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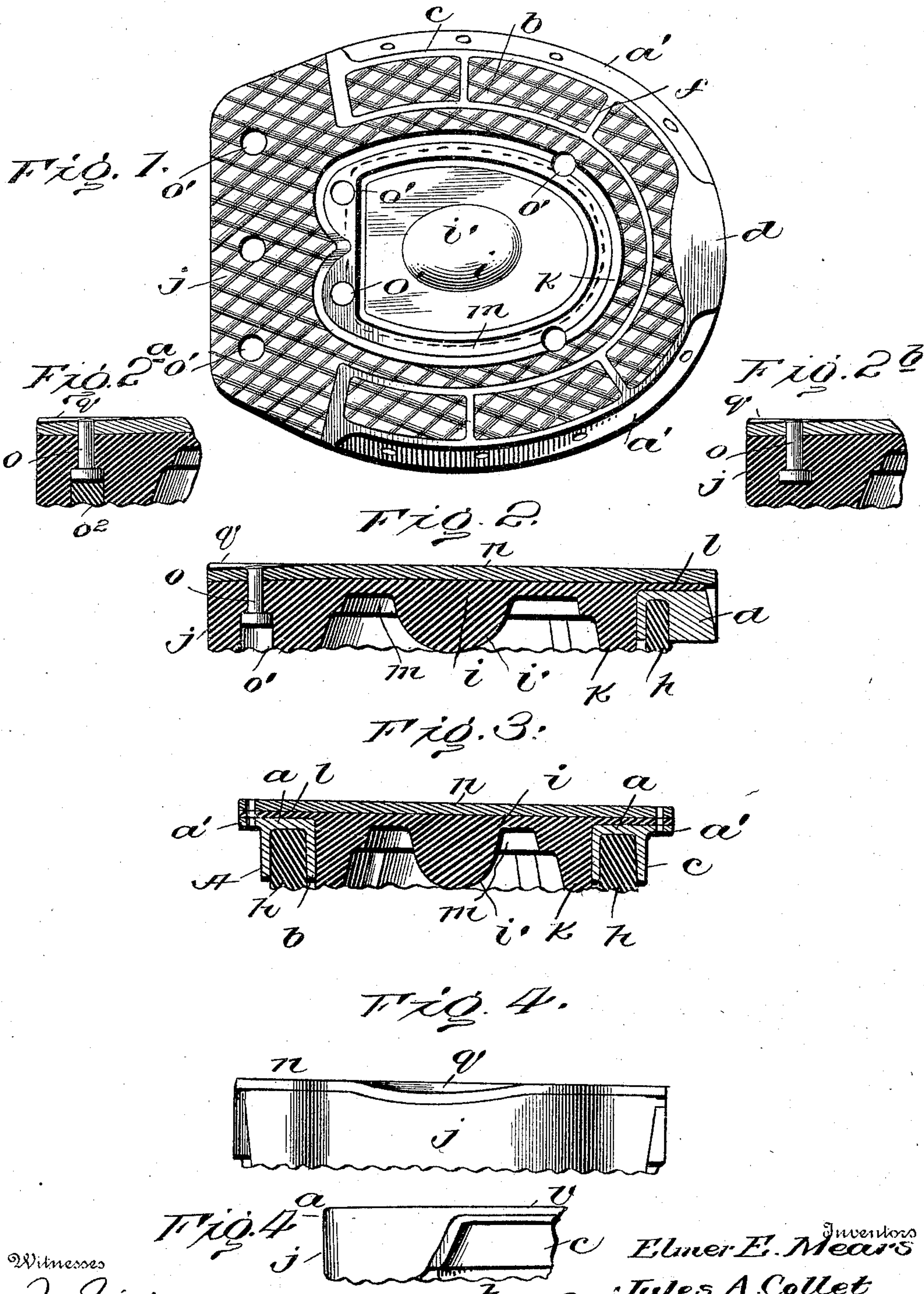
E. E. MEARS & J. A. COLLET.

SOFT TREAD HORSESHOE.

(Application filed Sept. 2, 1899.)

(No Model.)

