(No Model.)

R. McKAY.

MACHINE FOR RECESSING LEATHER.

No. 570,558. Patented Nov. 3, 1896.

Fig. 1.

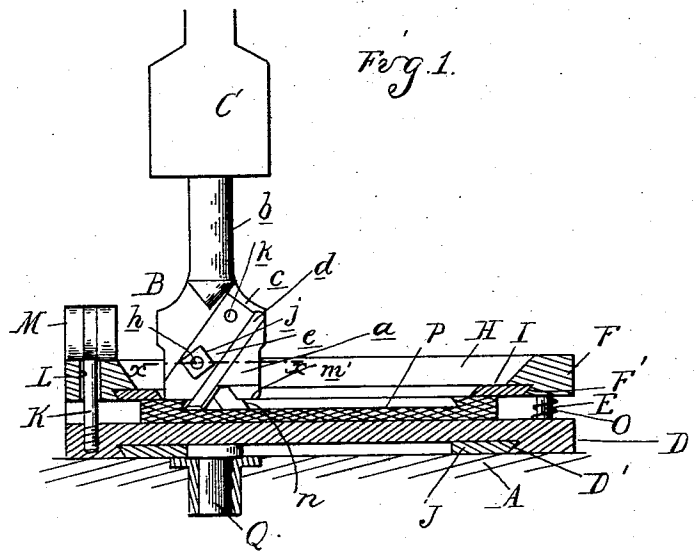


Fig. 6.

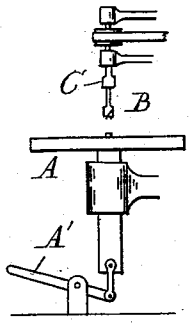


Fig. 2.

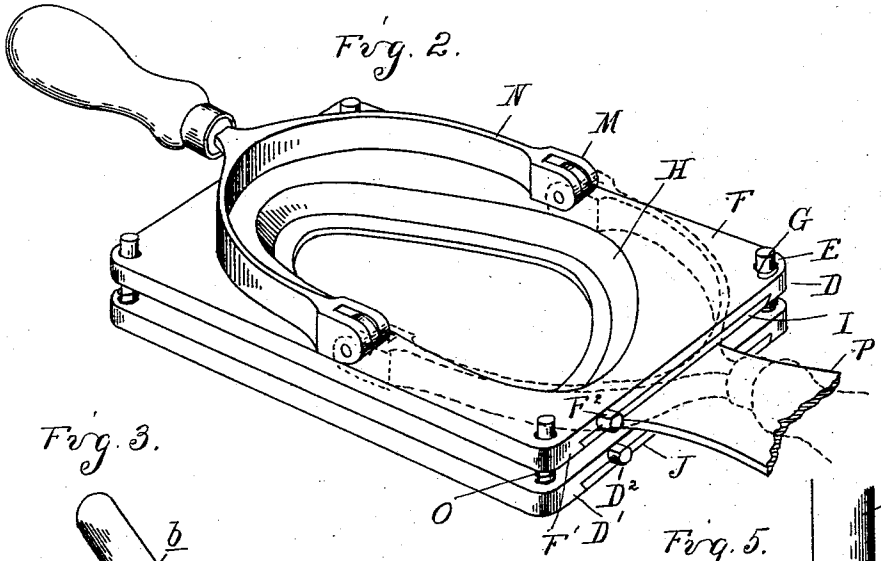


Fig. 3.

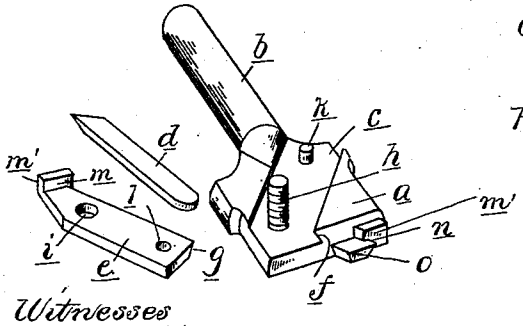


Fig. 4.

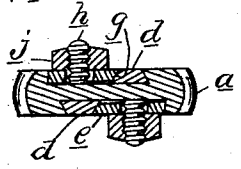
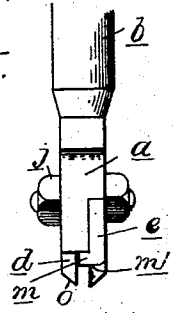


Fig. 5.



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UNITED STATES PATENT OFFICE.

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MACHINE FOR RECESSING LEATHER.

