Behel & Buell,

Horseshoe.

No. 55,045. Patented May 29, 1866.

Fig. 1

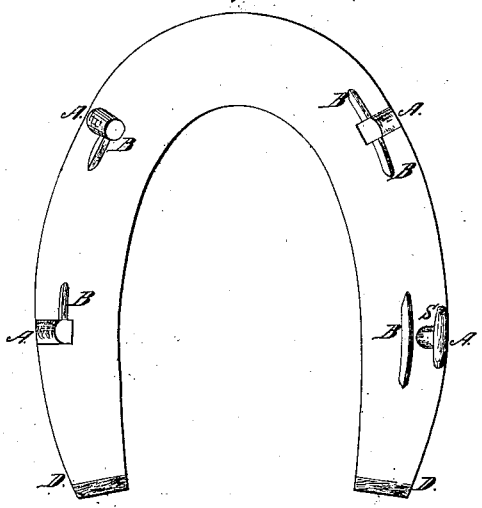

Fig. 2.

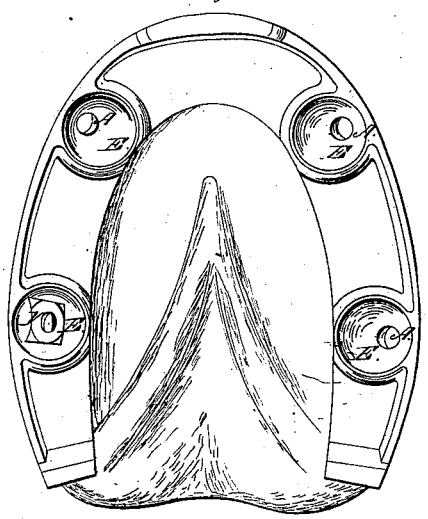

Fig. 4

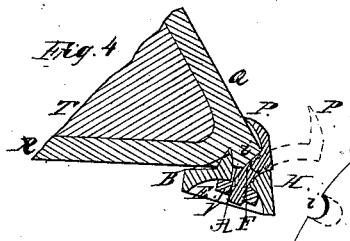

Fig. 3.

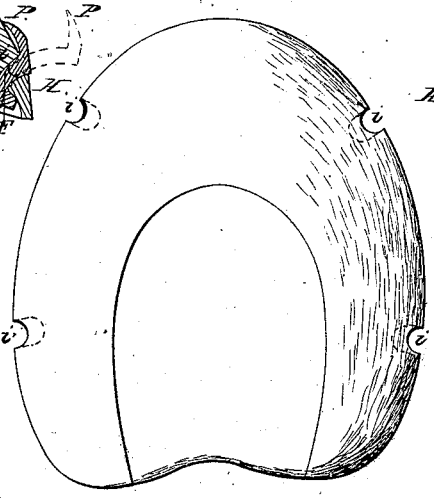

Fig 12

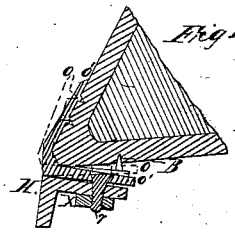

Fig. 5.

Fig. 6.

Fig. 7.

Fig. 8

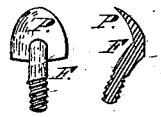

Fig. 9.

Fig. 10.

Fig. 11.

Witnesses

D. P. Holloway

A. Mahon

Inventor

Jacob Behel by his atts
John M. Buell &
John M. Buell

UNITED STATES PATENT OFFICE.

JACOB BEHEL AND JOHN M. BUELL, OF ROCKFORD, ILLINOIS.

IMPROVEMENT IN HORSESHOES.

Specification forming part of Letters Patent No. **55,045**, dated May 29, 1866.

To all whom it may concern:

Be it known that we, JACOB BEHEL and JOHN M. BUELL, of the city of Rockford, in the county of Winnebago, in the State of Illinois, have invented a new and Improved Method of Shoeing Horses and Mules without the Use of Nails; and we do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

Figure 1 is a top view of the shoe off the foot, showing the projections B B, &c., the openings A A, &c., one of the fastenings, S, in its place, and the outward bevel at the heel. Fig. 2 is a bottom view of the shoe on the foot, showing the openings A A, &c., the inverted cups E E, &c., and the nut *y* as placed on the fastenings. Fig. 3 is a top view of the foot prepared for the shoe, with the grooves *i i*, &c., ready to receive the fastenings. Figs. 4 and 12 are sectional views through the foot, shoe, and fastenings when the shoe is on. Fig. 5 is a sectional view of the shoe through the projection, opening, and cup. Figs. 6, 7, 8, 9, 10, 11, 12 are the fastenings, Fig. 12 also showing the application of the fastening to the foot.

