No. 648,276. Patented Apr. 24, 1900.

H. E. MERENESS.

HORSESHOE.

(Application filed Nov. 13, 1899.)

(No Model.) 3 Sheets—Sheet 1.

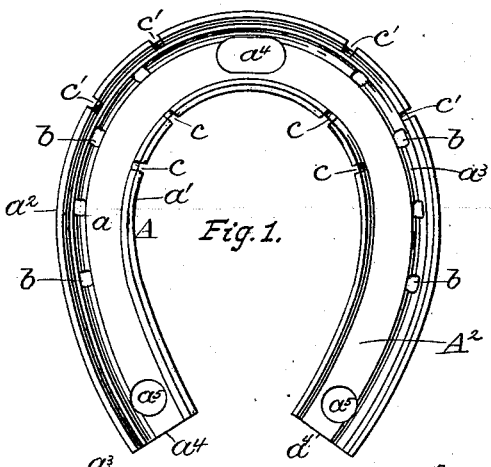

Fig. 1.

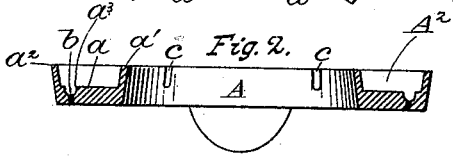

Fig. 2.

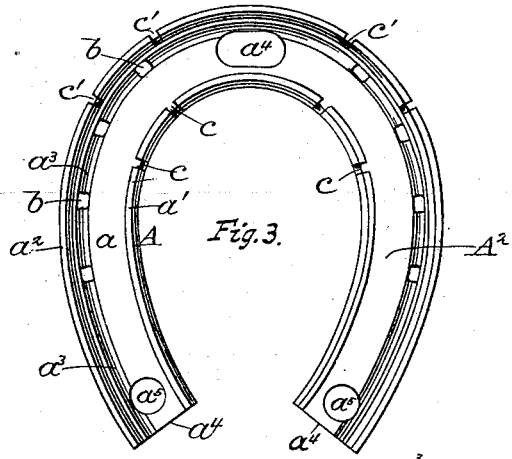

Fig. 3.

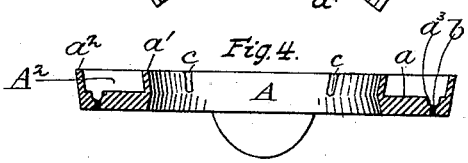

Fig. 4.

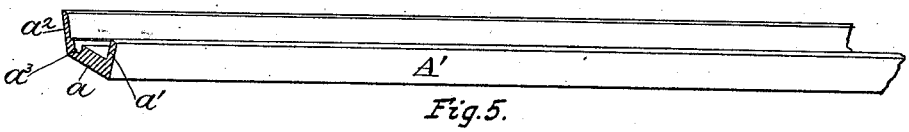

Fig. 5.

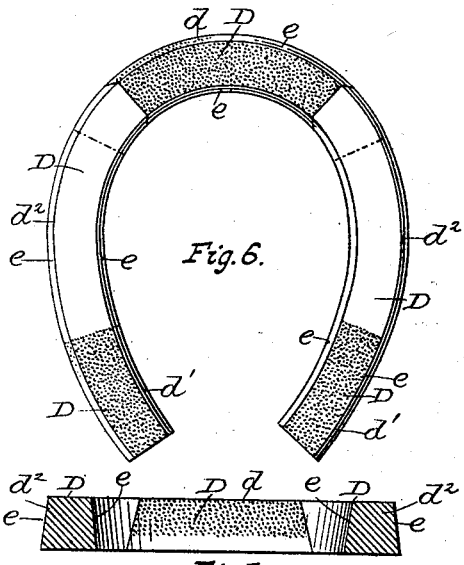

Fig. 6.

Fig. 7.

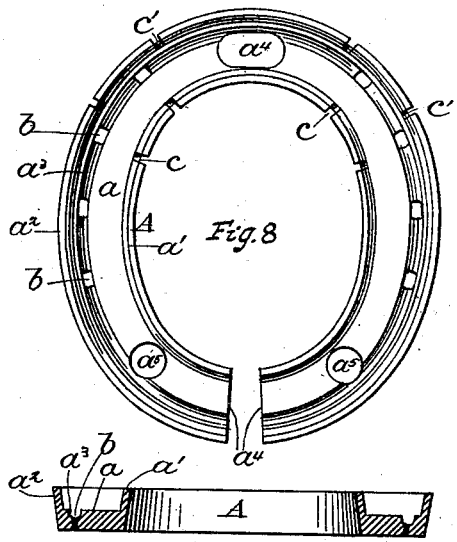

Fig. 8.

