F. W. WHITCHER & C. F. RANDALL.

PROTECTOR FOR HEELS AND SOLES OF BOOTS AND SHOES.

APPLICATION FILED NOV. 16, 1899.

959,982. **Patented May 31, 1910.**

2 SHEETS—SHEET 1.

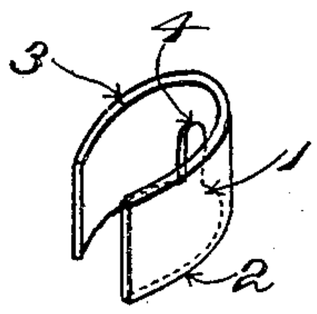


Fig. 1.

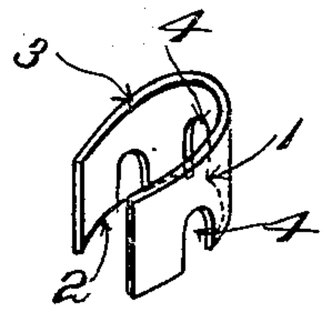


Fig. 2.

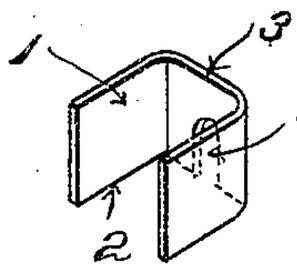


Fig. 3.

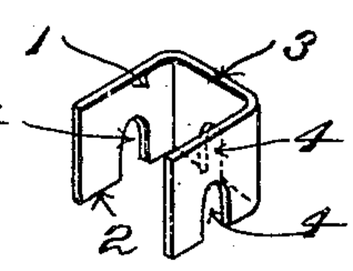


Fig. 4.

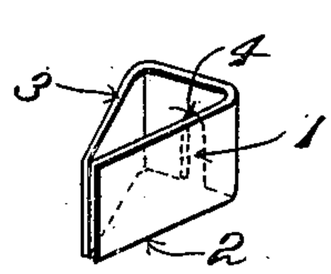


Fig. 5

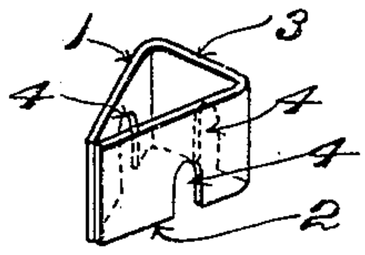
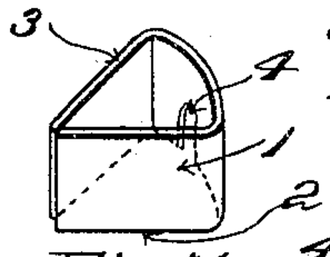


Fig. 6.



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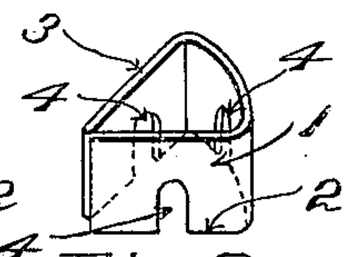

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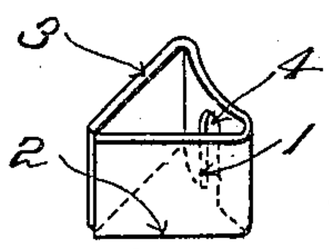


Fig. 9.

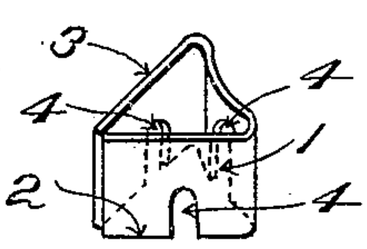


Fig. 10.

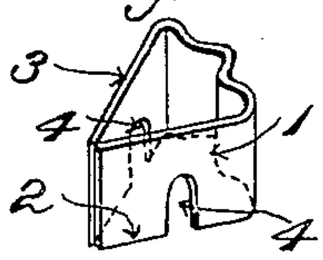


Fig. 11.

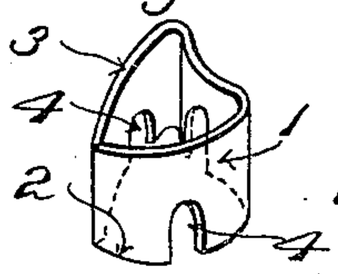


Fig. 12.

