(No Model.) 2 Sheets—Sheet 1.

A. ANDRES.

HEEL BURNISHING MACHINE.

No. 371,022. Patented Oct. 4, 1887.

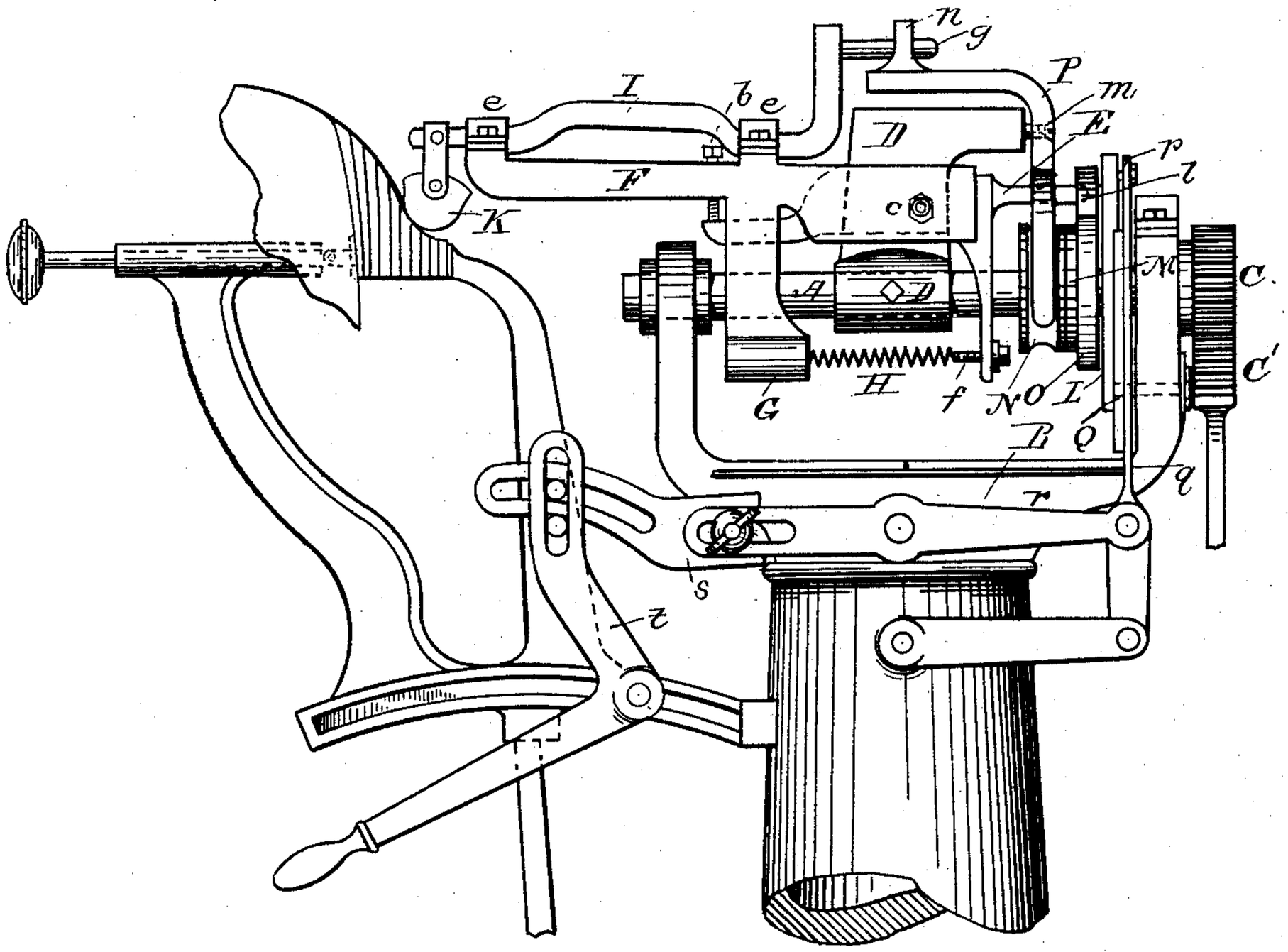

Fig. 1.

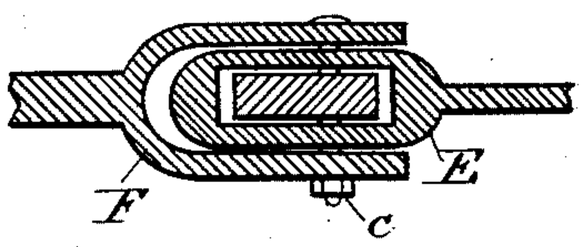

Fig. 10.

