

No. 701,807.

Patented June 3, 1902.

H. C. FROST.
RUBBER TREAD HORSESHOE.

(Application filed Dec. 30, 1901.)

(No Model.)

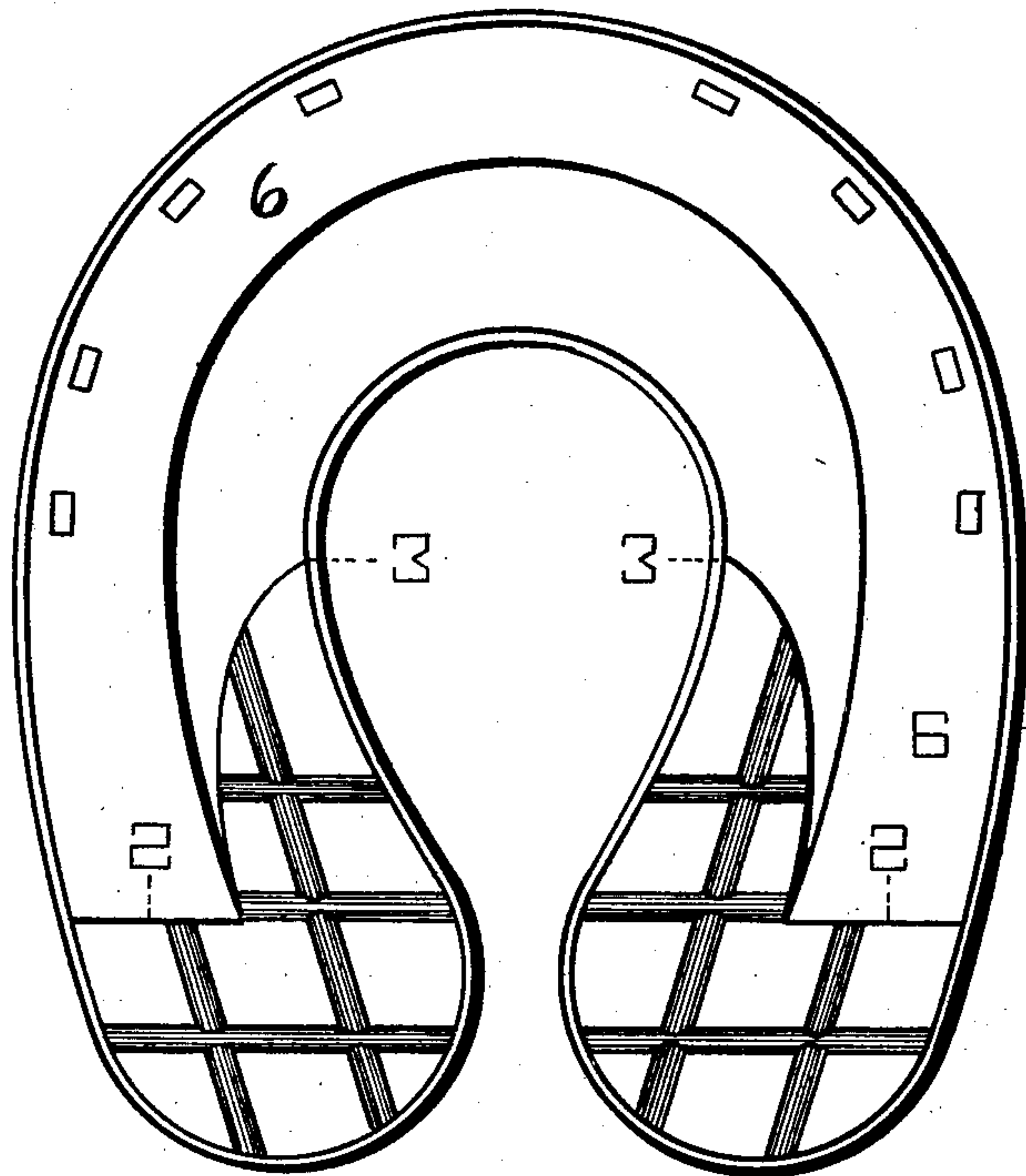


Fig. 1.