3 Sheets—Sheet 1.



Witnesses

Jas. Minix

C. C. Stines

Inventors  
Elmer E. Mears

Jules A. Collet

by R. H. Racey Their Attorneys







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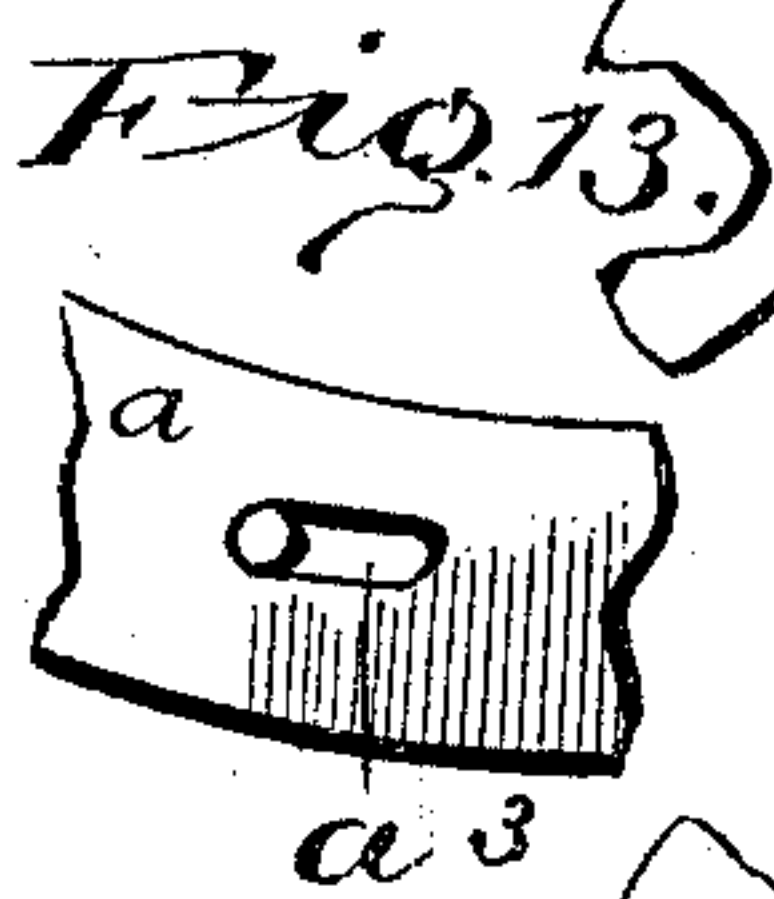
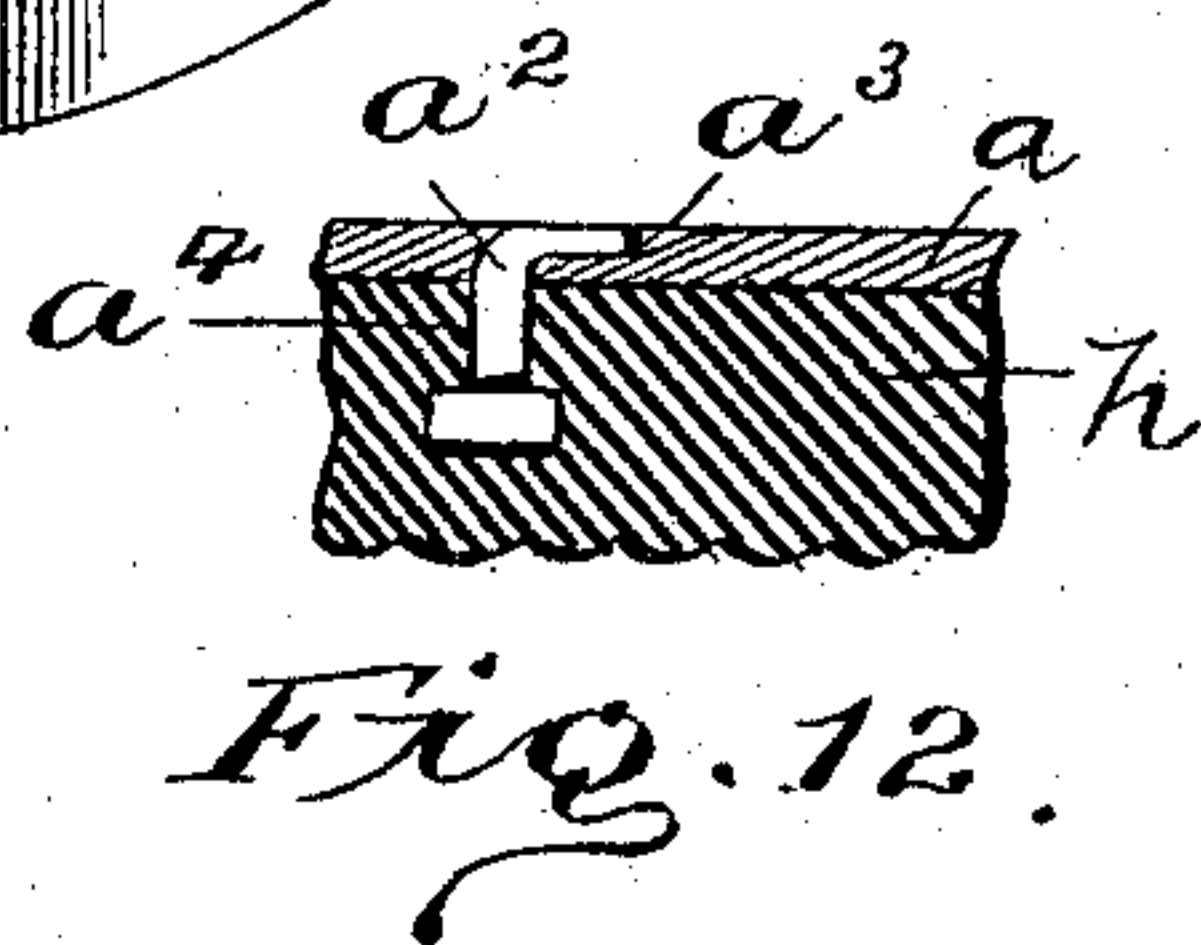
