

(No Model.)

3 Sheets—Sheet 1.

C. SHEATHER.

HORSESHOE.

No. 322,564.

Patented July 21, 1885.

Fig. 1.

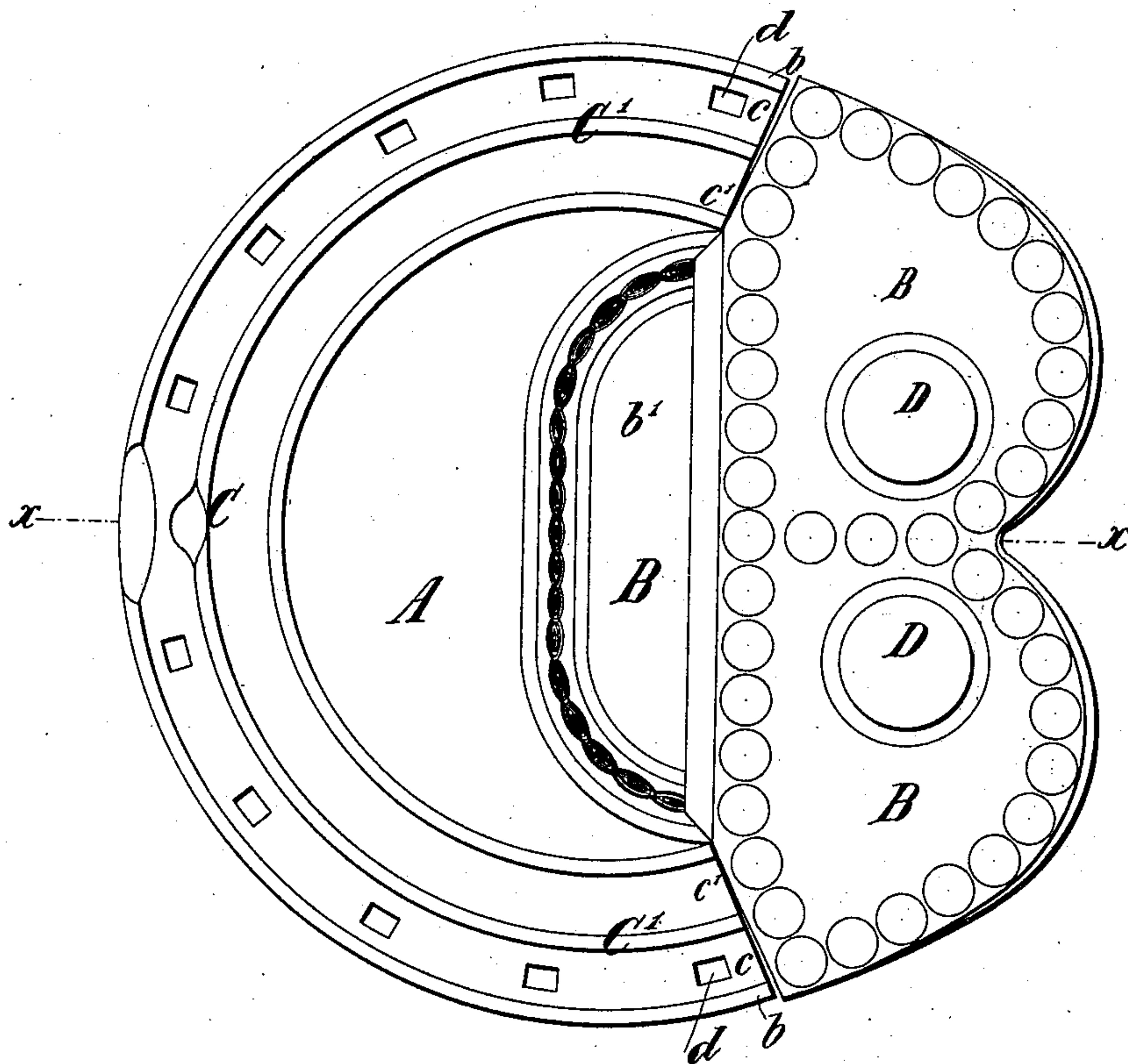
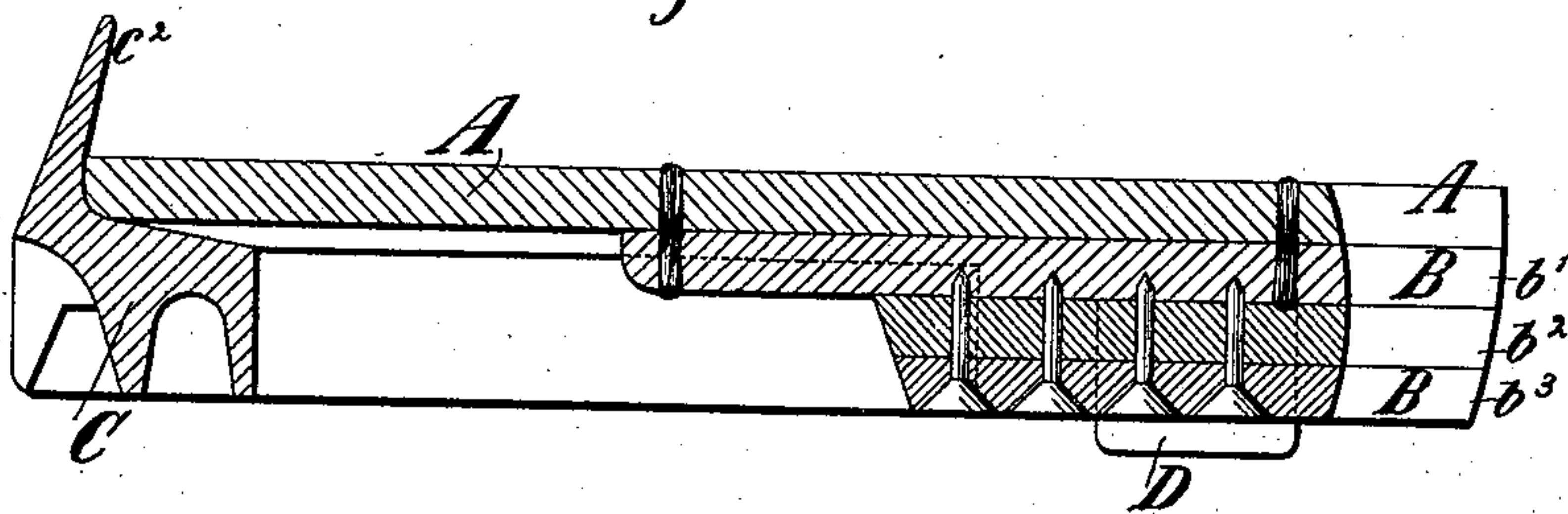