WITNESSES.

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INVENTOR.

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his Attorney.

(No Model.) 2 Sheets—Sheet 2.

A. ANDRES.

HEEL BURNISHING MACHINE.

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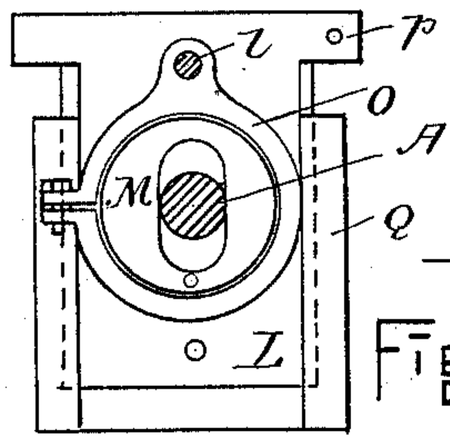

Fig. 2.

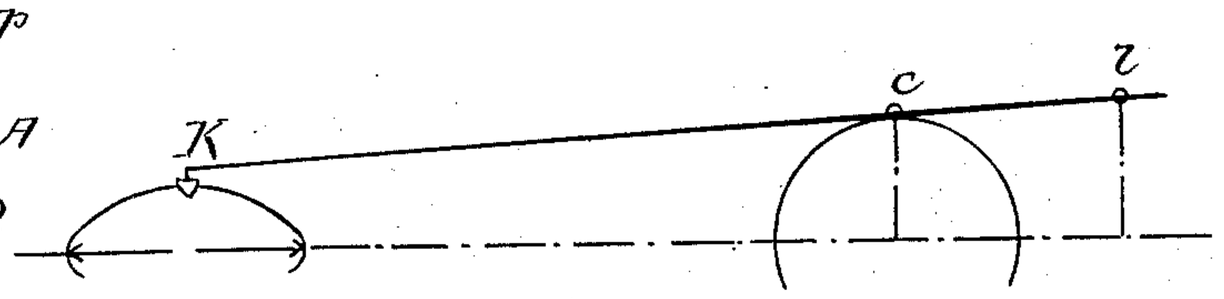

Fig. 5.

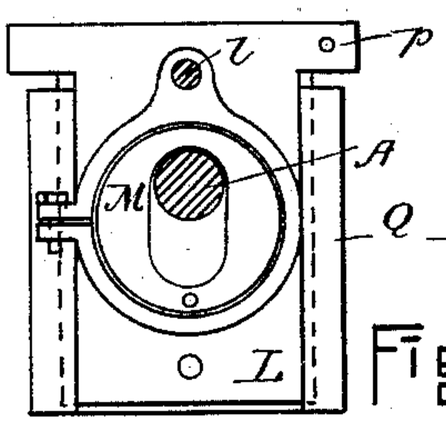

Fig. 3.

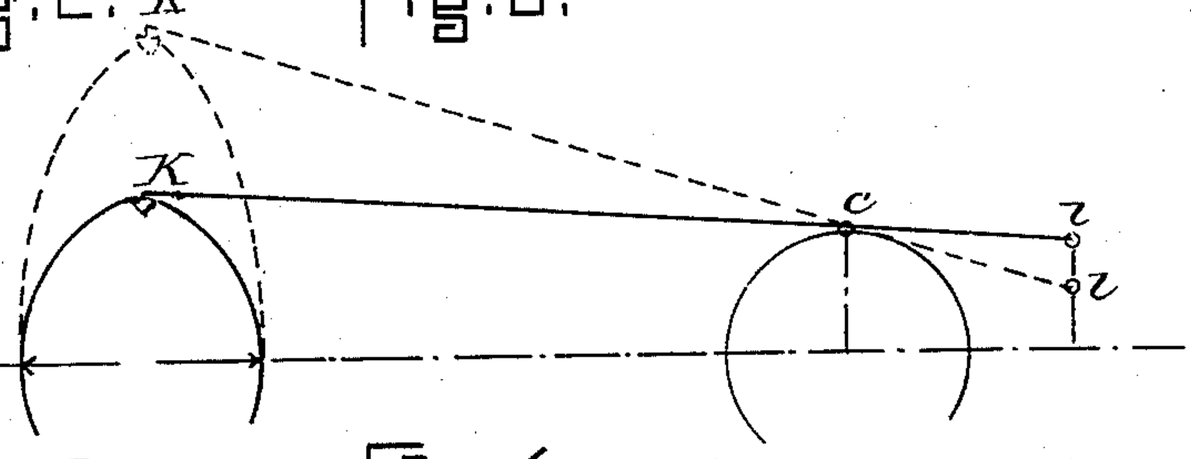

Fig. 6.