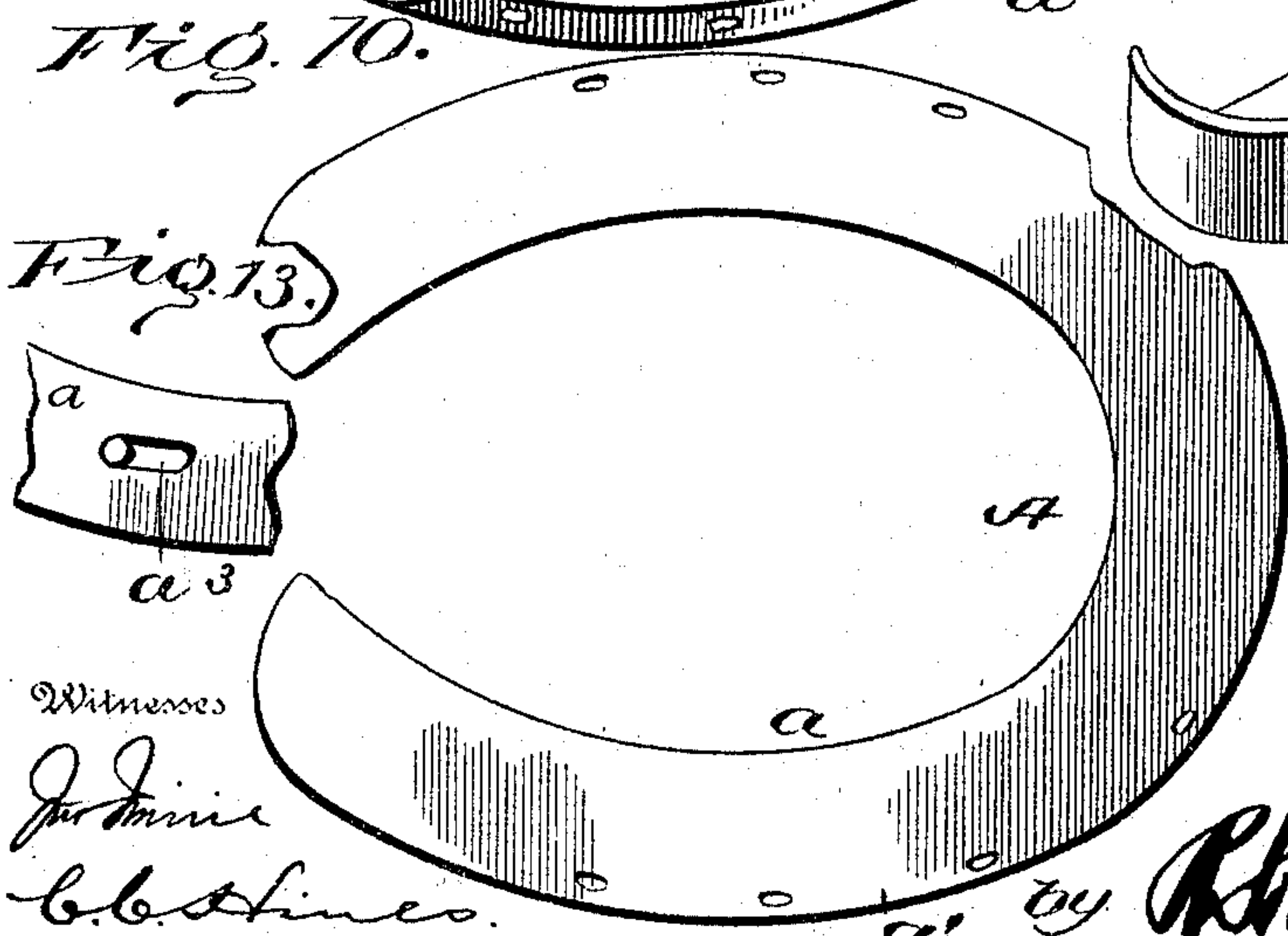
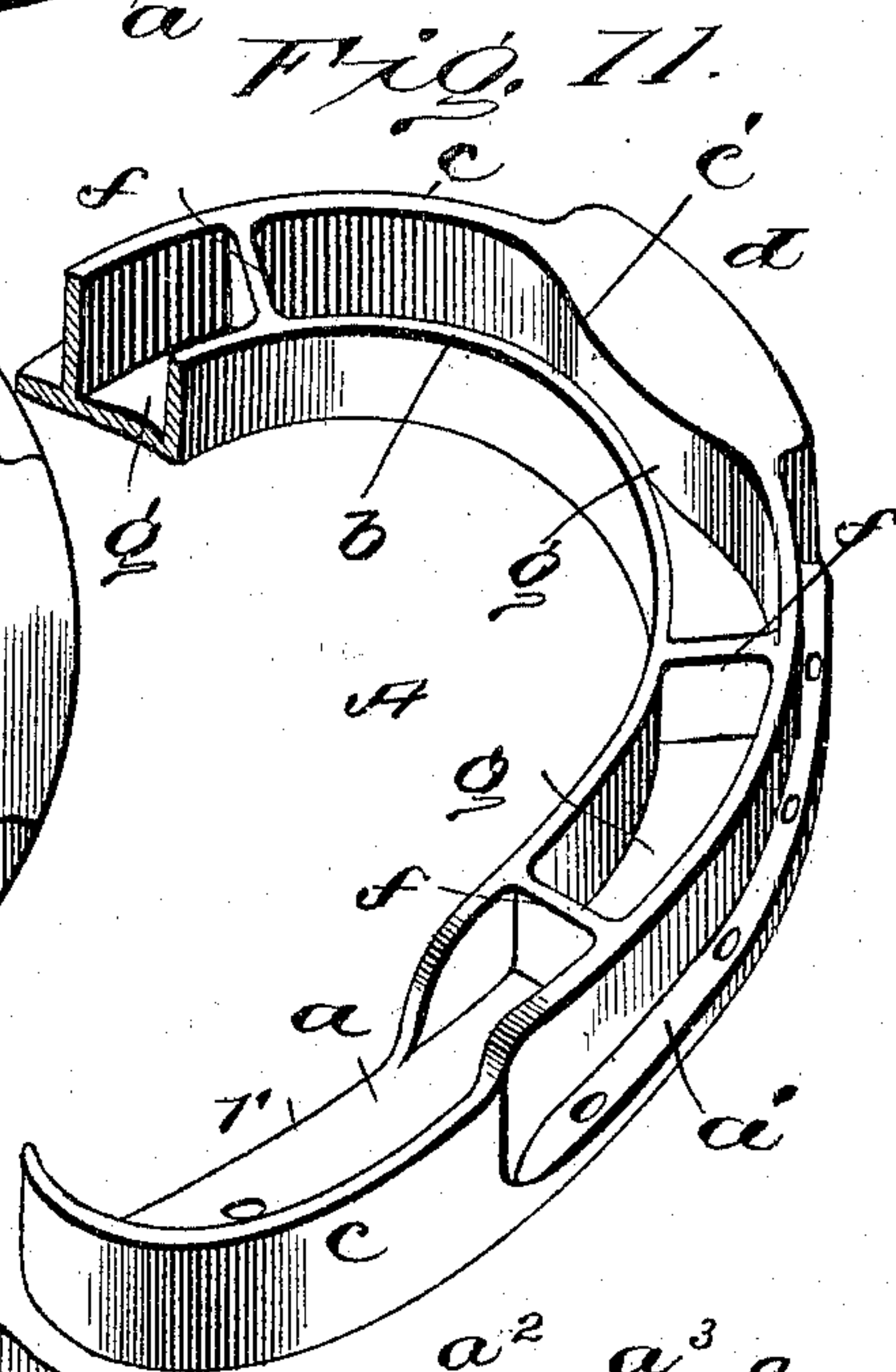
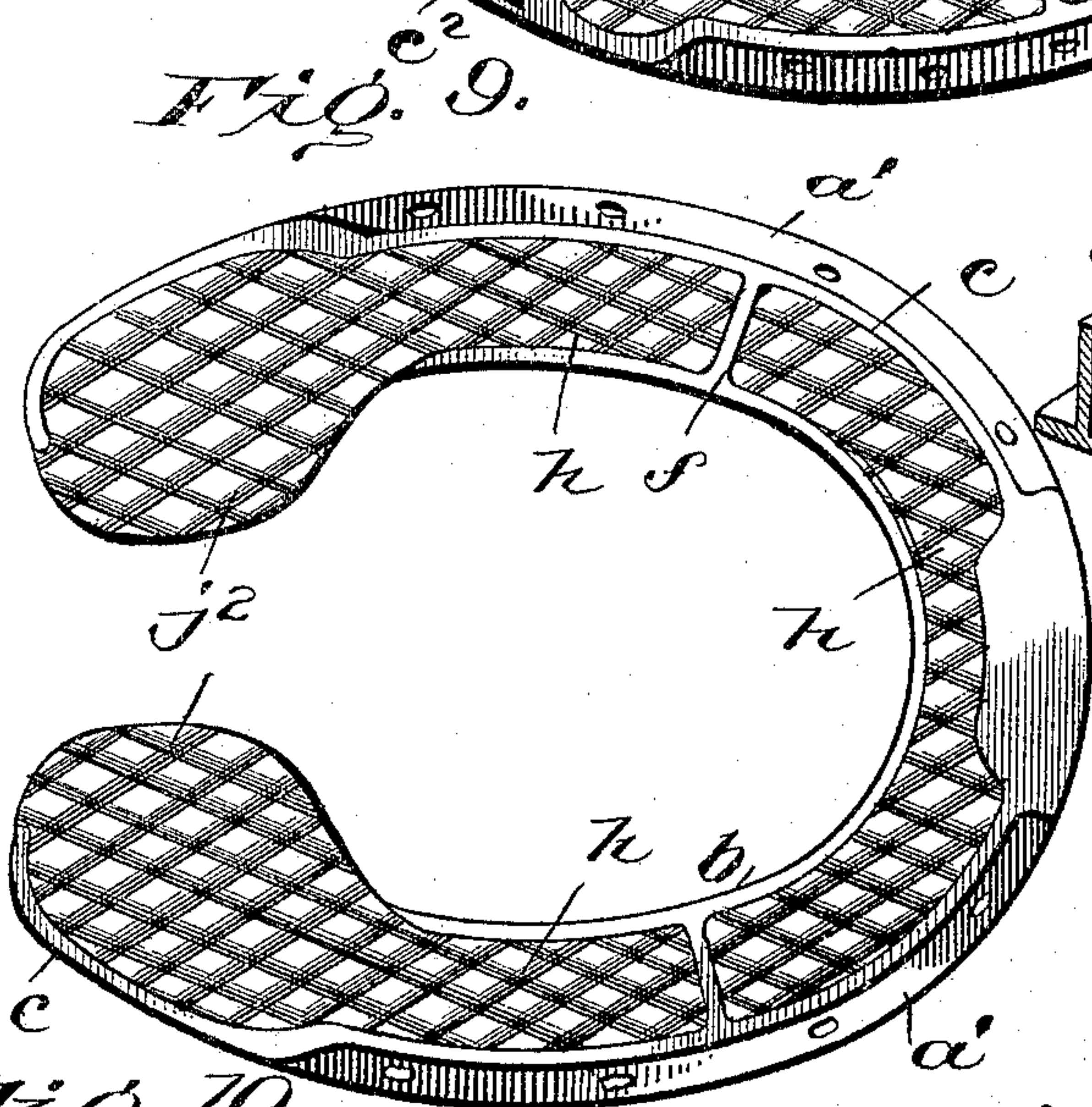
