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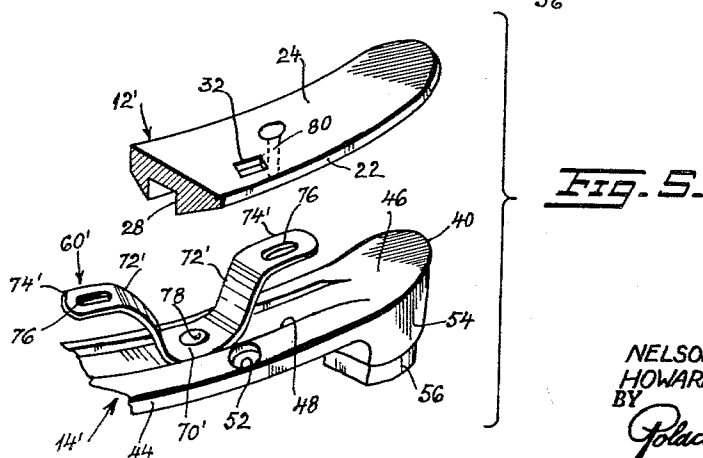
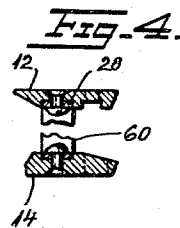
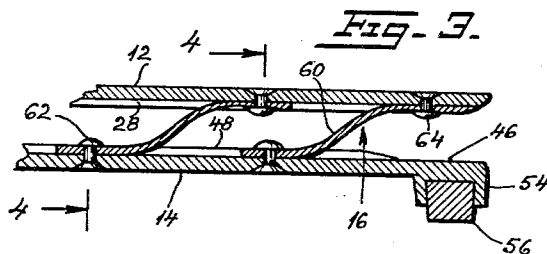
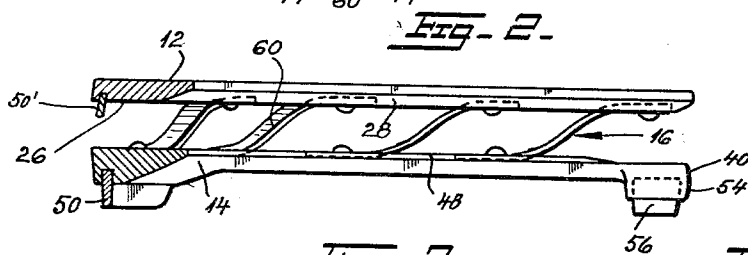
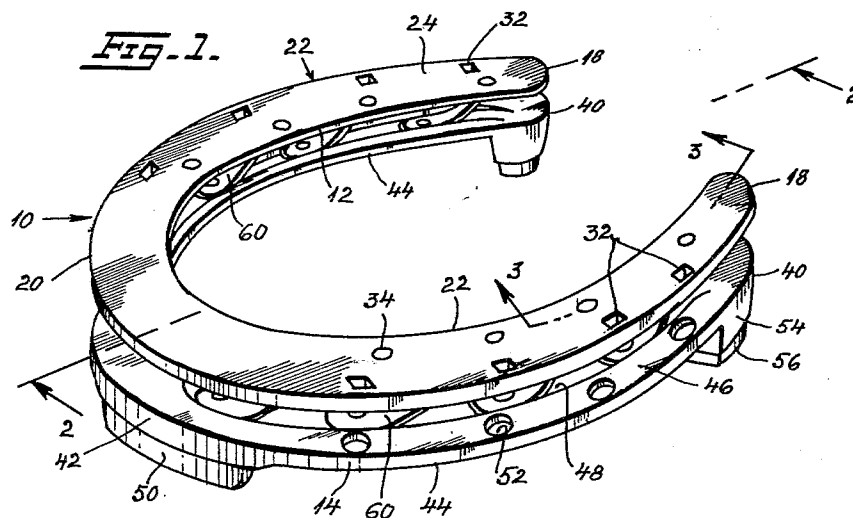
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3,180,421

