

No. 704,175.

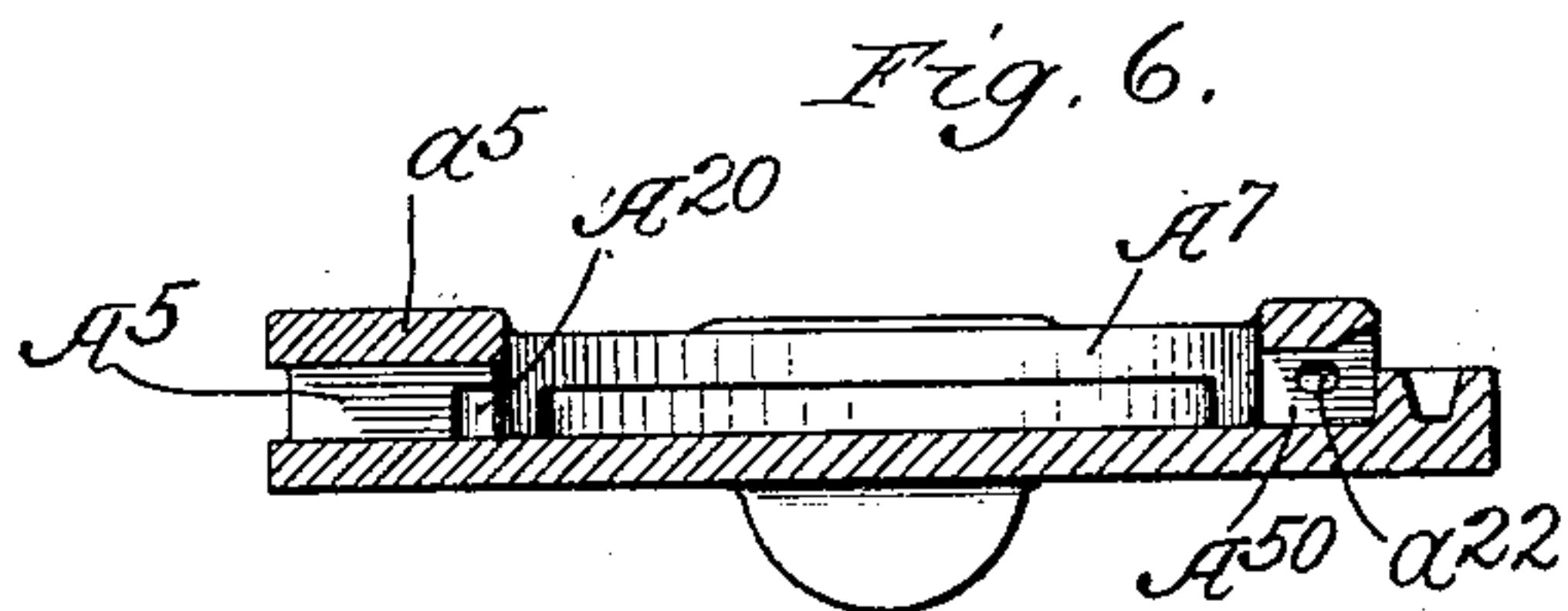