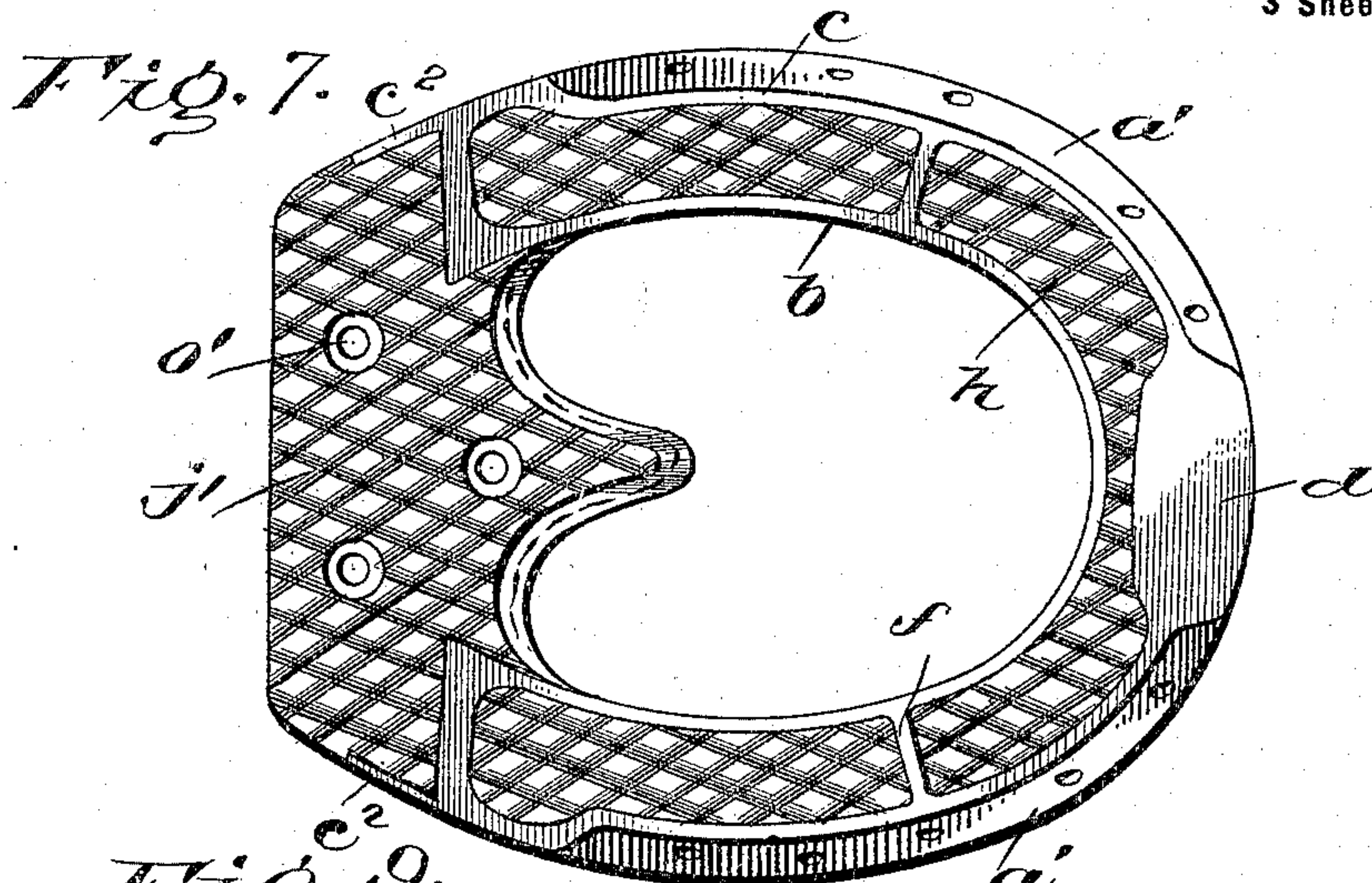
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Witnesses  
J. J. Smith  
C. C. Smith.