Fig. 2.



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Fig. 4.

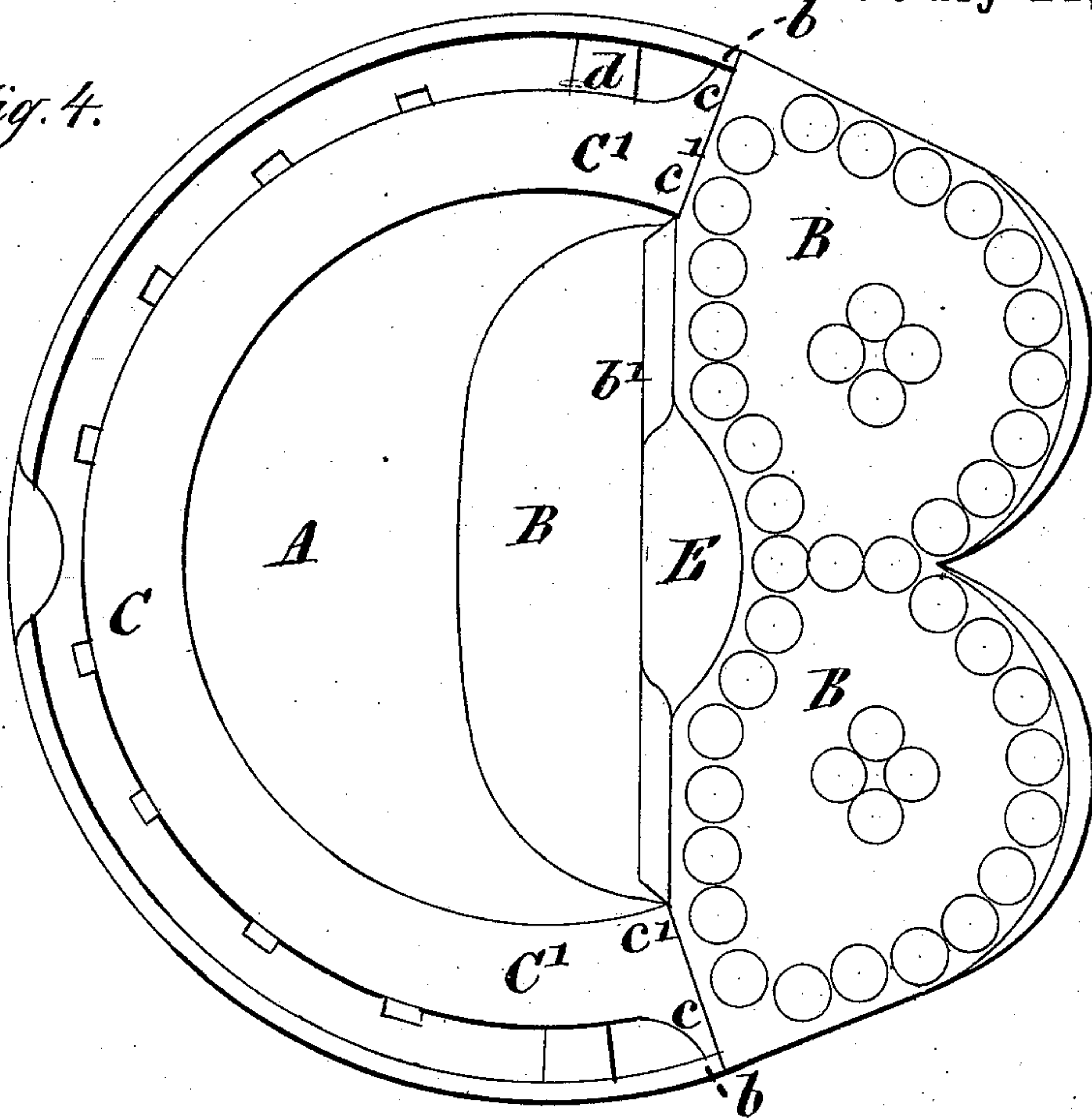
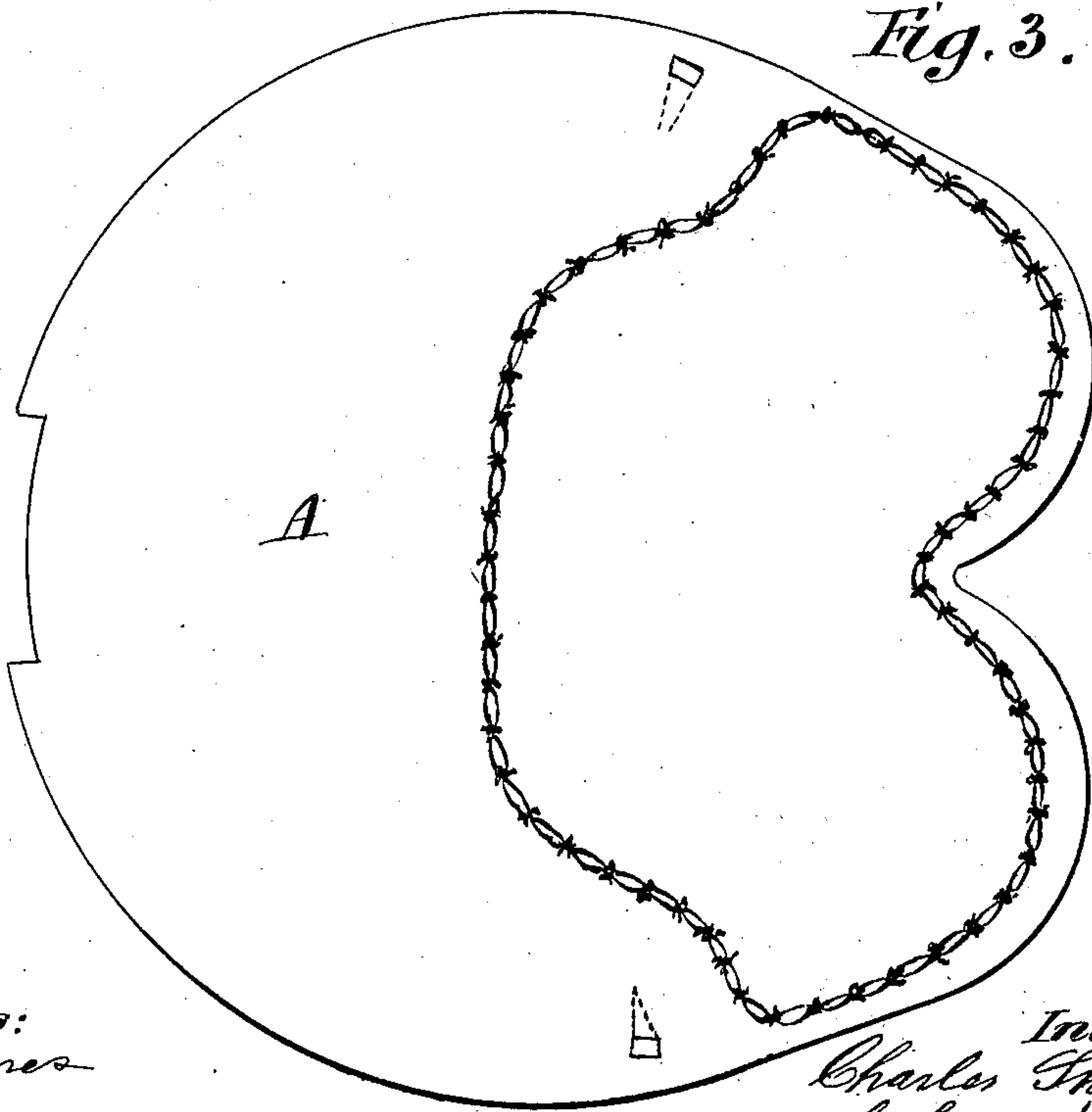


