(Model.)

2 Sheets—Sheet 1.

H. F. HALBACH.

Boot and Shoe Heel Trimming Machine.

No. 232,180. Patented Sept. 14, 1880.

Fig. 1.

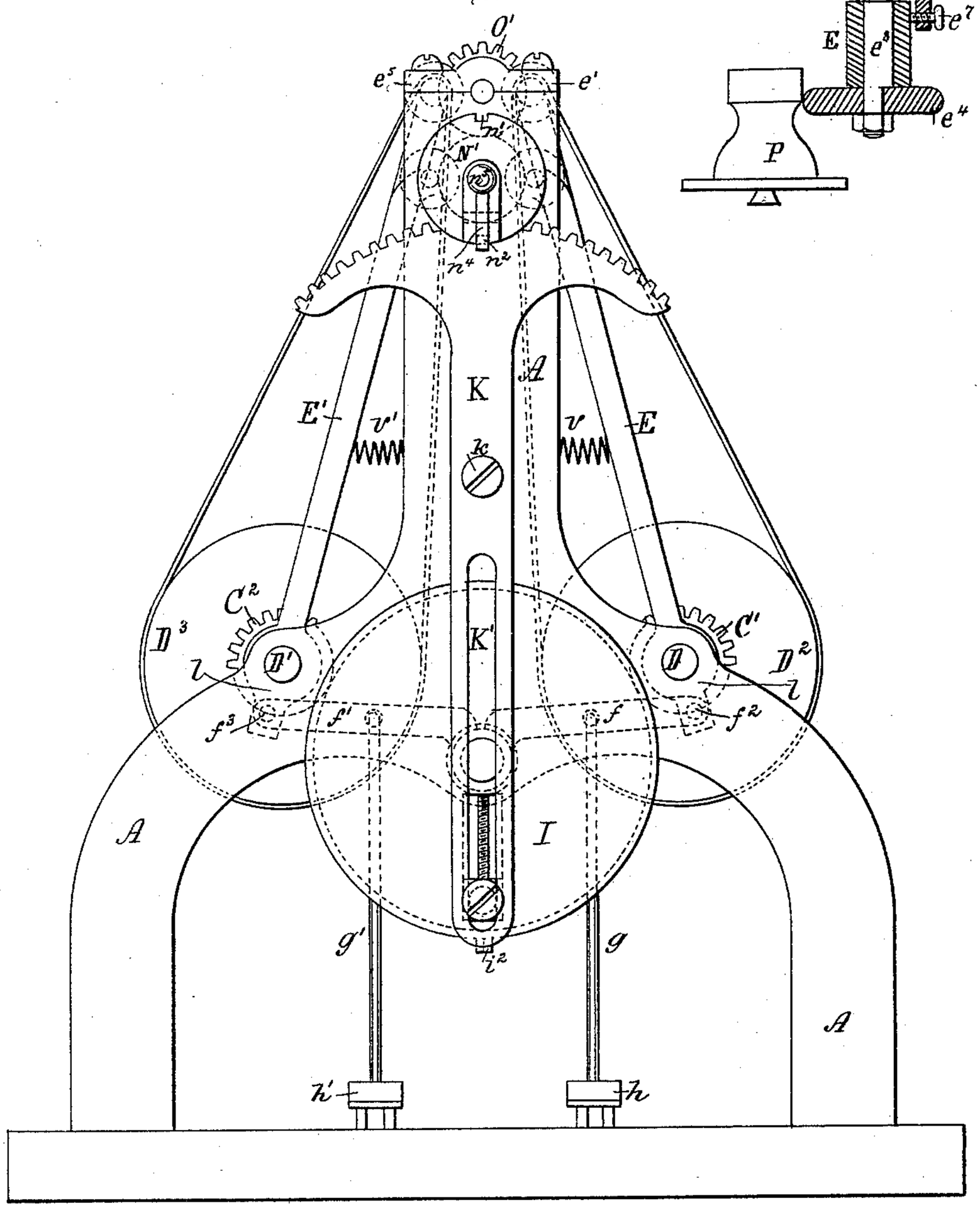

Fig. 5.

Fig. 4.

Witnesses:
Wm. Heckert,
Wm. Ewing.