Inventors  
Elmer E. Mears  
Jules A. Collet

Attorneys  
R. H. Racey



# UNITED STATES PATENT OFFICE.

ELMER E. MEARS AND JULES A. COLLET, OF NEW YORK, N. Y.

## SOFT-TREAD HORSESHOE.

SPECIFICATION forming part of Letters Patent No. 641,130, dated January 9, 1900.

Application filed September 2, 1899. Serial No. 729,367. (No model.)

*To all whom it may concern:*

Be it known that we, ELMER E. MEARS and JULES A. COLLET, citizens of the United States, residing at New York, (Brooklyn,) in the county of Kings and State of New York, have invented certain new and useful Improvements in Soft-Tread Horseshoes; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to certain new and useful improvements in soft-tread or cushioned horseshoes and pads therefor, and has for its object primarily to increase the cushioned surface and promote the wearing qualities of such shoes and to provide a hygienic shoe in which provision is made for securing a natural growth and healthy action of the frog.

Further objects of the invention are to provide a construction and arrangement of parts whereby an effective coaction between the metallic and elastic portions of the shoe is secured to reinforce and prevent undue wear of the cushions and to insure a proper cushioning action until the shoe is completely worn out; to provide improved means for connecting the parts of the shoe and pad together, so as to prevent loosening or parting thereof while the shoe is in use; to provide an improved construction of heel pad and packing designed to afford a direct elastic support between the frogs of the foot and ground and stimulate a healthy action of the frogs and also to permit of the natural growth of the frogs without injury thereto, and to provide a shoe of maximum strength and adaptability for wear.

With these and other minor objects in view the invention consists of certain novel features of construction, combination, and arrangement of parts, as will be hereinafter fully described, and particularly pointed out in the appended claims.

In the accompanying drawings, forming a part of this specification, and in which like letters of reference designate corresponding parts throughout the several views, Figure 1 is a bottom plan view of a horseshoe constructed in accordance with our invention. Fig. 2 is a vertical longitudinal section of the

same. Fig. 2<sup>a</sup> is a detail sectional view of a portion of the parts shown in Fig. 2, illustrating a modification. Fig. 2<sup>b</sup> is a similar view showing a further modification. Fig. 3 is a vertical transverse section. Fig. 4 is a rear end elevation. Fig. 4<sup>a</sup> is a side view of the heel portion of the shoe. Fig. 5 is a bottom plan view of the heel pad or cushion. Fig. 6 is a similar view of the metallic frame of the shoe. Fig. 7 is a bottom plan view showing a modified construction of shoe. Fig. 8 is a bottom perspective view of the heel pad or cushion thereof. Fig. 9 is a bottom plan view showing a further modified construction of shoe. Fig. 10 is a top plan view of the same. Fig. 11 is a bottom perspective view of the metallic frame thereof. Fig. 12 is a sectional view of one of the quarters of the metallic frame, showing a preferred manner of securing the cushions thereof. Fig. 13 is a top plan view of the same.

A in the drawings designates the U-shaped metallic frame or tip of the shoe, which is formed with a flat top or upper face *a* and a channeled bottom or lower face, said channel extending around the frame and being closed or bounded by inner and outer walls *b* and *c*, a toe-calk *d* and heel-walls *e*, and subdivided at the quarters by thin transverse strengthening ribs or partitions *f* to form, in conjunction with said heel-walls, a series of pockets or cavities *g*, which, as shown, are open at bottom and closed at top by the wall *a* and are consequently of approximately the same depth as the frame. Flanges *a'*, forming continuations of the top wall *a*, project outward beyond the wall *c* of the channel and are provided with holes for the passage of nails to secure the shoe to the hoof, and the said wall *c* is deflected inwardly, as at *c'*, to contract the central cavity of the channel intermediate of its length and also widen the toe-calk *d* to strengthen and increase the bearing-surface thereof. In each pocket or cavity is secured, by vulcanizing or otherwise, a pad or cushion *h* of rubber or other suitable elastic material. These cushions project below the walls of the channel and form an elastic tread for the frame of the shoe and are separated by the ribs or partitions *f* and preferably have their lower surfaces corrugated or otherwise roughened to prevent slipping on wet and icy roads



and streets. The cushions do not, however, project upon the top of the frame, and there are no top and bottom layers bound together by a portion extending through openings in the top plate *a*, our object being to avoid this construction, as the top portion of the cushion is liable to become displaced and bear or press upward under concussion and bruise or otherwise injure the sole of the hoof, and to locate the cushions upon the bottom of the frame, so as to come into play at the point where the greatest amount of concussion is sustained and where the jar or concussion can be taken up to the best advantage. By this construction and arrangement of parts it will be seen that the cushions are closely confined and reinforced by inner and outer and dividing metallic walls, the latter being alternately disposed with the cushions, where- by an effective coöperation between the metallic and elastic portions of the shoe is secured to prevent undue strain and wear on said cushions and accidental displacement thereof. Thus a full cushioning action is secured until the cushions and walls of the channel are completely worn out and the shoe is no longer fit for use. By deflecting the outer wall of the channel at the point *c'* a maximum amount of metallic surface is presented at the toe, whereon the greatest wear comes, and at the same time the central cushion is securely bound against casual displacement under twisting strains. If desired, the cushions may be cemented or riveted in, so that they may be independently removed and replaced in case of casual injury.