The nature of our invention consists, first, in constructing the shoe with projections or spurs on the upper or foot side, as seen at B B, &c., Figs. 1, 4, 5, and 12; second, in constructing the shoe with openings through it, A A, &c., Figs. 1, 2, 4, and 5, elongated across the shoe on the top, but round on the bottom, where they terminate in the bottom of inverted cups, as shown at E E, &c., Figs. 2, 4, and 5; third, in constructing the shoe slightly beveled outward on the upper side, near the heel, at D D, Fig. 1, but shown by the red line D, Fig. 5; fourth, in constructing the devices shown by Figs. 6, 7, 8, 9, 10, 11, and 12, which we use in connection with the shoe for the purpose of fastening or securing it to the foot.

To enable others skilled in the art to make and use our invention, we will describe its several parts in detail, and also their combined operation in effecting the desired result.

The shoe and the devices for fastening it to the foot can be most easily constructed of cast malleable iron; but any other metal desired may be used, either cast or wrought.

The projections B B, &c., Figs. 1, 4, 5, and 12, should be solid with or firmly attached to the shoe, and rise from it in the form of a right-angled triangle standing on one of its perpendicular sides, with the other perpendicular side facing toward the outside of the shoe. While the above-described form of these projections is not arbitrary, its greater utility will be made to appear farther on in our specification. The dimensions of these projections should be varied according to the size and weight of the shoe and the service required of it. These projections must stand immediately behind the fastenings, Figs. 6, 7, 8, 9, 10, 11, and 12, when applied to the foot, and at the same time sufficiently near the outer edge of the shoe as when inserted to avoid the sensitive part of the foot. The object of this relative position of the projections and the fastenings will appear farther on.

The openings A A, &c., Figs. 1, 2, 4, and 5, are enlarged across the shoe at the top, the front or outer side descending through the shoe on a curve and the rear or inner side descending through perpendicular, as shown in Figs. 4 and 5, and emerging on the bottom in a round form and of a size just capable of allowing the lower end of the arm or shank F to pass through. These openings terminate at the bottom of the shoe in an inverted cup, the bottom of which forms the seat of the nuts which secure the fastenings, (see Fig. 2, where *y* is one of the nuts put in its place,) and the sides of these cups rise around and above the nuts so as to protect them from being disturbed or broken off by anything which might otherwise come in contact with them. E E, &c., Figs. 2, 4, and 5, show these cups.

The reason for constructing the openings through the shoe substantially as above described will be given hereinafter.

The bevel outward on the upper or foot side of the shoe near the heel will cause the weight of the horse upon it to counteract any tendency there might be from any cause to contract the heel of the foot. The object is to prevent any such contraction or any tendency in that direction, D D, Fig. 1.

Our devices for fastening and holding the shoe to the foot, in connection with the shoe above described, consist of the curved shank or arm F, Figs. 6, 7, 8, 9, 10, and 11, provided with a thread at the lower end to receive the nut *y*, Figs. 2 and 4, and the part P, Figs. 6, 7, 8, 9, 10, and 11, which takes hold of or is applied to the foot. This part P is to be made of any size and form that will best suit the

shape of the foot to which it is to be applied. This device, with proper variations of the part P, will be sufficient to fasten the shoe firmly to the foot, except, perhaps, in rare instances, where the outer wall of the foot rises perpendicular to the shoe or inclines outward as it rises from the shoe. In such case the device shown in Fig. 12 can be successfully used. This we will hereinafter explain. It will be noticed that our drawings and model in this case show several different forms of the part P. For example, Fig. 6 is rasp-faced on the side that applies to the foot. Fig. 7 is a section view of the same. Fig. 8 is concave on the side that applies to the foot. Fig. 9 is a section view of the same. Fig. 10 is concave, with toothed edge on the side applied to the shoe. Fig. 11 is a section view of the same.

The great advantage of the above-described forms of the part P is obvious. They will take hold of and hold to the surface of the hoof without cutting or indenting it, and should always be used in preference to forms having flanges or projections penetrating into the hoof.