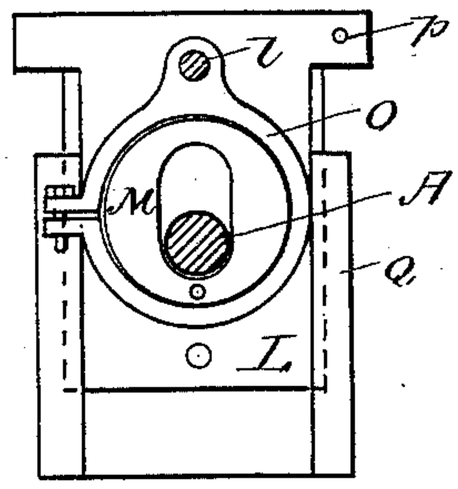

Fig. 4.

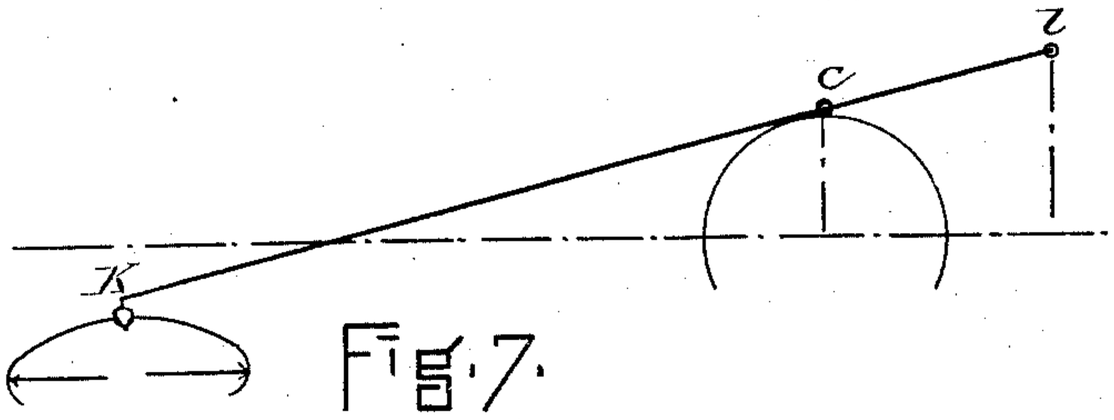

Fig. 7.

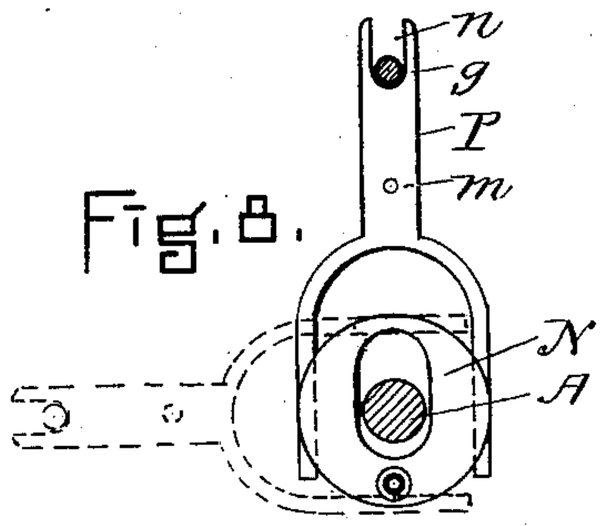

Fig. 8.

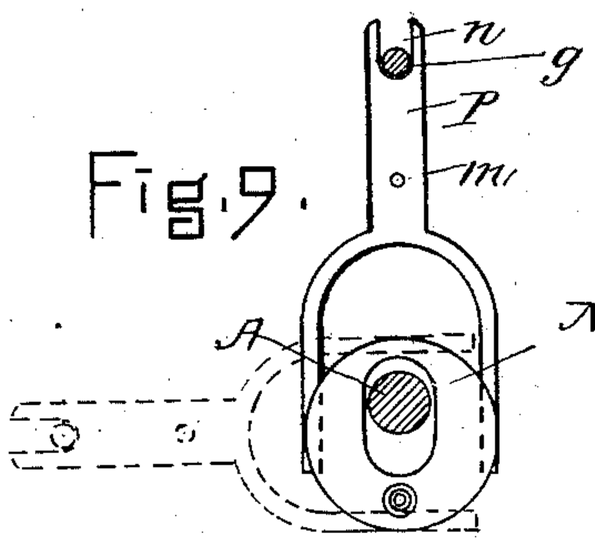

Fig. 9.

