

T. H. Ince,
Horseshoe.

N^o 55,215.

Patented May 29, 1866.

Fig. 1.

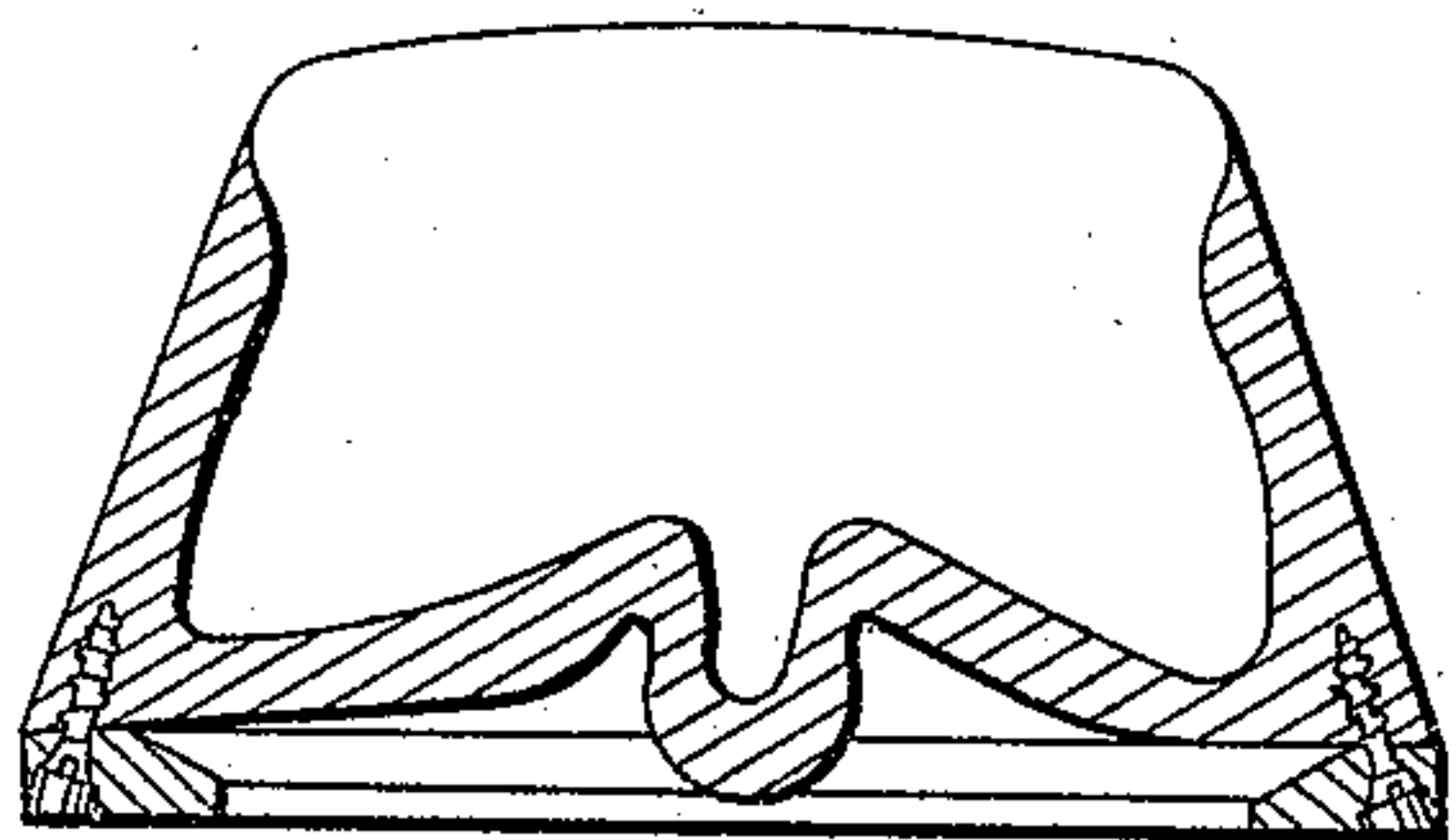


Fig. 3.

