2 Sheets—Sheet 1.

J. KIEFFER.

MACHINE FOR FORMING HEEL-STIFFENERS FOR BOOTS AND SHOES.

No. 177,338. Patented May 16, 1876.

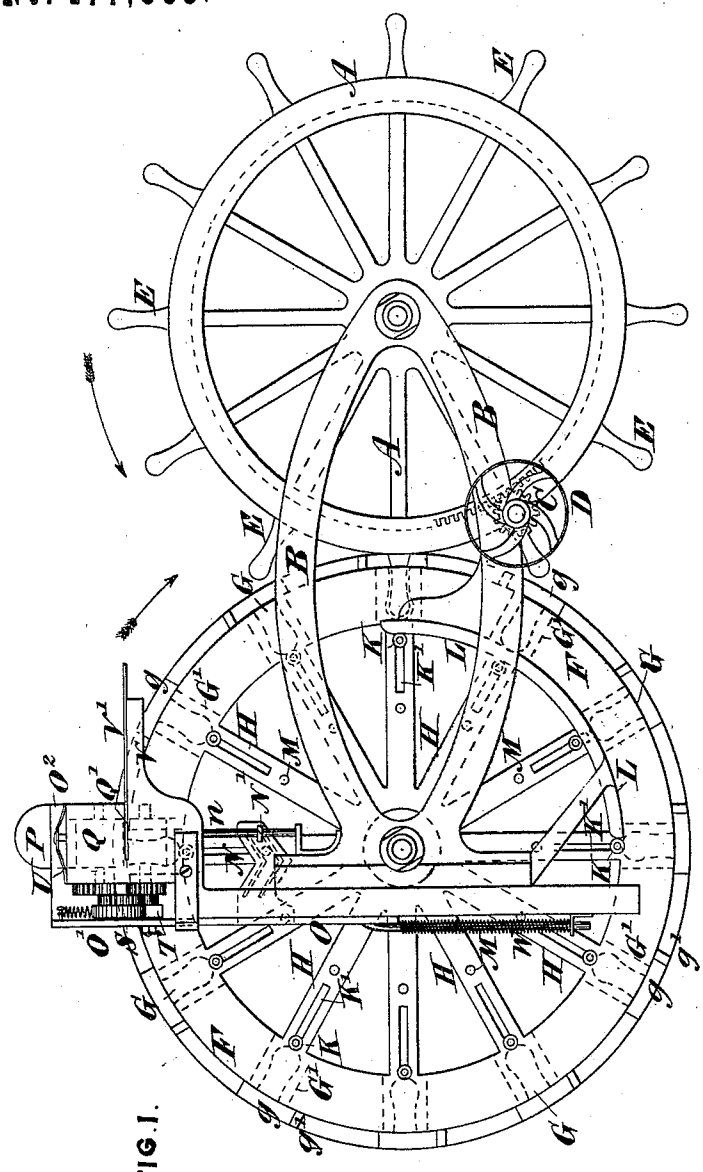

FIG. 1.

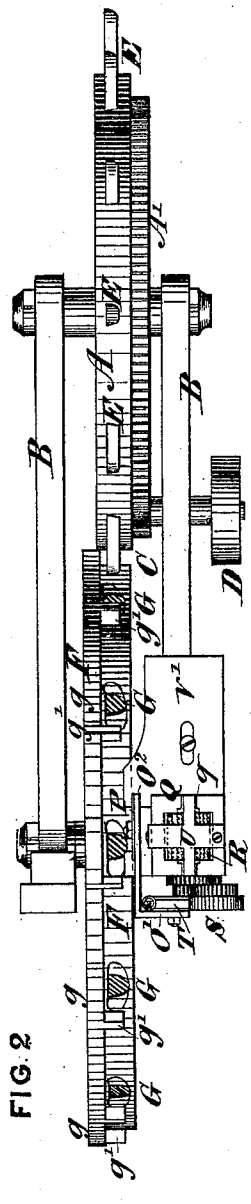

FIG. 2.

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2 Sheets—Sheet 2.

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FIG. 5

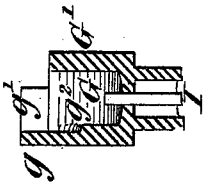


FIG. 6.

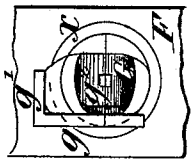


FIG. 7.