Fig. 3.



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Fig. 5.

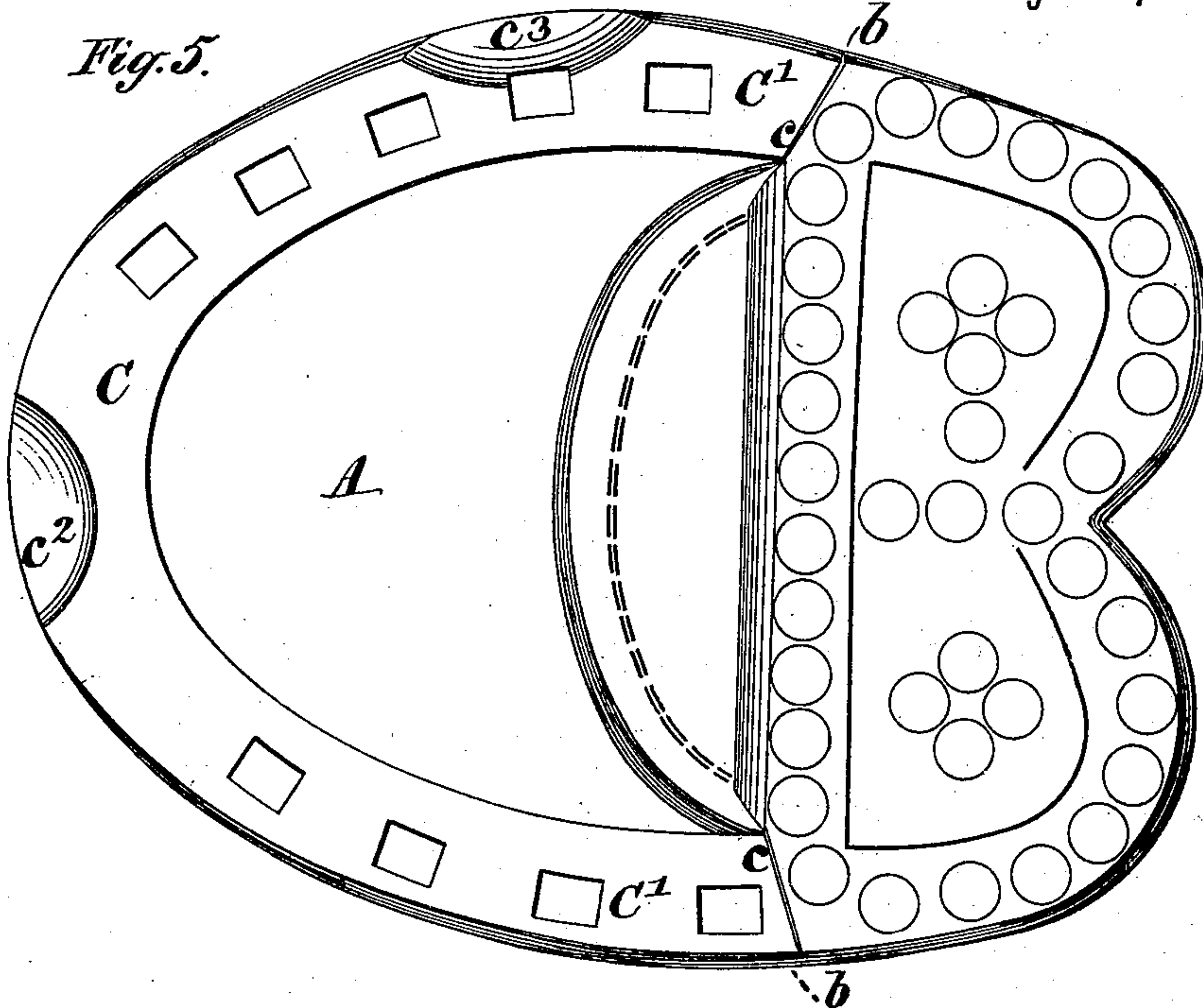
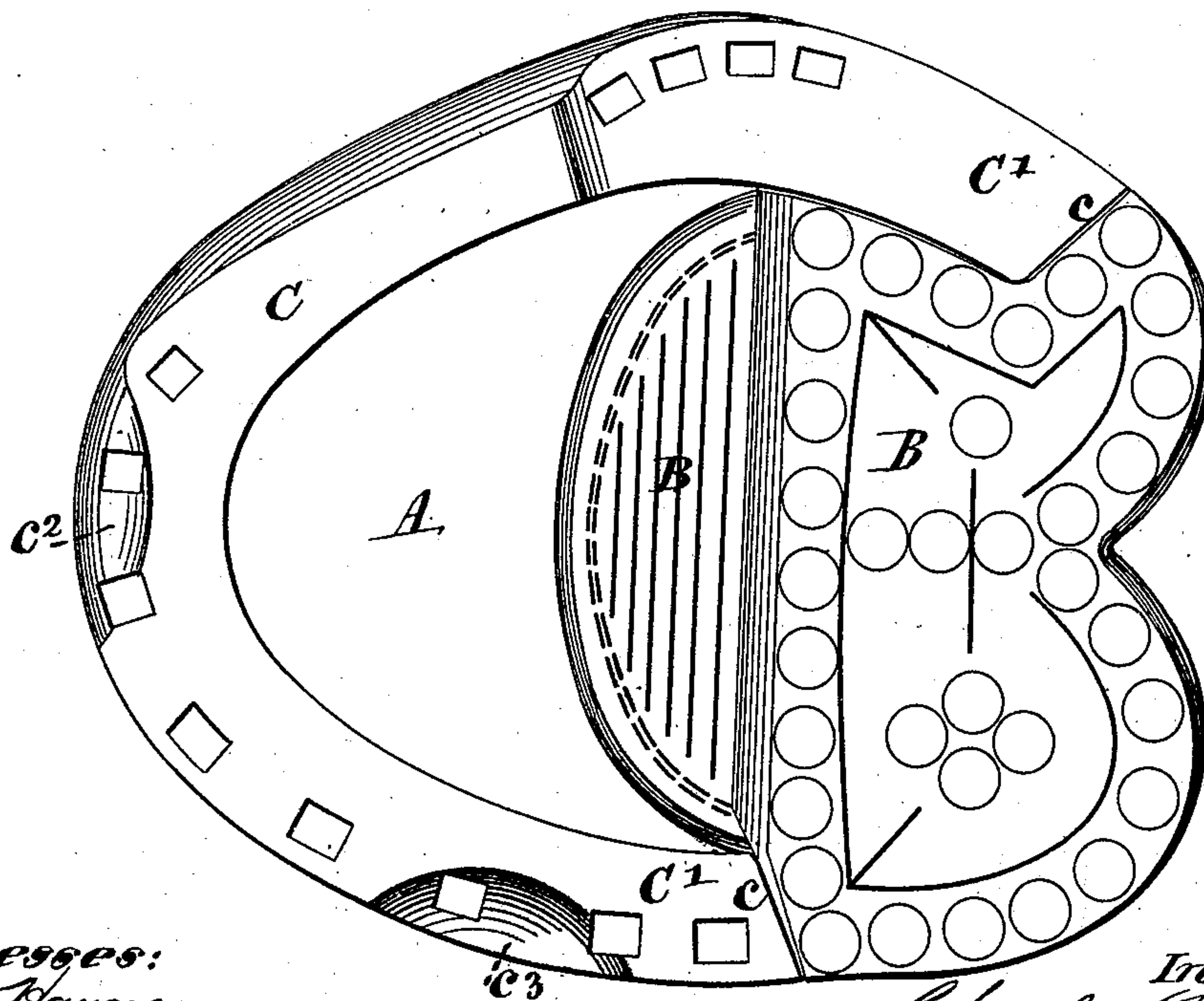


Fig. 6.



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UNITED STATES PATENT OFFICE.

CHARLES SHEATHER, OF YORK TERRACE, REGENT'S PARK, COUNTY OF MIDDLESEX, ENGLAND.

HORSESHOE.

