R. B. HUGUNIN.

Horseshoe.

No. 199,830. Patented Jan. 29, 1878.

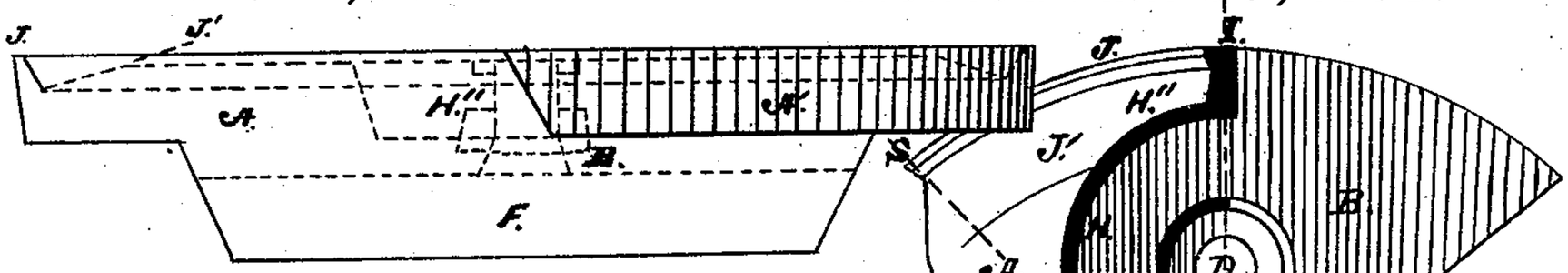

Fig. 1.

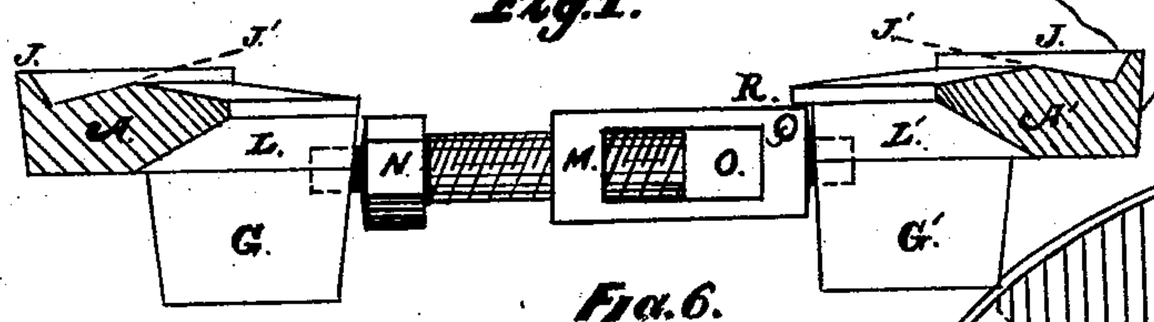

Fig. 6.

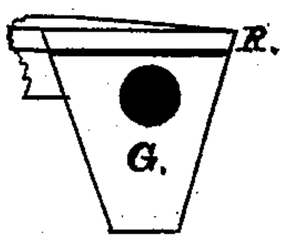

Fig. 8.

Fig. 7.