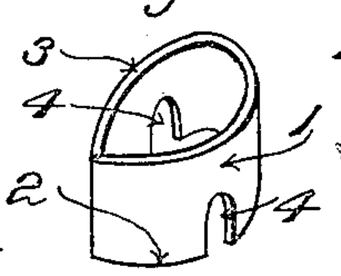
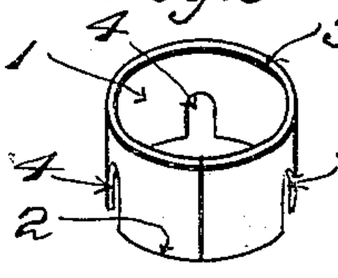


Fig. 13.



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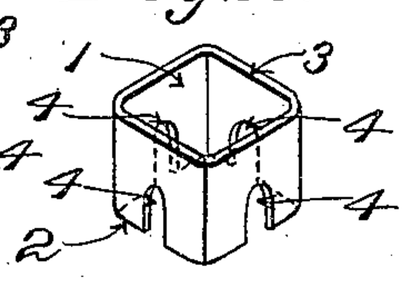

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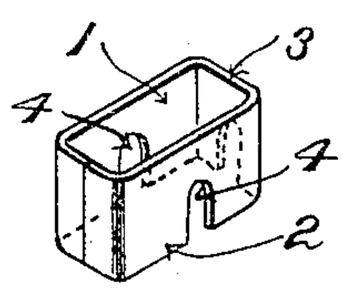

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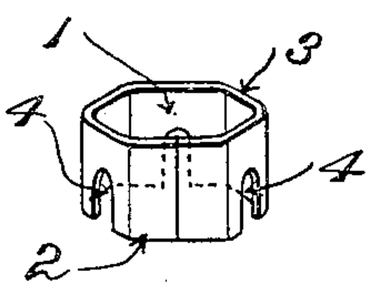

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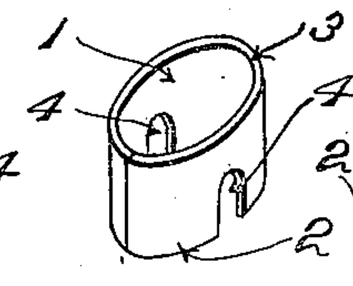

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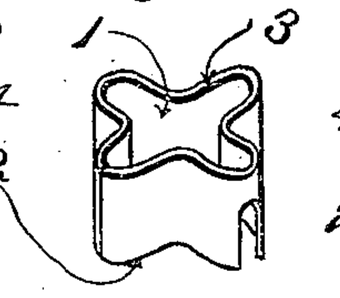

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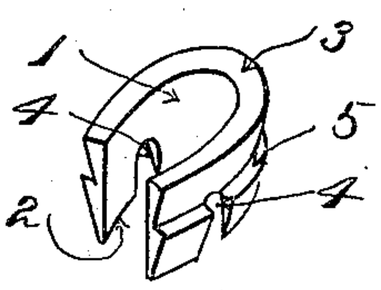

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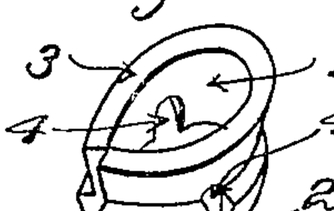

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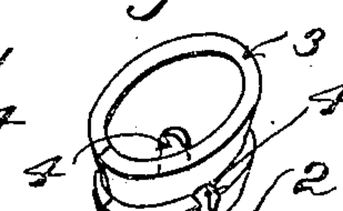

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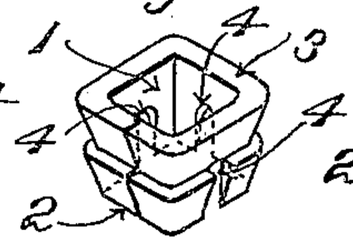

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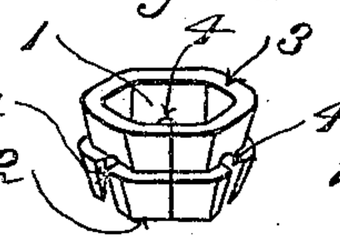
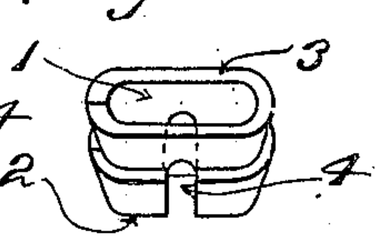


Fig. 24.



