

(No Model.)

2 Sheets—Sheet 1.

A. JUILLARD.
HORSESHOE.

No. 562,302.

Patented June 16, 1896.

Fig: 1

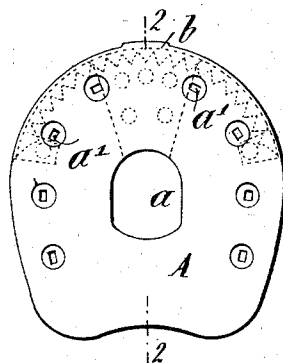


Fig: 2

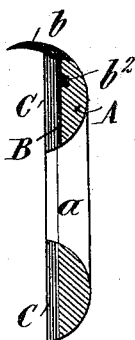


Fig: 3

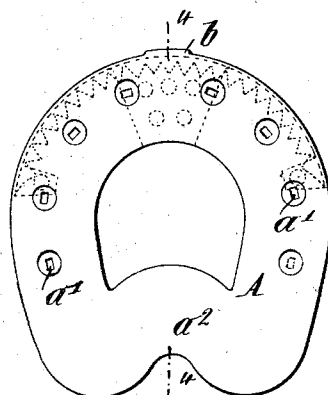


Fig: 4

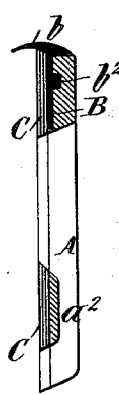


Fig: 1^{bio}

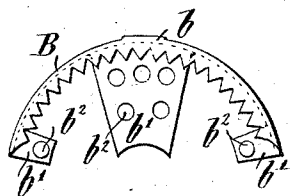


Fig: 2^{bio}

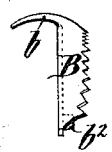


Fig: 3^{bio}

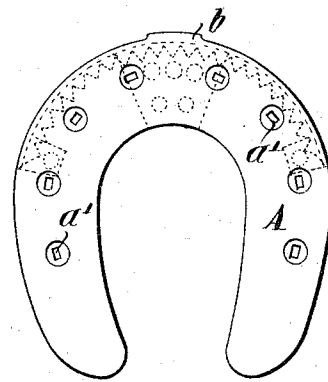


Fig: 9

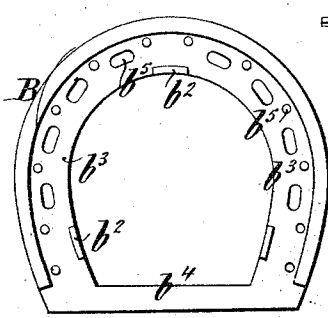
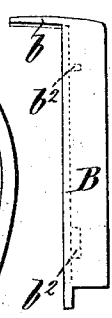


Fig: 10



Witnesses:

L. C. Connor
L. Wenke

Inventor
Antonin Juillard
By his attorney
Horton & Horton

(No Model.)

2 Sheets—Sheet 2.

A. JUILLARD.
HORSESHOE.

No. 562,302.

Patented June 16, 1896.

Fig. 5.

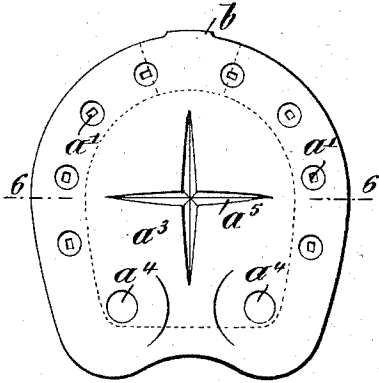


Fig. 11.

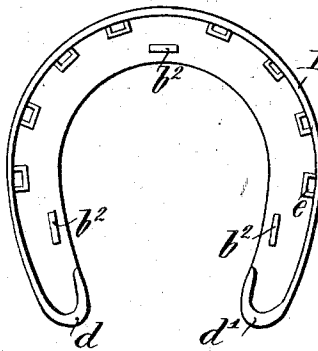


Fig. 12.

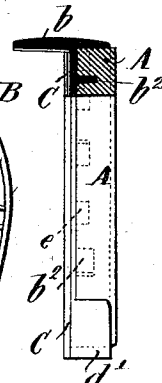


Fig. 6.