Fig. 9.

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by Alex. Zellerbach
Attorney

No. 648,276. Patented Apr. 24, 1900.

H. E. MERENESS.

HORSESHOE.

(Application filed Nov. 13, 1899.)

(No Model.) 3 Sheets—Sheet 2.

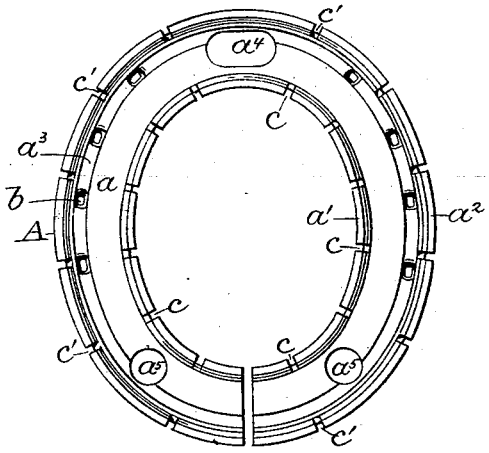

Fig. 10.

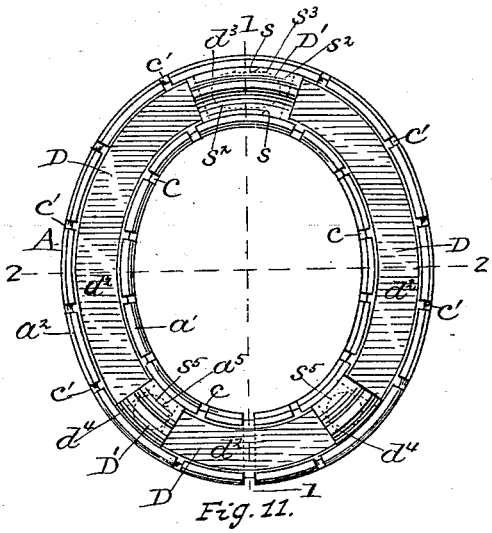

Fig. 11.

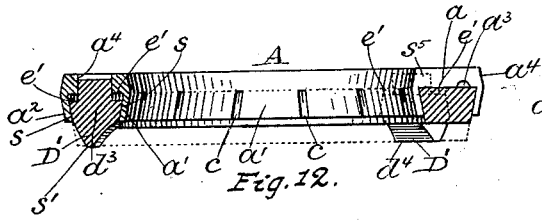

Fig. 12.

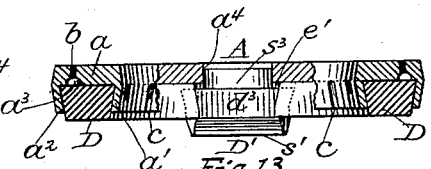

Fig. 13.

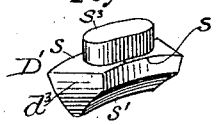

Fig. 14.

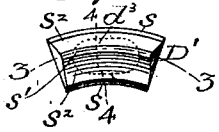

Fig. 15.

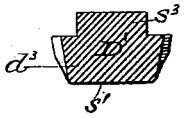

Fig. 16.

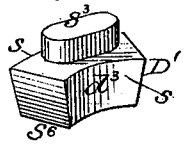

Fig. 24.

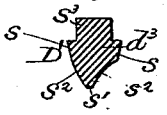

Fig. 17.

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No. 648,276. Patented Apr. 24, 1900.

H. E. MERENESS.

HORSESHOE.

(Application filed Nov. 13, 1899.)

(No Model.) 3 Sheets—Sheet 3.

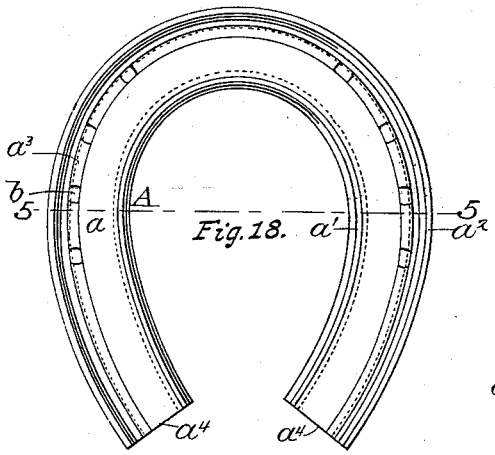

Fig. 18.

