2 Sheets--Sheet 1.

L. W. BAKER.

Machinery for Trimming the Sole Edges of Boots and Shoes.

No. 153,520. Patented July 28, 1874.

Fig. 2.

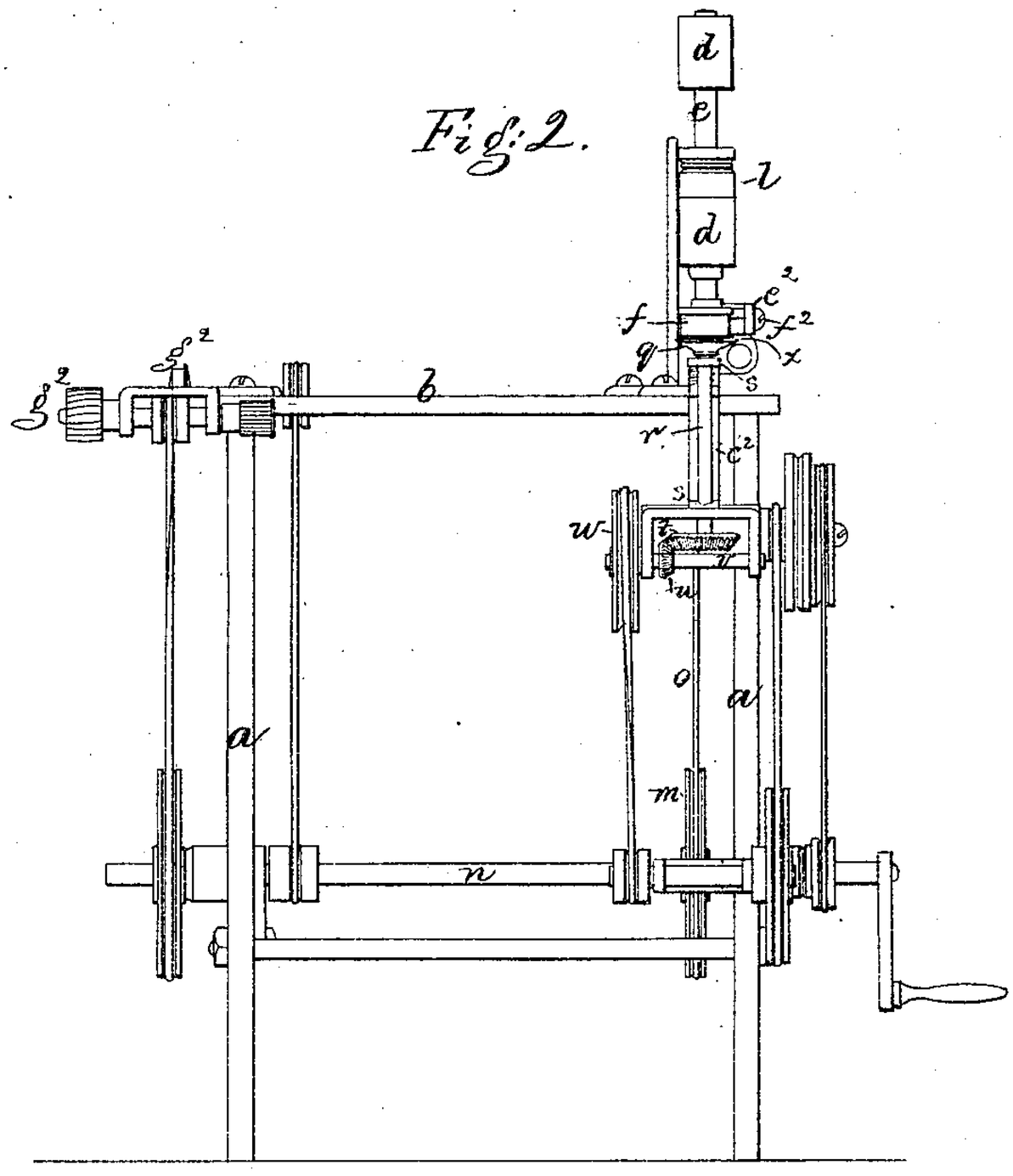
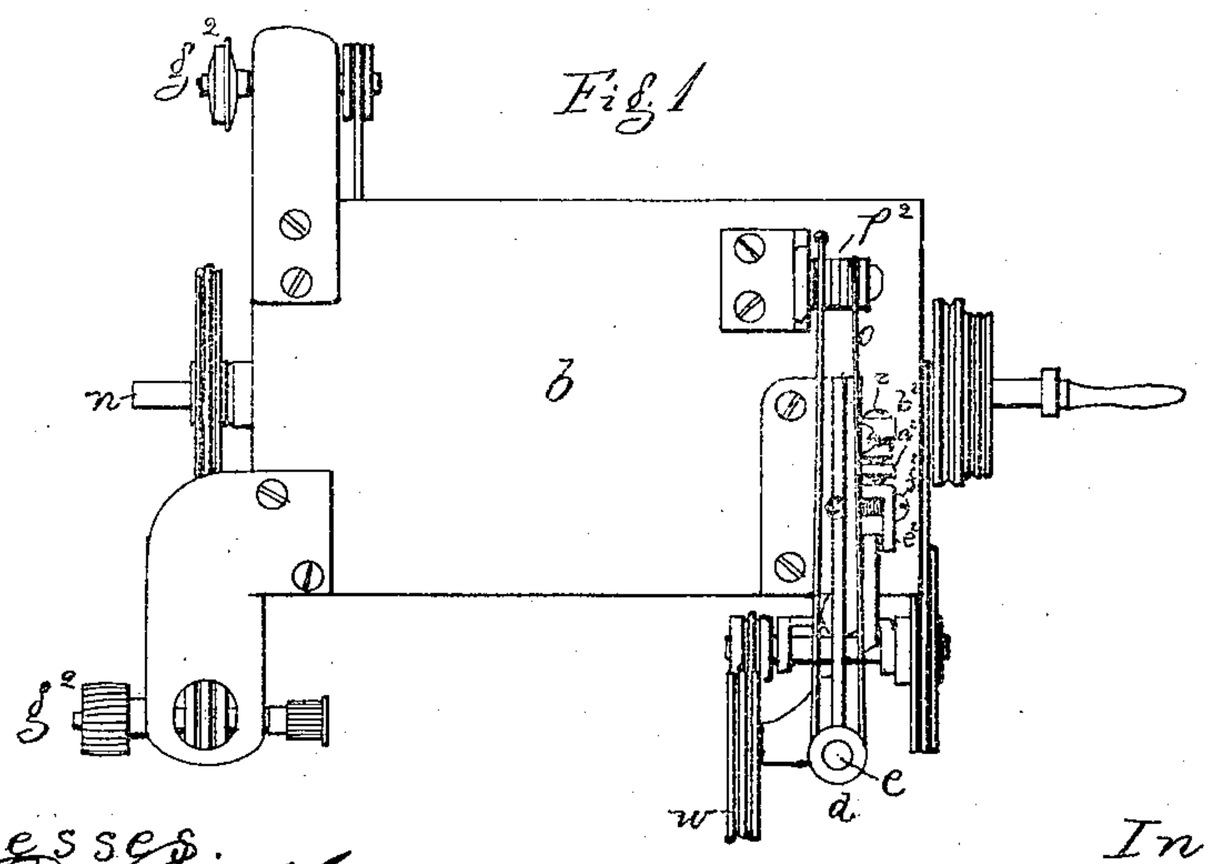