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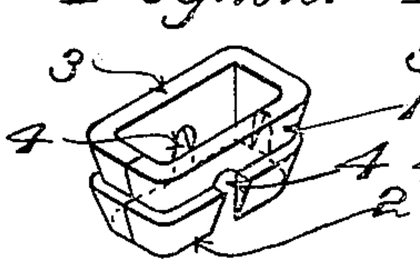

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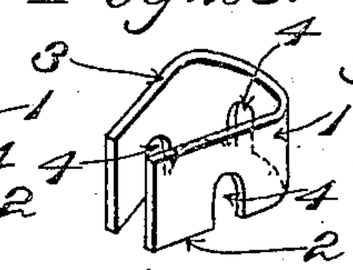
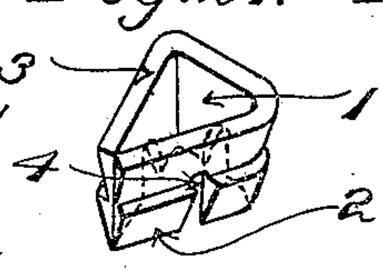


Fig. 28



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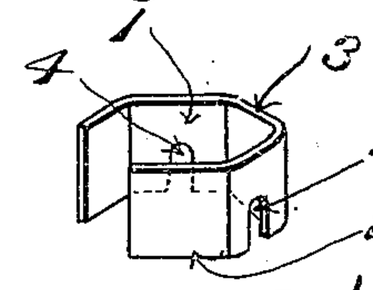

Fig. 29.

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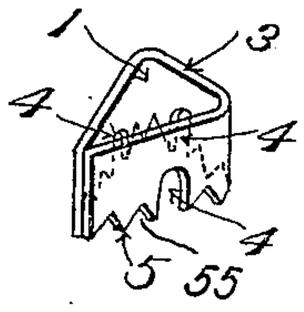
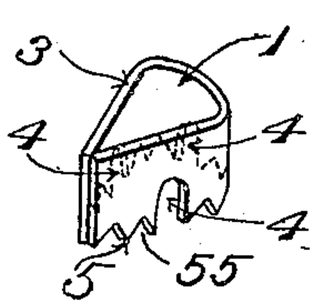


Fig. 30.



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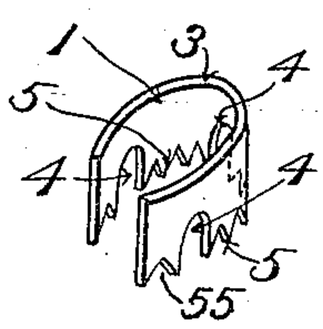
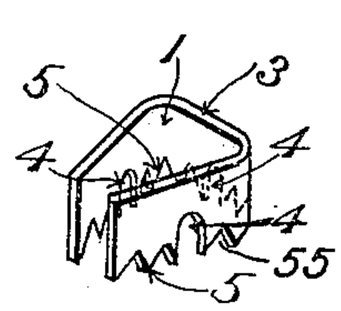


Fig. 32.



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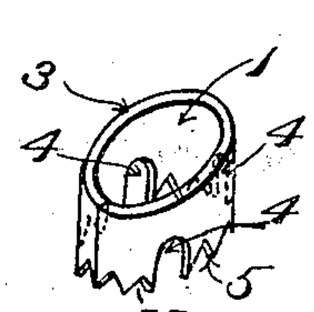


Fig. 34.

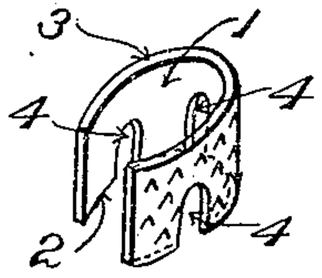


Fig. 35.

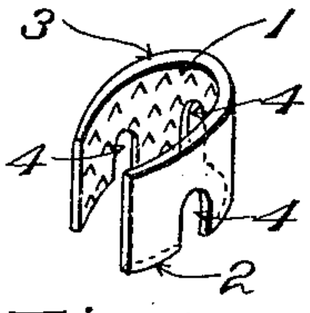


Fig. 36.

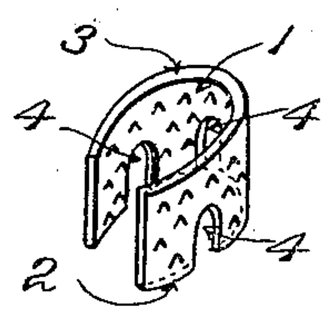


Fig. 37.

Fig. 38.