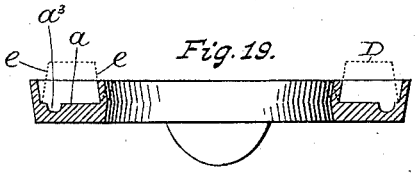

Fig. 19.

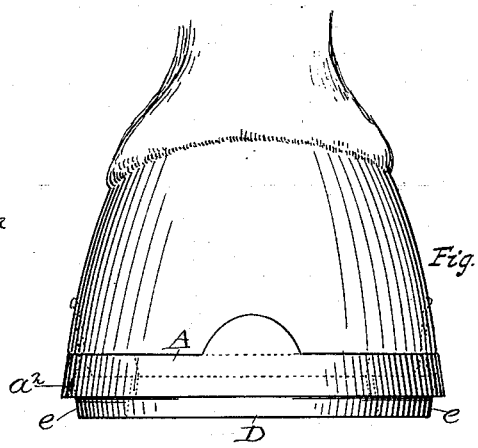

Fig. 20.

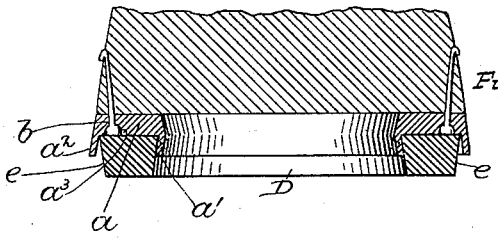

Fig. 21.

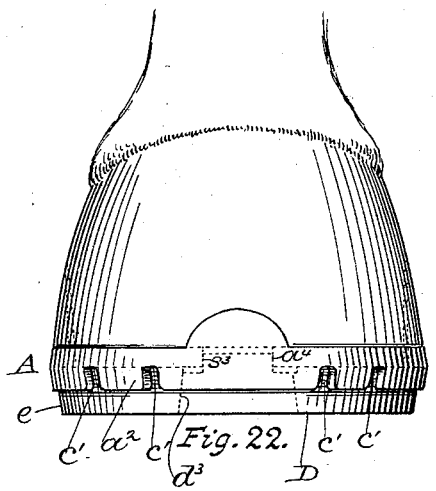

Fig. 22.

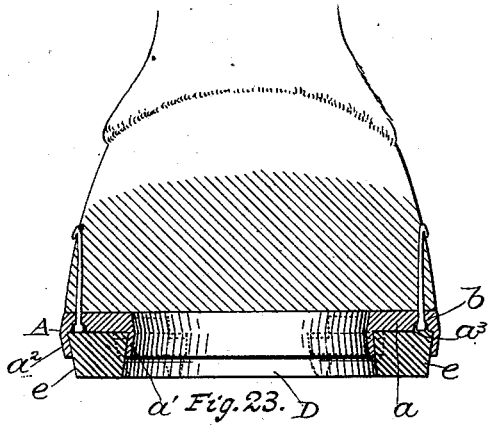

Fig. 23.

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A. Lelkuk Jr.

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Inventor.
by Alex. Lelkuk
attorney

UNITED STATES PATENT OFFICE.

HENRY E. MERENESS, OF ALBANY, NEW YORK.

HORSESHOE.

SPECIFICATION forming part of Letters Patent No. 648,276, dated April 24, 1900.

Application filed November 13, 1899. Serial No. 736,798. (No model.)

To all whom it may concern:

Be it known that I, HENRY E. MERENESS, a citizen of the United States, residing at Albany, in the county of Albany and State of New York, have invented new and useful Improvements in Horseshoes, of which the following is a specification.

My invention relates to horseshoes; and it consists of the novel construction, arrangements, and combinations of parts and devices hereinafter described, and set forth in the claims.

The objects of my invention are to provide in a horseshoe a combination of parts whereby the tread-surfaces of the shoe may be variously changed at pleasure, so as to adapt it for service in different conditions of the streets in the various seasons of the year and to provide means by which changes of tread-surfaces of the shoe may be effected without removing the shoe from the foot of the animal.