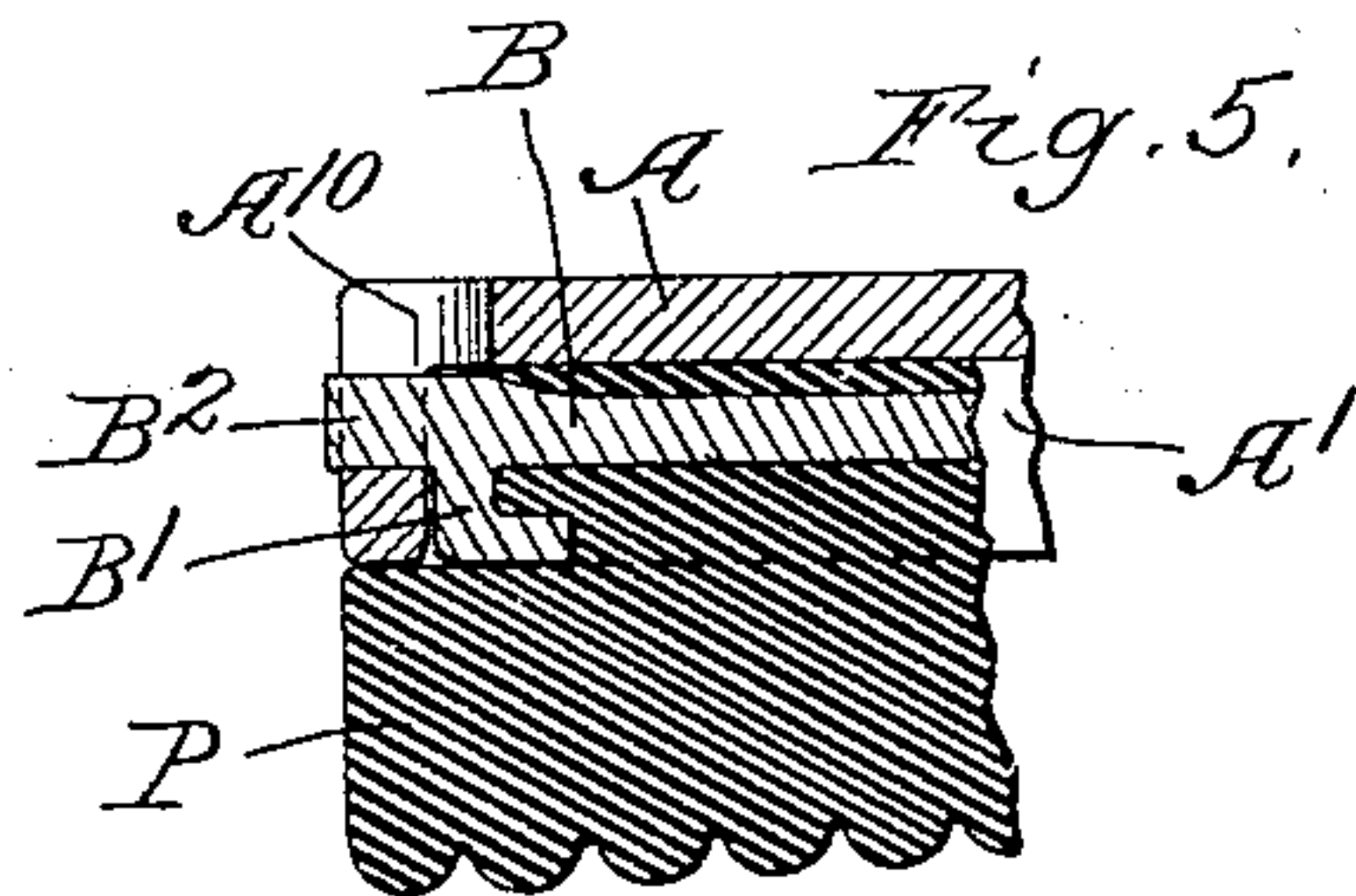