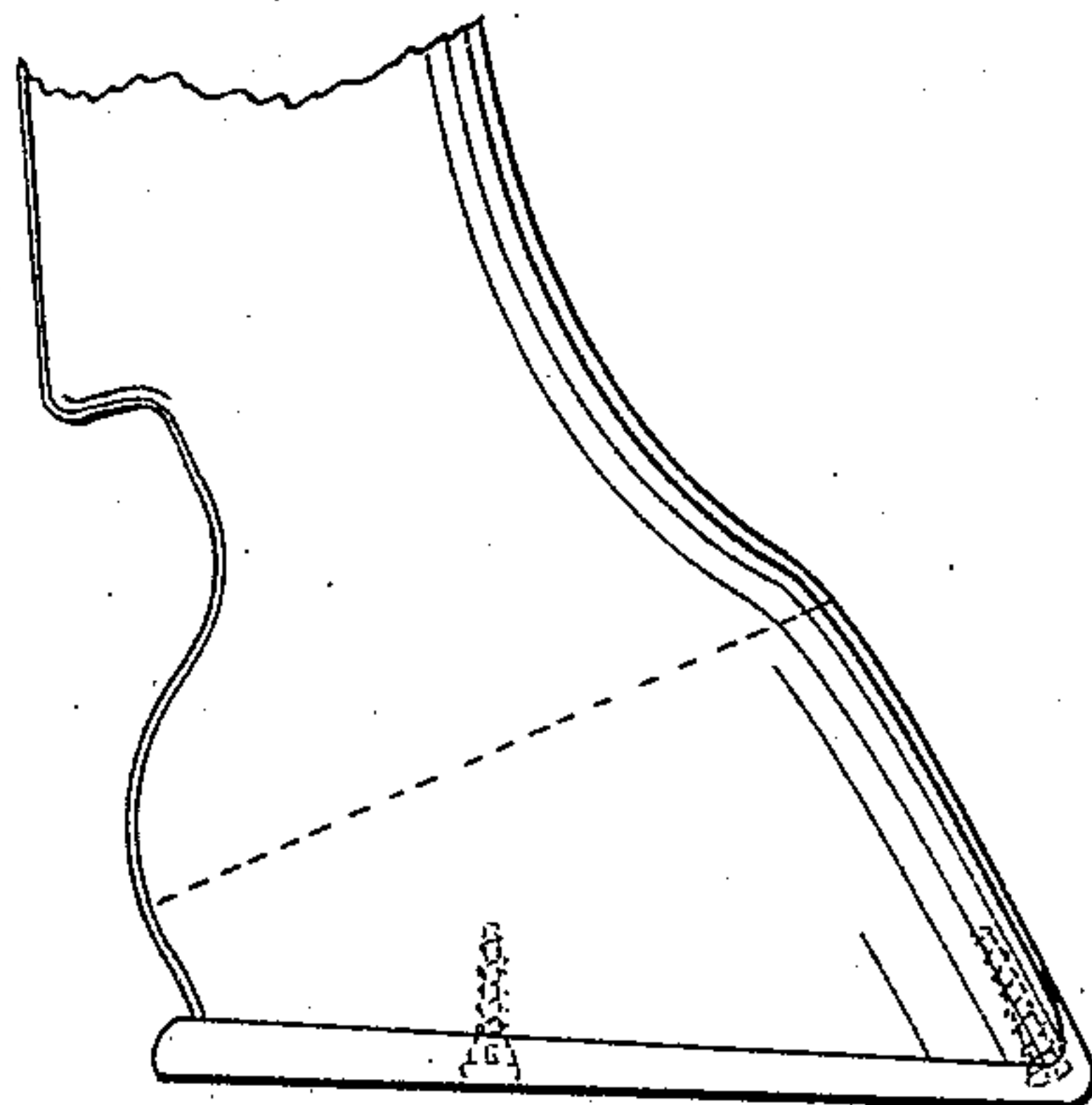