Fig. 1



Witnesses.
Jno. D. Patten
Geo. T. Smallwood

Inventor.
Levi W. Baker.
per John J. Halsted
Atty.

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2 Sheets--Sheet 2.

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Fig. 3.

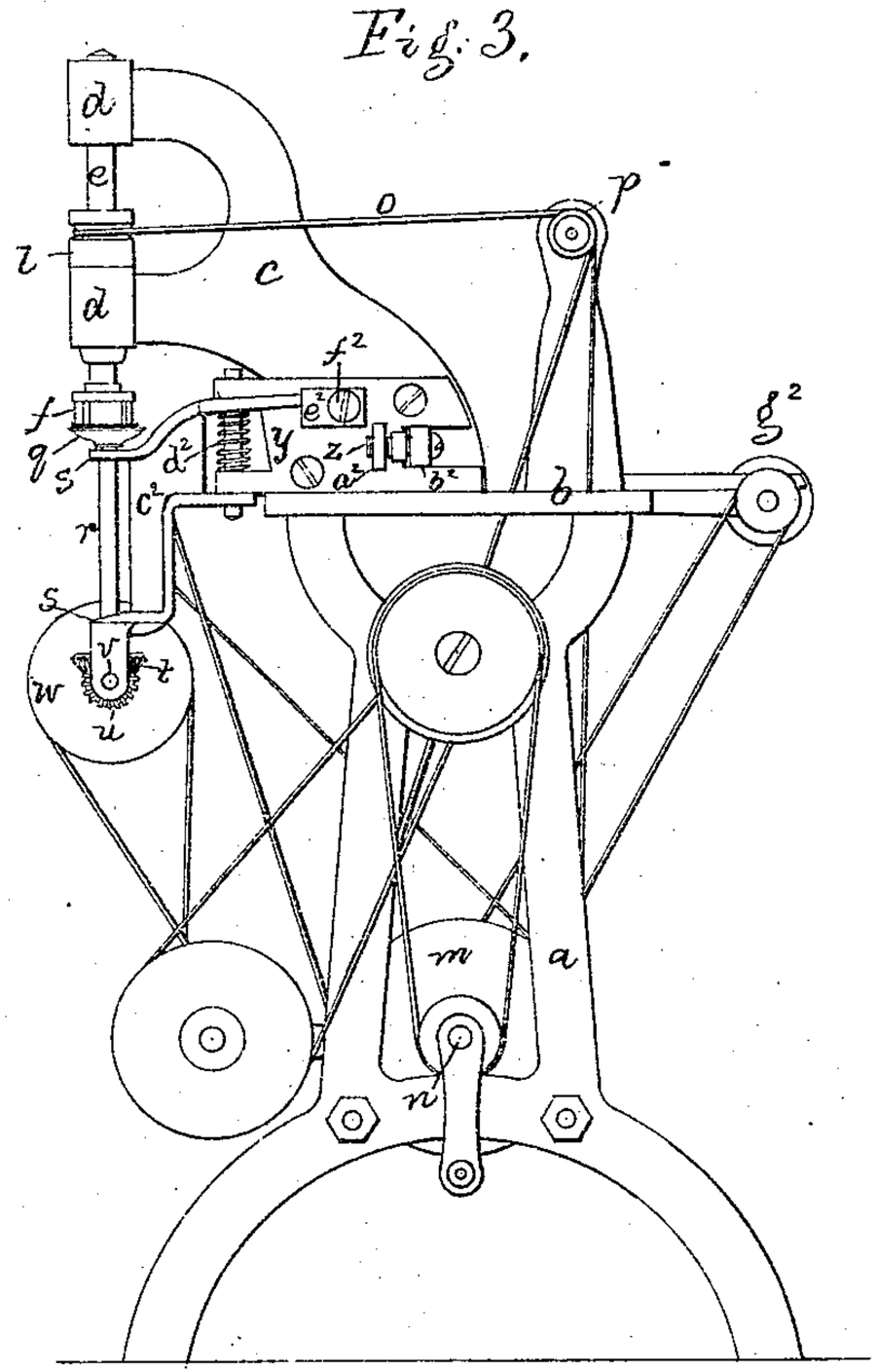


Fig. 4.