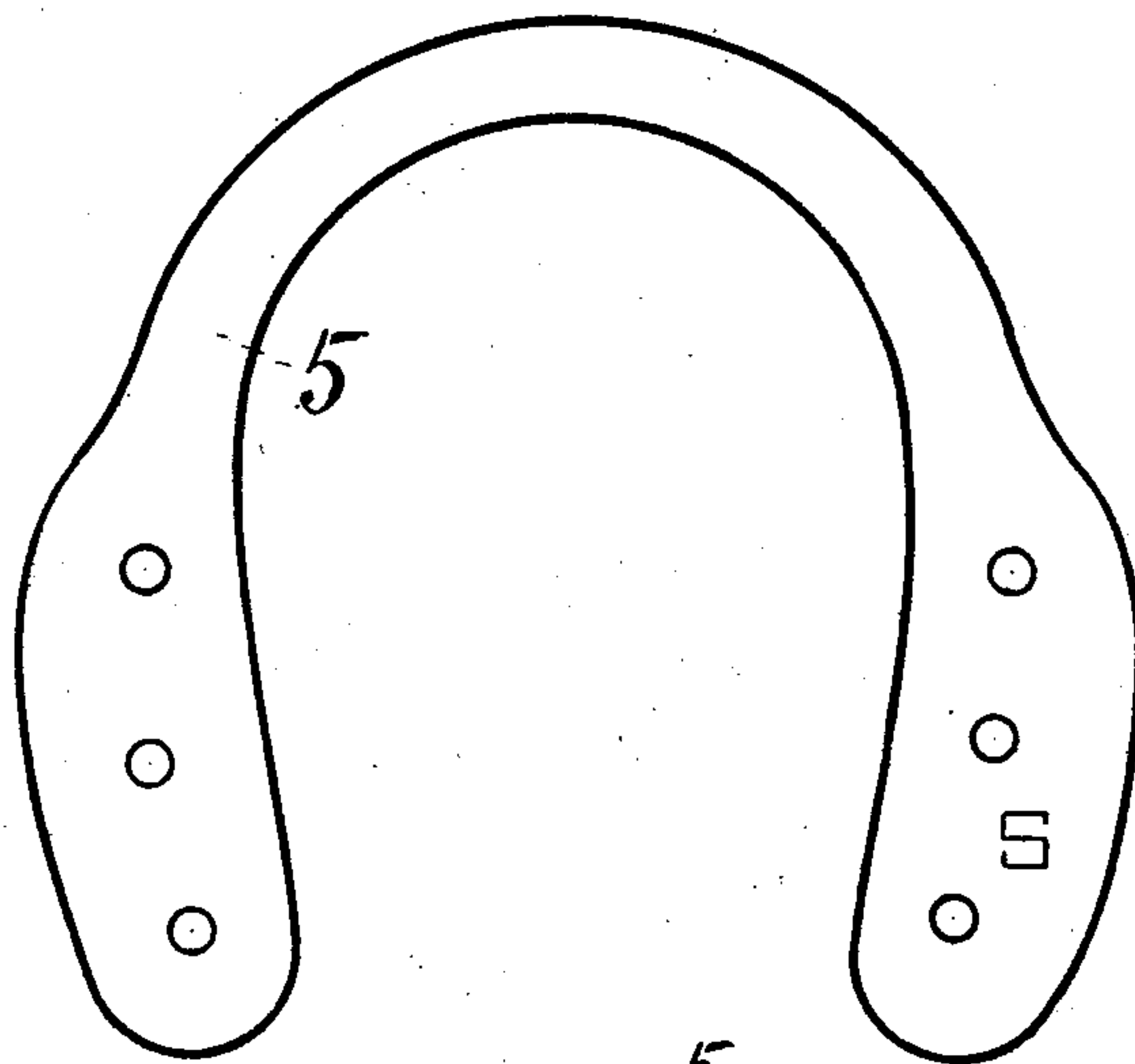


Fig. 2.