A pad is used in connection with the cushion shoe-frame and comprises in its construction a body portion *i*, of rubber or other suitable material, which covers the opening between the sides of the shoe-frame and has formed integrally therewith a heel-bar *j* and a rib or marginal cushion *k*, extending continuously around the sides and front of the inner edge of the top plate *a* and inner surface of the wall *b* of the bottom concavity of the shoe-frame and projecting below the same, so as to coact with the cushions *h* and provide a widened elastic tread. Extending forwardly from the bar outside of the rib and in the plane of the upper surface and approximately in the plane of the lower surface of the body portion of the pad is a flange *l*, forming a seat upon which the metallic frame *A* of the shoe rests. Also formed integrally with the body portion of the pad upon the inner side of the rib or marginal cushion and extending around the same is a bead *m*, which is of less depth than said rib, so as to stand above the plane of the tread of the shoe, and applied to the top of the pad is a backing *n* of leather or other suitable material. This backing is nailed with the metallic frame and pad to the hoof and may entirely cover the same, so as to coact with the body portion *i* of the pad in covering the sole of the hoof to prevent the picking up of stones, accumula-

tion of filth, and balling of snow therein; but, if desired, said parts may be recessed or cut away to leave the sole of the hoof exposed. A projection *i'*, of rubber or other elastic material, may also be formed upon or secured to the body portion *i* of the pad or to the backing to prevent balling by its resilient action. This projection may be of any approved shape. The bar *j* projects down to the plane of the lower surfaces or tread portions of the cushions *h* and rib *k* and forms a direct elastic support between the ground and bar and frogs of the hoof, so as to institute a healthy action and prevent contraction thereof. The pad is secured to the leather backing by means of rivets *o* passed through openings *o'*, formed in the bar and bead, the heads of the rivets being countersunk, so as to stand above the tread-surface, and the shanks thereof being upset or clenched upon the backing. If desired, the parts may also be cemented or secured together by a line of stitching extending around said bead or vulcanized together in any suitable manner. By this construction the fastening means are at all times located above the line of wear, and accidental separation of the parts by reason of wear on such means, as in pads where the fastening devices come in contact with the surface of the ground and are exposed to wear, cannot possibly occur. When the pad and backing are vulcanized together, the grain side of the backing is preferably placed next to the pad, so that the rubber will fill all the pores of the backing, so as to render the same waterproof and make a firm and stable connection. If desired, the packing may be perforated and a layer of rubber also placed upon the flesh side thereof, so that said layer and the body of the pad will be bound together by integral portions extending through said perforations. Another manner of connecting the parts which may be employed is to first place a layer of raw rubber upon each side of the pad, covering each layer with a strip of canvas, stitching the parts together, then applying a tread-layer to cover the stitching, and, finally, vulcanizing. By this means the parts will be securely bound together and the stitching protected from wear.

The lower ends or unoccupied portions of the rivet-holes *o'* may be left open, as shown in Fig. 2, or they may be closed by plugs *o''*, cemented or otherwise secured therein, as shown in Fig. 2<sup>a</sup>, or the rivets may be embedded in the rubber, as shown in Fig. 2<sup>b</sup>. The shoulders *p* formed at the intersection of the bar *j* and flange *l* are straight and planesurfaced, and the end walls *e* of the metallic frame abut squarely thereagainst. The flange *l* is of uniform thickness except at its rear ends *l'*, adjacent to said shoulders, where it is thickened to compensate for wear and to increase the cushioning action under the frog. The bar of the pad and rear portion of the leather backing *n* are concaved, as shown at *q*, (see Figs. 2 and 4,) to avoid bruising the



frog and provide for the natural growth and increased development of the same under the stimulating action of the bar thereon.

The form of pad above described may be properly termed a "full" pad, and is designed to promote the cushioning effect of the shoe in its entirety.

In the embodiment of the invention disclosed in Figs. 7 and 8 the pad is located at the heel only and is substantially the same in construction as that shown in Figs. 1 to 6, inclusive, and heretofore described, except that the central portion is cut away to leave the space between the sides open, and the body portion of the pad is foreshortened to form the short ribs  $k'$ , seat-flanges  $l'$ , and securing-bead  $m'$ , which are connected to the metallic frame and backing in the manner before set forth. An open backing is preferably employed in connection with this form of pad, and the bar is also preferably cut away on opposite sides adjacent to the shoulders  $p'$  to form recesses  $p^2$ , which are adapted to receive extensions  $c^2$  of the channel-wall  $c$  of the metallic frame, and thereby secure a stable connection to prevent lateral displacement of the pad. This construction provides a cushioned shoe that is desirable in cases where a full-cushioned pad is not needed.