SPECIFICATION forming part of Letters Patent No. 322,564, dated July 21, 1885.

Application filed June 12, 1884. (No model.)

To all whom it may concern:

Be it known that I, CHARLES SHEATHER, of York Terrace, Regent's Park, in the county of Middlesex, England, have invented certain
5 new and useful Improvements in Shoes for Horses and Mules, of which the following is a specification.

The objects of this invention are to prevent, relieve, and cure, or aid in curing, many of
10 the foot-diseases of horses and mules, to increase the strength and development of their feet, to diminish concussion to their limbs, and to give them greater security of foothold on all kinds of pavement; to protect their
15 feet from injury in a more efficient manner than under the ordinary system of shoeing, and to offer facilities for applying simple additional means to prevent slipping in all states of the various pavements in vogue, and in all
20 states of the weather.

To these ends the invention relates to the combination, in a shoe for horses and mules, of a yielding or semi-elastic heel-pad, of leather or rubber, (or leather and rubber combined,) attached to a flexible sole-piece for the
25 rear part of the hoof to rest on, and an iron or steel tip or "lunette," which only extends back as far as the "quarters," and does not approach the "heels" of the "crust" (or
30 horny rim) of the hoof, for the front part of the hoof to rest on.

The invention also relates to the combination, with the heel-pad, flexible sole-piece, and tip or lunette, above described, of rubber
35 plugs protruding from the surface of the heel-pad, the better to prevent slipping on asphalt pavements.

The main principle which has been followed in constructing shoes according to this invention consists in making provision for the distribution of the weight upon the foot of the animal over two portions—viz., a hard-metal front portion or tip and a pad of softer substance, such as leather or rubber, or a combination of two such substances constituting
45 the rear portion of the shoe, and secured in place upon the hoof by a flexible sole-piece fixed or gripped between the said hoof and the iron tip or lunette.

50 In the accompanying drawings, Figure 1 is

an inverted plan view of a non-slipping composite shoe constructed according to the above principle. Fig. 2 is a section of the same on the line *x x* of Fig. 1. Fig. 3 is a top plan view of the flexible sole-piece, to which the rear
55 pad of leather or rubber is attached. Fig. 4 is an inverted plan view of a slight modification of my invention suitable for country roads, the rubber plugs being then no longer necessary and being replaced by metal studs,
60 nails, or rivets, which protect the leather pad from cutting by stones and grit. Figs. 5 and 6 are inverted plan views of two shoes for hind feet, and will be fully described hereinafter.

In these figures similar letters of reference
65 indicate like or corresponding parts.

A is the sole-piece, which goes next to the hoof. B is the rear pad, attached by stitching or riveting to the sole-piece A, and C is the iron tip or lunette, accurately fitting against
70 the pad B, as shown at *c c*, and serving, when nailed to the hoof, to securely hold the sole-piece A (and consequently the rear pad, B, also) in position on the hoof. I preferably make the sole-piece and rear pad out of leather
75 of from one-sixteenth to one-fourth of an inch in thickness. The sole-piece I shape roughly to the outline of a horse's hoof. The rear portion of the pad B is shaped so as to accurately conform to the contour of the rear por-
80 tion of the sole-piece—that is, from *b* to *b* on the drawings, a distance which includes a portion of the quarters of the heel, the heel of the crust, (or rim of the hoof,) and the posterior portion of the "frog."
85

The front part of the pad B may be of curved or angular form, and may occupy the whole or a portion only of the space inclosed by the inner circumference of the tip or lunette C.

The pad B may be composed of several thick-
90 nesses or layers of leather, or leather and rubber combined, the several pieces or layers being firmly united by stitching, riveting, or otherwise. This pad B may have two or more holes cut in it for the reception of plugs D D,
95 of soft rubber, which plugs, however, are mainly intended for use on asphalt pavements in towns and cities, and are not necessary for country roads.

I prefer to construct the pad B as follows: 100

The upper layer of leather, forming the pad B, is strongly sewed to the sole-piece A, so as to keep them in close proximity and in proper relation. This method of connection may be described as a welt, such as is used for uniting a sole to the "upper" of a boot. The rest of the pad B may be constructed like the heel of a man's boot, care being taken to keep the outline accurate and the holes for the rubber plugs (when used) in line with one another.

The upper layer, b' , of the pad B I preferably make larger than the other layers, and of the shape shown in the drawings; but the other layers, b^2 and b^3 , Fig. 2, may be cut straight across from the inner angles, $c'c'$, of the iron tip C, to form a gripping or non-slipping edge to the pad. The layers of leather forming the pad B should be determined by the thickness of the iron tip, (see Fig. 2,) so that the foot, when resting on the ground, will be supported equally and horizontally on the composite shoe. The union of the layers of leather, rubber, or other durable and elastic substance forming the pad B may be assisted by cement or glue.

