3 Sheets—Sheet 1.

R. GLOVER.

Machine for Shaping Counters or Heel-Stiffeners for Boots and Shoes.

No. 212,923 Patented Mar. 4, 1879.

Fig. 1.

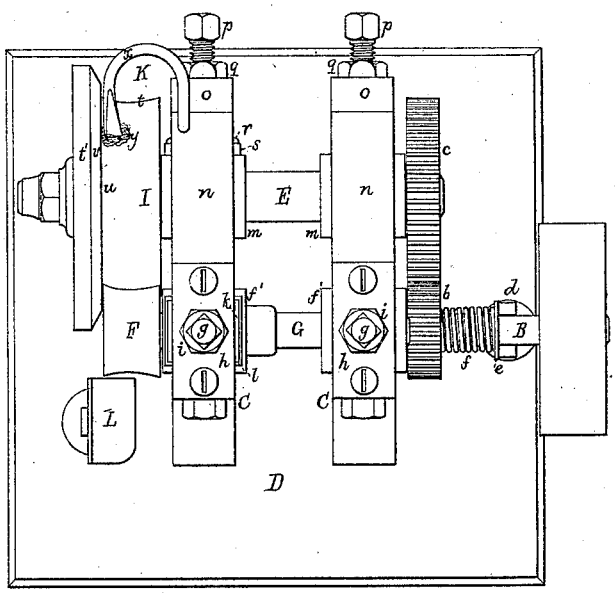
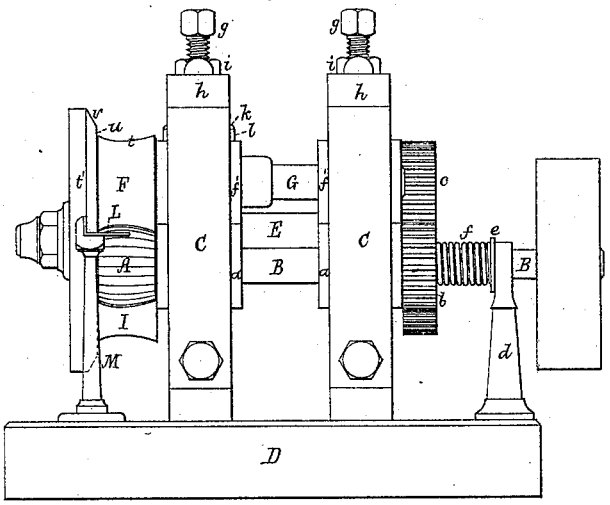


Fig. 2.



Witnesses.
S. N. Piper
G. G. Richardson

Inventor.
Robert Glover.
by attorney.
R. H. Eddy

R. GLOVER.

Machine for Shaping Counters or Heel-Stiffeners for Boots and Shoes.

No. 212,923 **Patented Mar. 4, 1879.**

Fig. 3.

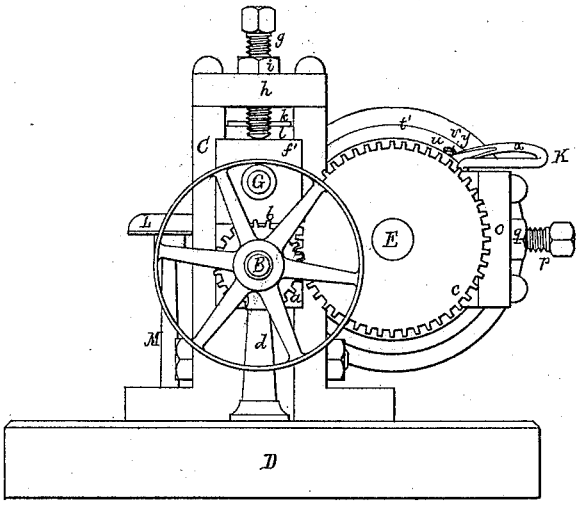
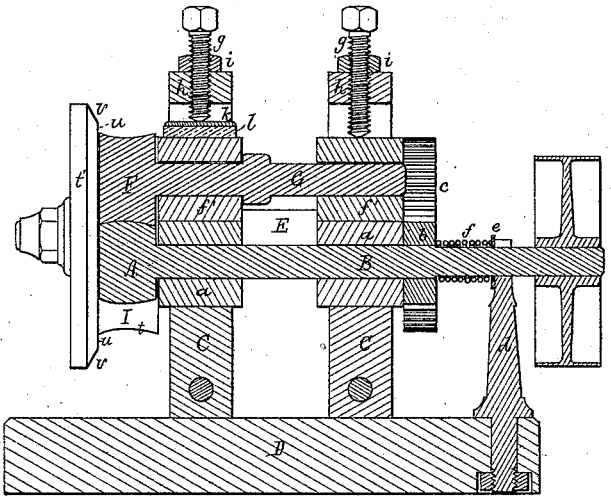


Fig. 5.