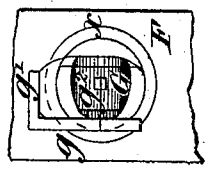


FIG. 4

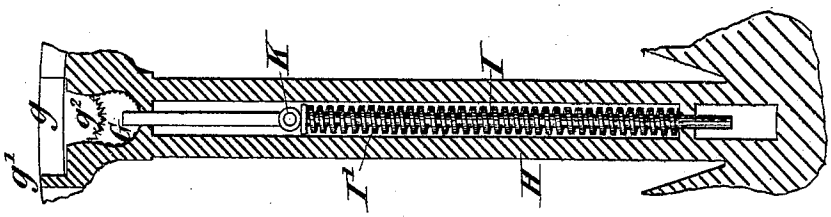
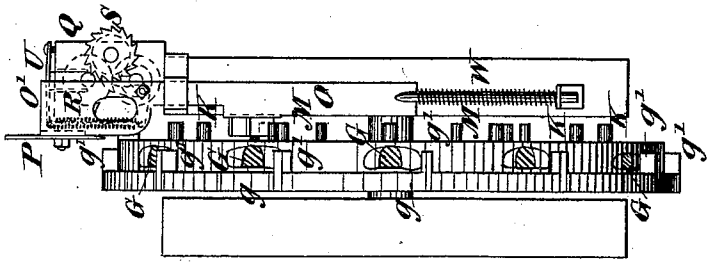


FIG. 3



Witnesses

W. A. Flynn

Hector Champagne

J. Kieffer

Inventor

UNITED STATES PATENT OFFICE.

JOSEPH KIEFFER, OF MONTREAL, CANADA.

IMPROVEMENT IN MACHINES FOR FORMING HEEL-STIFFENERS FOR BOOTS AND SHOES.

Specification forming part of Letters Patent No. **177,338**, dated May 16, 1876; application filed April 1, 1876.

To all whom it may concern:

Be it known that I, JOSEPH KIEFFER, of the city of Montreal, in the district of Montreal and Province of Quebec, Canada, have invented certain new and useful Improvements in Apparatus for Forming Heel-Counters; and I do hereby declare that the following is a full, clear, and exact description of the same.

By my machine a heel-counter, or stiffening-piece for the heels of boots and shoes, perfectly formed and ready for use, is produced at one operation from the strip of material, my invention consisting, mainly, in the arrangement and construction of a revolving wheel carrying molds, and being rotated by means of another wheel furnished with projecting teeth, which fit into these molds, and by doing so, form the counter; in devices for feeding to the wheel and cutting off from the strip the blank from which the counter is to be formed; and, lastly, in means for delivering the formed counter at the proper point. But, for fuller comprehension of the same, reference must be had to the annexed drawings, in which—

Figure 1 is a side view of the apparatus. Fig. 2 is a plan view of the apparatus. Fig. 3 is a part end view of the apparatus. Fig. 4 is an enlarged section of the arm or spoke, showing a longitudinal section of the mold. Fig. 5 is a transverse section of the mold. Fig. 6 is a plan of the mold modified. Fig. 7 is a plan of the mold modified.

Similar letters of reference indicate like parts.

A is a wheel, having its spindle carried in proper bearings B, secured to any vertical frame, and being rotated by means of a pinion-wheel, C, mounted on the same shaft as the pulley, (driven by any usual power,) and gearing into a toothed wheel, A^1, secured on the wheel A. E E are teeth or molding-dies, projecting from the periphery of A, and arranged to successively enter recesses G formed in the periphery of the wheel F, which is also carried in the bearings B, and thereby to rotate it.

Although twelve of these teeth and corresponding recesses are shown in the drawings, it will be understood that I do not confine myself to this exact number, as it may be varied to suit circumstances.

If required, however, this wheel F may be driven by any arrangement of gearing which will make it revolve at the same speed as the wheel A.

These recesses G are, as shown more particularly in Fig. 5, formed in boxes G^1, placed at the ends of the slotted radial arms or spokes H, in which are arranged rods I, projecting through an aperture formed in their bottoms into the molds G, and pressed outward by springs I^1. Secured to these rods I, and at right angles to them so as to project through slots in the casing of the wheel F, are secured rollers K^1, which as the wheel is turned are kept pressed inward during a part of its revolution by the segment L, carried from the frame and bearings.

An eccentric or other device which will answer the same purpose may be, if desired, substituted for the segment L.

In the line of each spoke or arm H, and equidistant from the center, are arranged pins M projecting from the casing of the wheel F, and working in a cam-groove formed, as shown in Fig. 1, on the plate N, attached to the bar O, which thereby receives vertical movement, the rod *n* secured at both ends to the frame, and up and down which the ring N^1 slides, acting as a guide. The upper part of this bar is, as shown at O^1, widened, and has a piece, O^2, carried out at right angles to it, to which is secured the knife P, which, if desired, may be curved to suit any form of counter-blank. As shown in Figs. 1, 2, and 3, Q is a box secured to the upper part of the vertical frame, into which the strip of material from which the piece to form the counter is cut is fed through the slit Q^1. In this box Q are arranged rollers R R, having a roughened or toothed surface, the upper one of these being rotated by means of gears driven by a ratchet-wheel, S, actuated by a pawl, T, pivoted to O^1, and kept pressed against S by a suitable spring. U is a spring placed, as shown, above the box Q, and arranged to bear on movable side pieces *q* above the bearings of the wheel R, so that it may accommodate itself to any extra thickness of the material passing between them. V is the table carried out on

one side of the box Q, and V^1 a gage for the strip.

