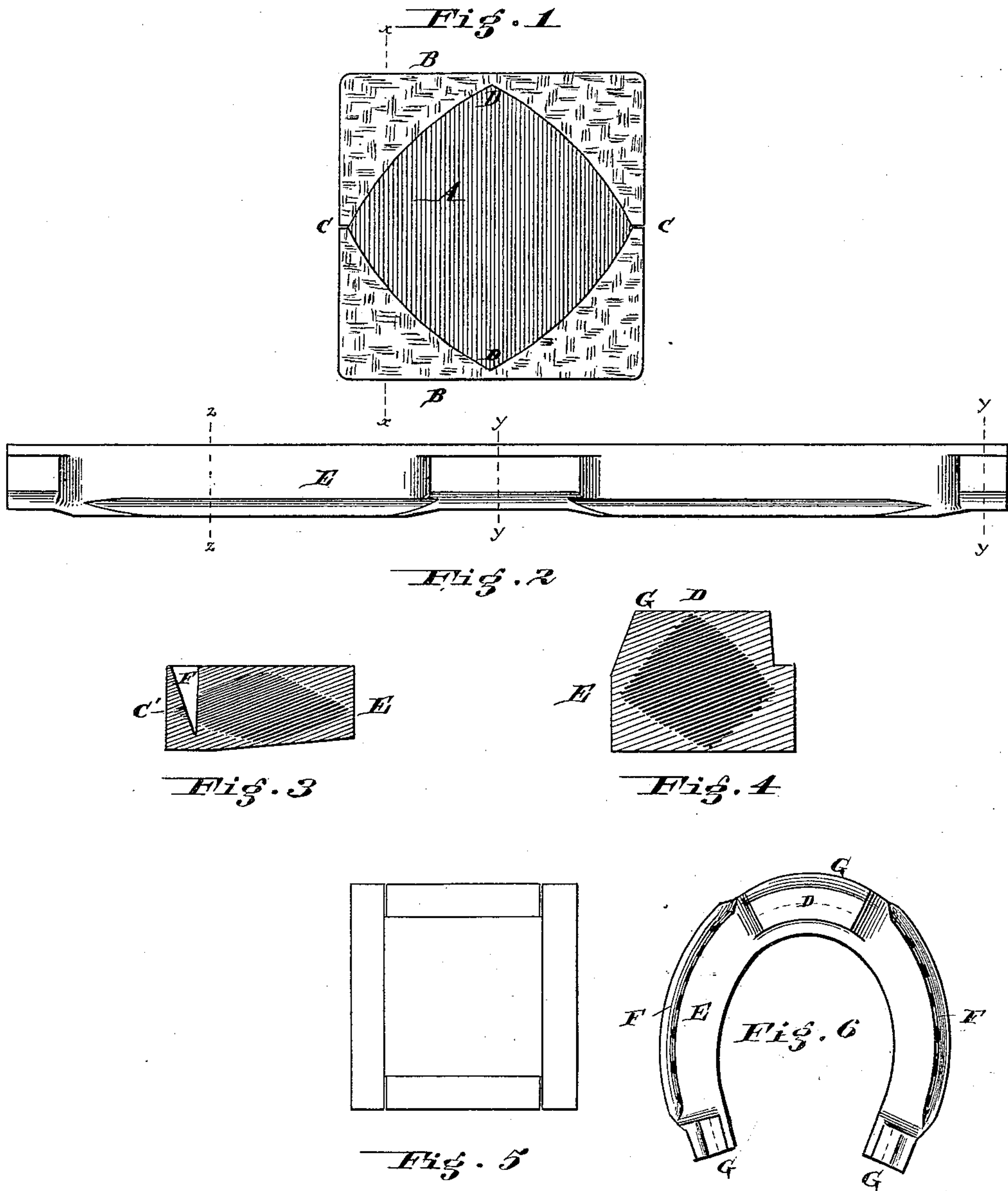


(No Model.)

W. G. HOWELL.  
HORSESHOE.

No. 265,418.

Patented Oct. 3, 1882.



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# UNITED STATES PATENT OFFICE.

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## HORSESHOE.

SPECIFICATION forming part of Letters Patent No. 265,418, dated October 3, 1882.

Application filed February 25, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM G. HOWELL, of the city and county of Philadelphia, and State of Pennsylvania, have invented an Improvement in the Manufacture of Horseshoes, of which the following is a specification.