SHOCK ABSORBENT HORSESHOE

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3 Sheets-Sheet 1



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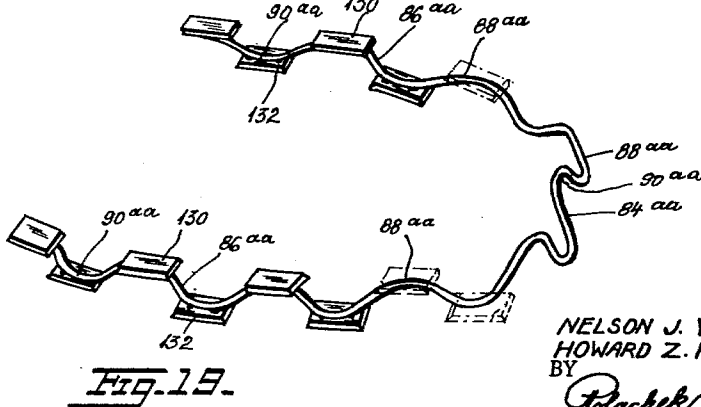
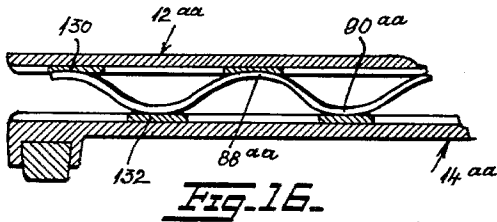
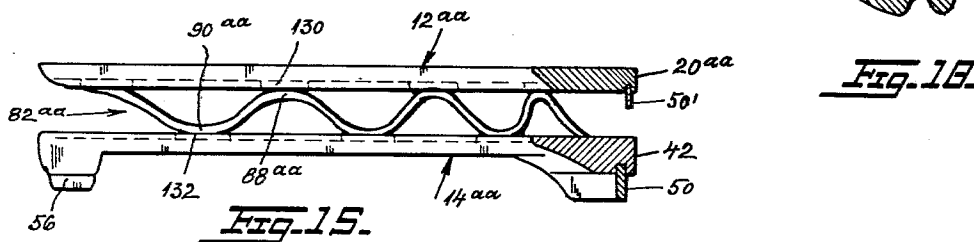
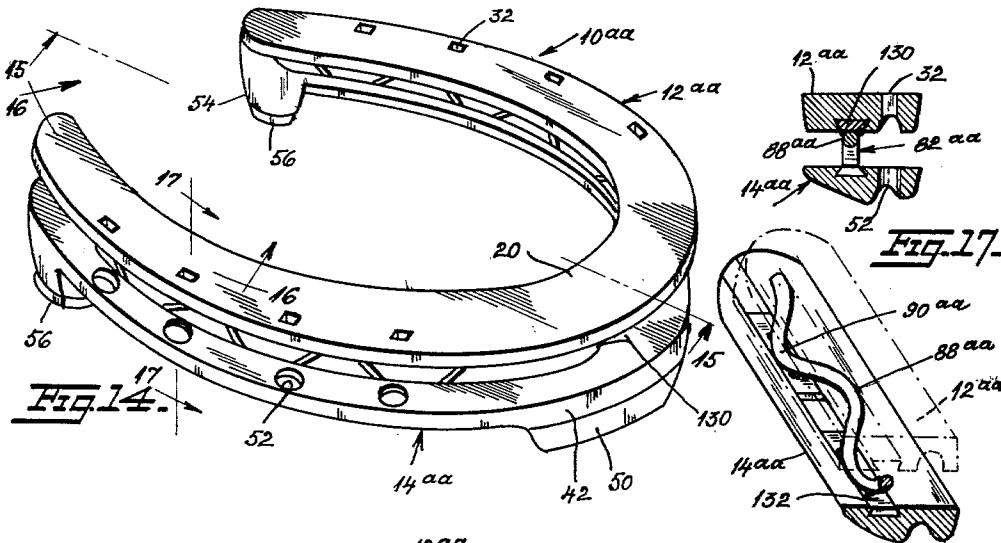
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SHOCK ABSORBENT HORSESHOE

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1

3,180,421

SHOCK ABSORBENT HORSESHOE

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2 Claims. (Cl. 168—12)

This invention relates generally to shoes for horses and more particularly to new and useful improvements in a racing plate for a race horse.

Some race horses have weak tendons in their fore legs and very often they bow these tendons, the reason being that there was constant pressure exerted on them. In the event that a race horse bows his tendons, he almost always loses a great deal of his racing ability and for example he could have been worth a million dollars and with such bowed tendons, this worth could be reduced to be less than one thousand dollars.