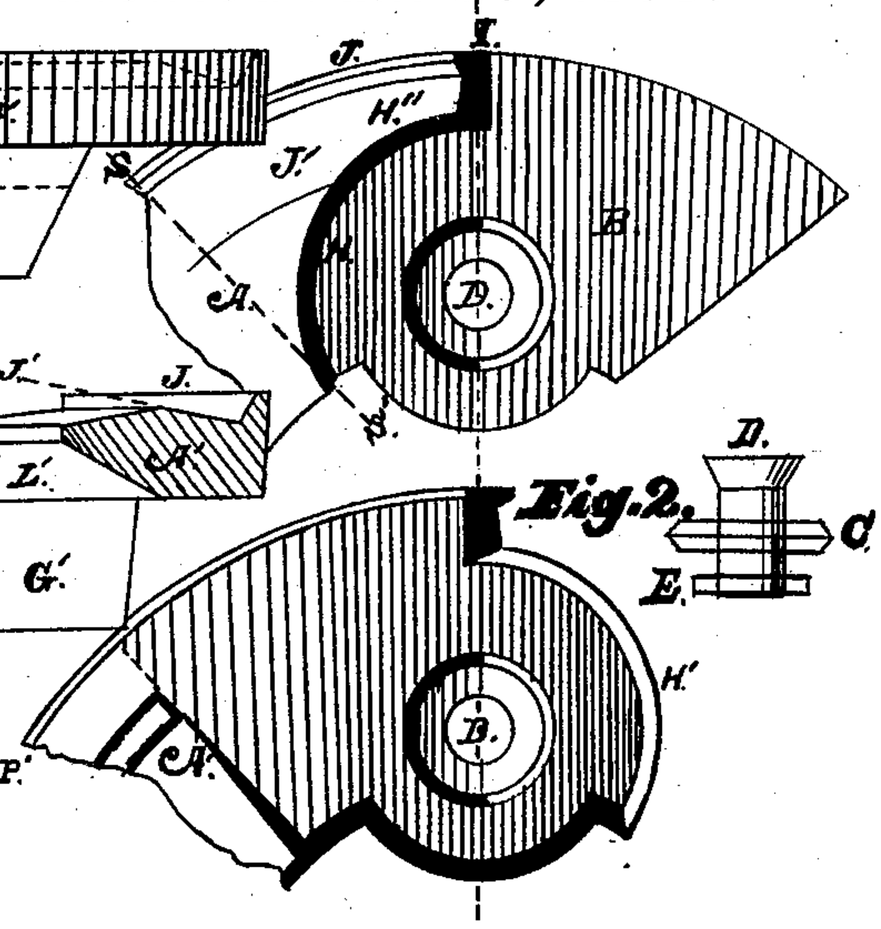

Fig. 2.