The size and number of the screws, nails, rivets, or plugs will depend on the requirements and nature of the locality; and conical, pyramidal, or chisel-shaped heads may be used, if desired, to give additional secure foothold.

The rubber plugs D D, cut with an oval or enlarged top, but otherwise cylindrical in shape, are of a diameter a little larger than the holes into which they are to be introduced. They are dipped in a solution of india-rubber dissolved in coal-tar, naphtha, or disulphide of carbon and pressed into the holes, the plug sinking in up to the sole-pieces A, while the ovoid or enlarged end projects slightly beyond the heel-pad B and protrudes, as shown in Fig. 2.

The whole of that part of the shoe which has been described as of leather might be molded in a rubber or other durable and semi-elastic composition, or part only thereof might be so molded. It might also be formed, by means of dies and great pressure, out of very thick rawhides chemically treated or tanned, the essential features being durability and semi-elasticity so far as the material is concerned, and a square gripping-edge, as shown at $c'c'$, so far as shape is concerned.

The tip or lunette C may be made of iron or steel of any section suitable for shoeing horses and mules, and, except in one particular, may resemble the tips in common use. The essential difference between my tip or lunette C and all other previously-known tips for horseshoes is that its rear ends or branches, C' , are not thinned down, but are of the same thickness as the tip itself, and the ends $C C'$ are cut off at or about at right angles to the plane of the wearing-surface. It is shaped to the front portion of the ground surface of the foot, contains the usual number of nail-holes, may or may not be "seated out" or beveled, ac-

ording to its substance, and is thick and square heeled.

The following is the method of applying the shoe: The sole A having been applied to the foot so that no portion projects at the rear of the foot, a mark is made on the sole at the point where the toe of the foot will come. All the sole in front of this mark is pared away to accurately conform to the front portion of the hoof. The tip C, roughly shaped, is then laid on that portion of the previously-prepared sole A, not covered by the heel-piece B. When the tip C is in its proper place, and its front edge coincides exactly with the toe of the hoof, the square-cut heels of the tip should exactly abut against the front walls of the pad B. If the said heels are too long to fit properly against the pad they must be shortened by heating and cutting. The tip C is then heated, a clip, c^2 , is drawn at the toe, and holes $d d$ are punched, one at each end of the tip. A stub (or nail) is driven into each hole $d d$ at the rear ends of the tip C, through the sole A, and riveted or clinched at the other side. This uniting of the parts, it will be understood, is effected after each part has been separately fitted and accurately shaped to the hoof. The complete shoe is now applied to the horse's foot, and nailed on with the ordinary nails, which pass through the sole, and so retain the whole shoe in place. The rest of the shoeing—such as cutting the nails and clinching—is performed in the ordinary way.

A lock of tow saturated with tar may, with advantage, be introduced between the sole and the foot.

The wall of the tip C on which the hoof stands (being only separated by the sole-piece A) may be serrated or dentated by a tool to afford additional resistance to the sole tearing out.

The hind foot, from its function and configuration, requires a modification of shape of the shoe, and the heel-piece of the shoe fills more of the space on the inner side of the tip or shoe.

Fig. 5 shows, in inverted plan view, a "near" hind shoe for a normal foot constructed according to my invention; and Fig. 6 is a similar view of an "off" hind shoe for the most usual deviation from the normal—a deviation which is almost as common as the normal.

The same letters of reference are used to indicate similar parts to those previously described.

It will be observed that in these hind shoes, a clip is drawn at the "quarter" of the tip, as well as at the toe. This "quarter clip," (marked C^3 in the drawings,) is generally advisable in the hind foot.

The shoe represented in Fig. 6 is what is called a "cutting-shoe," and is intended for horses that cut or brush their fetlocks when in action. This form of shoe may in some cases be adapted to front feet when a horse cuts or brushes his fetlocks or other parts. It

will be observed that in this shoe the inside toe portion of the tip has no nail-holes, and is beveled off to diminish or prevent the striking of the leg by the foot. The beveling is on the inner side of the shoe. It will also be seen that one branch of the tip is left longer than the other. The principle of construction, however, remains the same—that is to say, there is the tip of peculiar construction, combined with the flexible sole-piece, and the yielding heel-pad, in substantially the same manner in all the shoes.