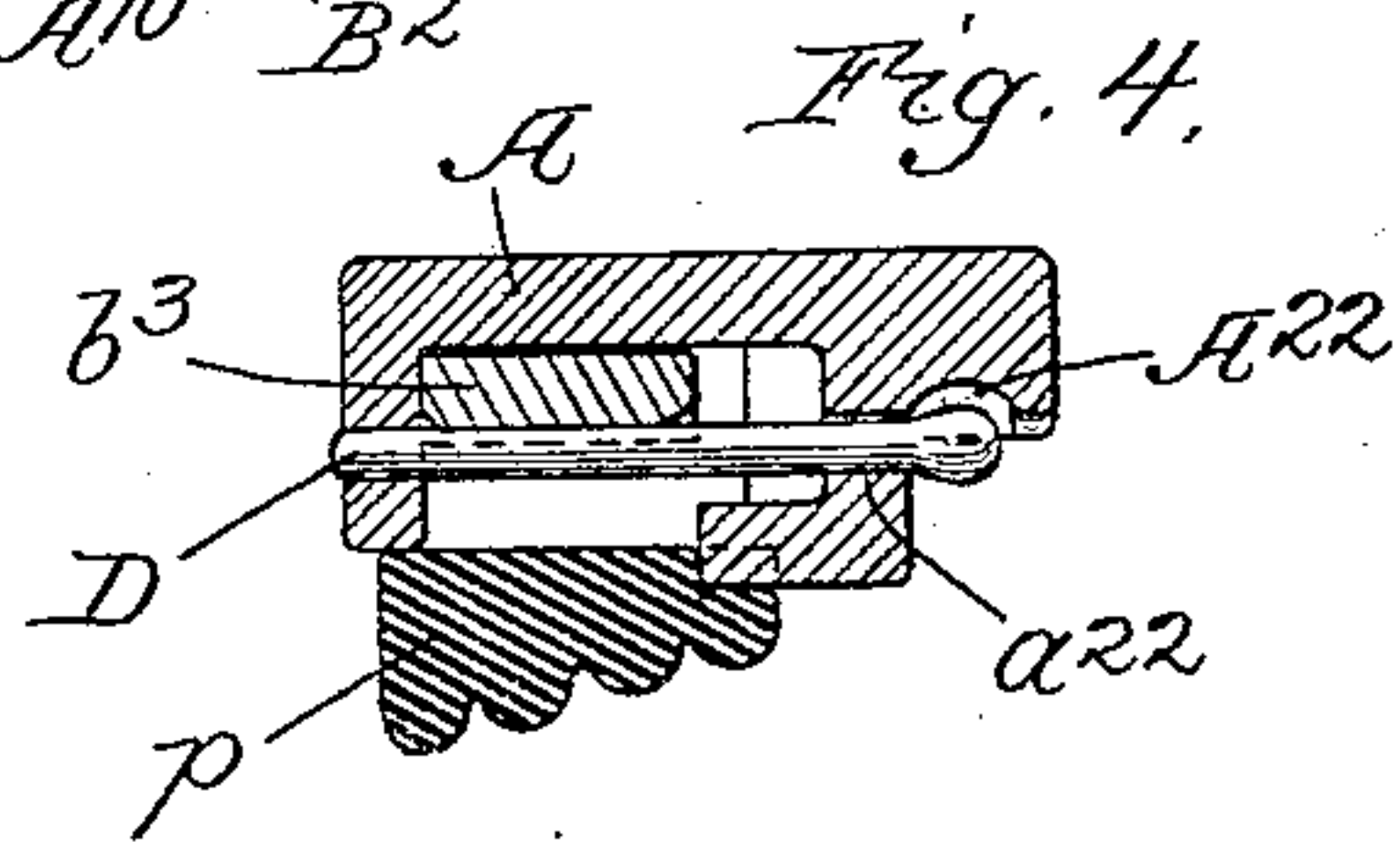
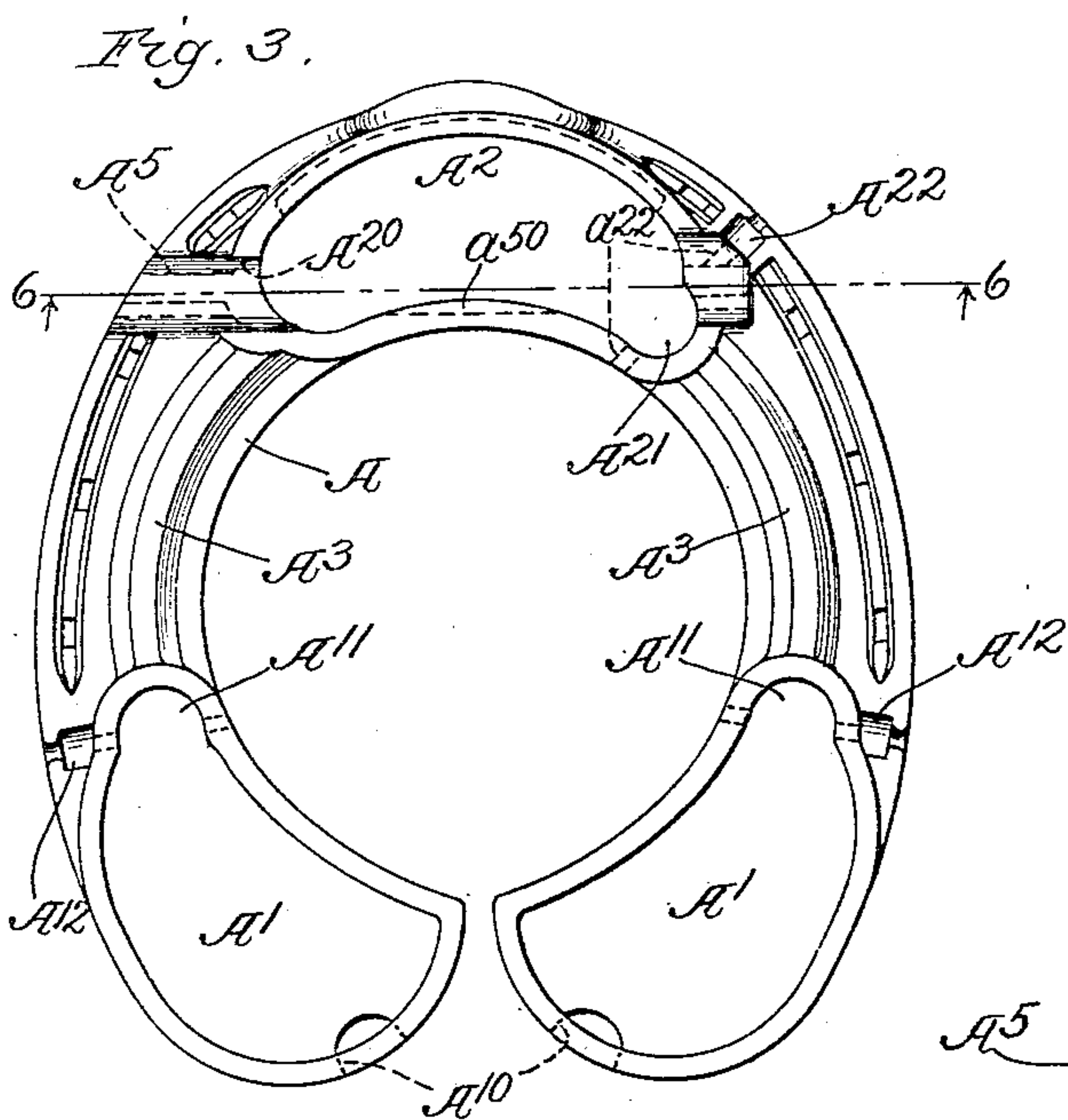
