urging the disk toward the feed roll, and a stop for limiting the extent of this movement.

8. A machine for roughing the margin of a piece of limp leather having, in combination, a rotary feed roll over which the work is fed, a yielding presser, a rotary abrasive disk having its forward operative portion extending over the feed roll into proximity to the presser, said disk being movable toward and from the feed roll, means cooperating with the feed roll for feeding the work, an edge guide for engaging the edge of the work and guiding it so that the margin thereof is operated upon by the disk, a spring for urging the disk toward the feed roll, and a stop for limiting the extent of this movement, said stop being adjustable to provide for different thicknesses of work.