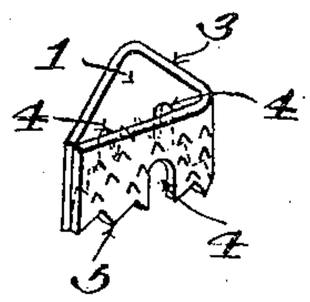
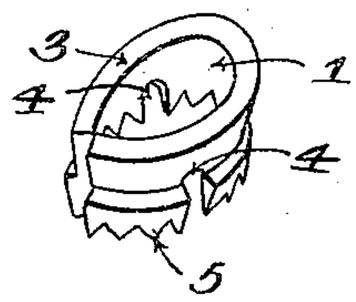


Fig. 39.



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UNITED STATES PATENT OFFICE.

FRANK W. WHITCHER AND CHARLES F. RANDALL, OF BOSTON, MASSACHUSETTS, ASSIGNORS, BY DIRECT AND MESNE ASSIGNMENTS, TO UNITED SHOE MACHINERY COMPANY, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

PROTECTOR FOR HEELS AND SOLES OF BOOTS AND SHOES.

959,982. Specification of Letters Patent. Patented May 31, 1910.

Application filed November 16, 1899. Serial No. 737,206.

To all whom it may concern:

Be it known that we, FRANK W. WHITCHER and CHARLES F. RANDALL, citizens of the United States, residing at Boston, in the county of Suffolk, State of Massachusetts, have invented a certain new and useful Improvement in Protectors for Heels and Soles of Boots and Shoes, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention relates to the reinforces which are applied to the heels and soles of boots and shoes for the purpose of retarding the wear thereof. These devices commonly are termed protectors.

More especially the invention relates to protectors of that class which are composed of strip-like material in various bent forms, either curved or angular, and applied by being driven edgewise into the heel or sole of a boot or shoe. In some instances, protectors of this class are of uniform thickness from edge to edge thereof, while in others one edge is reduced to facilitate the entrance thereof into a heel or sole and the other edge is of increased thickness to give a greater amount of substance and correspondingly reduce the rate of wearing down of the protector and of the heel or sole in which it is used. The present invention is equally applicable to each of these varieties.

In most cases, in practice, when protectors of this class are driven into a piece of stock, the entering edges thereof pass entirely through the said stock, thereby completely separating from each other the portions of stock between which the thickness of the protector comes to intervene. This results in more or less tendency, as the stock becomes dry, on the part of such portions to open away from the protector and release their hold on the latter, permitting it to loosen and to become dislodged sooner or later. Moreover it has been deemed impracticable heretofore to employ in actual practice protectors of this class in the form of complete inclosures, as for instance, circular ones, on account of the fact that the plug of stock which would be inclosed by a protector of such form when driven would be separated from the stock outside the protector, and would be liable to loosen and fall out of place, leaving the central space of the protector empty.

The said protectors are in practice frequently driven into the heels and soles of completed boots and shoes. It is an extensive practice, in addition, on the part of manufacturers, to introduce them into the top-lifts of heels, and into soles, before the said lifts or soles have been secured in place. One difficulty is experienced when the protectors are driven into the top-lifts and soles previous to the attachment of the latter to boots and shoes. That is to say, in being driven into a lift or sole, the protectors force portions of the leather to the under sides of the latter, producing on such side projections or bulges that tend to prevent the lift or sole from lying flatly and in perfect contact with the surface against which it is placed in the boot or shoe.

The objects of the invention are to obviate the foregoing drawbacks.

The invention consists in a protector of the class aforesaid, having the entering edge thereof notched as explained hereinafter with reference to the drawings. In a protector embodying our invention one or more deep notches or mouths extend from such edge part way across the width of the protector. These notches are narrow, as compared with the adjacent portions of the entering side of the protector, and are especially adapted, when the latter is driven into the stock to which it is applied for service, to leave intact or unsevered a similar number of corresponding necks or connecting portions of such stock joining together at an intermediate point or points of the protector the portions of the stock between which the protector intervenes. Thereby any tendency of the stock, when dry, to open away from the protector in such manner as to loosen the latter is obviated. Thereby, also, it is rendered practicable to employ in practice forms of protectors which completely, or almost completely inclose a plug of the said stock, inasmuch as the said plug remains connected with the remainder of the stock in a manner which renders it impossible for the same to fall

out. The specified form of notch or mouth does not interfere with the driving of the protector, as by tending to occasion deflection or distortion thereof, and it leaves substantially the full amount of material from the upper edge of the protector to the lower edge thereof, so that nearly the full wearing capacity of the protector remains until the whole height thereof has worn away. In some forms of the invention, the notches already referred to have adjacent the same other notches which are smaller. In all cases, the introduction of the protectors into the leather is facilitated and the tendency to cause the leather to bulge or project on the reverse face thereof is lessened or completely obviated.