WITNESSES.

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UNITED STATES PATENT OFFICE.

ALBERT ANDRES, OF FRANKFORT, GERMANY, ASSIGNOR TO CHARLES S. LARRABEE, OF SAME PLACE, AND CHARLES E. TINGLEY, OF BOSTON, MASSACHUSETTS.

HEEL-BURNISHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 371,022, dated October 4, 1887.

Application filed June 11, 1887. Serial No. 240,997. (No model.)

To all whom it may concern:

Be it known that I, ALBERT ANDRES, of Frankfort, Germany, have invented a new and useful Improvement in Heel-Burnishers, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part hereof.

My invention is an improvement upon what is well known to the trade as the "Tapley heel burnisher." The Tapley burnisher is designed to burnish heels of moderate height and but slightly underset, and its polishing or burnishing tool is given a circular motion around the heel, such motion enabling the tool to be brought in proper contact with the parts of the heel to be burnished. To burnish a very much curved or underset heel it is necessary that the path of the tool should be elliptical at times instead of always circular, and that the pressure of the polishing-iron should be adjustable; and to that end I have interposed between the main rock-shaft and the burnishing-tool of the Tapley burnisher various parts now to be described.

In the drawings, Figure 1 is a side elevation of a burnisher embodying my invention. Figs. 2, 3, and 4 show details of the construction of the eccentric adjusting mechanism. Figs. 5, 6, and 7 are diagrams showing the path of the tool when the parts are in the positions indicated in Figs. 2, 3, and 4, respectively; and Figs. 8 and 9 show details of the tool-presenting mechanism. Fig. 10 is a section showing the mode of pivoting the levers.

The rock-shaft A is mounted upon the standard B, and is given an oscillating or rocking movement by means of the gearing C and segment-gear C′ in the ordinary manner. To this shaft A is attached by set-screws the rocker-arm D, so that there is imparted to it an oscillating movement. There is fulcrumed upon this rocker-arm D, at *c*, two levers, E and F. (See Fig. 10.) The lever F is weighted at its lower part by the weight G, which is hollowed out so as to surround the shaft A and not interfere with or bind upon it in the course of any of the movements which may be required of F. The lever F is provided with a set-screw, *b*, which bears upon a part of the lever E and regulates the play of the lever F for the different sizes of heels. For a large heel the set screw *b* is screwed farther through the lever F, and for a small heel the screw is withdrawn more or less from the lever F, thus causing the polishing-iron to move in a larger or smaller circle, as required. The springs H, secured to the weighted piece G and the lower end of the lever E, tend to keep the lever F to its work and cause the iron to press upon the heel. By means of this arrangement the tension will be the same whether the polishing-iron presses on the lower part of the heel near the top lift, as seen in the drawings, or at the higher part near the heel-seat. The tension of these springs is regulated by means of thumb-screws *f*. The outer end of the lever E terminates in a pin, *l*, which is journaled in the eccentric-strap O. (See Figs. 1 to 4, inclusive.) This strap is mounted upon the eccentric M, which is attached to a slide, L, mounted in ways on the plate Q, attached to the standard B. The eccentric-strap O oscillates with the rock-shaft A, and the levers E F, being mounted upon the rocker-arm D, also oscillate with the rock-shaft. The main purpose of the slide L is to change the axis of the eccentric, and consequently the movement of the pin *l*, and by means of it the vertical position of the levers E and F around their fulcrum *c*, thus guiding the tool K, which is mounted upon the outer end of the lever F, so that its path will be either in part of a circle or of an ellipse, as may be desired.

The tool is mounted on a rocking crank-shaft, I, which is journaled in bearings *e* on the lever F. The crank at the other end of this shaft I terminates in a pin, *g*, which sets into bearings *n* at the upper end of the forked lever P. This lever is fulcrumed at *m* upon the rocker-arm D, and consequently has the same motion round the shaft A that the levers E F have. The forked lever P straddles the eccentric N, which is mounted about the shaft A and corresponds in shape with the eccentric M, so that when the eccentric M is so placed that it will cause the burnisher to move in an elliptical path the forked lever will be so turned on its fulcrum *m* by the various move-

ments of the eccentric N as to cause the face of the burnishing-tool to be always presented to the heel.