The principal object of this invention is to prevent a horse from bowing his tendons.

A further object of this invention is to make it possible for a horse which has sesamoid trouble and suffers great pain while in training to be relieved of great pressure and pain.

A still further object of this invention is to alleviate the pressure from the fore legs of a horse that has already previously bowed his tendons thereby permitting him to give his full racing performance thereafter.

Another object of the invention is to provide a sectional racing plate with cushioning means between the sections.

A further object of the invention is to provide a racing plate that is highly efficient for the purposes intended.

For further comprehension of the invention, and of the objects and advantages thereof, reference will be had to the following description and accompanying drawings, and to the appended claims in which the various novel features of the invention are more particularly set forth.

In the accompanying drawings forming a material part of this disclosure:

FIG. 1 is a top perspective view of a racing plate embodying one form of the invention.

FIG. 2 is a sectional view taken on the line 2—2 of FIG. 1.

FIG. 3 is a sectional view taken on the line 3—3 of FIG. 1.

FIG. 4 is a sectional view taken on the line 4—4 of FIG. 3.

FIG. 5 is a spread perspective view of the end of one section of a racing plate embodying a modified form of the invention.

FIG. 6 is a view similar to FIG. 1 of a racing plate embodying another modified form of the invention, parts being shown broken away, and parts being shown in dot-dash lines.

FIG. 7 is a spread perspective view of a part of a racing plate embodying a further modified form of the invention.

FIG. 8 is a top perspective view of yet another modified form of cushioning device.

FIG. 9 is a spread perspective view of one section of a racing plate embodying the device of FIG. 8.

FIG. 10 is a side view of a racing plate embodying a still further modified form of the invention.

FIG. 11 is a perspective view of a spring used in the form of FIG. 10.

FIG. 12 is a part side and part sectional view of a racing plate embodying an additional modified form of the invention.

FIG. 13 is a perspective view of a magnet used with the form of FIG. 12.

2

FIG. 14 is a view similar to FIG. 1 of still another modified form of racing plate.

FIG. 15 is an enlarged sectional view taken on the line 15—15 of FIG. 14.

FIG. 16 is an enlarged sectional view taken on the line 16—16 of FIG. 14.

FIG. 17 is an enlarged cross-sectional view taken on the line 17—17 of FIG. 14.

FIG. 18 is a fragmentary perspective view of a portion of the assembly shown in FIG. 14.

FIG. 19 is a perspective view of the wire spring device used therewith.

Referring more in detail to the drawings, in FIG. 1 a racing plate for race horses is shown and designated generally by the reference numeral 10. The racing plate is preferably formed of aluminum and is formed with a sectional body semi-oval in plan having an upper section 12 and a lower section 14. The sections are in superimposed relation and are connected to each other by a cushioning device indicated generally at 16.

The upper section 12 has heel portions 18, 18, a curved toe portion 20 and curved quarters 22, 22 between the heel portions and toe portion. The upper face 24 has a flat and smooth surface. The bottom face 26 is formed with a shallow groove 28 along each quarter 22. The bottom face along the toe portion is plain and smooth. Rectangular-shaped spaced holes 32 are formed along the outer periphery of the quarters 22, 22, eight of such holes being shown. A similar number of round spaced holes 34 are formed along the center area of the quarters.

The lower section 14 is of similar shape and of similar dimensions with heel portions 40, 40, curved toe portion 42 and curved quarters 44, 44 between the heel portions and toe portion. The top face 46 along the quarters is formed with curved grooves 48 centrally thereof. A curved calk 50 depends from the curved toe portion 42 and is frictionally embedded therein. Round-shaped holes 52 are formed along the outer periphery of the quarters 44, 44 in line with the holes 32 in the upper section 12. The heel ends are enlarged downwardly as indicated at 54 and fixed in sockets in said enlargements are depending calks 56.

The sections 12 and 14 are secured together by the cushioning device 16. This cushioning device 16 consists of a plurality of short rectangular-shaped compound curved leaf springs 60. One end of each spring 60 seats in the groove 48 in the upper surface of the lower section 14 and its other end seats in the groove 28 in the lower surface of the upper section 12. A rivet 62 passing through a hole in the end of the spring fastens said end to the lower section 14, and another rivet 64 passing through a hole in the other end fastens said other end to the upper section 12.