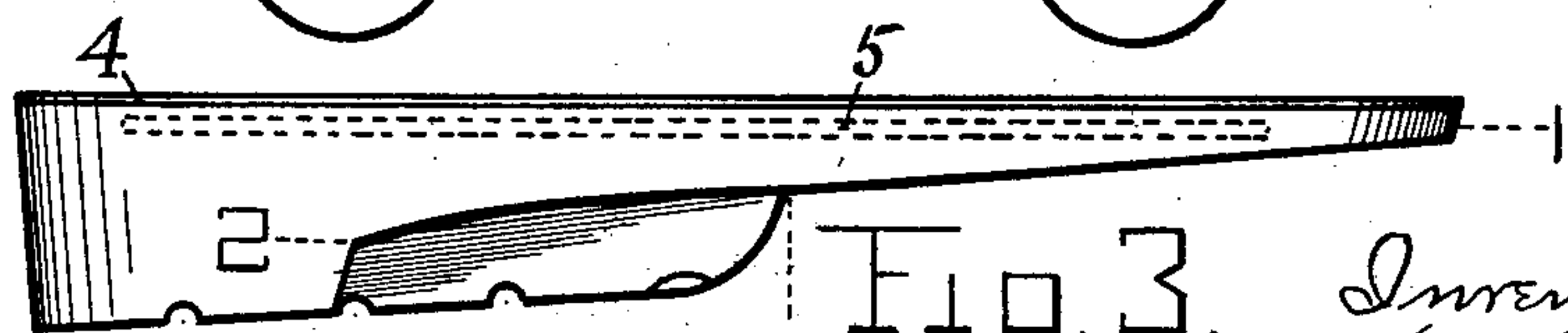


Fig. 3.

Witnesses
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UNITED STATES PATENT OFFICE.

HARRISON C. FROST, OF AKRON, OHIO, ASSIGNOR TO THE GOODYEAR TIRE AND RUBBER COMPANY, OF AKRON, OHIO.

RUBBER-TREAD HORSESHOE.

SPECIFICATION forming part of Letters Patent No. 701,807, dated June 3, 1902.

Application filed December 30, 1901. Serial No. 87,819. (No model.)

To all whom it may concern:

Be it known that I, HARRISON C. FROST, a citizen of the United States, residing at Akron, in the county of Summit and State of Ohio, have invented a certain new and useful Improvement in Rubber-Tread Horseshoes, of which the following is a specification.

My invention has relation to improvements in that class of rubber-tread horseshoes in which the rubber is associated with an internal metallic strengthening-plate and one or more layers of rubber-saturated fabric known to the trade as "friction." Heretofore considerable difficulty has been experienced in causing the various parts to adhere in use and resort has been had to riveting and stitching the different parts together, entailing an expense of time and labor, thus increasing their cost to the consumer. Again, another difficulty has been found in sustaining the heel of the rubber, as it is often found that these soon begin to sag in use, dropping away from the hoof at each lifting of the foot, and a third objection is found in properly securing the metallic strengthening-plate, so as to prevent its becoming loose in its bed within the rubber.

The object of my invention is to overcome these several objections by causing the several parts to adhere and become practically integral by a single simultaneous vulcanization; and as incident to this to greatly shorten the time of construction and lessen its cost to the consumer, and a final object is to provide a rubber tread which requires no special formation in the metal binding-shoe.

To the aforesaid objects my invention consists in the peculiar and novel construction, arrangement, and combination of parts hereinafter described, and then specifically pointed out in the claims, reference being had to the accompanying drawings, which form a part of this specification.

