S. M. RICHARDSON.
Boot and Shoe Heels.

No. 217,485. Patented July 15, 1879.

Fig: 1.

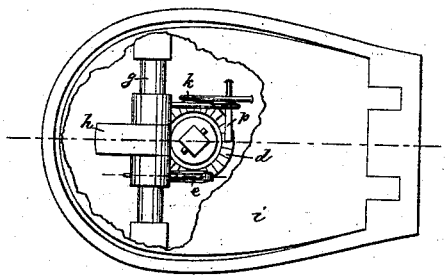


Fig: 2.

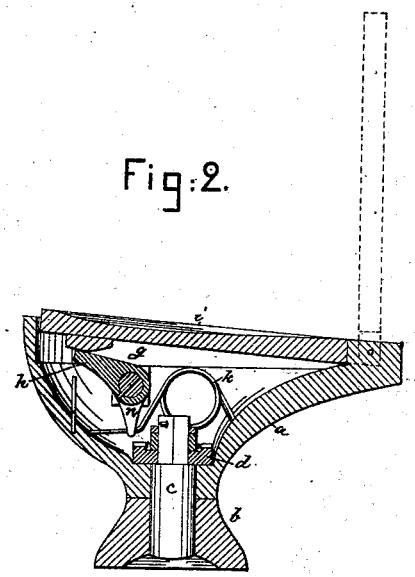
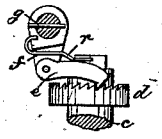


Fig: 3.



Witnesses.
L. F. Connor.
N. E. Whitney.

Inventor.
Samuel M. Richardson
by Crosby & Gregory Attys

UNITED STATES PATENT OFFICE.

SAMUEL M. RICHARDSON, OF BOSTON, MASSACHUSETTS, ASSIGNOR OF ONE-HALF HIS RIGHT TO ALBERT T. STAHL, OF SAME PLACE.

IMPROVEMENT IN BOOT AND SHOE HEELS.

Specification forming part of Letters Patent No. **217,485**, dated July 15, 1879; application filed September 2, 1878.

To all whom it may concern:

Be it known that I, SAMUEL M. RICHARDSON, of Boston, county of Suffolk, State of Massachusetts, have invented an Improvement in Boots and Shoes, of which the following description, in connection with the drawings forming a part thereof, is a specification.

This invention relates and has special reference to the heels of boots and shoes; and consists in the combination, with a heel-tip, of mechanism to positively and automatically rotate it.

Figure 1 represents, in top view, a heel provided with my improvements; Fig. 2, a longitudinal section thereof; and Fig. 3, a detail of the heel-tip-rotating devices.

This heel is chiefly applicable to ladies' shoes having what are called "French heels," and the completed heel will be attached to the shoe in any usual way. The heel-shell *a*, of any usual shape, size, and material, is made hollow (see Fig. 2) to receive within it the mechanism for rotating the heel-tip *b*, of leather, metal, rubber, wood, rawhide, or of suitable moldable material or their compounds, or leather covered with some harder material.

This heel-tip is attached to a spindle, *c*, provided, as shown in this instance, with a ratchet, *d*, the teeth of which are engaged by a pawl, *e*, on an arm, *f*, of a shaft, *g*, supported by suitable bearings in the shell *a*. This shaft *g* has an arm, *h*, which, as shown in this instance, is depressed by the plate *i*, or it may be the sole end, each time the weight of the person is transferred to the shoe, such plate then descending and causing the pawl to move forward over the ratchet. On the removal of weight from the shoe or part *i* the spring *k* acts upon arm *n* and rotates the shaft *g*, so that the pawl engaged with the ratchet turns it, the spindle, and tip *b* as the foot is lifted from the ground or floor.

It will be noticed that the tip is moved as the foot is lifted.

This invention automatically rotates the heel, thereby continuously bringing a new portion of said heel to the outer side of the shoe, so that the heel will wear evenly and squarely.

The extent of rotation of the heel-tip will depend upon the extent of movement of the shaft *g* and the size of the ratchet-teeth.

The plate *i* is shown as pivoted upon the heel part; but instead it may be hinged or flexibly connected thereto, so as to move up and down and actuate the shaft *g*.

The shape of the pawl and ratchet may be variously changed without departing from my invention; and instead of the said pawl and ratchet any other well-known or equivalent device may be employed to automatically rotate the heel-tip.

The detent *p* prevents the heel-tip from rotating when the pawl is moved forward, and a spring, *r*, holds the pawl down upon the ratchet.

The spring *k* is made of sufficient strength to turn the shaft *g* and lift the plate *i* when the foot is lifted from the ground or floor.

I claim—

1. A heel provided with an independent tip, in combination wtih mechanism to progressively rotate the tip when the heel is lifted from the ground or floor, substantially as described.

2. The heel-tip, connected spindle and ratchet, and pawl and rock-shaft, combined with a plate and a spring to operate the rock-shaft in opposite directions to rotate the tip automatically, substantially as described.

3. As an improved article of manufacture, a heel provided with an automatically-rotated tip, to operate substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

SAMUEL M. RICHARDSON.

Witnesses:

G. W. GREGORY,

L. F. CONNOR.