The combined heel and sole piece constitute a semi-plantar sole—that is, a sole of which only about one-half or one-third actually touches the ground.

A kind of arch or hollow may be scooped out of or cut in the abrupt front edge of the pad B to assist in giving increased flexibility to the pad under pressure of a horse's weight, as shown at E, Fig. 4.

The absence of any iron under the posterior one-half to one-third of the foot (except in the case of a hind foot, when the iron may extend back one heel if there be any danger from cutting) leads to great development of the heels of the crust, frog, and bars by exciting increased functional activity. This is the center principle of the invention. It should be borne in mind, however, that as the feet and gaits of horses differ, so slight variations are necessary in making shoes according to my invention for horses with irregular feet, gait, or action. Thus for some hind feet the iron tip may have both branches short like the front tip, while in other cases one or possibly both of the branches may be left long.

I am aware that it is not new to make a horseshoe of several thicknesses of leather secured together, and having pieces of rubber cemented to the rear portions of the shoe, so that they will come between the hoof and the leather shoe when applied to the hoof, and in such shoe one thickness of leather has been made continuous between the rearmost ends of the shoe to form a cross-piece therefor.

I am also aware that a metal shoe approximately of ordinary form has had a plate or piece of rubber secured by a metal plate upon its under surface, so as to form rubber pads at opposite sides and the front of the shoe; but in this case the metal shoe only was in contact with the horse's hoof.

I am also aware that it is not new to employ, in connection with a metal shoe shortened at the heel and having its rear ends beveled downward and rearward, a cushion of india-rubber which conforms in shape to the hoof, and has at its rear ends a cross-piece or cross-bar connecting them, the portion of the cushion which comes between the metal shoe and the hoof being thinner than the rear portion of the cushion which is flush with the lower surface of the metal shoe, and the cushion having beveled shoulders against which the downward and rearwardly-beveled ends of the shoe bear. I do not desire to include

by my invention either of the constructions hereinabove described as old.

In making my shoe I employ a flexible sole-piece, A, which is preferably of leather and which covers the entire under surface of the hoof. I also employ a yielding or elastic heel-pad, B, which is secured to the rear portion of the sole-piece A, and a metal tip or lunette which has its rear ends square and abutting against the square front edge of the heel-pad. It is very desirable that the sole-piece A, which comes between the metal and the hoof, should be flexible, and yet it is not desirable to have it elastic. No matter how tightly the shoe may be nailed on, the rubber cushion, if rubber be employed between the shoe and the hoof, will always yield when the weight of the horse comes upon it, and the nails whereby the shoe is secured will be soon loosened or broken off. In my shoe the leather sole-piece is flexible, but is not elastic, and hence is very different from a rubber cushion introduced between the hoof and the metal shoe.

It is advantageous to have the rear ends of the metal tip or lunette C square, because then these ends will be strong and cannot become bent upward by pounding upon a hard surface or stones. When the rear ends of the metal tip or lunette are beveled rearward and downward, so as to form thin edges, such edges are very apt to become turned or bent upward and to cut into the softer material of the shoe, whether it be leather or rubber, and to wear the shoe out very rapidly. With my shoe there can be no such rapid wear, because the rear ends of the metal tip or lunette are square cut or abrupt and abut against the square forward edge of the heel-pad B.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a shoe for horses or mules, the combination of a flexible sole-piece, A, covering the entire under surface of the hoof, a yielding or semi-elastic heel-pad, B, welted or otherwise secured to the sole-piece A, and a metal tip or lunette, C, having square-cut rear ends abutting against the heel-pad and flush therewith, as and for the purpose set forth.

2. In a shoe for horses and mules, the combination of a flexible sole-piece, A, covering the entire under surface of the foot, a yielding or elastic heel-pad, B, shaped to present a gripping edge or wall in front, the said pad being securely attached to the sole-piece and filling the entire space below the rear portion thereof, and a metal tip or lunette, C, having square-cut ends abutting against the said heel-pad, and adapted to hold the forward portion of the sole-piece A in place upon the hoof and to be flush with the surface of the heel-pad when the parts are properly fitted in place, as and for the purpose set forth.

3. In a shoe for horses and mules, the combination, with a tip or lunette, C, having square-cut heels or ends and holes for its

attachment to the hoof by nailing, of an integral sole-piece, A, of durable and flexible material—such as leather—adapted to be interposed and securely held between the said tip
5 and the hoof, and a yielding or semi-elastic heel-pad B, shaped, as described, to prevent slipping, and welted or otherwise secured to the central and rear portions of the sole-piece,

for supporting the rear part of the hoof, substantially as set forth.

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