

(No Model.)

W. J. KENT.
HORSESHOE.

No. 530,643.

Patented Dec. 11, 1894.

FIG. 1.

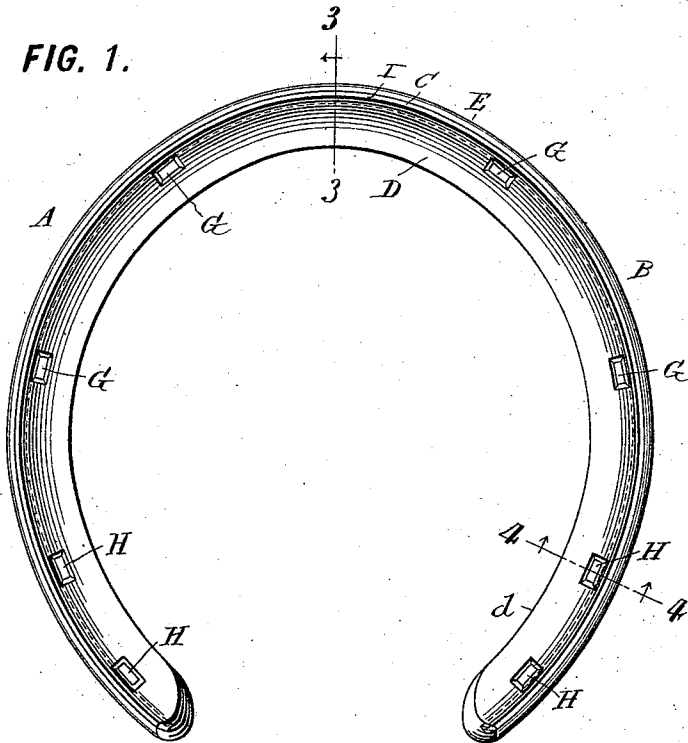


FIG. 2.

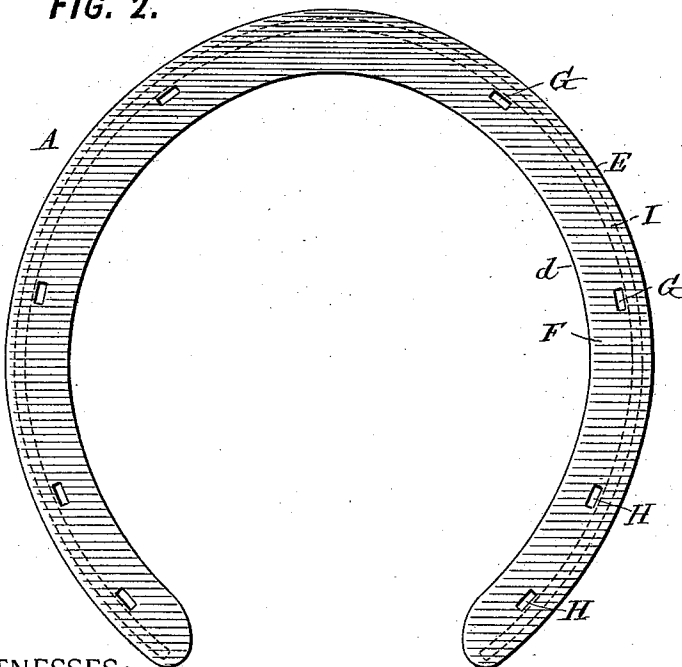


FIG. 3.

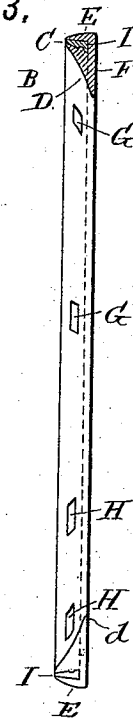


FIG. 4.

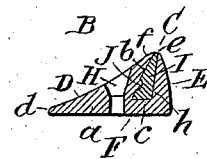
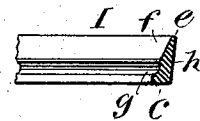


FIG. 5.



WITNESSES:

Fred White
W. W. Lloyd

INVENTOR:

William J. Kent,
By his Attorneys,

Arthur C. Chase & Co.

UNITED STATES PATENT OFFICE.

WILLIAM J. KENT, OF NEW YORK, N. Y.

HORSESHOE.

SPECIFICATION forming part of Letters Patent No. 530,643, dated December 11, 1894.