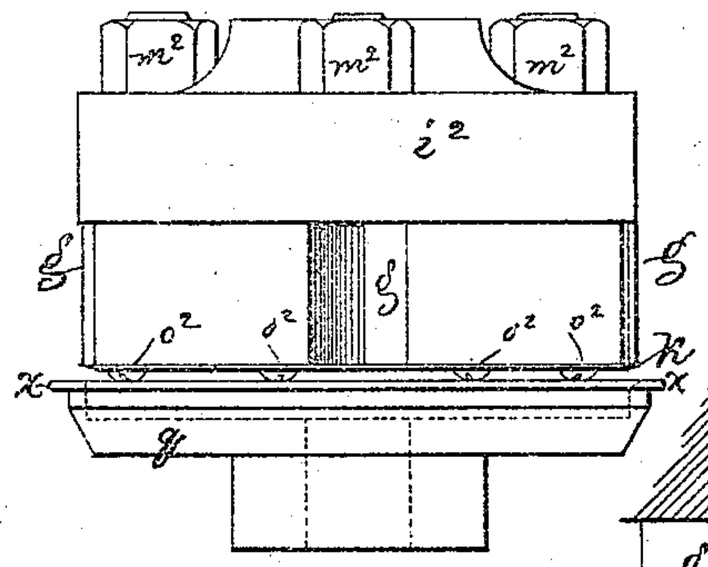


Fig. 6

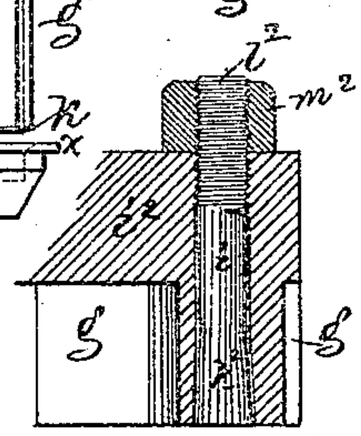
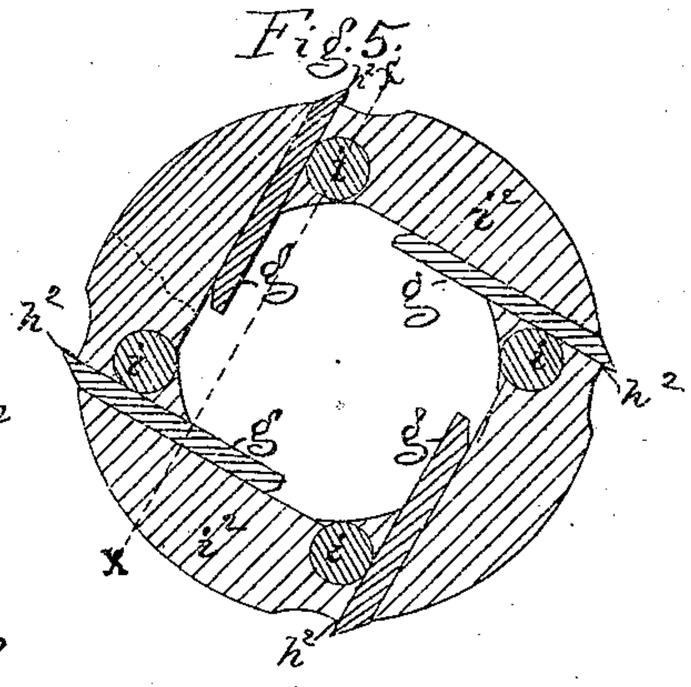


Fig. 5.



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Levi W. Baker.
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UNITED STATES PATENT OFFICE.

LEVI W. BAKER, OF MARLBOROUGH, MASSACHUSETTS.

IMPROVEMENT IN MACHINERY FOR TURNING THE SOLE-EDGES OF BOOTS AND SHOES.