The construction and formation of the mold are clearly shown in Figs. 5, 6, and 7, by which it will be seen that on the periphery of the wheel is arranged a flange, *g*, at right angles to the direction in which the strip of material is fed, and transversely to this a flange, g^1, which is always, by the movement of the wheel, in rear of the mold proper G, and which carries along with it, and retains in place, the blank from which the counter is to be made.

The teeth E are made to correspond in contour exactly with the molds G, allowing only for the thickness of the material from which the counter is made, the side of the molds farthest from the feeding device being, as shown in Figs. 5, 6, and 7, nearly flat, and tapering toward the bottom, the tooth E having a corresponding taper toward the point on its outer side. On this side of the mold is formed a sinking or "upturn," g^2, deeply serrated at its lowest part, the whole of the inside surface of the mold being also slightly serrated or roughened.

The mold-boxes G^1 may, if desired, be made in two or more parts, secured together by elastic bands *x*, so as to yield and accommodate themselves to an extra thickness of material. (See Figs. 6 and 7.)

The operation of my invention is as follows: The wheel A is set in motion by the pinion C gearing into the wheel A^1, and the teeth E on its periphery, striking into the recesses G, turn the wheel F. The strip of material from which the counter-blank is to be cut is then inserted into the box Q through the slit Q^1, and, being caught by the rollers R R, is passed through them and onto the periphery of the wheel F, just above the mold-box G^1, until stopped by the flange *g*. These rollers R receive their motion from the ratchet-wheel S, rotated, by means of the pawl T, by the vertical movement of the bar O, actuated by the pins M, working in the cam-groove on the plate N. The counter-blank is cut off from the strip by the knife P, secured to the plate O^2, and receiving its downward motion from the spring W.

The counter-blank thus cut is then, by the revolution of the wheel F, brought round, so as to be struck into the mold G, and there formed into the perfect counter, as will be hereinafter more particularly described. The rod I is, of course, pressed inwardly by the action of the teeth E, and the roller K being caught by the segment L and held pressed back, the formed counter is kept in place in the mold G until the wheel F has revolved a certain distance, when the roller is released, and the force of the springs I^1 drives the rod I outward and pushes out the formed counter. As soon as the tooth E enters the recess or mold G it exercises a constant, steady pressure on the counter-blank, holding it against the sides of the mold, (still, however, allowing a certain amount of play,) and forms the sides of the counter, the serrated or roughened surface of the mold allowing the material to stretch. The serrated edge of the ledge or upturn g^2 makes, when the blank is brought against it, indents or wrinkles in that part of the material which is to form the upturned portion of the finished counter. As the tooth enters farther into the recess G it presses successively the parts of the material, corresponding more to the mold until, when it arrives at the bottom, it fits exactly, (allowing only for the thickness of the material,) and forms the rounded heel, at the same time flattening out the wrinkles or folds in the middle of the part which is turned over. The side portions of the turned-in part naturally follow the inclination or bending in of the middle, and receive the exact form of the mold.

It will, of course, be clearly understood that I do not confine myself to any particular shape of mold and corresponding contour of molding-die, as these may be varied to suit the shape of heel required. I, however, in all cases retain the upturn g^2, with its serrated edge.

Although I have shown the teeth or molding-dies E as mounted upon the periphery of a wheel or disk, (which will in most instances be found the best arrangement,) this may in some cases be varied, and the teeth be secured to a vertical or horizontal rack, or arranged to work somewhat in the manner of a planing-machine.

Having thus described my invention, what I claim is as follows:

1. In combination, the disk F, provided upon its periphery with molds or recesses, and disk A, carrying upon its peripheral surface teeth or molding-dies, all arranged as shown and described, and adapted to form counter-stiffeners, as set forth.

2. In a mold for a heel-counter, the ledge or upturn g^2, having serrated surface, as and for the purposes set forth.

3. In combination with the mold G, the flanges $g\,g^1$, as and for the purposes described.

4. In an apparatus for forming heel-counters, the formation of the molds in two or more parts, provided with bands *x*, as herein set forth.

5. In combination with the mold G and arm H, the rod I, springs I^1, rollers K, and segment L, as and for the purposes herein set forth.

6. In combination with the disk F, having recesses or molds formed in its periphery, the feeding device, consisting of the rollers R R, having roughened surfaces, one or both being hung in yielding bearings and driven by the rotation of the disk F, substantially as herein described.

7. In combination with the disk F and molds G, the knife P, operated by the rotation of the disk F, substantially as described.

Montreal, 29th day of March, A. D. 1876.

Witnesses: J. KIEFFER.

W. A. FLYNN,

HECTOR CHAMPAGNY.