Application filed March 3, 1894. Serial No. 502,167. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM J. KENT, a citizen of the United States, residing in the city, county, and State of New York, have invented certain new and useful Improvements in Horseshoes, of which the following is a specification.

This invention relates to horse shoes, and particularly to devices of this general class known as racing plates for use on race horses.

The invention aims to provide an improved racing plate which shall combine extreme lightness with the requisite strength, stiffness, and holding or gripping qualities, and which shall be durable against wear or fracture.

In racing plates it is essential that the plate shall be extremely light, and that it shall afford the horse a good hold or grip on the track during running. Various attempts to provide a plate having these qualities have heretofore been made. In one instance a plate, consisting of an aluminum body and bearing at top, was provided on its ground face with embedded steel spirals, and granular steel fragments forced into the body under pressure; and in another instance the plate, has consisted of a slender steel body traversed longitudinally by a crease, the top edges of which serve as the gripping face for the plate.

My present invention provides an improved shoe of the class composed of two metals. In its preferred form I construct the shoe with an aluminum body, having a continuous flat top bearing furnishing the seat of the shoe, an outwardly inclining bottom face descending from the inner edge of the seat to a point near the outer edge of the shoe, an inwardly inclined front face extending downwardly from the seat to meet the bottom face, and a narrow steel wearing strip embedded in this body exteriorly of the nail holes and projecting at its outer edge at the point or angle formed by the bottom and front faces of the shoe, the strip being preferably inclined downwardly and outwardly from the seat to said angle in the direction of the thrust of the strain when the shoe strikes the ground. Said strip is broader at its inner edge than at its exposed edge, and is inclosed within the body at its inner edge near said seat, whereby the body presents a large backing for receiving

the concussion or thrust on the strip; and the strip is fixed in the body by reciprocal inter-engaging portions formed on the latter and the strip.

In the accompanying drawings, which illustrate the preferred form of my invention, Figure 1 is an elevation of a front plate, or a shoe, for the fore foot of a horse, the working face being shown. Fig. 2 is a similar view thereof, looking at the bearing or top face of the plate. Fig. 3 is a cross section of Fig. 1 cut on the line 3—3 and looking in the direction of the arrow. Fig. 4 is a cross section of the plate shown in Fig. 1, cut on the line 4—4 in said figure, the section being through one of the nail holes, and the view being on a larger scale, and Fig. 5 is a perspective view of the steel strip removed and on a larger scale.

Referring to the drawings let A indicate the plate as a whole; B, the sole or working face thereof; C, the gripping edge thereof; D, the bottom inner side face thereof; E, the outer front face or side edge thereof; F, the bearing seat or upper face thereof; G, the four front holes for the nails; H, the four nail holes for the heel nails; I, the steel strip, and J the interengaging positions between the strip and body.

The shoe A consists of a body *a* of aluminum. This body may be variously formed according to the particular requirements of use, and will be adapted in shape or curvature to the shape of the foot to which it is to be applied. In or on this body is embedded or fixed the substantially vertically arranged steel strip I. In the preferred form of my invention I construct the body *a* of the cross section shown in Figs. 3 and 4, with the wide flat continuous aluminum bearing face F at its top or hoof side, the outer side front face E at its outer edge and extending downwardly from the bearing with a slight inward inclination toward the working face, with an edge, ridge or point C at the outer extremity of its working face, and an inclined and preferably slightly concave bottom side face D extending from the bearing F at the inner edge *d* of the body downwardly and outwardly and meeting the front face E near the outer edge of the body, the angle thus formed being the gripping edge of the shoe.

Longitudinally the body *a* is constructed

with a groove or depression *b* extending from the point C inwardly toward the bearing F, preferably externally of the nail holes, and inwardly inclined as it progresses toward the bearing, and in this groove or depression is embedded or fixed the strip I. This strip is preferably a separate piece of metal distinct from and not welded to the body, consisting of a single integral piece extending longitudinally around the body exteriorly of the holes, through substantially the entire length thereof, and may be of any suitable cross section, but that shown is found most advantageous. In the cross section shown the strip is of narrow and substantially triangular cross-section, has a base or inner edge *c* extending parallel with the bearing F of the plate, and of relatively great width, a straight outer face *h* angular to the face *c* and extending therefrom to the outer edge *e* of the strip, from which edge, at a point at or near to the point of juncture of the face *h* therewith is a return face *f*, angular both to the faces *h* and *c*, and extending in a straight line to the latter at an angle sufficient to give the desired width to the base face *c* of the strip. Upon some suitable point of the strip it is preferably provided with an overhanging portion engaging or engaged by a similar portion of the body *a*. I prefer to construct the strip with a longitudinal groove *g* for this purpose, which groove is disposed on the inner face *f* of the strip near its base.