SPECIFICATION forming part of Letters Patent No. 570,558, dated November 3, 1896.

Application filed May 7, 1896. Serial No. 590,567. (No model.)

To all whom it may concern:

Be it known that I, ROBERT McKAY, a citizen of the United States, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Machines for Recessing Leather, &c., of which the following is a specification, reference being had therein to the accompanying drawings.

It is the object of my invention to obtain a machine for recessing leather and other like soft pliable substance, and especially designed to be used in the manufacture of shoe-soles.

Heretofore shoes have been made having leather soles provided with rubber wearing-faces, which are inlaid into the leather. In the practical manufacture of such shoes, however, the recessing of the leather to receive the rubber has been found to be a difficult task, and so far as I am aware no machine has heretofore been devised that has accomplished this in a satisfactory manner. The difficulty arises from the fact that the recess must necessarily be cut to an exact pattern, and to properly secure the rubber therein should be undercut at the edges. This on account of the soft and pliable nature of the material used cannot be done with any ordinary tool, which will press the material out of its path and leave a ragged irregular edge.

My invention consists in the peculiar construction of the tool or cutter employed, further in the peculiar construction of the clamp for holding the work and pattern, and further in the peculiar construction, arrangement, and combination of parts, as more fully hereinafter described and claimed.

In the drawings, Figure 1 is a vertical section through my machine, showing the rotary cutter in elevation. Fig. 2 is a perspective view of the work and pattern holding clamp. Fig. 3 is a perspective view of the detached parts of the cutter. Fig. 4 is a horizontal section on line *x x*, Fig. 1. Fig. 5 is an end elevation of the cutter, and Fig. 6 is a diagram elevation of the machine.

My machine comprises a bed or table A, a rotary cutter B, secured to a revolving spindle C above the table, and mechanism for raising or lowering said table and cutter in relation to each other.

In Fig. 6 of the drawings I have shown a foot-lever A′ for raising or lowering the table; but, if desired, the table may be made stationary and means provided for raising or lowering the spindle. The frame of the machine may be of any suitable construction, and I have therefore omitted showing it in the drawings.

The cutter B is preferably formed as shown in Figs. 1, 3, and 4 of the drawings, in which *a* is a flattened head of substantially rectangular form and provided with the upwardly-extending securing-shank *b*. Upon opposite sides of this head are formed inclined slots *c*, in which the knife-bars *d* are longitudinally adjustably secured by means of the clamping-plate *e*. The knife-bars *d* are of wedge-shape cross-section, as shown in Fig. 4, one edge of each engaging with the inclined edge *f* of the slot *c* in which it is secured, the other edge passing under the inclined edge *g* of the clamping-plate *e*. *h* are studs secured to the head, projecting through apertures *i* in the clamping-plates, and *j* are nuts upon said studs. *k* are guide-pins on the head passing through apertures *l* in the clamps.

m are angular flanges at the lower end of the clamping-plate *e*, the lower faces *m′* of which form work-bearing surfaces above the inclined cutting edge *n* of the knives, all so arranged that the knives are clamped to the head by the clamping-plate *e*, and may be sharpened when necessary by simply grinding the ends *o* and then adjusting the bars longitudinally to bring the cutting edges the proper distance below the head.

To bring the work in the proper relation to the tool to be operated upon, I provide the work and pattern clamp illustrated in Figs. 1 and 2 of the drawings, which is constructed as follows: D is a base-plate provided with the upwardly-projecting guide-pins E. F is a clamping-plate above the plate D, guided upon the pins E, which pass through the apertures G in the plate F. The central part of this plate is cut away at H to substantially the shape of the pattern to be cut in the work. To the lower faces of these plates D and F are secured, respectively, the bearing-plate I and pattern-plate J, preferably by a sliding engagement with the guides D′ and F′, being locked from disengagement by the buttons

D^2 F^2 at the ends of these plates. The pattern J is preferably cut away to exactly the size and shape of the recess to be formed in the work, and the plate I is of similar shape, but cut somewhat larger to give sufficient clearance for the tool. K are posts on the opposite sides of the center of the plate D, projecting through apertures L in the plate F, and M are cams formed on the ends of the bifurcated lever N and pivotally secured to the upper ends of the posts K. O are springs sleeved upon the pins E between the plates D and F. The work, such as a shoe-sole P, may be secured in this clamp by slipping it in at one end between the plates I and D and then turning the lever from the position in full lines, Fig. 2, to the position indicated by dotted lines in the same figure, which will cause the cams M to press the plate F down upon the work and firmly clamp the same. Projecting from the table D, below and in axial line with the rotary cutter B, is the guide-pin Q, the diameter of which is preferably the same as the distance between the inclined cutting edges *n* of the knives *d* in the plane of the bearing-surface *m'*.