In use, the racing plate 10 is secured to the horse's hoof by means of horseshoe nails driven through the aligned square holes 32 by means of a punch device extending through the aligned holes 52 in the lower section of the plate. The springs 60 absorb the shocks and strains of the feet of the horse when running.

In FIG. 5, a modified form of cushioning spring 60' is shown having a body substantially U-shaped in configuration, with a horizontally disposed base 70', and with upwardly slanting arms 72' terminating in horizontally disposed fingers 74' having holes 76 therein. The base 70' is secured to the lower section 14' by a rivet 78 and the fingers are secured to the upper section 12' by rivets 80.

FIG. 6 illustrates another modified form of cushioning spring 82 with a body shaped to conform to the shape of the upper section 12'' and lower section 14''. The body of the spring is formed of flat spring metal stock with a curved bight section 84, and corrugated legs 86, 86, the

3

corrugations constituted by hills 88 and dales 90 and forming individual spring elements. The dales 90 are formed with elongated slots 92 and the hills with elongated slots 94, in alignment with each other. The cushioning spring 82 is placed between the lower section 14" and the upper section 12" with the bight section 84 placed between the toe portions 20" and 42" of the upper and lower sections 12" and 14", respectively. The spring is secured in position by rivets 96 passing through the slots 92 in the dales 90 into the lower section 14" and by rivets 98 passing through the slots 94 in the hills 88 into the upper section 12".

The modified form of cushioning spring 82'" shown in FIG. 7 is similar to the cushioning spring 82 of FIG. 6 except that the hills 88'" and dales 90'" are not perforated to receive rivets but instead the spring is fastened in position between the upper section 12'" and the lower section 14'" by peening the material of the lower section 14'" over the dales as indicated at 100 along the edges of the groove 48'" therein, and by peening the material of the upper section 12'" over the hills as indicated at 102 along the edges of the groove 28'" therein. A plate 104 has one end secured to one of the quarters 22'" of the upper section 12'" with its other end extending laterally thereof to serve as a handle for manipulating the section 12'".

Another modified form of cushioning spring device 82^x is shown in FIGS. 8 and 9. The spring device 82^x consists of a body shaped to conform to the shape of the upper and lower sections 12^x and 14^x of flat spring stock to be placed between the upper and lower sections. Pairs of opposed upper and lower spring elements 60^x are secured to the upper and lower surfaces of the legs 86^x of the body of the spring in spaced relation therealong. Each spring element 60^x has a substantially U-shaped body disposed across the leg with its bight portion 112 secured to the surfaces of the leg by welding or the like and with its legs 114 slightly curved outwardly at the extremities 116 thereof. The extremities 116 of the spring elements 60^x on the top surface of the legs frictionally interlock with the outer surfaces of the walls of the groove 28^x of the upper section 12^x, and the extremities of the spring elements on the bottom surface of the legs interlock with the outer surfaces of the walls of the groove 48^x of the lower section 14^x. The spring 82^x is secured to the upper section 12^x by rivets 98^x and to the lower section 14^x by rivets 96^x.

In FIGS. 10 and 11, the modified cushioning device takes the form of a plurality of spaced coil springs 60^a spaced along and between the quarters of the upper section 12^a and the lower section 14^a, with the top ends of the springs seated in and impinging the base of the groove 28^a of the upper section 12^a and with the bottom ends seated in and impinging against the base of the groove 48^a in the lower section 14^a.

FIGS. 12 and 13 illustrate the cushioning device between the upper and lower sections 12^x and 14^x in the form of a pair of opposed spaced perforated permanent magnets 120, 120 secured in the grooves 28^x and 48^x, respectively, by rivets 122, with the North poles and South poles of the magnets in vertical aligned position. A pair of telescopic connections is provided between the upper and lower sections, each connection including a tubular socket member 124 extending upwardly from the top surface of the lower section 14^x and a solid post 126 depending from the lower surface of the upper section 12^x and slidable in the socket member 122. With the North and South poles of the magnets being in aligned position, the sections with the magnets are normally yieldably held apart in spaced relation. When pressure on the upper section 12^x is exerted by the horse's foot when running, the telescopic connections will permit the upper section to move toward the lower section to cushion the shocks against the action of the magnets.