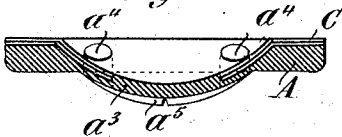


Fig. 13.

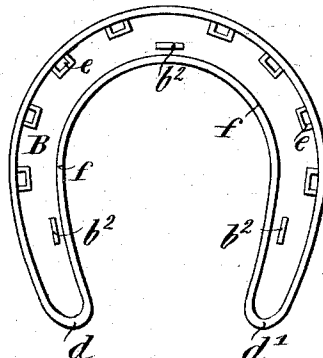


Fig. 14.



Fig. 7.

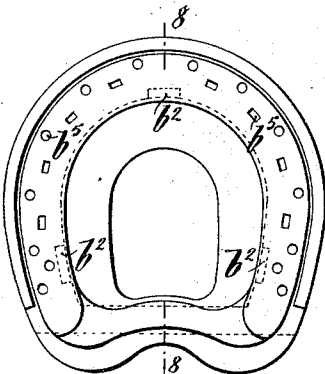
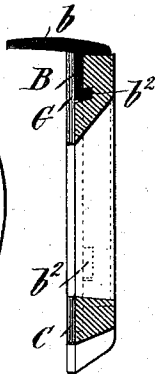


Fig. 8.



Witness:

S. C. Connor
L. Henkel

Inventor
Antonin Juillard
By his attorneys
Howson & Howson

UNITED STATES PATENT OFFICE.

ANTONIN JUILLARD, OF PARIS, FRANCE, ASSIGNOR TO LE FER Â CHEVAL
CAOUTCHOUC, OF SAME PLACE.

HORSESHOE.

SPECIFICATION forming part of Letters Patent No. 562,302, dated June 16, 1896.

Application filed February 4, 1896. Serial No. 578,033. (No model.) Patented in France June 8, 1895, No. 247,995.

To all whom it may concern:

Be it known that I, ANTONIN JUILLARD, manufacturer, a citizen of the Republic of France, residing in Paris, France, have invented certain Improved Means for Shoeing Horses and other Animals, (for which I have obtained a French patent, dated June 8, 1895, No. 247,995,) of which the following is a specification.

10 The object of this invention is to provide improved means for shoeing horses or other animals, by the use of rubber, or of a special compound, the chief constituent element of which is india-rubber. I will refer to it as
15 "rubber," for the purposes of the general description.

In the improved rubber horseshoe or shoeing device there is embedded internally, in an appropriate situation, a metal band, indented and studded in such a way as to be
20 protected from wear; and it further comprises canvas strips, which completely separate the rubber from the substance of the animal's hoof. The improved device is secured in place by means of nails, which on
25 being driven into the material of which the device is made grip the same at its upper part, that is to say, at the part which it is most important to secure.

30 The improved rubber device offers the following advantages:

First. For saddle-horses it will bring about a considerable improvement in the condition of those animals which are afflicted with
35 quiter-bone, ring-bone, heel-contraction, wire-heel, and other diseases, owing to the fact that the rubber imparts to them a certain vital activity and plasticity, which will greatly improve their pace by rendering it rapid,
40 brisk, and graceful.

Second. In the case of trotters, the relief which the improved shoeing device will cause them to experience will render their trot extremely regular, and protect them from cracks
45 or chaps at the knees, or at the fetlocks and from similar injuries, while as regards "stepping" horses, the india-rubber will very much improve their gait, especially on paved roadways.

Third. With carriage-horses, the rubber 50 device will impart to them considerable animation resulting from the small weight of the shoeing.

Fourth. As regards trained or circus horses, the rubber device will give relief to the limbs 55 and impart great beauty to their action or attitude in turning.