Witnesses.
S. N. Piper
G. G. Reichardson

Inventor.
Robert Glover
by attorney.
R. H. Eaton

3 Sheets—Sheet 3.

R. GLOVER.

Machine for Shaping Counters or Heel-Stiffeners for Boots and Shoes.

No. 212,923 **Patented Mar. 4, 1879.**

Fig. 4.

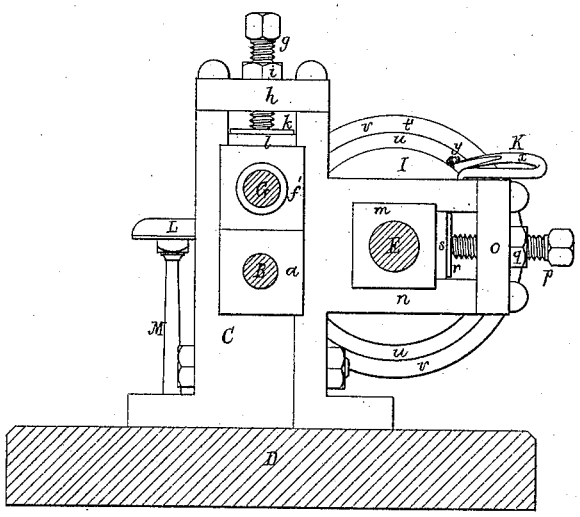


Fig. 7.

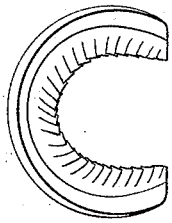


Fig. 8.

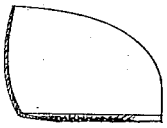


Fig. 9

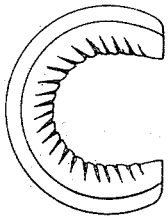
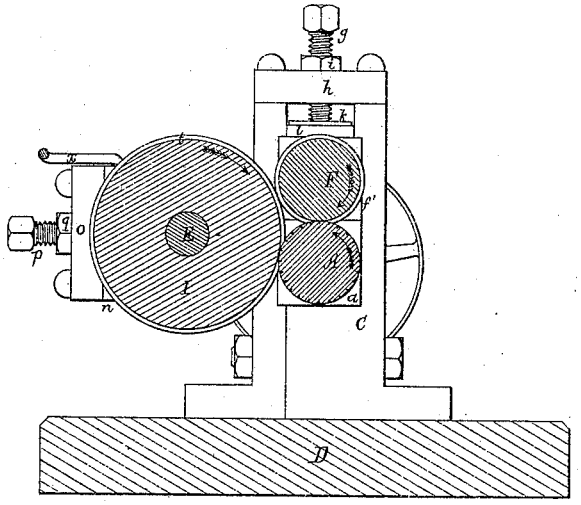


Fig. 6



Witnesses.
S. N. Piper
G. G. Richardson

Inventor.
Robert Glover.
by attorney.
R. H. Eddy

UNITED STATES PATENT OFFICE.

ROBERT GLOVER, OF LEOMINSTER, ASSIGNOR TO NAHUM HARWOOD, OF SAME PLACE, AND JOSEPH A. HARWOOD, OF LITTLETON, MASS.

IMPROVEMENT IN MACHINES FOR SHAPING COUNTER OR HEEL STIFFENERS FOR BOOTS AND SHOES.

Specification forming part of Letters Patent No. **212,923**, dated March 4, 1879; application filed November 4, 1878.

To all whom it may concern:

Be it known that I, ROBERT GLOVER, of Leominster, of the county of Worcester and State of Massachusetts, have invented a new and useful Improvement in Machinery for Shaping Counters or Heel-Stiffeners for Boots or Shoes; and do hereby declare the same to be described in the following specification and represented in the accompanying drawings, of which—

Figure 1 is a top view, Fig. 2 a front elevation, Fig. 3 an end view, and Fig. 4 is a central section, of a machine containing my invention. Fig. 5 is a vertical and longitudinal section taken through the rotary former and the concave roller over it, and their shafts. Fig. 6 is a vertical and transverse section taken through the rotary former, the lateral bender, and the longitudinal bender and flanger, to be hereinafter described.