In the accompanying drawings, in which similar reference-numerals indicate like parts in the different figures, Figure 1 is an inverted plan of my improved rubber tread with the metal binding-shoe thereon; Fig. 2, a plan of the inner metallic strengthening-plate, and Fig. 3 a side elevation of the shoe with the metal binding-plate absent.

Referring to the figures, 1 is my improved shoe, having an outer configuration to fit the hoof with edges beveled from the top inward, its top in a true plane and the bottom also in a true plane for a greater portion of the distance to the heel, but diverging therefrom toward the heel, so that it constantly grows thicker in that direction. The heels are much thicker and for a portion of the way to the front are in a plane parallel with the lower face of the front part. Each heel at the outside and a short distance from the back is cut abruptly from below for nearly half its width in a plane beveled slightly toward the front to a point 2 nearly up to the plane of the under part of the shoe, whence it extends in an upward-curved plane to meet and unite with said plane at the point 3. The inner part of the heel extends forward and gradually curves to a point at 3.

On top of the shoe 1 is preferably placed a layer of rubber-saturated duck 4. Embedded in the shoe 1 at about the position of the dotted lines in Fig. 3 is a metallic plate 5, with an inner contour to lie within the shoe 1 a short distance from the edge, the back or heel ends being widened. The narrow part of this plate can be bent by hand to widen or contract the distance between the heels to adapt it to any required width of hoof at that place. This plate is preferably of sheet-steel and has a number of holes in the wider part to permit the rubber to pass through and form a more secure fastening and prior to use is slightly corroded by immersion in some material, as sulfuric acid, which is afterward neutralized and the metal cleaned in an alkaline solution. This operation gives to the metal a rough face that enables the rubber to form a secure and firmer union therewith.

The shoe is prepared of unvulcanized rubber, rubber-saturated fabric, and the corroded-faced plate, assembled as just stated and vulcanized in that state, by which the several parts are practically made integral. It is then applied to the hoof in the usual manner, retained by the binding-shoe 6, which is a flat bar of iron or steel provided with nail-holes and which abuts at the back against the face of the cut-away portion of the heel at 2. When so placed, it bears more firmly on

the curved part of the shoe between the points 2 and 3 than it does in front of the part, thereby forming a firm support of the heel and preventing its sagging.

5 Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. An improved horseshoe-cushion of rubber having the heel portions highest, each recessed from below in an abrupt plane from the outside inward for a portion of its width, and thence by a curved line to the inner curve of the cushion, with the portion in front of said recesses decreased in thickness to the toe in a plane slightly curved upward from the end of said recess, substantially as shown and described.

2. An improved horseshoe-cushion of rubber having the heel portions highest, each recessed from below by an abrupt plane from the outside, inward for a portion of its width, and thence by a curved line to the inner curve of the cushion, with the part in front of said recess decreased in thickness to the toe in a plane slightly curved upward from the end of said recess, in combination with a metal plate of suitable outline to lie within said cushion and embedded and vulcanized therein, substantially as shown and described.

3. An improved cushion-horseshoe consisting of a rubber portion having thick end por-

tions divided by abrupt planes from the intermediate part, in combination with an embedded metallic plate of like general outline but narrower, and having holes to permit the rubber to flow through and unite, in combination with a metal shoe adapted to rest on said rubber portion, with its ends abutting the abrupt ends of the highest parts, substantially as shown and described.

4. The herein-described horseshoe consisting of a rubber section having thicker portions at the heels, divided by abrupt planes from the front portion, the front portion gradually decreased in thickness toward the toe, with a metallic plate having enlarged ends and smaller intermediate portion, and with holes for the rubber to flow through, embedded in said shoe, said parts being united by vulcanization, and a metal shoe to abut said heel portions of the rubber portion and bear on the intermediate part, and having holes to receive retaining-nails, substantially as shown and described.

In testimony that I claim the above I hereunto set my hand in the presence of two subscribing witnesses.

HARRISON C. FROST.

In presence of—

W. E. PALMER,

C. A. WHITTLESEY.