Other objects and advantages of the invention will be fully understood from the following description and claims when taken in connection with the annexed drawings, in which—

Figure 1 is a plan of a metal body of the shoe in this invention viewed from its lower side before the tread-pieces of the shoe are placed. Fig. 2 is a section taken transverse to its length. Fig. 3 is a plan of the same after the inner side flanges have been turned inward. Fig. 4 is a section taken in the transverse. Fig. 5 is a perspective view of a channel-bar of steel or iron from which the metal body of the shoe may be produced. Fig. 6 is a plan of tread pieces or sections out of the body of the shoe and illustrating an assemblage of the same in the order they occur in the completed shoe. Fig. 7 is a sectional view of the same in cross direction. Fig. 8 is a plan of a modification of form of the metal body which may be employed. Fig. 9 is a cross-section of the same. Fig. 10 is a plan of another modification of the metal body of the shoe. Fig. 11 is a plan showing tread parts of the shoe assembled and secured. Fig. 12 is a section taken at line 1 in Fig. 11. Fig. 13 is a section taken at line 2 in Fig. 11. Fig. 14 is a perspective view of a toe-calk which may be employed as a tread-piece in the assemblage of tread-pieces in the body of the shoe. Fig. 15 is a plan view of the same. Fig. 16 is a section taken in direction of line 3 in Fig. 15. Fig. 17 is a section in direction of line 4 in Fig. 15. Fig. 18 is a plan view illustrating the inner flanges of the body turned inward before the shoe-body is nailed to the hoof of the animal. Fig. 19 is a section taken at line 5 in Fig. 18 and illustrating the same with tread-pieces indicated by dotted lines. Fig. 20 is a view of the body of the shoe secured to the hoof of the animal and before outer flange is set in. Fig. 21 is a cross-section of the same. Fig. 22 is a front view of the shoe secured to the hoof and outer flange turned inward, binding the tread part in place in the body of the shoe. Fig. 23 is a cross-section of the same, and Fig. 24 is a perspective view of a blunt toe-piece.

Similar letters of reference refer to similar parts throughout the several views.

In the drawings, A is the metal channeled body of my improved shoe, which body may be of iron or steel, cast or rolled or forged, and ductile, so as to adapt its clamping-flanges to be bent in either direction, yet I prefer to form the said body of steel from a channel-form bar A′, embodying the base-web a and side flanges a' and a^2, as shown in Fig. 5. In bars A′ for heavy shoe-bodies I prefer to form in the base-web a of the same a groove a^3, run parallel with the flange a^2 and near its base, for receiving the lower portion of the heads of the nails which secure the body of the shoe to the hoof, as illustrated in Figs. 21 and 23. This body A may be made in the forms and modifications shown in Figs. 1, 8, and 10 and with dimensions and proportions of parts as may be required or be advantageous in light, medium, and heavy shoes for light or heavy or other service. Although these several modifications show the continuity of the bodies A to be broken at their heel ends, so that the terminals a^4 a^4 do not touch each other, yet they may touch, or the body may be made to be continuous by suitable welding, as by butt-welding, when preferred, and any suitable machine, method, or series of processes may be employed for forming these bodies A of the shoe from the grooved channel-form bar A′ into shapes in curved direction for a suitable near correspondence with

hoofs of animals they may be applied to and for punching the nail-holes *b b* in the web *a* at the groove a^3 and for dividing or breaking the continuity of the flanges *a'* a^2 where it may be found to be advantageous in the shoe or where the character of the service of the shoe may require for good results. The interior side flange *a'* of the bar A', from which the body A may be formed, is turned from inclined position, shown in normal position in the bar A', Fig. 5, and from position in the turned body A in Figs. 1 and 2 to the inclined position shown in Figs. 3 and 4, so as to overhang the channel A^2 of said body and form a dovetail form of wall to said channel. This interior flange *a'* in bodies A for heavy shoes is made thicker than in bodies for light shoes and therefore is preferably slitted by slits *c c* at suitable intervals, so as to permit the heavy metal of the said flange between any two of such slits to be more readily turned to a suitable inward incline than the flange could be were it continuous or unbroken. These slits *c c* may be made by any suitable means and by separate or simultaneous operations when the body is being shaped or before or after shaping the same. If preferred, the exterior flange a^2 may also be slitted at two or more points in each limb of the said body, as at *c' c'* in Figs. 1 and 3, for facilitating the inward turning of said flange after the body A has been nailed to the hoof of the animal and the tread-pieces have been placed in their proper position in the channel A^2 of the same. With this body A of the shoe I employ wearing-pieces in the form of removable tread-pieces D, filling the channel A^2 of said body when properly assembled and secured and having a projection down from the lower edges of flanges *a'* a^2 to such distance or distances as may be found to be advantageous for use in particular seasons of the year or may be suitable for particular service or as the nature of the pavements or road-beds may require. For adapting these tread-pieces D for services suitable as wearing-pieces in the shoe as differing seasons, services, and conditions of streets and road-beds may require I provide with the body A of the shoe tread-pieces which are interchangeable and removable at will, so that said pieces may be made to comprise differing assemblages of the same and these be made at pleasure without removal of the said body A from the animal's foot. Although a single wearing part of rubber or other suitable material having form corresponding with that of the channel A^2 and beveled or inclining sides *e e* and a thickness greater than the depth of the said channel, as indicated by dotted lines in Figs. 18 and 19, may be employed for use on sand roads or asphalt pavements, yet preference is given to employment of sectional wearing parts, which comprise two or more tread-pieces D of like material or character of substance or of materials differing in character or qualities, as may be found to be advantageous. Such an assemblage is shown in Figs. 6 and 7 and also in Figs. 10, 11, 12, and 13.

