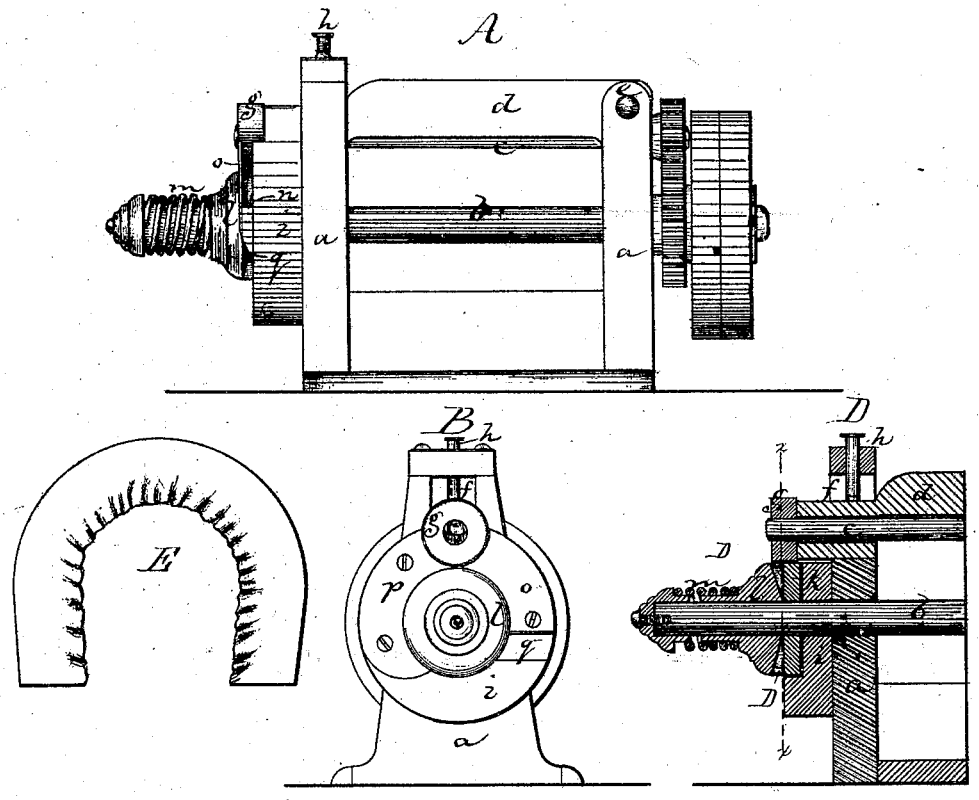
Holmes & Sargent,

Heel Machine.

NO. 113432. Patented Apr. 4. 1871.



Witnesses.
L. B. Hidden
M. W. Frothingham.

Sumner Holmes,
Joseph F. Sargent.
by their Attys.
Crosby & Gould

United States Patent Office.

SUMNER HOLMES, OF NORTH BROOKFIELD, AND JOSEPH F. SARGENT, OF MELROSE, MASSACHUSETTS.

Letters Patent No. 113,432, dated April 4, 1871.

IMPROVEMENT IN MACHINES FOR FORMING HEEL-RANDS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that we, SUMNER HOLMES, of North Brookfield, Worcester county, and JOSEPH F. SARGENT, of Melrose, Middlesex county, all in the State of Massachusetts, have invented jointly an Improved Machine for Forming Heel-Rands; and we do hereby declare that the following, taken in connection with the drawing which accompanies and forms part of this specification, is a description of our invention sufficient to enable those skilled in the art to practice it.

To fill the space at the edge of a boot-heel, between the top of the heel and the bottom of the sole, a thin narrow welt-strip, called a heel-rand or runner, is inserted. These heel-runners are made from straight strips of leather, generally about a half to three-quarters of an inch in width, an eighth to a quarter of an inch thick on the outer edge, and scarfed or chamfered to a feather edge, (at the inner edge;) and they are generally bent to a semicircular or heel-shaped form by hand during the process of affixing the heel. It is not only laborious and troublesome to thus form and apply the runners, but the bends are not uniform or permanent, and while, in heeling boots by hand, this want of uniformity and of rigidity is not particularly objectionable, because the hands of the workman can correct the evil as the nailing progresses, it is a serious obstacle in nailing heels by machine, because any displacement of the heel-runner cannot be easily corrected during the heeling operation.

In heeling boots and shoes by hand the top-lift is slightly tacked to the sole, and then the rand-forming strip is inserted between such lift and the sole, beginning at the center of the strip, (at the rear of the heel,) and then turning it and pressing it into place and tacking it down as fast as bent. Now, while this is very easy of accomplishment in building up heel-lifts by hand, it is impractical in machine-heeling, because the runner has to be nailed upon the top of the made-up heel before said heel is presented to the action of the heel-nailing mechanism.