In the accompanying drawings we have illustrated the invention embodied in protectors of a variety of shapes.

Figure 1 shows in isometric a horseshoe-shaped protector formed from a thin flat strip and having a single deep parallel-sided notch therein, the same being located in the rounded bend of the device. Fig. 2 shows a similar protector with three such notches, one in the said bend and one in each side or limb. Figs. 3 and 4 show similar views of a U-shaped protector having flat sides. Fig. 5 shows a triangular protector, having all the sides thereof flat, with a deep parallel-sided notch in one of such sides. Fig. 6 shows a similar protector with a similar notch in every side. Figs. 7 and 8 are views corresponding with Figs. 5 and 6, and showing a triangular protector with a convex side constituting the base of the triangle, the notch in Fig. 7 being in the said convex base. Figs. 9 and 10 are views also corresponding with Figs. 5 and 6, and showing a triangular protector with concave side constituting the base of the triangle, the notch in Fig. 9 being in the said concave base. Fig. 11 shows a triangular protector having a corrugated side constituting the base of the triangle, the invention being embodied therein. Fig. 12 shows a somewhat triangular protector with concave base and convex sides. Fig. 13 shows a protector approximately oval in shape. Fig. 14 shows a circular protector. Fig. 15 shows a square one. Fig. 16 shows one in the form of an oblong rectangle. Fig. 17 shows a hexagonal one. Fig. 18 shows an elliptical one. Fig. 19 shows a corrugated one. Figs. 20 to 27 show protectors similar in form, in plan, to certain of those shown in the preceding views, but of a different shape in cross-section as hereinafter described. Fig. 28 shows a protector of substantially U-shape, with rounded base and converging sides having the ends separated, formed of a thin flat band or strip. Fig. 29 shows a hexagonal one with separated ends, formed of a similar band or strip. Figs. 30 to 34 show forms each having notches of different depths. Figs. 35, 36, 37 and 38 show forms having burs upon the surfaces thereof. Fig. 39 shows a protector of the form represented in Fig. 21, with the addition of shallow notches in the entering edge thereof.

In every view of the drawings, the numeral 1 designates the body of the protector. In all the figures except Figs. 30 to 34 the entering edge is designated 2. In every view 3 is the wear-resisting edge of the protector.

The deep and narrow notches or mouths which are formed in the entering edges of the protectors are designated 4, 4. The precise number of the same in each protector is not material, one or more being formed therein, as preferred or as made advisable by the shape of the protector itself.

The protectors of Figs. 1 to 19 and 28 to 38 are formed of material of uniform thickness from edge to edge thereof. All of them, with the exception of those shown in Figs. 1 to 4, 28, 29, 32, 33, and 35 to 37, form complete inclosures which would separate plugs from the remainder of the stock into which driven, if the deep and narrow notches 4, 4, were not provided.

The various forms which are shown in Figs. 5 to 19 may be cut from the ends of suitable tubes, seamless or otherwise, or all the forms which have been referred to may be composed of strips cut to suitable length and bent into shape. When the protectors are cut from tubes, the latter may be rolled beforehand to the requisite cross-section, or the protectors may be given their final shape after being cut off, the notches preferably being formed in the ends of the tubes before the respective protectors are cut off. When material in strip form is employed, the notches will be formed in the strip itself before the latter is cut into the lengths that are required for the protectors themselves.

The horseshoe-shaped protector of Fig. 20 has a thick wear-receiving edge, a taper below the same, an intermediate ridge 5 to assist in retaining the protector in the stock into which it is driven, and a thin entering edge, our invention being embodied therein. Figs. 21 to 27 show protectors of similar cross-section and respectively oval, elliptical, square, hexagonal, flattish elongated, oblong rectangular, and triangular in plan, and all containing the deep notches or mouths. As will be apparent, all of these last forms, when driven, completely inclose plugs of stock which are connected with the stock outside the protectors by the necks extending through the notches. The protectors of Figs. 20 to 27 usually are formed of strip-material which is first given the required shape in cross-section, with the notches, and then is cut to length and bent into form.

Many other forms may be adopted in practice, in addition to those which are represented in these views.

We contemplate producing by casting or molding any or all of the various forms of protectors in which our invention may be embodied.