Specification forming part of Letters Patent No. **153,520**, dated July 28, 1874; application filed June 9, 1874.

To all whom it may concern:

Be it known that I, LEVI W. BAKER, of Marlborough, in the county of Middlesex and State of Massachusetts, have invented certain Improvements in Machines for Trimming the Edges of the Soles of Boots and Shoes; and I do hereby declare that the following, taken in connection with the drawings which accompany and form part of this specification, is a description of my invention sufficient to enable those skilled in the art to practice it.

In the manufacture of boots and shoes, most of the work formerly effected by hand-labor is now done by machine; and my invention relates particularly to the organization and details of organization of a machine for trimming the curved edges of the soles of boots and shoes.

In my machine I employ a rotary shaft, preferably mounted in vertical bearings, and having fixed at one end a rotary cutter head or cylinder, and in connection with such cutter-cylinder another shaft, having fixed to its end, adjacent to the end of the cutter-cylinder, a thin guide-wheel, the periphery of which extends beyond the periphery of the cutter-cylinder. This wheel is preferably made as a feed-wheel, and enters the groove or recess between the upper and sole, the wheel acting as a guide to present the sole-edge to the cutter-cylinder, and as a feed to carry the shoe forward.

The invention consists, primarily, in the cutter-cylinder and guide-wheel arranged and operating as thus generally described.

The drawing represents a machine embodying my improvements.

Figure 1 shows the machine in plan. Fig. 2 is a front elevation of it. Fig. 3 is an end elevation. Fig. 4 shows a side view of the cutter-cylinder and guide-wheel, enlarged. Fig. 5 shows the cutter-cylinder in cross-section. Fig. 6 is a section on the line *x x*.

a denotes a frame or stand, having extending from its top *b* an upright, *c*, at the front side of which are vertical bearings *d*, for supporting a vertical cutter-shaft, *e*. At the foot of this shaft is the cutter cylinder or head *f*, which may be provided with any suitable peripheral cutters or cutting-edges. The cutter-head shown in the drawing is provided with radial cutter-blades *g*, held in place by taper screw-pins *i*, the screws holding the blades firmly in position, but allowing each to be removed for repair or replacement, and to be adjusted in position to properly present the cutting-edge. At the bottom of the cutter-cylinder is a flange or lip, *k*, against which the corner of the sole-edge bears, to prevent the formation of a lip or burr upon the sole-corners. The cutter-shaft *e* is driven by any suitable power, it being shown as carrying a pulley, *l*, belted to a pulley, *m*, on the driving-shaft *n* by a belt, *o*, passing around these pulleys and guide-pulleys *p*. Directly beneath the cutter-cylinder is the guide and feed-wheel *q*, which is mounted on the top of a vertical shaft, *r*, journaled in suitable stationary bearings *s*. The shaft *r* is shown as carrying a beveled gear, *b*, meshing into and driven by a beveled pinion, *u*, on a horizontal shaft, *v*, said shaft *v* carrying a pulley, *w*, by which and a suitable connection with the driving-shaft *n* the guide-wheel shaft *r* is driven, the rotation of the guide-wheel being in a direction opposite to the rotation of the cutter-cylinder above it. The guide-wheel is of greater diameter than the cutter-cylinder *f*, thereby forming a flange, *x*, that extends beyond the flange *k* of the cutter-cylinder; but the axis of the cutter-cylinder and the axis of the guide-wheel are not in the same line, the respective shafts being so journaled that the axis of the guide-wheel is a little in rear of or near one side of the axis of the cutter-cylinder shaft. The flange of the guide-wheel and the flange of the cutter-cylinder are in or nearly in the same horizontal plane, and in presenting the sole-edge to the action of the cutters the shoe is held with the tread-face of the sole uppermost, the top of the sole, or the surface adjacent to the upper, being held down upon the flange of the guide-wheel, in which position the flange, of course, extends into the groove formed by the juncture of the shoe upper and sole.