Referring now to the modified form of racing plate

4

10^{aa} shown in FIGS. 14 to 18, inclusive, this form is used especially for training purposes. In this form, the lower section 14^{aa} and the cushioning device can be readily detached and the upper section 12^{aa} secured on the horse's hoof for racing.

In this form, the upper and lower sections 12^{aa} and 14^{aa} are similar in construction to the upper and lower sections 12 and 14 of FIG. 1 except that the upper section 12^{aa} is provided with a downwardly extending calk 130 at the front 26^{aa} thereof, and similar reference numerals are used to indicate similar parts thereof.

A modified form of cushioning device is shown in the form of a spring device 82^{aa}. The spring device has a body shaped to conform to the shape of the upper and lower sections 12^{aa} and 14^{aa} and is formed of round heavy wire stock. The body of the spring device is corrugated to form alternating hills 88^{aa} and dales 90^{aa} throughout its length. Short flat plates 130 are secured to the hills 82^{aa} longitudinally thereof by welding or the like and similar short flat plates 132 are similarly secured to the dales 90^{aa} longitudinally thereof along the legs 86^{aa} of the body, the hills and dales along the bight 84^{aa} being free of such plates. The plates are of dovetail shape.

The spring device 82^{aa} is positioned between the upper and lower sections 12^{aa} and 14^{aa}, respectively, with the upper plates 130 disposed in the groove 28^{aa} in the upper section 12^{aa}, which is of dovetail shape in cross section as shown in FIG. 17, and with the lower plates 132 disposed in the groove 48^{aa} in the top surface of the lower section 14^{aa}, which is of dovetail shape in cross section as seen in FIG. 18.

In assembling this form of racing plate, the spring device 82^{aa} is inserted lengthwise of the upper and lower sections with the free ends of the legs 86^{aa} leading the way. By pulling on the spring device in the opposite direction, the racing plate can be readily disassembled and the upper section 12^{aa} used as the racing plate on the foot of the horse for racing.

While we have illustrated and described the preferred embodiments of our invention, it is to be understood that we do not limit ourselves to the precise constructions herein disclosed and that various changes and modifications may be made within the scope of the invention as defined in the appended claims.

Having thus described our invention, what we claim as new, and desire to secure by United States Letters Patent is:

1. A horseshoe adapted for use on racing horses comprising an upper hoof engaging metal plate substantially oval in plan, means by which said upper plate is adapted to be secured to a horse's hoof, a complementary ground engaging lower metal plate spaced from said upper plate; each of said plates having a curved toe portion, a pair of heel ends, and a pair of opposed similar arcuate side sections by which said toe portion is connected to said heel ends; cushioning means by which said upper and lower plates are yieldingly connected together disposed between the arcuate sections of said upper and lower plates; said cushioning means comprising a plurality of spaced leaf springs, and each of said leaf springs comprising an upper flat section and a lower oppositely extending flat section which are connected together by a compound-curve section; means rigidly securing said upper flat sections to said upper plate and said lower flat sections to said lower plate with the upper flat sections of all of said leaf springs extending in the same general direction, said means being such as to prevent sidewise movement of said upper and lower plates with respect to each other.

2. A horseshoe adapted for use on racing horses comprising an upper hoof engaging metal plate substantially oval in plan, means by which said upper plate is adapted to be secured to a horse's hoof, a complementary ground engaging lower metal plate spaced from said upper plate; each of said plates having a curved toe portion, a pair of heel ends, and a pair of opposed similar arcuate side sec-

5

tions by which said toe portion is connected to said heel ends; the lower surface of said upper plate being provided with an annular groove which extends from heel end to heel end thereof, and the upper surface of said lower plate being provided with a similar opposed complementary groove; cushioning means by which said upper and lower plates are yieldingly connected together disposed between the arcuate sections of said upper and lower plates; said cushioning means comprising a plurality of spaced leaf springs, and each of said leaf springs comprising an upper flat section and a lower oppositely extending flat section which are connected together by a compound-curve section; means rigidly securing said upper flat sections to said upper plate within the groove provided in the lower surface thereof and the lower flat sections to said lower plate within the groove provided in the upper surface

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thereof with the upper flat sections of all of said leaf springs extending in the same general direction whereby any sidewise movement of said upper and lower plates with respect to each other is prevented.

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