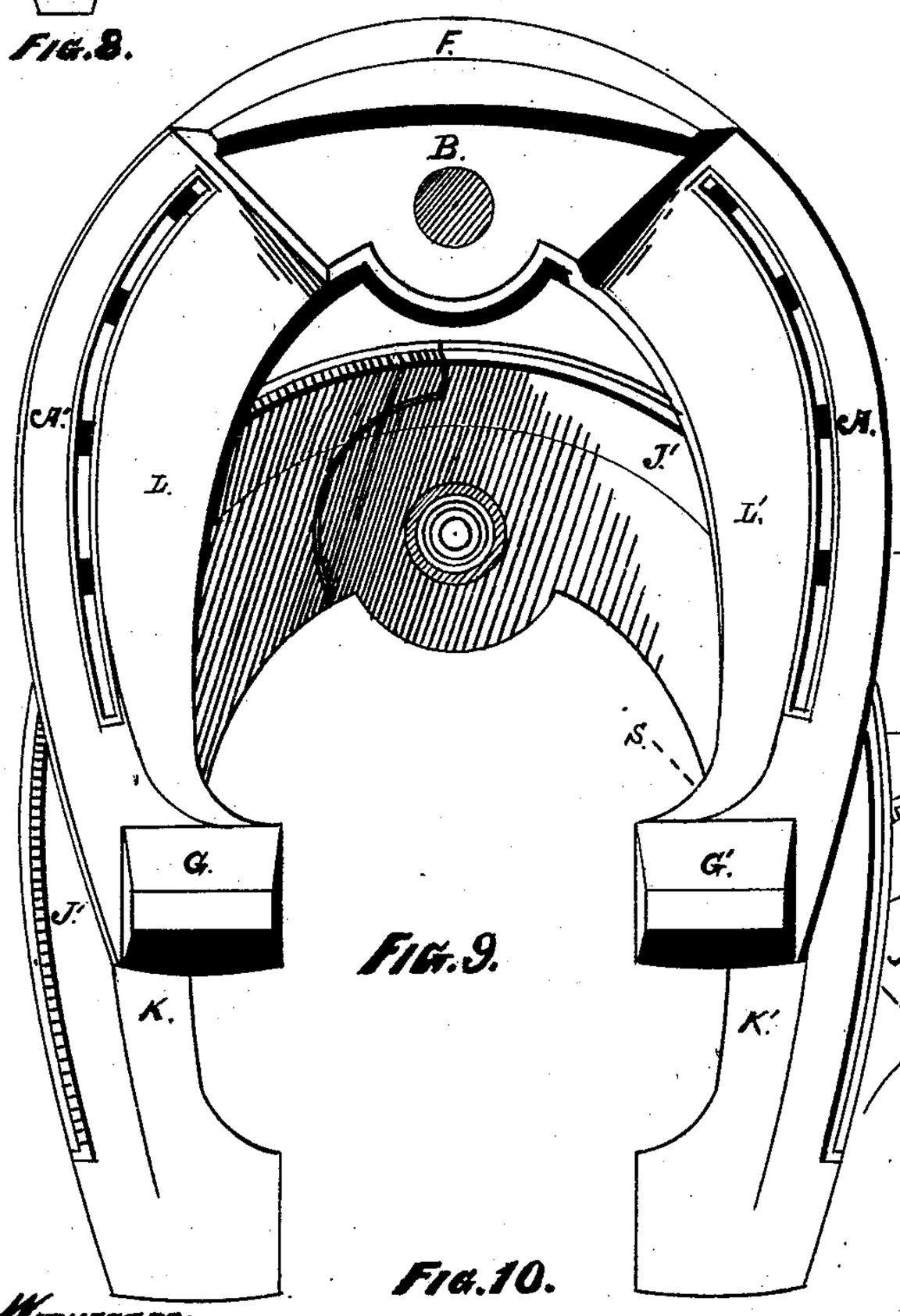

Fig. 9.

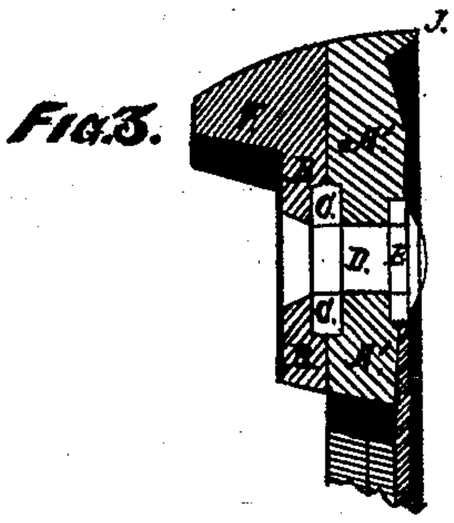

Fig. 3.

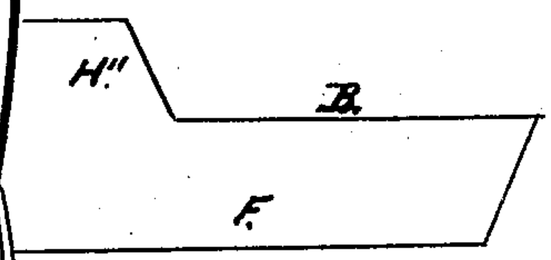

Fig. 4.

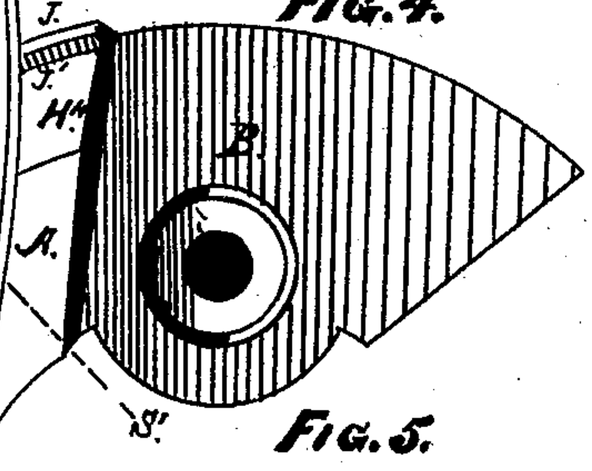

Fig. 5.

Fig. 10.

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UNITED STATES PATENT OFFICE.

ROBERT B. HUGUNIN, OF NEW YORK, N. Y.

IMPROVEMENT IN HORSESHOES.

Specification forming part of Letters Patent No. **199,830**, dated January 29, 1878; application filed January 14, 1878.