Forming and applying these rands by hand for machine-nailed heels is a very slow and laborious operation; and our invention has reference to a construction or organization of mechanism by which welt-shaped or chamfered strips, cut to proper width and thickness, are converted into heel-rands or runners, uniform in shape, and so crimped and bent as to receive a permanent "set," so that each has merely to be located upon the heel to be nailed to insure its proper position and union with the heel and sole.

In carrying out our invention we prefer to employ, in connection with a toothed or peripherally-roughened feed-wheel, a guide-throat leading into and between the faces of two wheels or collars, the face of one of which wheels is perpendicular to the axis of the driving-shaft upon which it is mounted, while the face of the other wheel is angular thereto, the normal space between the two corresponding radially to a cross-section of the runner.

The outer or inclined wheel-face is fluted or grooved radially, and said wheel slides upon the shaft, and is pressed up to the other wheel by a strong spring.

Beyond the feed-wheel a peripheral guard extends partially around and covers the space between the edges of the wheels.

The straight blank to be formed into a wheel-rand or runner is preferably presented over a guide-plate and between suitable guide-walls to the biting action of the feed-wheel, and as soon as such wheel grasps the strip it crowds it down and feeds it along between the faces of the two wheels and the peripheral guard, the action of the wheels and guard not only causing the strip to assume the requisite semicircular shape, but producing (by the action of the groove-faced wheel) such crimps in the thin edge of the strip as will render the bend permanent, it being, of course, understood that the strip to be bent into shape is soft and moist or in temper when introduced to the action of the machine.

It is in this or an analogous or equivalent organization of mechanism that our invention consists.

The drawing represents a machine embodying the invention.

A shows the machine in side elevation.

B is an end view of it.

C is a section on the line *x x*.

D is a vertical central section of the feed and crimping-wheel.

E is a view of a heel-rand or runner.

a a denote two stands, in which is journaled a driving-shaft, *b*, which shaft is geared to and operates a feed-wheel shaft, *c*, journaled in the opposite ends of a lever or arm, *d*, which is hung at one end upon a pin, *e*, and at its other end works in a vertical opening, *f*, in the front stand, this opening being for the purpose of permitting adjustment of the feed-wheel *g* by means of a set-screw, *h*, which regulates the distance to which the arm or lever can rise.

The feed-wheel is at some distance from the front of the stand, and directly against the stand is a ring, *i*, within which is a wheel, *k*, on the driving-shaft *b*, the front face of the wheel being in line with the front face of the ring.

l denotes the other wheel on the shaft *b*, this wheel

sliding on the shaft and having a tapering or conical inner face, the wheel *l* being held up to the wheel *k* by the stress of a spring, *m*, and the relation of the two wheels being such that there is a radial angular space between the two, as seen at D.

n denotes a horizontal guide, leading from the outer edge of the ring *i* into the space between the wheels *k l;* and

o is a vertical guide-plate, the open space between the ring *i* and plate *o* and over the guide *n* forming the throat, through which the end of the strip is presented to the bite of the feed-wheel, and between the wheels *k* and *l*.

The strip is pressed down by the feed-wheel *g* into the angular space between the wheels *k l*, and under the gripe of the three wheels is fed along and passes under the circular guard-plate *p*, by which it is held between the wheels *k l*, so that, as it emerges at the open space beneath the wheels, it has acquired, from the action of the rolls, the desired shape seen at E, the bottom of the guide *n* being formed angling, as seen at *q*, fig. 1, to cause it to act as a stripper in case the runner feeds around to it. The action of the teeth of the crimping-wheel *l* corrugates the thin part of the leather strip, so that it readily bends, while the action of the bending and crimping mechanism together establishes the permanent set of the heel-runner or rand.

Instead of having the two wheels or collars *k l*, one fixed, and the other movable on one shaft, there may be two independent shafts in axial line, the ends (or the faces of wheels at the ends of the two shafts) being brought together, the same as are the two wheels *k l*, but with no axial or shaft-connection, the two shafts being geared together by a counter-shaft or a feed-wheel shaft.

This modification enables heel-rands of very small curvature to be made, as the central core or shaft between the wheels is dispensed with. We prefer, however, for general purposes, the specific construction shown, and it may be here observed that the essence of our invention consists in so combining together an edge feed-wheel and two face-feed wheels or feed-surfaces that the strips of leather, upon being presented, are automatically bent and crimped into form and automatically discharged from the machine, such an organization permitting the heel-rands or runners to be continuously or successively formed without any intervention of hand other than that necessary to present the strips in succession to the bite of the feed-wheel.

We claim—

1. For forming heel-rands or runners, a machine, substantially as described, which crimps the thin edge of the leather strip and bends the strip into form.

2. The combination with an edge-feed wheel of two face-wheels or collars, (between which the strip is received and fed,) a guard for keeping the strip in the curved path, and a stripper for releasing the formed runner, all substantially as shown and described.

3. The guide piece *n*, provided with an angling under-side, to deflect and strip the rand after it has been crimped.

4. The combination, with a feeding mechanism composed of a throat or guide and feed-wheels, of bending and crimping-wheels, substantially as described.

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Witnesses:
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