The groove *b* is preferably of slightly less depth than the height of the strip I, so that when the latter is in the groove the outer edge *e* projects and is exposed to a very slight extent at the working face of the plate, this edge projecting at and constituting the point C and serving as the gripping edge, ridge or point of the working face of the plate. Preferably the body *a* is extended outside of the strip I in the form of a slender tapering front wall E inwardly inclined as it extends from the bearing F to the ridge C, and meeting the edge *e* of the strip I at this point. Thus it will be seen that this steel strip is with the exception of its edge *e* entirely embedded in the aluminum body *a*. When thus embedded the metal of the body is preferably locked to that of the strip by compressing or otherwise forcing the two together until the aluminum flows into the groove *g* of the strip thus constituting a special interengaging portion J between the strip and body. It is not however essential that the groove *g*, or an equivalent such as recesses or lugs on the face of the strip I, be employed, as the strip may be retained in place by its inclination relatively to the body, or by the fact of its inner end being wider than its outer edge. In the former case when the strip is embedded and the shoe bent the embedded edge of the strip is considerably inside of the exposed edge, and the aluminum of the body at the inclined face D will prevent any looseness or escapement of the strip.

According to my improved process of making horse shoes I form the body, preferably as a straight bar, with a longitudinal groove, preferably undercut, and then fix the steel strip to the body by applying it in this groove, preferably while both the strip and body are straight, after which the compound bar thus formed may be brought to its final shape, in the construction shown by bringing both sides of the groove *b* intimately against the sides of the strip I, and then bending the bar to its final shape.

In use the plate is applied to the horse's foot with its bearing F against the hoof and its working face B exposed for contact with the earth. The working face thus presents a sharp longitudinal gripping edge C, traversing it near its front edge, and a broad inclined bottom face D extending from this edge inwardly. The edge C affords the requisite grip or hold for the plate, while the face D affords an extensive inside bearing surface communicating part of the weight or force applied to the plate through the body to the broad bearing F by which it is transmitted to the foot.

The concave gradual inner and upward slope of the face D prevents mud from catching within the shoe, and affords an excellent point for the location of the nail holes, which traverse the body substantially vertically immediately inside of the strip I and have countersinks for the nail heads so that the nails can be canted either way in driving without twisting the shoe. This construction avoids the use of creases for the nails and strengthens the shoe.

It will be seen that my invention provides an improved horse shoe which can be variously availed of, and which is especially adapted as a racing plate, for which use it possesses the advantages of extreme lightness, and great strength, coupled with the requisite breadth of bearing for properly protecting the sole of the foot, and effective gripping or holding quality for preventing slipping and giving the horse a firm hold in running. The steel strip, combined with the cross-sectional width of the body *a*, gives the plate a desirable lateral stiffness which reinforces the foot to resist expansion at the heels when the ground is struck, thus preventing bursting of the horse's heels. The width of the bearing helps the sole of the foot to resist the pressure of the coffin-joint when the horse is in violent action, thus preventing diseases of the foot liable to be caused when such pressure is not properly resisted over a sufficient portion of the area of the foot. The gradual slope of the inclined face D prevents the accumulation of mud or other matter within the shoe.

It will be understood that the invention is not limited in its application to a racing plate, or to a shoe the two metals composing which are respectively aluminum and steel; but that it may be availed of in whole or in part

for horse shoes generally in which two metals of different degrees of hardness are employed. Nor is it essential that the strip of hard metal extend throughout the length of the shoe, as if desired it may be used only at the point or points where the wear is greatest.

In its use with the particular construction of shoe illustrated, this invention presents many features of advantage, among which is the inclination of the wearing strip downwardly and outwardly from the seat of the shoe to the bottom thereof, whereby the strain due to the shoe striking the ground is received at the toe of the shoe by the strip in the direction of its inclination; and a second feature of improvement is that the body of the shoe presents a large backing to the wearing strip to receive the concussion upon the latter.