Having explained the several parts of the shoe and the devices to fasten and hold it to the foot, we will bring them together, as is done in shoeing, and show their joint and perfect action in accomplishing the work. First a shoe and fastenings suitable are selected. The foot is then prepared in the ordinary way to receive the shoe. Next the recesses are cut in the proper places to receive the projections B B, &c. The shoe then being properly seated upon the foot, the notches or grooves *i i*, &c., Fig. 3, are cut beveling under the foot and directly above and opposite to the openings A A, &c. These notches or grooves should be of such shape and size as to allow the shank F to be passed down through the openings A A, &c., and yet so that when the fastening is in its proper place for holding the shoe the upper part of the shank will exactly fit in the notch or groove, as seen at *i*, Fig. 4.

By reference to Fig. 4 the whole process will be clearly understood. Here a sectional view is given through the foot, the shoe, the projection upon the shoe, the opening through the shoe, and consequently through the inverted cup, the curved shank, the part P, and the nut *y*.

Fig. 5 is a section view through the shoe at the same point as shown in Fig. 4.

In Fig. 4 Q is the outer crust or wall of the foot; R, the sole; T, the inner or vital part. The shoe is here shown applied to the foot, as above described, with the projection B inserted in the invisible outer wall of the foot, immediately behind the clasp or part P. The projections B B, &c., being placed in this position relative to the clasp or parts P, perform three important functions. First, they hold the shoe in position on the foot; second, they serve as abutments to protect the vital part of the foot from any injurious pressure when the clasp or part P is brought firmly upon and against the outer wall of the foot by the nut *y;* third, it forms, in connection with the clasp or part P, a dovetailed hold upon that portion of the insensible outer wall of the foot embraced between them, thereby rendering it impossible for the shoe to be removed from the foot without first removing the fastenings. This will hold true in all cases except where the outer wall of the foot rises perpendicular to the shoe at the point where the fastening is applied. In that case it is evident that this dovetailed hold cannot be taken, and then it is we may, if necessary, resort to the device shown in Fig. 12.

The object and purpose of making the outside of the openings A A, &c., descend through the shoe on a curve and of making the shank F curved is to cause the clasp or part P to be rotated or moved forward to the foot more rapidly as the shank F is descending through the opening A, and also to cause the force exerted by the nut *y* to be expended more directly and efficiently in pressing the clasp or part P and the upper part of the shank F against the foot in the direction of projection B, thus increasing the firmness and stability of their hold upon that portion of the hoof embraced between them. The object of enlarging the openings A A, &c., across the shoe on the top and descending through perpendicular on the inner side, it will be seen, is to enable the action and the result last above described to be fully realized, for if the openings were not so constructed the shank F would be brought against the inner wall of the openings and the efficiency of the fastenings be thereby greatly impaired.

It will be seen that the notches or grooves *i i*, &c., serve three important purposes: First, they allow shank F to be passed down through the openings A A, &c.; second, they form the seat for the inner side of the shank F, thereby contributing to its efficiency; third, they act as auxiliaries to the projections B B, &c., in keeping the shoe in position on the foot, and especially do they prevent the shoe from moving backward or forward.

It is plain that instead of constructing the shoe as shown in Figs. 1 and 2 we may vary it so as to use at any desired point the fastening shown in Fig. 12. If, for instance, the rear quarter of the foot rises perpendicular or inclining outward, we can use this fastening at that point and the other fastening on the front quarter. In order to do this the shoe will be constructed with a recess on the top just the size of the fastening on the outside of the shoe, but inclined and enlarged downward across the shoe to the inside, so that room will be thus afforded for this part of the fastening to move up and down when the shoe is on the foot. A bolt with the head countersunk in the fastening passes down through it and through a hole in the shoe. The fastening is placed in the recess, the bolt put in its place, and then the shoe applied to the foot, as seen in Fig. 12. The fastening now occupies the position of the red lines *o o*. Nut *x* is turned

onto the bolt *r*, the fastening is drawn into the position *o' o'*, projections *k k* are drawn into recesses previously cut into the shell of the foot, and the shoe is thus effectually fastened.

It will be seen that our method of shoeing is very simple and easy, and that any person experienced in the art can readily perform the work.

Thus, having fully explained the nature and operation of our invention, what we claim as new, and desire to secure by Letters Patent of the United States of America, is—

1. The curved clamp F P, with roughened faces or edges, when constructed substantially as and for the purpose set forth.

2. The clamp F P, in combination with a shoe having recesses E and openings A, with projections B and the nut *y*, for securing and tightening the shoe, the parts being constructed and arranged for use substantially in the manner and for the purpose set forth.

JACOB BEHEL.
JOHN M. BUELL.

In presence of—
THOS. J. RUDD,
C. J. HORSMAN.