To all whom it may concern:

Be it known that I, ROBERT B. HUGUNIN, of the city, county, and State of New York, have invented certain new and useful Improvements in Hinged Shoes for Animals, of which the following is a specification:

My invention consists in combining and using a strengthening projection, connecting and blending the front half of my improved toe-calk lip with its side piece, being a continuation from the end and inner side of the side piece outwardly in an angular or curved direction on its inner side and along the front, terminating near the center of the calk, midway between its two ends, (see Figures 2 and 4,) the said lip being a thinner and under continuation of the side piece of the shoe, arranged to accommodate a downward-projecting calk of any required length; (the extending and uniform thickness of lip, with a continuous front opening between the lips, and the abrupt termination of the side of the shoe at the connection with the lip, are shown by me, but not claimed, in my patent of July 31, 1877, upon which this part of my invention is an improvement;) the object being to afford efficient support to the long lip and downward-projecting portion of the same in its connection with the side piece of the shoe, and prevent its being broken off by a sudden blow upon the calk, as in striking a stone, and durability.

My invention further consists in the use of a button-pivot, working in corresponding cavities in each of the hinging parts of the shoe; the object being durability and strength of construction, and to take the working strain off of the rivet.

My invention further consists in combining, with the outer flange or rib, the bevel extending downward and outwardly from the upper surface of the shoe; the object being to form a surface or sort of groove around the outer upper surface of the shoe for the inner and outer sides of the shell of the hoof to rest in, and, when the latter is thoroughly nailed thereto, giving the parts of the shoe efficient support against the hoof from both its inner and outer sides. (See Figs. 1 and 10.)

My invention further consists in the use, in connection with hinged or expanding shoes, of the removable expanding bolt and hollow projecting nut; the object being to enable the application and removal of the bolt after the shoe has been nailed to the animal's foot.

Fig. 1 is a front elevation, showing the toe-calk lip, the strengthening projection extending part way around the lip from the side of the shoe; also the front division between the two parts of the shoe, with the outer end of the lip, upon which the side piece of the shoe rests and is supported; also shows the combined flange and outward bevel, together with pivot, rivet, and washer. Fig. 2 is a detailed view of the hinging parts of the shoe, showing the upper construction of my extended calk-lip, with its supporting projection, the button-pivot cavities, button-pivot, rivet, and washer disconnected; also the curved hinged termination, with the rivet as the center. Fig. 3 is a cross-sectional view of hinging parts, showing application of button-pivot. Fig. 4 is a front view, showing calk, calk-lip, and strengthening projection ready for the lapping on and securing of the other removed side piece. Fig. 5 is an upper view of the calk-lip, showing the strengthening connection with an angular inner side, instead of the old curve shown in Fig. 2, the line S S′, as in Fig. 2, showing the end of the plate or side proper, and the amount of support given by the strengthening projection, S S′ being the under inner side line of the lip. Fig. 6 is a transverse cross-sectional view of the shoe cut in halves between front and rear, showing the combined flange and outer upper bevel, and the application of the single-threaded expanding bolt. Fig. 7 is a view of the double screw-threaded removable expanding bolt, constructed upon the same general plan as the single bolt, only using two nuts. Fig. 8 is an elevation of a heel-calk, having a hole for the bearing of removable bolt. Fig. 9 is a rear view of my shoe, showing the general plan of rear construction of the calk-lip and hinging connections. Fig. 10 is a front view of the same shoe, showing the groove produced by the combined outward bevel and flange, point of the rivet, the washer, the strengthening projection, also the old hinge-curve.

A is one of the side pieces of my hinged

shoe, having calk-lip with strengthening projection, a connection between this extended calk-lip and the end of the side piece of the shoe, and also having the outer bevel and flange. A′ is the side piece opposite to A, having the outward bevel and flange, and a hinging projection at its front end, corresponding with the receptacle for it on the opposite part. This hinging projection, as shown, is a plain surface, and rests upon a corresponding plain supporting-surface on the upper side and the extended end of the lip, to which it is attached by a rivet. The hinging end is shown with a curve, though in this particular it would not add to the merits or demerits of the shoe if the hinge end be made on an angle corresponding to Fig. 5.

It will be observed that the rear or pivot curve is not followed in the curve called the "hinge-curve." This change is made by me to accommodate a greater rear breadth of the lip when used for a wearing-surface for a summer shoe. It is only shown moderately in the drawings, but is capable of being used to give the lip any desired width on its rear side.