The respective parts being thus constructed and arranged, the presentation of the shoe to the guide-wheel on one side of the wheel will leave the edge of the sole out of contact with the rotary cutting-edges, enabling the operator to carefully bring the shoe to position before the cutters begin to act. The tendency

of the feed-wheel is to move the shoe forward, and as the operator turns the shoe so as to present it to the front part of the feed-wheel, the lessening projection of the feed-wheel flange beyond the periphery of the cutter-cylinder brings the cutters into action, and the operator has then simply to press the sole-edge against the cutter-cylinder, and down to the flanges *k x*, and to guide it and turn it by hand as the feed-wheel moves forward, always keeping the sole-edge presented to the same part of the cutter-wheel until the whole perimeter of the sole-edge is trimmed. In this operation the projecting edge of the guide-wheel rests against the upper, and the sole-edge is, therefore, trimmed uniformly, with relation to the upper. The sole-edge may be more or less trimmed by presenting the edge to different parts of the front of the guide-wheel; but I prefer to first present the edge to the side of the wheel, and to then gradually turn the shoe, holding it to the front of the wheel, and to vary the extent of cut, or the relation of the trimmed edge to the shoe-upper, by mounting the guide-wheel in a slide-frame, *y*, the position of which may be varied by adjusting the screw *z*, turning in nut-threaded projections a^2 b^2, one extending from the slide *y* and the other from the upright *c*.

It will be obvious that by varying the position of the slide the eccentricity of the cutter-cylinder *f* and guide-wheel *q* may be more or less varied. To set the guide-wheel so that the plane of its upper surface may be varied with relation to the plane of the bottom surface of the cutter-cylinder, the bearings *s* may form part of an arm, c^2, made movable vertically with relation to the slide *y*, the arm being pressed up by a spring, d^2, and confined in position by a clamp, e^2, acted upon by a screw, f^2.

Upon the same frame, *a*, carrying the mechanism thus described, may be journaled the shafts of other trimming or burnishing wheels g^2, belted to and operated from the same driving-shaft *n;* but my invention relates wholly to the organization I have described in detail. The cutter-cylinder must have, of course, a positive rotary movement; but the eccentric guide-wheel may be simply a loose or friction wheel; or the two shafts *e r* and wheels may be concentric, and both, or only the cutter-cylinder, be positively rotated.

The cutter-head that I prefer is shown enlarged in Figs. 4, 5, and 6. Each cutter is held in a slot, h^2, of the cutter-head by a taper screw-pin, *i*, said pin extending through a cap-plate, i^2, and the stock, and having at its head a taper form, as seen at k^2, and at its outer end a screw-thread, l^2, and a nut, m^2, the cutter being held tightly in position in the slot by turning up the nut, the tapered head having on one side a flat face that jams up squarely against the flat face of the cutter. The cap i^2 has at its edge the flange *k*, held in place by screws o^2.

I claim—

1. In combination with the cutter-cylinder, the guide-wheel *q*, extending beyond the periphery of the cutter-cylinder, and acting to present the sole-edge to the cutters, and to gage the cut, substantially as described.

2. In combination with the cutter-cylinder, the wheel *q*, having a positive rotary motion opposite to the rotation of the cutter-cylinder, substantially as described.

3. In combination with the cutter-cylinder, the guide-wheel *q*, having a perimeter eccentric to the perimeter of the cutter-cylinder, substantially as and for the purpose described.

4. The bearings *s*, having provision for horizontal adjustment with respect to the cutter-cylinder, for the purpose of varying the eccentricity of the guide-wheel relatively to such cutter.

5. The cutter-cylinder *f*, combined with the guide-wheel *q*, having provision both for vertical adjustment and for horizontal adjustment, substantially as described.

6. The cutter-head formed with the cutters held in the slots h^2 by the taper screw-pins *i*, substantially as shown and described.

LEVI W. BAKER.

Witnesses:

M. W. FROTHINGHAM,

L. H. LATIMER.