Inventor:
Herman F. Halbach.
by Theodore G. Hoster, his atty.

(Model.) 2 Sheets—Sheet 2.

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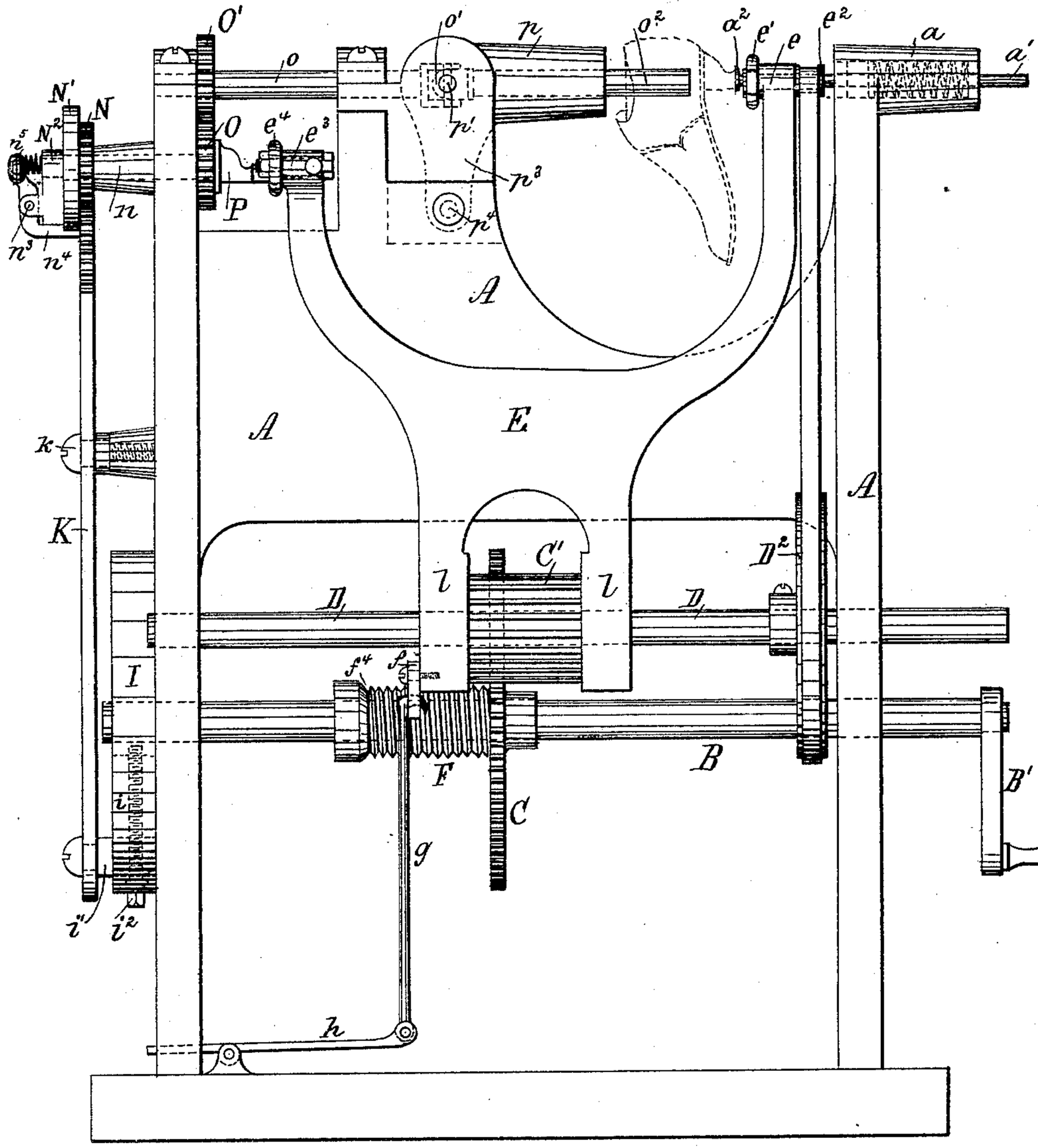
No. 232,180. **Patented Sept. 14, 1880.**

Fig. 2.