Figs. 30 to 34 38, and 39 show forms of protectors in which the deep parallel-sided notches 4 formed in the entering edges of the latter have adjacent the same more numerous, and shallower, notches 5, 5, 5, 5, the latter facilitating the driving of the protectors and obviating bulge or projection of the reverse face of the stock into which the same are driven.

Protectors of any or all the forms in which the invention is capable of being embodied may be roughened or otherwise constructed to prevent accidental loss of the protectors from the stock into which they have been driven. Figs. 35 and 38 show two of the foregoing forms with burs struck up on the exterior surface thereof. Fig. 36 shows the same with burs struck up on the interior surface thereof. Fig. 37 shows the same with burs on both surfaces.

We claim as our invention:—

1. A protector adapted to be driven edgewise into the wear-surface of the heels and soles of boots and shoes, consisting of strip-like material of substantially uniform width having the substantially uniform entering edge thereof composed of relatively wide sections adapted to cut their way into the leather into which the protector is driven, and having the said sections separated by one or more deep and relatively narrow mouths or notches to leave intact in the said leather a corresponding neck or necks joining together at an intermediate point or points the portions of leather that are separated by the said sections of the entering edge, substantially as described.

2. A protector adapted to be driven edgewise into the wear-surface of the heels and soles of boots and shoes, consisting of strip-like material of substantially uniform width in bent form, having the substantially uniform entering edge thereof composed of relatively wide sections adapted to cut their way into the leather into which the protector is driven, and having the said sections separated by one or more deep and relatively narrow mouths or notches to leave intact in the said leather a corresponding narrow neck or necks joining together at an intermediate point or points the portions of leather that are separated by the protector, substantially as described.

3. A protector adapted to be driven edgewise into the heels and soles of boots and shoes, of substantially uniform width and having the form of a complete inclosure, with the substantially uniform entering edge thereof composed of relatively wide sections adapted to cut their way into the leather into which the protector is driven, and having the said sections separated by one or more relatively narrow deep notches to leave intact in the said leather a corresponding neck or necks joining the portion of stock that is inclosed by the protector with the portion thereof surrounding the latter, substantially as described.

4. A protector adapted to be driven edgewise into the heels and soles of boots and shoes, and consisting of strip-like material of substantially uniform width having the substantially uniform entering edge thereof formed with the deep notch or notches which are narrow in proportion to the adjoining portions of the said entering edge and also having the shallow notches formed in the sections of said entering edge laterally adjacent said notch or notches as described and substantially as set forth.

5. A protector adapted to be driven edgewise into the wear-surface of the heels and soles of boots and shoes, and consisting of strip-like material of substantially uniform width in bent form, with the substantially uniform entering edge thereof composed of relative wide sections adapted to cut their way into the leather into which the protector is driven, having a relatively narrow slot or notch to leave intact in the said leather a corresponding neck and having one or both surfaces thereof provided with burs, substantially as described.

6. A protector adapted to be driven edgewise into the heels or soles of boots and shoes, consisting of strip-like material having a substantially uniform entering edge adapted to cut its way into the material of the heel or sole into which the protector is driven, and also having the said edge intersected by one or more relatively deep parallel-sided mouths or notches which are adapted to leave corresponding necks of the said material intact, and also are narrow in proportion to the adjoining sections of the entering edge, whereby the protector retains substantially its full wearing capacity across the notched portion of its width.

7. A protector adapted to be driven edgewise into the heels or soles of boots and shoes, consisting of strip-like material having the substantially uniform entering and wearing edges thereof parallel or substantially so with each other, and also having the said entering edge composed of wide sections which are separated by one or more relatively deep mouths or notches, narrow in proportion to the said sections of the entering edge, whereby the protector retains substantially its full wearing capacity from the wearing edge to the entering edge.

8. A protector adapted to be driven edgewise into the wear-surface of the heels and soles of boots and shoes, and consisting of strip-like material rigid vertically and having in the substantially uniform entering edge thereof one or more deep mouths or notches narrow in proportion to the laterally adjacent sections of the said edge.

9. A protector adapted to be driven edgewise into the wear-surface of the heels and soles of boots and shoes, and consisting of strip-like material having in the substantially uniform entering edge thereof one or more parallel-sided deep mouths or notches narrow in proportion to the laterally adjacent sections of the said edge.

In testimony whereof we affix our signatures, in presence of two witnesses.

FRANK W. WHITCHER.
CHAS. F. RANDALL.

Witnesses:
LEPINE HALL RICE,
EDITH J. ANDERSON.