The eccentrics M and N are slotted, so as to allow them to move freely up and down in respect to the shaft A.

The plate L is raised and lowered at pleasure by means of a hand-lever, *t*, adjustably-slotted link *s*, bell-crank *r*, and link *q*, which is pivotally attached at *p* to the upper part of the plate L. (See Figs. 1 to 4.) The hand-lever *t* is pinned to the jack in the way usual in the old-style Tapley machines, and the apparatus is operated as follows: The boot or shoe having been jacked in the ordinary manner, the link *s* is adjusted so that the movement of the hand-lever will carry the jack forward and the polishing-iron K will touch the back of the heel at the top lift and will move from there to the heel-seat, touching all points of the back of the heel. For higher heels the link will be lengthened, and for lower heels it will be shortened. The adjustment necessary to regulate the pressure of the tool upon the work will also be made at the screws *b* and *f*. The rock-shaft A is then set in motion, and the heel is presented to be polished by moving the jack toward the machine by the use of the lever *t*. This continued use of the lever *t* as the heel is brought farther and farther under the tool causes the eccentric to gradually depress the back ends of the levers E F and raise the tool K, causing it to mount the heel and describe a larger and larger ellipse, these changes in the path of motion of the tool being made through changing the position of the slide L with relation to the shaft A.

The path of the burnishing-iron is controlled not only by the position of the pin *l* at the farther end of the system of levers, which, being journaled in the eccentric-strap O, is raised or lowered according to the position given the plate L, but also by the rocking movement of the arm D, this whole mechanism giving to the burnishing-tool the movements indicated in the three diagrams, Figs. 5, 6, and 7 and the various movements intermediate thereto.

So long as the axis of the eccentric M is coincident with its center (see Fig. 2) it will not act as an eccentric, and the path of the pin *l* will be circular, the portion of the circle through which it traverses depending upon the arc traversed by the rock-shaft. If the axis of the eccentric is as in Fig. 4, the pin *l* will move on a large curve, and consequently the tool at farther end of the levers will receive a correspondingly small movement. (See Fig. 7.) Such a movement would be useful ordinarily when burnishing the top layers of the heel. If the axis of the eccentric is as shown in Fig. 3, the pin *l*, moving in a small curve, will give to the polishing-tool a correspondingly large movement, (see Fig. 6,) such as would burnish the heel near its seat. As the eccentric M acts upon the levers E F and causes the tool to move in an elliptical path, the eccentric N, which is a part of the eccentric M, throws the forked lever P about its fulcrum *m*, thus giving to the crank I a slight movement, which is sufficient, however, to keep the face of the tool in proper relation to the surface of the heel. The use of two levers, E and F, the one carrying the tool and the other transmitting the necessary movements thereto from the eccentric, is very desirable, as it allows the pressure to be regulated, and also allows the parts to yield in case for any cause the pressure is suddenly increased, but it is not always necessary.

What I claim as my invention is as follows:

1. In a heel-burnishing machine, the combination of the rock-shaft A, rocker-arm D, and tool-carrying lever mounted thereon, with the plate Q, attached to standard B, the plate L, sliding upon said plate Q and carrying the eccentric M, the eccentric-strap O and connections, substantially as described, whereby the movements of said strap are communicated to the said tool-carrying lever, all substantially as and for the purposes set forth.

2. In a heel-burnishing machine, the mechanism above described for regulating the pressure on the burnishing-tool, consisting of the lever E and the tool-carrying lever F, provided with its weight G, and the springs H, connecting said levers E with said weight G, and provided with suitable adjusting mechanism, substantially as described, and adapted for the purposes set forth.

3. In a heel-burnishing machine, the rocker-arm D, forked lever F, mounted thereon, and crank-shaft I, connected with said forked lever and carrying the burnishing-tool K, in combination with the variable eccentric N, located within the fork of said lever, all connected and operating substantially as and for the purposes set forth.

4. In a heel-burnishing machine, the combination, with the herein-described mechanism, whereby the path of the burnishing-tool may be controlled, of the operating-levers *t* and *r* and their connecting-links, all substantially as and for the purposes set forth.

ALBERT ANDRES.

Witnesses:
THOMAS STANDACHER,
WILHELM KREBS.