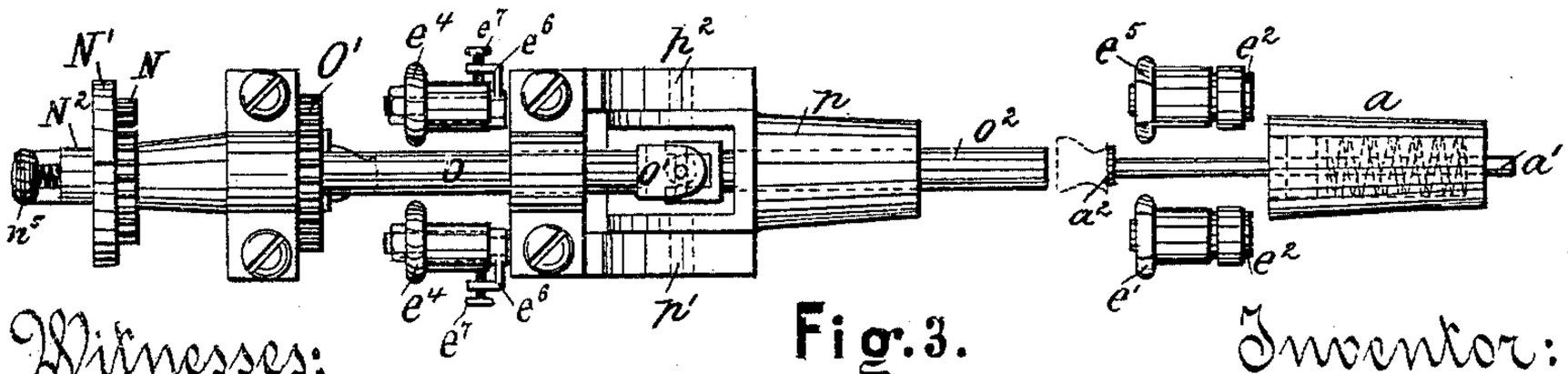


Fig. 3.

Witnesses:
Wm. Heckert,
Wm. Ewing

Inventor:
Herman F. Halbach.
by Theodore G. Hoster, his atty.

UNITED STATES PATENT OFFICE.

HERMAN F. HALBACH, OF BALTIMORE, MARYLAND, ASSIGNOR OF ONE-HALF OF HIS RIGHT TO HENRY H. FAUST, OF SAME PLACE.

BOOT AND SHOE HEEL TRIMMING MACHINE.

SPECIFICATION forming part of Letters Patent No. 232,180, dated September 14, 1880.

Application filed May 31, 1880. (Model.)

To all whom it may concern:

Be it known that I, HERMAN F. HALBACH, of the city of Baltimore, in the county of Baltimore and State of Maryland, have invented a new and useful Improvement in Shoe and Boot Heel Trimming Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part thereof.

My invention relates to shoe and boot machinery; and its objects are, first, to shape a heel from the rough square leather to any desired shape; and, second, to finish the heel, ready for the blacking and burnishing. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is an end view of the entire machine. Fig. 2 is a side elevation of the same. Fig. 3 is a top view of part of the machine. Fig. 4 is an enlarged side view of the rotary cutter; and Fig. 5 is an enlarged sectional view of the friction-roller and its eccentric shaft, hereinafter more fully described.

Similar letters of reference throughout the several views indicate like parts.

A is the main frame, and carries the main shaft B, which is rotated by means of a crank, B′, or a pulley. On the shaft B, and rotating with it, is the large gear-wheel C, which operates the pinions C′ and C² on shafts D and D′.

The frames E and E′ are alike in construction, and swing on shafts D and D′ on bearings *l l*, between which are placed the pinions C′ and C² on shafts D and D′. On a shaft, *e*, on one arm of frame E, is the chipping-wheel or rotary cutter *e′* and small pulley e^2, and on another arm of frame E is an eccentric shaft, e^3, which carries the friction-roller e^4.

The frame E′ has a shaft similar to shaft *e*, but which carries a sand-paper wheel or its equivalent, e^5. (See Fig. 3.) On shafts D and D′, and rotating with them, are the pulleys D² and D³, and an endless belt passes over each to the pulleys e^2 e^2, by which means the rotary cutter *e′* and the sand-paper wheel or its equivalent e^5 are rotated.