In the drawings, the former is represented at A, it being a conoidal frustum, or an approximation thereto, and having its periphery scored or grooved transversely, as shown. It is fixed on a shaft, B, supported in bearings *a a*, in two standards, C C, erected on a base, D. The said shaft is provided with a gear, *b*, to engage with another and larger gear, *c*, fixed on another shaft, E, arranged as shown. Between the gear *b* and a furcated post, *d*, arranged as shown, are a washer, *e*, and a helical spring, *f*, they being arranged concentrically on the shaft B. The spring serves to force the former A toward the shoulder of the longitudinal bender and flanger, and to admit of the said former moving to accommodate itself to the thickness of the counter-blank. Over the former A is the transverse bender F, which is a roller curved concavely in its periphery, to correspond with the transverse convex curve of the periphery of the said former A. This roller F is fixed to a shaft, G, arranged in bearings *f' f'*, that rest on the bearings *a a*. Screws *g g* screw down in and through the caps *h h* of the standards, and are provided with set-nuts *i i*, arranged as shown. The front screw, or that next the bender F, steps upon a metallic plate, *k*, between which and the bearing *f'* beneath it is an elastic cushion or plate, *l*, of vulcanized rubber. Such plates, or "spring," as it may be termed, serves to enable the bender to move up from the former A, to accommodate itself to the thickness of the counter-blank. The other screw steps on the top of the upper bearing or shaft-box immediately under it, such upper bearing, or the part of the shaft that is within it, being formed so as to admit of the requisite vertical play of the shaft and the bender. In front of the former A and the bender F is the longitudinal bender and flanger I, which is a roller. It is fixed on the shaft E, supported in bearings *m m*, arranged to slide horizontally between projections *n n* from each of the standards. Each vertical pair of such projections is provided with a cap, *o*, fastened to it by screws. Through these caps screws *p p*, provided with set-screws *q q*, are screwed, one of such screws, or that next the gear *c*, being stepped against the bearing next adjacent to it. The other screw is stepped against a metallic plate, *r*, between which and the next contiguous bearing is a cushion or elastic plate, *s*, of rubber, which allows the roller I to move away from the former A, to accommodate itself to the varying thickness of the counter-blank while the latter may be passing between the rollers. The roller I has its periphery *t* concave transversely, to correspond with the transverse convexity of the former A, and, besides, it has a flange, *t'*, projecting from its outer end, such flange being formed, next the roller, with a shoulder, *u*, and a conic frustum, *v*, which are arranged with or lap on the outer ends of the former A and the bender F, in manner as shown. There is applied to the periphery of the roller I and to the shoulder *u* a lubricator, K, consisting of a curved arm, *x*, and mass, *y*, of cotton-waste, fixed thereto at one end thereof, the said arm, at its other end, being fastened to one of the projections *n*, hereinbefore referred to. When the machine may be in operation the mass *y* is to be saturated with oil, and is to apply it to the roller I and its shoulder as they may revolve. A flanged gage, L, formed and arranged as shown, and supported by a post, M, serves to sustain the blank and guide it to the rollers.

The former A and the roller I being put in revolution in the direction denoted by the arrows marked on them, a counter-blank, on being placed on the gage and inserted end fore-

most between the said former and the bender F, will be seized by them and advanced between them against the periphery of the conic frustum *v*, which, as the blank may move forward, will bend its flange or lip portion downward and plait it. In passing between the former A and the bender F the blank, by them, will be bent or curved transversely. On meeting the roller I the blank will be bent down into the bite of the said roller and the former A, and by the said roller and former will be curved lengthwise about the said former, the plaited flange being also caused to pass between the shoulder *u* and the outer end of such former, whereby it will be compacted or condensed and smoothed, especially at and near its junction with the rest of the blank.

Fig. 7 is a top view, Fig. 8 a transverse section, and Fig. 9 a bottom view, of a counter as formed by the said machine.

What I claim as my invention is as follows, viz:

1. The combination of the lubricator with the longitudinal bender and flanger, arranged to operate with the former and the transverse bender, as set forth.

2. In a machine for forming counters, the flanged gage L, the former, the lateral bender, and the longitudinal bender and flanger, constructed, arranged, and applied substantially as set forth.

3. The lateral bender F and the flanged roller I, having their boxes provided with the springs *l s*, to admit of diametric movements of the said rollers with respect to the former A, in combination with the said former, having the spring *f*, adapted to admit of and effect endwise movements of the said former relatively to the flange of the roller I, as set forth, such springs being to enable the rollers to accommodate themselves to the thickness of the body and flange parts of a counter-blank while passing between or being acted on by them.

ROBERT GLOVER.

Witnesses:
R. H. EDDY,
S. N. PIPER.