The invention will be best understood by reference to the accompanying drawings, in which—

Figure 1 is a front elevation of the improved 60 rubber-shoeing device. Fig. 2 is a longitudinal section on the line 2 2, Fig. 1. Figs. 1^{bis} and 2^{bis} are corresponding views of the metal band or strip separated from the rubber. 65 Figs. 3 and 4 (Fig. 4 being a section on the line 4 4, Fig. 3) represent a modified arrangement of the rubber shoeing illustrated in Figs. 1 and 3. Fig. 3^{bis} is a front view of the same form of rubber shoeing. Figs. 5 and 6 70 (Fig. 6 being a section on the line 6 6, Fig. 5) represent another modification of the rubber shoeing constructed in accordance with this invention. Figs. 7 and 8 (of which Fig. 8 is a section on the line 8 8) represent a further 75 modification of the improved rubber shoeing. Figs. 9 and 10 (Fig. 10 being a side elevation) are detached views of the metal band employed in connection with the form of shoeing represented in Figs. 7 and 8; and Figs. 80 11 and 12 and 13 and 14 are views of still further modifications of the rubber shoeing constructed according to this invention.

The rubber-shoeing device represented in Figs. 1 and 2 consists (as will be seen) of a 85 rubber-compound block A, a metal band or hoop B embedded or sunk within the india-rubber compound, and strong coarse canvas strips C, superposed over each other, and placed upon the plane surface of the rubber 90 block. The nature and density of the rubber compound employed should be such as to meet the requirements which the improved shoeing is intended to fulfil, it being cast in molds of appropriate shape, its outline corresponding to that of the animal's hoof, and 95 presenting a sectional area of more or less semi-circular shape, and its central portion *a* be-

ing recessed, so as to leave the sole of the hoof exposed. Apertures or perforations, such as a' , are either stamped out or formed in casting, for the reception of the nails or "calks."

The metal band B may be wrought-iron, a malleable-iron casting, cast-steel, aluminium or glucinium, such band being curved in the shape of an arc of a circle, as illustrated in Figs. 1^{bis} and 2^{bis}, and besides indented or serrated on its lower edge, and provided with a clip b , situated in its center, opposite the serrations or indentations, and with flaps or tongues b' , having projections or studs b^2 . The metal band or hoop B is sunk in the rubber compound in the process of casting, as will be seen. It is situated at the front part of the rubber block, the area of which it partly covers, the indentation being turned toward the rubber surface which is to touch the ground, while its studded flaps secure its connection with the rubber.

The strips C, of strong fabric—of which there may be any convenient number—are superposed and perforated, and into the perforations rubber compound is cast, so that it spreads out between the several superposed strips, and thereby fixes, or, as it were, welds them together, while there are formed a species of rubber rivets, which assist in rendering the whole of the improved rubber shoe compact, secure and homogeneous. The object of these canvas or cloth strips is to protect the horny substance of the hoof from direct contact with the rubber. In casting the improved rubber shoe, a mold of corresponding shape is employed, the perforated canvas strips C being placed at the bottom of the mold, and covered over with the metal band B, after which the rubber solution is cast into the mold. The solution enters all the interstices of the canvas strips, and metal band or hoop, so that all parts are firmly welded together and indissolubly united or incorporated with the rubber mass. The rubber is then vulcanized by the ordinary method, and the shoeing device thus formed will then present externally a rubber portion of practically semicircular configuration, a metal protecting hoop B, with a projecting clip b in front, a plane surface covered with canvas, and apertures or perforations a' for the reception of nails or calkings. No joint or seam whatever is visible between the metal hoop or band B and the rubber compound A, the parts where the metal and rubber meet and unite being perfectly smooth and even.

The rubber shoeing represented in Figs. 3 and 4 differs from the type or form of shoe just described in this particular, that the cross-piece or plate a^2 in the rear is here placed lower down, so as to insure greater yieldingness and ease for the heel. In fact, this transverse portion may be omitted altogether, as exemplified in Fig. 3^{bis}.

In the modification shown in Figs. 5 and 6

there is provided a membrane a^3 for connecting the parts that touch the horny substance of the hoof. The said membrane a^3 is made slightly bulging, so that it may not touch the horse's foot, and it is, moreover, provided with perforations a^4 , which serve to insure suitable ventilation for the sole of the hoof, the air entering through one of the perforations, and issuing through the other. When the animal puts his foot down on the ground, the membrane referred to yields to the pressure, owing to the provision of grooves, such as a^5 , and in so doing acts as a species of bellows, causing air to enter and escape, the remaining parts of the rubber shoe being constructed in the manner hereinabove indicated.