A screw, F, is placed on shaft B, and in its threads engage the levers *f* and *f′*, having their fulcrums on the frames E and E′ at f^2 and f^3, respectively. To levers *f* and *f′* are hooked the rods *g* and *g′*, connected at their lower ends to treadles *h* and *h′*.

To main shaft B is fastened the disk I, provided with a slot, *i*, in which the wrist *i′* is adjustable by means of a screw, i^2. A segment, K, swings on the stud *k*, screwed to a hub on the frame A. The lower end of said segment K is provided with a slot, K′, and through it projects the wrist *i′*. The segment K operates the gear-wheel N, placed loosely on shaft *n*, which has its bearings in the main frame A.

To the gear-wheel N is fastened the disk N′, provided with two notches, *n′* and n^2. Secured to the shaft *n* is the plate N², provided with lugs and pin n^3, on which swings the lever n^4, which has one end engaged in one of the notches *n′* or n^2, (n^2 in the drawings,) and the other end is provided with a knob, n^5, against which presses a spring placed between the knob n^5 and plate N², Figs. 2 and 3.

To shaft *n* is also secured the gear-wheel O, in a recess of the frame A, and to it is fastened by some well-known means the former P. Gear-wheel O operates gear-wheel O′ on shaft *o*, which has its bearings on the main frame A, and the one end is coupled by means of a universal joint, *o′*, to shaft o^2, placed in the bearing *p*, and to the extreme end of said shaft o^2 is fastened by some device the shoe or boot with its rough heel to be trimmed.

The bearing *p* swings on its trunnions *p′* and p^2 between two lugs on the frame A, and has an arm, p^3, projecting downward in a recess in frame A, (shown in dotted lines in Fig. 2,) and can be securely locked there by a pin, p^4, passing through the frame A and arm p^3. Through a hub, *a*, on main frame A passes a rod, *a′*, provided on one end with a plate, a^2, and around the rod *a′* in the hollowed-out hub *a* is wound a spring pressing against a collar on rod *a′*, by which means the plate a^2 is pressed against the heel of the shoe or boot placed on shaft o^2.

The operation of this machine is as follows: In order to place the shoe or boot on shaft o^2 it is necessary to remove the pin p^4, and the bearing *p*, with its shaft o^2, is then swung on its trunnions *p′* and p^2 upward at right angle, (the universal joint *o′* allows this operation,)

which enables the operator to fasten the shoe or boot by means of last or other device to the shaft o^2. The bearing p is then swung in the position again, as shown in Fig. 2, and the pin p^4 is inserted, whereby the bearing p is locked. Partial rotation is given to the shoe or boot on shaft o^2 by rotating the shaft B, by crank or pulley, which causes the segment K to oscillate on stud k by means of disk I, its wrist i' being engaged in the slot K′ of segment K. The segment K transmits its motion to gear N, its disk N′, and to plate N^2, by having the lever n^4 engaged in notch n^2 of disk N′. The plate N^2 transmits its partial rotation to shaft n, gear-wheel O, and its former P. Gear-wheel O gives partially rotating motion to gear O′, whereby the shaft o, and shaft o^2, with its shoe or boot, are partially rotated.