My invention has reference to horseshoes made from compound bars of iron and steel; and it consists in forming a horseshoe of combined iron and steel by inclosing a bar of steel of substantially diamond shape or square in cross-section within two arch-shaped or channel bars of soft iron, the edges of said steel bar coinciding with that part of the arch-shaped pieces as would correspond with the spring and crown, and the pile thus formed is brought to a welding heat and run through rolls and rolled out into horseshoe-bars and formed into horseshoes in which the toe-calk and the heel-calks shall have an edge of steel on their wearing-surface, and that part of the bar which is grooved or creased for the reception of the nails will be mainly through the soft iron, and the weld between the iron and steel almost at right angles to said crease, all of which is more fully set forth in the following specification and shown in the accompanying drawings, which form part thereof.

Heretofore in making horseshoes it has been customary to pile the steel and iron so as to make welds in line with the crease; but this is objectionable, as in forming the said creases the steel is liable to be separated from the iron, and in some instances there was a layer of soft iron upon the toe and heel calks, and in other cases, after the pile has been rolled into horseshoe-bars, the creases have to be made through the steel.

The object of my invention is to construct horseshoes the calks of which will have a steel edge in the middle and incased on each side with soft iron, and in which the creases will be formed, to a very great extent, through soft iron, but through sufficient of the steel to give greater strength without the addition of labor, and, further, the welds are in lines at angles to the surface of the calks and creases.

In the drawings, Figure 1 is an end view of a pile from which to make horseshoe-bars embodying my invention. Fig. 2 is a plan of the horseshoe-bar rolled from said pile. Figs.

3 and 4 are cross-sections of same, respectively, on lines  $z z$  and  $y y$ . Fig. 5 is an end view of a pile as made by one of the methods heretofore used, and Fig. 6 is a plan view of my improved horseshoe.

A is a steel bar of substantially a diamond or square shape in cross-section, its sides being preferably curved, as shown. Inclosing this steel bar are two bars of soft iron, B B, their edges meeting on a line with two of the edges of the steel bar on diametrically-opposite sides, and, as shown at C C, the said bars A and B, when arranged as above, forming a square or rectangle in cross-section. From this it will be seen that the edges of the steel are only covered with a thin layer of soft iron, while the sides thereof are covered with substantially triangular bars of metal, two of said triangular bars being formed together to make a bar, B. The edge D of the steel bar will correspond to the calk when the pile is rolled out into horseshoe-bars, and the line  $z z$  will correspond to the creases. After being brought to a welding heat the pile is passed through suitable reducing and forming rolls, which weld the iron bars B B to the steel bar A, the joints C C becoming obliterated, and the steel edges D, &c., are brought practically to the surface, as shown in Figs. 3 and 4.

E represents the horseshoe-bar, in which G are the calks, and F the creases. It will be seen by examining Fig. 3 that the crease F is, to a very great extent, through soft iron, but is partly through the steel-edge C, and the welds are across the creases; and in Fig. 4 it will be seen that the calk G is made up of the steel edge D, inclosed on each side with soft metal. As the iron wears away the edge of the steel becomes more prominent, and is adapted to withstand great wear and impart great strength to the calk and the entire shoe, preventing easy wear, even upon the body of the shoe, as in the case of the calks. This form of pile, though particularly adapted to shoes having calks, is also adapted to shoes having no calks or toe-calks alone.

In this application I do not claim the general construction of making piles of combined iron and steel of shapes having but two joints in the puddle-bars which inclose the steel, and when placed together forming a stable pile, or



one which will not require bands to hold it together, as that forms subject-matter of another application bearing even date with this, this application being for a specific construction of  
5 horseshoes, as hereinbefore set forth.

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

1. A horseshoe which consists of a center of  
10 steel wholly inclosed in iron, to which it is welded, and provided with a steel wearing-edge running through the calks of said shoe, substantially as shown.

2. A horseshoe which consists of a steel cen-

ter of diamond shape, the edges correspond- 15  
ing with the sides of the shoe, said steel being wholly inclosed in iron, to which it is welded, and the creases for the nails being formed mainly through the iron, but also through one edge of the steel, substantially as shown and  
20 described.

In testimony of which invention I hereunto set my hand this 23d day of February, A. D. 1882.

W. G. HOWELL.

Witnesses:

H. DU PONT GERHARD,  
A. J. D. DIXON.