In the operation of the machine the work is first secured in the clamp in the manner before described, and the latter is then placed upon the table over the guide-pin Q. Motion being now imparted to the spindle the tool is brought into contact with the work, (either by raising the table or lowering the spindle,) the knives cutting into the leather until the bearing-surface *m'* comes into contact with the upper face of the leather. The clamp may now be moved around until the recess is completely formed, the sides of the pattern coming into contact with the pin Q to limit the movement, so as to cut the recess the exact size and shape of the pattern. When finished, the work may be quickly removed from the clamp, another blank secured in its place, and the operation repeated. The arrangement of the bearing-surface *m'* in relation to the knives forms an important feature of my invention. These surfaces I have shown and described as being formed on the clamping-plates *e*, but I do not wish to be limited to this structure, as it is evident that they might be formed directly upon the head *a*. In either case the inclined edge *n*, which forms the undercutting edge of the tool, is beneath the surface *m'*, which in the operation of the tool holds the material from being pressed up out of the way of said cutting edge, thus securing a sharp undercut the exact size of the pattern.

It will be observed that in sharpening the tool the shape is never altered, and the only adjustment required is the longitudinal adjustment of the knife-bars. As before stated, the pin Q is normally the same diameter as the cutter, but if it is desired to make a slight variation in the size of the recess without changing the pattern, as for two different widths of shoe, this may be accomplished by substituting a slightly larger or smaller pin for the pin Q. Where a greater variation is made, the pattern and bearing plates J and I may be disengaged and a larger or smaller size secured in their places.

What I claim as my invention is—

1. A rotary tool for recessing surfaces provided with an undercutting edge and a work-bearing surface above said edge.

2. In a rotary recessing-tool, the combination with a head, of a knife-bar inclined to the axis of said head, and longitudinally adjustably secured thereto, the lower projecting end of said bar forming an undercutting edge, and a work-bearing surface on said head above said undercutting edge.

3. In a rotary recessing-tool the combination with a head, of knife-bars oppositely inclined to the axis of said head and longitudinally adjustably secured on opposite sides thereof the lower projecting ends of said bars forming undercutting edges, and a work-bearing surface on said head above each of said undercutting edges.

4. In a rotary recessing-tool, the combination with the head *a*, provided with the inclined recess *c* having the overhanging sides *f* of the clamping-plate *e* in said recess, the inclined edge *g* the knife-bar *d* of wedge-shape cross-section between said clamping-plate and the overhanging side *f*, the screw-threaded stud *h* secured to the head and projecting through an aperture in said clamping-plate and the nut *j* on said stud.

5. In a rotary recessing-tool, the combination with the head *a* provided with the inclined recess *c* having the overhanging side *f*, of a knife-bar of wedge-shape cross-section, and the clamping-plate *e* in said recess, the screw-threaded stud *h* projecting from said head through an aperture in the clamping-plate, the nut *j* thereon and the flange *m* on the lower end of the clamping-plate, the lower face of which forms a work-bearing surface over the inclined undercutting edge *n* on the projecting end of the knife-bar.

6. The combination with a rotary recessing-cutter, a table below the same and means for moving said cutter and table toward or from each other, of a guide-pin projecting from said table in axial line with said cutter, and a work-holding clamp having its upper member cut away for the tool to work in, and its lower member provided with a recessed pattern on its lower face adapted to engage with said guide-pin.

7. The combination with a rotary recessing-tool, a table below the same having a projecting guide-pin in axial line with said cutter and means for moving said table and cutter toward or from each other, of a work-holder comprising an upper and a lower clamping-plate, the upper plate being apertured for the cutter to work in, a bearing-plate and a pattern-plate detachably secured

respectively to said upper and lower clamping-plates on the under face thereof, said plates being correspondingly apertured.

8. A work-holder comprising the plate D, the apertured plates F, the bifurcated clamping-lever N and the correspondingly-apertured plates I and J detachably secured respectively to the lower faces of the plates F and D, substantially as and for the purpose described.

9. In a rotary recessing-tool, the combination with a head, of a knife-bar secured to the head and having a cutting edge inclined to the axis of said head, and a cutting edge at its end, and a work-bearing surface on said head above said inclined cutting edge.

In testimony whereof I affix my signature in presence of two witnesses.

ROBERT McKAY.

Witnesses:
M. B. O'DOGHERTY,
O. F. BARTHEL.