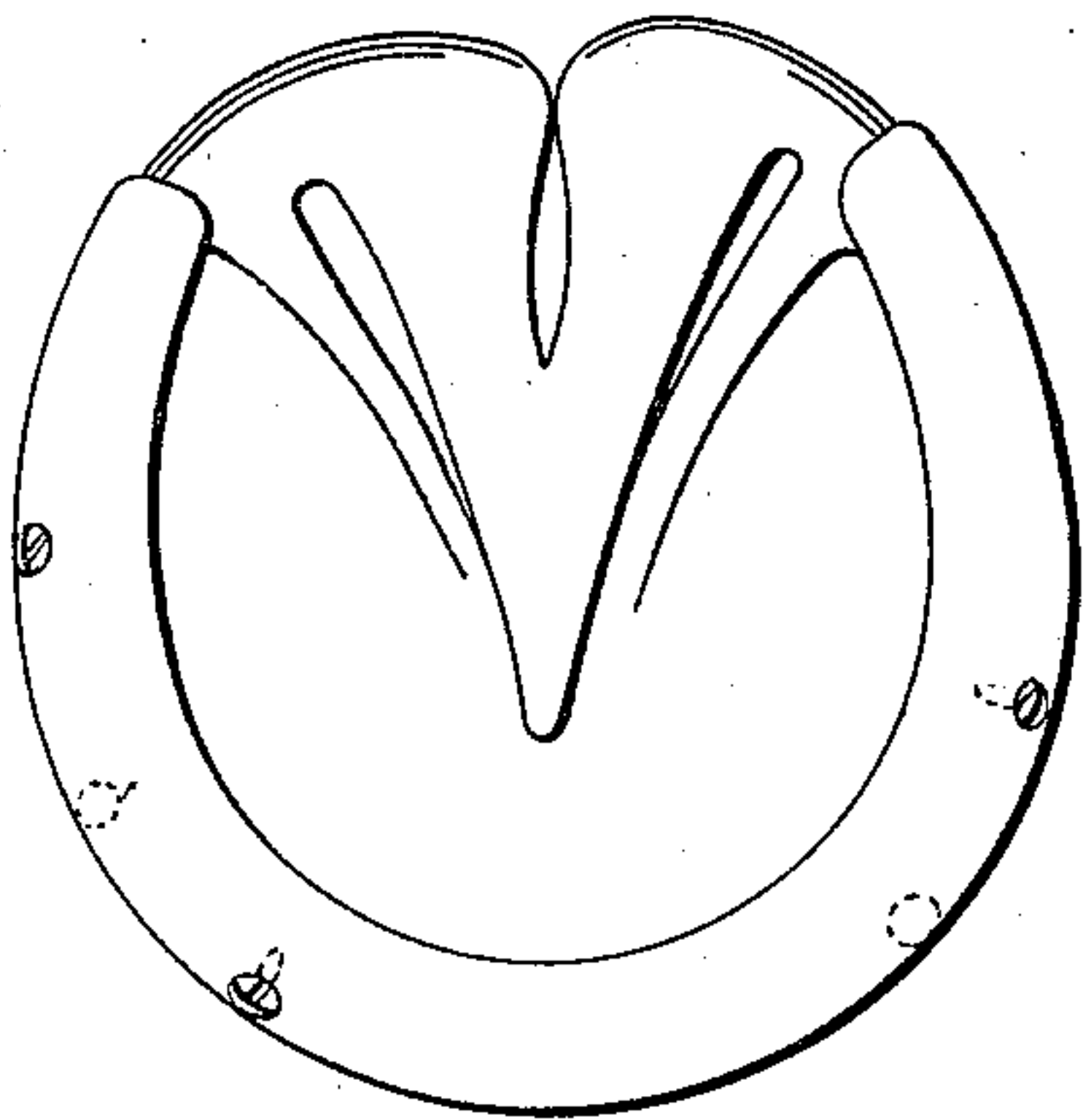