In the tread-pieces D, Figs. 6 and 7, the toe-piece *d* is of composite structure, in which the lower portion, Fig. 7, is of elastic vulcanized rubber and its upper portion is of composition of vulcanite and corundum or other suitable hard gritty mineral having adhesion, with its lower or base portion of elastic character, which is indicated by the slightly-undotted portion of toe-piece *d* in Fig. 7. The heel-pieces *d'*, Fig. 6, of this assemblage of tread-pieces D is preferably made with a composite structure similar to that of said toe-piece *d*, so as to combine in each a lower or base portion of elastic rubber in adhesion to the upper portion of composition of vulcanite and corundum, while the intermediate pieces d^2, Fig. 6, are of vulcanized rubber or other suitable yielding material.

In Figs. 11 and 12 are shown the wearing parts of the shoe having an assemblage of tread-pieces D' of differing materials which are adapted for use on hard stone pavements and in seasons when ice generally covers large portions of the roadways of streets. In the assemblage of tread-pieces D and D' in Figs. 11 and 12 the toe-piece d^3 in the same is of hard metal and preferably of the kind known as "unmalleabled" cast-iron, (from which cast malleable iron is produced by process of annealing.) This toe-piece d^3 (shown in Figs. 11, 12, 13, 14, 15, 16, 17, and 24) is preferably made of hard cast-iron, as above described, or of hardened steel and may be of any suitable form and have its front and rear sides, as *s s*, made in correspondence with the flanges *a'* a^2, which clamp said toe-piece, and have its tread end portion *s'* made with tapering form, so as to produce a biting edge, with their sides made with inclines s^2, as shown in Figs. 15 and 17. Made integral with this toe-piece d^3 and projected from its upper side is a short tenon s^3, which fits in perforation a^4 in the web *a* of the body A at toe portion of the latter, as shown in Figs. 10, 12, and 13 and indicated by dotted lines in Figs. 11 and 22. In this same assemblage of wearing parts, Figs. 11 and 12, are shown heel tread-pieces d^4, made of metal similar to that of which toe-piece d^3 is made. These heel-pieces may be of any suitable form and have sides and ends beveled in manner similar to the sides and ends of the toe-piece d^3 and are preferably provided with a tenon s^5, fitting in perforations a^5 in the web *a*, as shown in Figs. 11 and 12. In some cases these toe and heel pieces d^3 d^4 may be made with blunt or flat tread-surfaces similar to tread-surface s^6 in Fig. 24. In this assemblage of tread-pieces D and D' the intermediate pieces d^2, arranged between the metal toe-piece d^3 and the metal heel-pieces d^4, are preferably made of substance similar to that before described as employed in intermediate pieces d^2 in the as-

semblage shown in Figs. 6 and 7, and an intermediate wearing-piece (also marked d^2) is shown to be arranged between the heel-pieces d^4 d^4 in Fig. 11. Elastic cushions e', of thin rubber or other suitable material, are employed between the toe-piece d^3 and the web a of the body A and between the heel-pieces d^4 d^4 and the same web, as shown in Fig. 12. These elastic cushions operate to prevent the shocks from the pound of the metal pieces d^3 and d^4 being communicated to the body A of the shoe and the foot of the animal. In Figs. 11 and 12 the intermediate elastic pieces d^2 are shown to project to a distance at a point or line between the lower edges of the clamping-flanges a' a^2 and the plane of the lower edge of the toe and heel pieces d^3 and d^4, yet these intermediate pieces may project to the plane of the tread edges of said pieces d^3 and d^4, as indicated by dotted lines in Fig. 12 and full lines in Figs. 22 and 23, or these intermediate pieces d^2 may be projected down to any preferred line between the lower edges of the clamping-flanges and the plane of the lower edges of said toe and heel pieces.