B is the toe-calk lip, used also as a wearing-surface for a summer shoe. It is made thinner than the plate, as shown in the dotted line in Fig. 1 and in Fig. 3, and from the under side of its connecting-plate it projects forward in the general direction of the parts of the shoe when united, sufficiently to accommodate any required length of toe-calk. Its connection with the plate A, on its under side, is strengthened, stiffened, and supported by a strengthening projection extending from the end of the plate A over its surface and around its front, as shown in Fig. 2, rendering this long lip, which would otherwise be very weak at its point of connection, as strong there and as little liable to break from blows on the calk as any other part of the shoe. Supported, as it is, by the strengthening projection connecting it with the side, and being otherwise supported by its calk around its front, it can be made very thin, and the shoe correspondingly light, requiring in this case but sufficient thickness to securely hold the rivet from breaking away.

C is a button-pivot, used in connection with corresponding cavities on the hinging-lips, the parts being held together against the button by a rivet or some other equally suitable mode of fastening. This button takes the working strain off of the rivet, and prevents lost motion in the working parts by the wearing of this rivet. The button is punched out, swaged into shape, and the cavities are counterbored.

E and D are the washer and countersunk rivet used in securing the parts of the shoe.

F is a toe-calk, dropped out of bar-steel or wrought-iron, with the lip and side A, or made of cast-steel, malleable iron, or, in certain cases, of cast-iron, in which case the calk is chilled to obtain hardness and durability.

G G′ are heel-calks, made in the same manner with the shoe, or put on afterward, &c.

H H′ are the hinge-curved ends of the plates A A′, with rivet D as the center. The curve H is the shape of the inner side of the strengthening projection.

H″ is a strengthening projection between the lip B and the plate A, being preferably curved on its inner side, or arched, to better resist a blow delivered on the calk F or lip B, this curve being considered by me as the best form to strengthen the projection on its inner side. The opposite hinging end of the plate A′ is constructed to conform to it.

I am well aware that the curve itself, in a hinged shoe, is old.

I is the front joint, continuing downward and around to the outward end of the lip, upon which the side piece A′ rests, being the outward joint between the two, as arranged.

J J′ are a combined flange or rib, and an outside bevel, used in connection with each other to form surfaces to confine the hoof and support the shoe from either side, relieving the nails from blows delivered on either side of the shoe. In a solid shoe this is unnecessary to support the nails, they acting together. In a hinge-shoe, the ends being free, the nails from one side afford little resistance to blows given upon the other.

K and L are upper and lower bevels on the surfaces of the shoe. M is a hollow projecting nut, made open between the part upon which the thread is cut and the bearing end, or cored out.

N is a screw-bolt, working in and through the thread cut in the nut M. This bolt is made both single and double, as shown in Figs. 6 and 7. When double it has a right and left thread, and uses two hollow expanding nuts, with a bearing on the outside end of each nut.

O is a hollow cavity, in which the end or ends of the bolt N work in the nut projection M. P P′ are bearings on the ends of the expanding bolt proper. (Shown in Figs. 6 and 7.) Q is a flattened end, used on the ends of the hollow nuts, as one way of locking the same.

R is a nut-locking projection on the inner side of the heel-calk, against which the flat surface Q rests, holding the nut from turning while screwing out the bolt. Of course, this bolt-nut can be held by any other preferred plan equally as well, perhaps.

S S′ is the line showing the inner end of the shoe side piece A before the strengthening projection H″ is applied to strengthen the junction of the lip B with the plate. The projecting calk F of the plate B gives greater durability to the plate B and the holding-surface, for retaining the head of the rivet D, used to hinge the two parts together.

Having described my invention and its objects, I claim—

1. In a hinged horseshoe, the combination of the side piece A, provided with the lip B, calk F, and strengthening projection H″, constructed, substantially as described, with the side piece A′, the two being united by a rivet,

or its equivalent, substantially as and for the purposes set forth.

2. The combination of the pivot-button C with the hinging parts of shoe-plates, having corresponding cavities, all secured together by a rivet, or its equivalent, substantially as and for the purposes specified.

3. In combination with a hinged or expanding shoe, the combined arrangement of the flange or rib J and outside bevel J′, the two arranged to form a groove or concave surface, to confine and hold the inner and outside surface, of the hoof, and support the shoe and shoe-nails, substantially as and for the purposes specified.

4. In combination with a hinged or expanding shoe, the removable hollow projecting nut M and expanding bolt N, having bearings P P′, substantially as and for the purposes specified.

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Witnesses:

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