Fig. 2.



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UNITED STATES PATENT OFFICE.

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IMPROVED METHOD OF ATTACHING SHOES TO HORSES.

Specification forming part of Letters Patent No. 55,215, dated May 29, 1866.

To all whom it may concern:

Be it known that I, THOMAS HENRY INCE, of the Westminster Palace Hotel, Westminster, in the county of Middlesex, England, barrister-at-law, have made new and useful Improvements in the Mode of Shoeing Horses; and I do hereby declare the following to be a full, clear, and exact description of the nature and operation of the same, sufficient to enable one skilled in the art to which my invention is allied to use the same, reference being had to the accompanying drawings, which are made part of this specification.

This invention has for its object improvements in the mode of shoeing horses and other animals.

In shoeing horses as at present generally practiced nails are used, which are driven into the foot of a horse in a curved direction, the points being first bent in such manner that the end or point of each nail may, after entering the foot a certain distance, come out through the outer surface of the horn or hard crust of the foot, where the nails are clinched and filed off. In thus driving the nails to fasten a shoe considerable skill is required in order that the nails, on the one hand, may enter to the desired extent, and then that their points or ends may pass out of the foot, and, on the other hand, that this may be done without touching or injuring the tender parts interior of the hard crust or horn. Again, by penetrating the outer crust of the hoof, and by the hammering required to clinch the nail, the hoof is very seriously and permanently injured.

Now, according to the present invention, screws are used for fixing shoes onto horses' feet in the place of nails. The shoes are also formed and suitably drilled or punched, with or without fullering, for the reception of the screws, and so as to guide the screws into holes which are first drilled or bored in the under edge of the horn or hard crust of the feet. This is done in such manner that each screw may, when in the foot, be as nearly as may be parallel to the outer surface of the foot, the points of the screws not being allowed to pass out from the hard crust or horn of the foot. The screws employed have threads formed on them similar to wood-screws—that is, the threads or worms are of considerable depth as compared with the diameter of the shafts of the screws. It is preferred that the shaft of each screw should be cylindrical from end to end beyond

where it joins its nicked head; but this is not essential, as the shafts of each screw may be somewhat tapered. It is desirable that the diameter of the thread or worm of a screw should be somewhat less at the point or end than at the head, so that the succeeding turns of the thread or worm, as it enters the foot, are slightly larger than the preceding ones. The holes drilled in the foot are to be as large in diameter as the shafts of the screws used, in order that the hard part of the crust of the foot may not be pressed outward or inward by the shafts of the screws as they pass into the holes drilled in the foot. The holes drilled into the shoes are countersunk to receive the heads of the screws, and, as before mentioned, the directions in which the holes are formed through a shoe correspond with those formed in the foot, and this direction is such that each screw may be parallel, or nearly so, with the outer surface, and not so inclined thereto as to cause the point thereof to pass out.

In some cases the surfaces of the heads of the screws, in place of being at right angles to the central line of the shafts, are inclined thereto, so that when the screws have been screwed into the foot the heads of the screws may come more nearly parallel with the under surfaces of the foot than they would do if the heads were formed at right angles to their shafts. By thus using screws, and shoes suitable for receiving screws, the concussion produced by nailing is avoided.

The putting on of horseshoes may be performed by persons having comparatively little skill, as compared with that necessary in fixing shoes by nails as now practiced, and with no danger of pricking. The shoes will also be more securely held, and may be readily removed from the feet, as it will only be necessary to withdraw the screws. In the event of the heads of the screws being so much worn as to require fresh nicks, they may be readily produced by a cutter, so as to admit of the screws being turned back and withdrawn. This plan also obviates the injuries produced by hammering on the hoof in clinching the nails, producing scaly feet and other diseases of the feet—the too frequent result of fastening shoes by nailing—and the horse travels with comfort immediately after shoeing, instead of having to wear his shoes awhile to become accustomed to them when nailed and clinched to the hoof.