In my above-described parts comprising my improvements the metal body A of the horseshoe is made to constitute a simple form of device for securing at pleasure the detachable and replaceable tread-pieces D to the foot of the animal, the said body itself being only a part of a shoe which is progressively changed in its portions from the bar-form condition, as shown in Fig. 5, to its form of finish and completion after the said body has been secured by nailing to the hoof and the tread-pieces have been properly placed and secured by means of the exterior clamping-flanges a^2, as described, such removable and replaceable tread-pieces of kind or character being employed to complete the shoe while the body A is secured to the foot as may be selected as being the best adapted at the time for use with the metal attaching body of the uncompleted shoe.

By my above-described improvements the body A of the horseshoe may be securely nailed to the hoof of an animal by means of nails which are passed through the web a at lines corresponding with lines on which nails are driven in ordinary solid horseshoes, thereby permitting the wearing tread-pieces D of the shoe to be made wider and allowing the replaceable wearing tread-pieces of the shoe to be made from one side of the completed shoe to the other about in correspondence with the width of the hoof to which the body part A is secured instead of being contracted in width, as in cases in shoes which are secured to the hoof by nails driven on row-lines through a web which is exterior to the exterior flange a^2, as in some cases heretofore, and, further, the width of the material of the tread-pieces may also be greater, so that a greater area of wearing-surface may be provided for contact with the surfaces of the street. Another advantage is that the wearing tread-pieces may at pleasure be placed and secured to the body of the shoe while the said body is secured to the hoof and according as the season of the year or condition or nature of the pavements, roadways, or surfaces of the same may require the tread-pieces D and D′ to be changed for use for driving on ice, snow, stone, asphalt, or dirt roads by simply loosening, by means of a suitable instrument, the grip of the portions of the clamping-flanges a' a^2 to a degree required for allowing the removal of those tread-pieces to be replaced by others of another suitable or preferred form and then tightening said flanges on the replacing-pieces. These clamping-flanges a' a^2 may be variously broken in their continuity as the service of the shoe may require and still be operative substantially as unbroken flanges for strong holding on the tread-pieces and protection of the sides of same.

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

1. In a horseshoe, the combination with one or more tread-pieces which comprise the entire wear-receiving portion of the shoe and have inclined sides and taper from base to wearing-face and having elastic-rubber base portions, of the metal body A having a horseshoe form and comprising a horizontal web suitably pierced by nail-holes located and arranged in suitable rows at near the exterior edge margins of said web, nails securing said web to the hoof of an animal, and interior and exterior clamping-flanges, integral with the respective interior and exterior edge margins of said web and broken in their continuity at one or more points in the length of each said flanges, and comprising the sole means for securing said tread-pieces in place in said metal body, and also adapted to be spread outwardly at will for removal and replacement of said tread-pieces while said body is nailed on the foot, substantially as and for the purposes set forth.

2. In a horseshoe, the combination with a metal channeled body of horseshoe form and comprising a web which is pierced by suitable nail-holes at its outer edge margin, and having an exterior clamping-flange which is integral with the outer edge margin of said web and has its continuity broken from its point of junction with said web to its lower edge, and having an interior clamping-flange also having its continuity broken from its junction with the web, to its edge, both said flanges being adapted to be turned inwardly toward and from each other at pleasure, and nails securing said body to the foot of an animal, of a sectional wear-receiving portion which comprises removable tread-pieces having tread portions of selected kinds described and the described elastic element between the latter and the web of said body, and having

their sides inclined toward each other as they run from base to wearing-face so as to be confined in place within said metal body solely by the grip of said clamping-flanges turned tight on their inclined sides, the said clamping-flanges being adapted to be loosened from their grip on said sectional wear-receiving pieces and the latter removed at pleasure from said metal body and replaced by other similar or corresponding form pieces of the same or different quality or character as described, substantially as set forth.

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Witnesses:
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CHARLES SELKIRK.