Another advantageous feature is that the stated inclination of the wearing strip enables an increasing amount of soft metal to be used outside of the strip at the front wall E of the body, thus giving sufficient strength of metal in front of the strip and saving weight, which is important in a racing plate. Another feature lies in bringing the downwardly and outwardly inclined bottom face of the body, and the downwardly and inwardly inclined front face thereof together to form an angle near the outer edge of the shoe, and locating the wearing strip at the apex of this angle; and a further advantage results from the fact that when the nail holes are inserted in the soft metal body inside of the wearing strip, the nails when driven in these holes strengthen the retention of the wearing strip in place in the body of the soft metal.

What I claim is—

1. A horse-shoe having a body of relatively soft metal and a wearing strip of relatively hard metal carried by said body, which strip when in position in the shoe inclines downwardly and outwardly and is exposed at the bottom face of the shoe where it constitutes the wearing portion thereof, whereby the strain due to the toe of the shoe striking the ground is received in the direction of the inclination of said strip.

2. A horse-shoe having a body of relatively soft metal and a wearing strip of relatively hard metal carried by said body near the front edge thereof, and when in position in the shoe said strip exposed at the bottom face of the shoe and constituting the wearing portion of the latter, whereby the strain when the shoe strikes the ground is received by said strip, said body having nail holes through its soft metal portion and at the inner side of said strip, whereby the nails when driven in said holes strengthen the retention of the wearing strip in place in the body of the shoe.

3. A horse-shoe having a body of relatively soft metal which furnishes the seat of the shoe, and a wearing strip of relatively hard metal which constitutes the wearing portion of the

shoe, said strip projecting at its lower edge at the bottom face of the shoe and there receiving the concussion of the shoe when in use, and of greater width at its upper edge, inclosed at its wide upper edge in the soft metal of the body of the shoe, and transmitting said strains to said body through its wider edge, whereby said strains are received by the narrow edge of the strip and are distributed over an extensive portion of said body by the wide inclosed edge of said wearing strip.

4. A horse-shoe having a body of relatively soft metal which furnishes the seat of the shoe, and has an outwardly inclining bottom face, and an inwardly inclining front face, said faces meeting and forming an angle at the sole of the shoe, and said shoe having a hard metal wearing strip which is exposed at the angle formed by said bottom and front faces at its lower edge, and inclosed in the soft metal of said body at its upper edge, said wearing strip receiving at its lower exposed edge at said angle the concussion due to the shoe striking the ground and transmitting such concussion through its inclosed upper edge to the interior of said body below said seat whereby said angle constitutes the striking point of the shoe and has a hard metal point.

5. A horse-shoe having a body of relatively soft metal which furnishes the seat of the shoe and has an outwardly inclined bottom face and an inwardly inclined front face, said faces forming an angle at the sole of the shoe near the front edge thereof, and said shoe also having a wearing strip exposed at the angle formed by said bottom and front faces at one edge, and inclosed in said body near said seat at its other edge, said strip inclining downwardly and outwardly from its portion nearest the seat to its exposed edge at said angle, whereby said strip constitutes the wearing portion of the shoe, and the strain when the shoe strikes the ground is received at said angle in the direction of the inclination of said strip.

6. A horse-shoe consisting of an aluminum body *a* having a continuous bearing seat *F* at top, and a downwardly inclining bottom face *D*, said shoe having a hard steel wearing strip *I* traversing said body throughout substantially the entire length thereof, said wearing strip exposed at its lower edge at the bottom face of said body and inclosed at its upper edge within said body near said seat, whereby the strains in use are received by said wearing strip, and by it transmitted to said body, and said body having nail holes at the inner side of said strip, through which holes the shoe can be nailed to the hoof of a horse, substantially as and for the purpose set forth.

7. A horse-shoe having a body of aluminum, and a wearing strip of steel carried by said body, which strip when in position in the shoe inclines downwardly and outwardly and is

exposed at the bottom face of the shoe where
it constitutes the wearing portion thereof,
whereby the strain due to the toe of the shoe
striking the ground is received in the direc-
5 tion of the inclination of said strip and the
steel of the strip protects the aluminum of
the body from wear.

In witness whereof I have hereunto signed
my name in the presence of two subscribing
witnesses.

WILLIAM J. KENT.

Witnesses:

GEORGE H. FRASER,
THOMAS F. WALLACE.