Having thus stated the nature of my invention, I will, with the aid of the drawings hereunto annexed, proceed more fully to describe the manner of performing the same.

Figure 1 is a vertical section of the hoof and shoe of a horse, the shoe being applied according to my invention. Fig. 2 shows the under side of the foot with the shoe, and Fig. 3 is a side view of the same.

A horse's foot is to be first evenly pared or prepared as usual. The shoe is to be of the usual shape, with the following modifications: Instead of a scratch, crease, or fullering, as usually made in the shoe, and instead of the nail-holes, as ordinarily made, a flat-bottomed fullering or a sufficient number of round holes of such a size as to receive the screw is to be made in the shoe in such parts of the shoe as the operator prefers. The holes are to be well countersunk, so as to protect the heads of the screws from wear. The holes are to be formed in directions as nearly as possible in a line with the outer crust or wall of the hoof at the place where the screw is intended to enter the hoof. It is preferred that the screws used should be made of the toughest metal with hardened heads, which may have a diameter one-half greater than the threaded portion. The screws may be nicked so as to be driven and withdrawn with a screw-driver, or they may have square or angular heads driven and withdrawn by a key or nippers. The shaft of each screw may be either cylindrical or tapering, and the thread should be deep and tapering slightly from the head to the point, and continued up so near the head as to prevent any unthreaded portion of a screw entering the hoof.

When the shoe is made to fit the hoof accurately with a suitable gimlet, drill, or other boring-instrument, which is to make a hole of the diameter of the shaft of the screw to be used. Each hole in the hoof is to be as nearly as may be parallel to the outer surface of the wall or crust. But as in most horses' feet the walls of the hoofs are firmer and tougher on the outside than on the inside, it is obvious that the holes through the shoe and into the hoof should be in such places and in such directions as to pass the screws into the most dense and tough parts of the horn. It will be evident that the strength, length, and size of the screw must be regulated to suit each horse according to its size, the work to be performed, and the weight of the shoe worn. The number of screws used for fixing a shoe must also be regulated by the same rule.

In replacing shoes the same holes in the foot should be used as far as practicable; but of course new holes may be made, according to the judgment of the operator. It is desirable to oil the screws before using. The depth of each hole should correspond exactly with the length of the part of the screw to be received. The holes in the shoe may be countersunk to such distance as to leave only sufficient metal between the screw-heads and the hoof to hold on the shoe, and the heads of the screws being beveled the holes may be so much countersunk as to admit of the shoe being worn down to the head of the screw before removing, if desirable. Should the heads of the screws become worn down and the nicks obliterated new nicks can be made. Whenever grooved shoes or shoes with intercepted calks, or any other formation of shoe by which the heads of the screw would be protected, are used, the holes in the shoe to receive the screws may or may not be countersunk, according to the judgment of the operator. The best kind of screws preferred to be used are similar to the ordinary wood-screw, with the thread running to the heads, but with deeper threads, smaller heads, and deeper nicks than the ordinary wood-screw.

It is found desirable after a horse has been shod a few hours, and when the hoof has become closely compressed to and has accommodated itself to the shoes, that the screws should be tightened, and when found necessary the screws may be again tightened.

Among the advantages resulting from my invention are the following: The outer crust of the hoof is not pierced, broken, or injured to any extent, as occurs in nailing. The concussion required in nailing is entirely avoided. The horse travels off with perfect ease and comfort immediately after being shod with screws. The shoes may be easily removed for the purpose of frost-roughing, or for any other purpose, and pricking, which so frequently results from nailing, is entirely obviated.

What I claim as my invention is—

The mode herein described of attaching a horseshoe by screws whose heads shall be sunk within the body of the metal, as shown and described, and which penetrate the hoof in a direction parallel, or nearly so, with the outer wall thereof, but without piercing the latter.

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