In the embodiment of the invention disclosed in Figs. 9, 10, and 11 the top wall  $a$  and outer side wall  $c$  of the metallic frame are extended at the heel to provide a complete shoe and form seats, pockets, or cavities  $r$  for the reception of pads or cushions  $j^2$ , forming prolongations of the rear cushions  $h$  and vulcanized to said frame. These pads or cushions  $j^2$  constitute elastic supports for the frogs, and the frame is made so that it can be shaped cold to fit hoofs of different contour.

Instead of cementing or vulcanizing the cushions  $h$  in the pockets or cavities they may be secured by mechanical fastenings of any approved type, so as to provide for the ready removal and replacement of any cushion that may be casually injured so as to be unfit for use, as well as the insertion of the cushions after the metallic frame has been shaped to the hoof. Figs. 12 and 13 illustrate a preferred way of connecting the cushions, and in this construction the top plate  $a$  is formed with one or more rivet-holes  $a^2$ , communicating with each pocket or cavity, each rivet-hole connecting with a seat depression  $a^3$  in the upper surface of said plate, and embedded in each cushion are one or more rivets  $a^4$ , whose shanks are passed up through said openings  $a^2$  and have their upper ends upset, clenched, or bent down into the depressed seat, so as to lie flush with the upper surface of the frame. By cutting off the heads of the rivets the cushions may be readily removed whenever desired and the cushions may be applied by the horseshoer after the frame has been shaped hot or cold to suit the contour of the hoof.

The advantages of our improved shoe will

be readily understood from the foregoing description, taken in connection with the drawings.

The invention is susceptible of changes and modifications in the construction and arrangement of parts within the spirit and scope of the invention as defined by the appended claims.

Having thus described the invention, what is claimed as new is—

1. A soft-tread or cushioned horseshoe, comprising a U-shaped metallic frame having a channel extending around the bottom thereof and a flat top closing the upper side of the channel, said channel being bounded by thin inner and outer walls projecting from the top and being subdivided by thin transverse ribs or partitions to form a series of closely-related pockets or cavities, nail-flanges projecting beyond the outer sides of the channel and forming continuations of the top, and pads or cushions seated in said cavities.

2. A soft-tread or cushioned horseshoe, comprising a U-shaped metallic frame having a flat top, and a continuous channel extending around the bottom thereof, said channel being formed by inner and outer boundary-walls depending from said top and being subdivided by thin transverse ribs or partitions connecting said walls and forming a series of closely-related pockets or cavities, and pads or cushions seated in said pockets or cavities and having their ends coming closely together without abutting but separated slightly by the thin transverse ribs, whereby an effective cooperation between the cushion and metallic parts of the shoe is insured, substantially as described.

3. A soft-tread or cushioned horseshoe, comprising a U-shaped metallic frame having a flat top, and a continuous channel extending around the bottom thereof, said channel being formed by inner and outer boundary-walls depending from the top, their transverse ribs or partitions connecting said walls at the quarters and subdividing the channel into a series of pockets, short pads or cushions seated in the pockets at the quarters, and a toe pad or cushion extending around the toe part of the channel continuously to the foremost transverse ribs of the quarter-pockets.

4. A soft-tread or cushioned horseshoe, comprising a U-shaped metallic frame having a flat top, and a continuous channel extending around the bottom thereof, said channel being bounded by thin inner and outer depending walls, a toe-calk and heel-walls and subdivided at the quarters by thin transverse ribs or partitions to form pockets or cavities, and the toe-calk being deflected inwardly to contact the central portion of the cavity, and pads or cushions seated in said cavity extending continuously around the toe to the foremost partitions at the quarters.

5. A soft-tread or cushioned horseshoe, comprising a U-shaped metallic frame having a flat top and a channeled bottom subdivided



to form pockets or cavities, said top being provided with openings communicating with the cavities and upper seat depressions connecting with said openings, and pads or cushions  
5 seated in the pockets and provided with rivets passed up through the openings and having their upper ends upset, clenched or bent down into said depressions.

6. A soft-tread or cushioned horseshoe, comprising a U-shaped metallic frame having an elastic tread, and a pad having a heel-cushion and a body portion covering the opening  
10 between the sides of the frame and provided on the under side thereof with a resilient antiballing projection.  
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7. A soft-tread or cushioned horseshoe, comprising a metallic frame, a backing, and a pad, said pad being provided with openings, and

rivets securing the backing and pad and having the lower surfaces of their heads countersunk in said openings and located wholly  
20 above the plane of the tread of the shoe.

8. A soft-tread or cushioned horseshoe, comprising a cushioned metallic frame, a pad contacting with cushions of the frame, a backing  
25 for the pad, and means for connecting the pad and backing, said connecting means being located wholly above the plane of the tread of the shoe.

In testimony whereof we affix our signatures in presence of two witnesses. 30

ELMER E. MEARS. [L. S.]

JULES A. COLLET. [L. S.]

Witnesses:

EDWIN M. WEAVER,  
CAMDEN MEARS.