For the first operation—that is, for the shaping of the heel by the rotary cutter e'—it is necessary to throw the lever f' out of contact with screw F, by rod g' and treadle h', while lever f remains in contact with said screw F. The latter, being rotated, causes the lever f, and thereby the frame E, to which it is fastened, the shaft D, the pinion C′, and pulley D^2 to move sidewise, (to the left in Fig. 2,) which brings the friction-roller e^4 over the heel-shaped former P and the cutter e' to the heel to be trimmed to the shape of former P. Rotation is given to cutter e' by pulley e^2 and the endless belt passing over pulley D^2. The pinion C′, placed between the two bearings $l\ l$ of frame E, is made very long, so as to allow sidewise movement without going out of gear with the gear-wheel C on the shaft B. The friction-roller e^4 is held against a straight extension of former P by means of a spring, v, fastened to the main frame A and the sliding frame E. The latter, now moving sidewise, causes the friction-roller to follow the shape of the former P, and as the partial rotation of the boot or shoe on shaft o^2 is the same as of former P, and the friction-roller e^4 and rotary cutter e' are on the same swinging frame, thereby moving simultaneously sidewise, the heel to be trimmed attains the same shape as has the former. When the friction-roller e^4 arrives at the end of former P the lever f stands at the end of screw F, and moving up the incline f^4, will cause a stop of sidewise motion to the frame E and its accessories. By means of a spring or weight (not shown in the drawings) attached to frame E or shaft D the parts which have made the sidewise movement can be thrown back to their original position, as shown in Fig. 2. The relation of the partial rotation of the shoe or boot on shaft o^2 to the cutter e' is such that the rotary cutter commences to trim on the edge of the flat part of the heel, around the curve of the heel, over to the other edge of the flat part and back again.

Pressing on knob n^5 will disengage lever n^4 from notch n^2, whereby the plate N^2 and shaft n cease to partially rotate, and consequently the shoe or boot on shaft o^2 is brought to a stop until the lever n^4 engages in notch n', whereby a partial rotation in the opposite direction from what had been obtained before will be given to the shoe or boot, which motion is necessary for the second operation—that is, the finishing of the heel with the sand-paper wheel, or its equivalent e^5. The lever f' is now thrown in contact with screw F, (the lever f is held disengaged by treadle h,) and the same movement is given to frame E′ and its accessories as had been given to frame E, described above. The friction-roller e^4 on frame E′ will be moved over former P, while the sand-paper wheel or its equivalent e^5 will finish the heel ready for blacking and burnishing.

For the different shaped formers a different oscillation is required, and is obtained by moving the adjustable wrist i', by means of screw i^2, in or out in the slot i of disk I, and thereby in or out of slot K′ of segment K, whereby more or less oscillation of the segment K is obtained. An entire revolution can by this device be given to the boot or shoe on shaft o^2.

As shoe and boot heels vary in width, (for larger or smaller shoes of the same pattern,) but retain the same curved shape, I have placed the friction-roller e^4 on an eccentric shaft, e^3, (see Fig. 5,) which can be turned in its bearing on frame E or E′ by a lever, e^6, and fastened in any desired place by set-screw e^7. This operation throws the friction-roller e^4 to or from the former P, and the rotary cutter e' to or from the rough heel, whereby the same former P answers for trimming heels of the same curved shape as former P, and also for trimming heels to various widths.

I claim in a boot and shoe heel trimming machine—

1. The feed-screw F on shaft B, lever f, connected to frame E, in combination with the gear-wheel C, pinion C′, shaft D, and pulley D^2, as and for the purpose specified.

2. The rotating shaft B, with its screw F, in combination with the lever f and frame E, as and for the purpose specified.

3. The lever f, connected at f^2 to frame E, the connecting-rod g, and treadle h, as and for the purpose specified.

4. The frame E, carrying the rotary cutter e' and friction-roller e^4, in combination with the former P, as and for the purpose specified.

5. The frame E′, carrying the rotary sand-paper wheel e^5, or its equivalent, in combination with the former P, as and for the purpose specified.

6. The friction-roller e^4, eccentric shaft e^3, lever e^6, and set-screw e^7, in combination with the former P, as and for the purpose specified.

7. The disk I, with its slot i, screw i^2, and adjustable wrist i', in combination with the segment K, as and for the purpose specified.

8. The oscillating segment K, gear-wheel N, disk N′, provided with notches n' and n^2, in combination with the lever n^4, plate N^2, keyed to shaft n, as and for the purpose specified.

9. The partially-rotating shaft n, gear-wheel

O, and former P, in combination with the gear-wheel O′, shaft *o*, universal joint *o′*, and shaft o^2, as described, and for the purpose as specified.

10. The bearing *p*, with its trunnions *p′* and p^2, in combination with shaft o^2 and universal joint *o′*, as and for the purpose specified.

11. The bearing *p*, with its trunnions *p′* and p^2, partially-rotating shaft o^2, in combination with the pin p^4, as described, and for the purpose as specified.

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Witnesses:
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