In the modification shown in Figs. 7, 8, 9, and 10, the metal band or hoop is not indented, its flaps being connected all along it, so as to form a species of flange b^3 , the ends of which are connected by a cross-tie b^4 . The said flange b^3 is fitted with studs b^2 and with round or square perforations b^5 , formed at certain distances apart, which perforations the rubber solution enters in the process of casting the block A, so as to reach the canvas strips C, and firmly fix them to a metal hoop B, while on the other hand such strips C are attached to the block A by the rubber which enters the perforations therein. The sole of the hoof remains exposed.

In the modification shown in Figs. 11 and 12, the metal band B carries, in addition to the flange b^2 , clamps or staples, such as $d d'$, surrounding the rubber block A at the heel portion. In this case the said band or hoop is unprovided with any cross-piece connecting its ends, while the perforations in its flange, which serve for the insertion of nails or calkings, as well as for pouring in rubber solution, (in the process of casting,) are surrounded by a raised portion or bead e , forming a kind of sheath or guide for each nail, and keeping the nails more firmly against becoming loose by concussion.

The cramp-irons or staples $d d'$ of the hoop may be joined by means of an internal rib f , as indicated in Figs. 13 and 14.

In the two last-mentioned modifications, the metal hoop or band is always "welded" to the rubber A, which in all cases is cast in a mold, at the bottom of which canvas strips C and the said metal band B have been placed, the rubber becoming firmly welded together with the said canvas strips and metal band, the whole constituting a perfectly-solid block, incapable of getting out of shape, after the india-rubber has been vulcanized.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

1. A horseshoe comprising an india-rubber block forming the body and recessed in the center to leave the sole of the horse's hoof exposed, a protective metal band placed round

the outer edge of the block, the said metal band having projecting parts embedded in the rubber block, substantially as set forth.

2. A horseshoe comprising an india-rubber block, recessed in the center to leave the sole of the horse's hoof exposed, the sectional area of the rubber being of semicircular shape, the plane portion of which is toward the hoof of the horse, in combination with a protective metal band placed round the outer edge of the rubber block, and having projecting parts embedded in the rubber block, and canvas strips on the plane portion of the block, all substantially as and for the purposes set forth.

3. A horseshoe comprising an india-rubber block, recessed in the center to leave the sole of the horse's hoof exposed, a protective metal band placed around the outer edge of the rubber block, and provided with studded flaps embedded in the rubber block and also provided with a clip in front, substantially as set forth.

4. A horseshoe comprising an india-rubber block recessed in the center to leave the sole of the horse's hoof exposed, in combination with a bulging membrane over the said recess, the said membrane being provided with perforations for the inlet and outlet of air, substantially as and for the purposes set forth.

5. A horseshoe comprising an india-rubber block recessed in the center to leave the sole of the horse's hoof exposed, in combination with a protective metal band placed round the outer front edge of the block and provided

with a studded and perforated flange and a cross-piece embedded in the rubber, substantially as set forth.

6. A horseshoe comprising an india-rubber block recessed in the center to leave the sole of the horse's hoof exposed, in combination with a protective metal band placed round the outer front edge of the rubber, and provided with a studded and perforated flange and cramp-irons, and shoulders surrounding the said perforations to serve as guides and guards for the nails, substantially as set forth.

7. A horseshoe comprising an india-rubber block recessed in the center to leave the sole of the horse's hoof exposed, in combination with a protective metal band placed round the outer front edge of the rubber, and provided with a studded and perforated flange having cramp-irons and an internal rib connecting the cramp-irons, all substantially as set forth.

8. A horseshoe comprising an india-rubber block, a protective metal band placed round the outer edge of the rubber and having inwardly-projecting perforated parts, and perforated canvas strips, all substantially as and for the purposes set forth.

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

ANTONIN JUILLARD.

Witnesses:

LEVI FRANCKEN,
CLYDE SHROPSHIRE.