

(No Model.)

E. S. SMITH.
HEEL PROTECTOR.

No. 352,717.

Patented Nov. 16, 1886.

Fig. 1

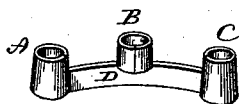


Fig. 2

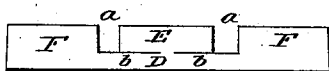


Fig. 6



Fig. 3

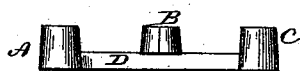


Fig. 7

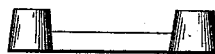


Fig. 4

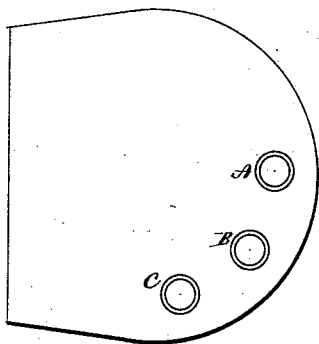
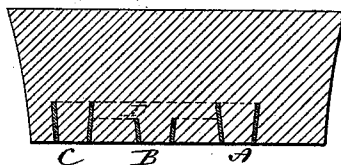


Fig. 5



Witnesses
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UNITED STATES PATENT OFFICE.

EDWARD S. SMITH, OF WATERBURY, CONNECTICUT.

HEEL-PROTECTOR.

SPECIFICATION forming part of Letters Patent No. 352,717, dated November 16, 1886.

Application filed September 27, 1886. Serial No. 214,610. (No model.)

To all whom it may concern:

Be it known that I, EDWARD S. SMITH, of Waterbury, in the county of New Haven and State of Connecticut, have invented a new Improvement in Heel Protectors; and I do hereby declare the following, when taken in connection with accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a perspective view of the protector complete; Fig. 2, the blank from which the protector is formed; Fig. 3, a vertical central section through the protector; Fig. 4, an under side view of the face of the heel; Fig. 5, a section of the heel cutting through the several studs, and showing the connecting-bar; Figs. 6 and 7, modifications.

This invention relates to an improvement in the metallic device to be introduced in the heels of india-rubber boots, or heels made from any composition which is molded into the heel formed in a plastic state, so that the protector may be introduced in the process of molding, particularly to that class of protectors which consist of several metal studs connected by a bar, the bar being embedded in the heel, while the studs project to the outer surface. Heretofore this class of protectors have been made from cast metal, consisting of several studs connected by a bar. In molding the heel great pressure is necessarily brought upon the composition, and this pressure brings irregular strain upon the bar and studs, and because of the non-elastic or non-yielding character of the metal the bars frequently break, causing a displacement of the studs, and consequently destroying the heels, so that a great loss occurs in the employment of such protectors.

The object of my invention is to construct a protector from wrought or sheet metal, as steel, which will be not only yielding and stronger than hard metal, and overcome the objections before mentioned, but will be very much lighter than the cast metal can be.

I represent the protector as made with three studs, A B C, connected by a continuous bar, D.

In producing this protector a blank is cut from steel or other suitable sheet metal, as seen

in Fig. 2. Distant from each end of the strip equal to the circumference of the stud to be produced I cut a slit or notch, *a*, from the outer edge of the strip toward the opposite edge halfway across, more or less, and from the bottom of each of these notches longitudinally, and preferably in the same line, I cut slits *b*, (see Fig. 2,) the two slits extending nearly to the center, but so as to leave the central portion, E, connected to the bar D, the part E being substantially half the width of the strip, more or less, while the two end portions, F F, are of the full width of the strip. I now bend each end F into tubular form, as seen in Figs. 1 and 3, and preferably of larger diameter at the bar end than at the opposite end, as indicated in Fig. 3. The central portion, E, I bend from each end into tubular form, as also indicated in Figs. 1 and 3. Thus bending the parts of the strip forms the tubular stud A at one end of the bar and the tubular stud C at the other end of the bar in full length, while the intermediate stud, B, is as much shorter than the studs A C as the depth of the bar D. Preferably the intermediate stud, B, is made of frustum-of-cone shape, as shown. The axis of the several studs should be substantially parallel with the plane of the bar.

The protector is introduced in the process of molding the heel, so that the composition of the heel surrounds the bar D and fills the respective studs, as seen in Fig. 5. The embedding of the bar within the heel, leaving the ends of the studs exposed upon the face of the heel, as seen in Fig. 4, firmly secures the studs in place. The conical shape of the studs also aids in the security of the protector.

If desired, there may be more than three studs, as indicated in Fig. 6, where four studs are shown, the studs bent into tubular form from metal integral with the connecting-bar; or, if desired, two studs only may be employed, as seen in Fig. 7, these two tubular studs connected by the bar in the same manner.

From the foregoing it will be understood that I do not claim, broadly, a metal heel-protector consisting of several studs connected by a bar at their inner end; but

What I do claim is—

1. The herein-described heel-protector made

rom sheet metal, consisting of a bar, D, having several studs as an integral part thereof, each bent into tubular shape, substantially as specified.

2. The herein-described heel-protector made from sheet metal, and consisting of the bar D, with three or more studs made as an integral part of the bar, the studs A C at the extreme ends of the bar, bent into tubular shape and longer than the depth of the bar, so that said

tubular studs will project beyond the edge of the bar, the intermediate studs, also bent into tubular shape, but shorter than the studs at the ends of the bar, the axis of the several studs being at substantially right angles to the bar, substantially as specified.

EDWARD S. SMITH.

Witnesses:

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