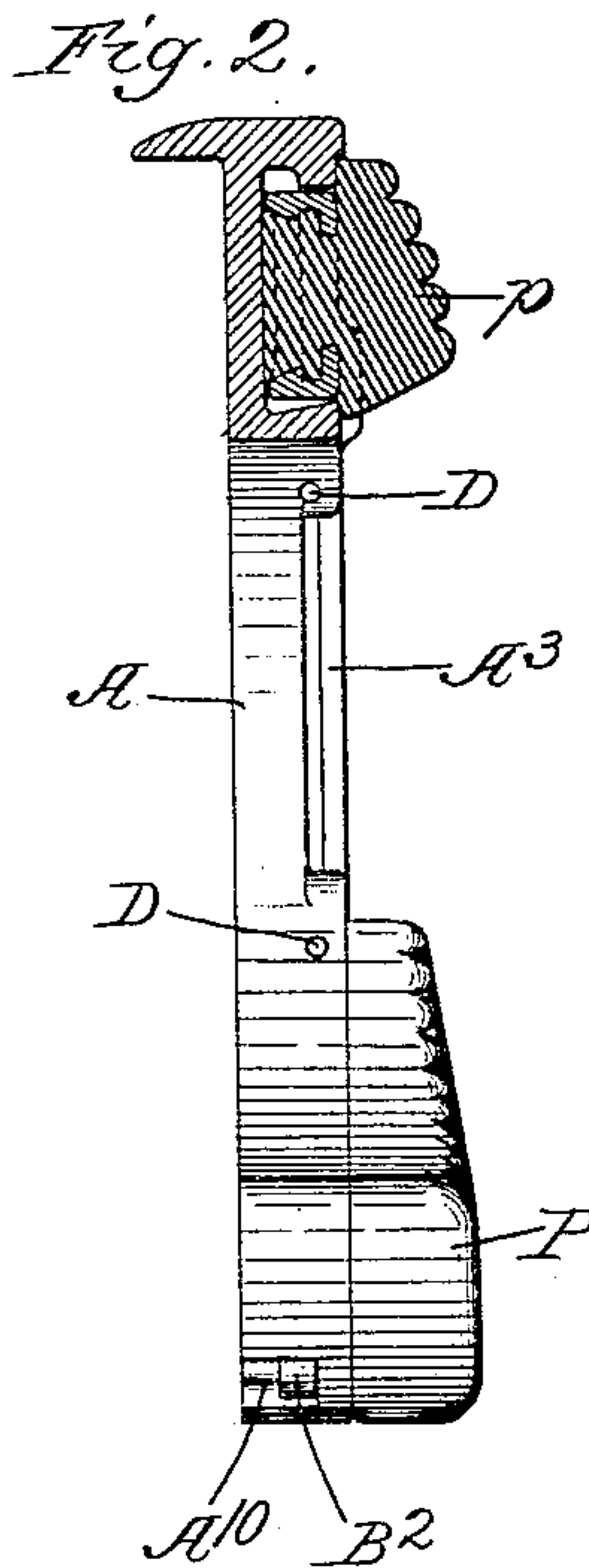
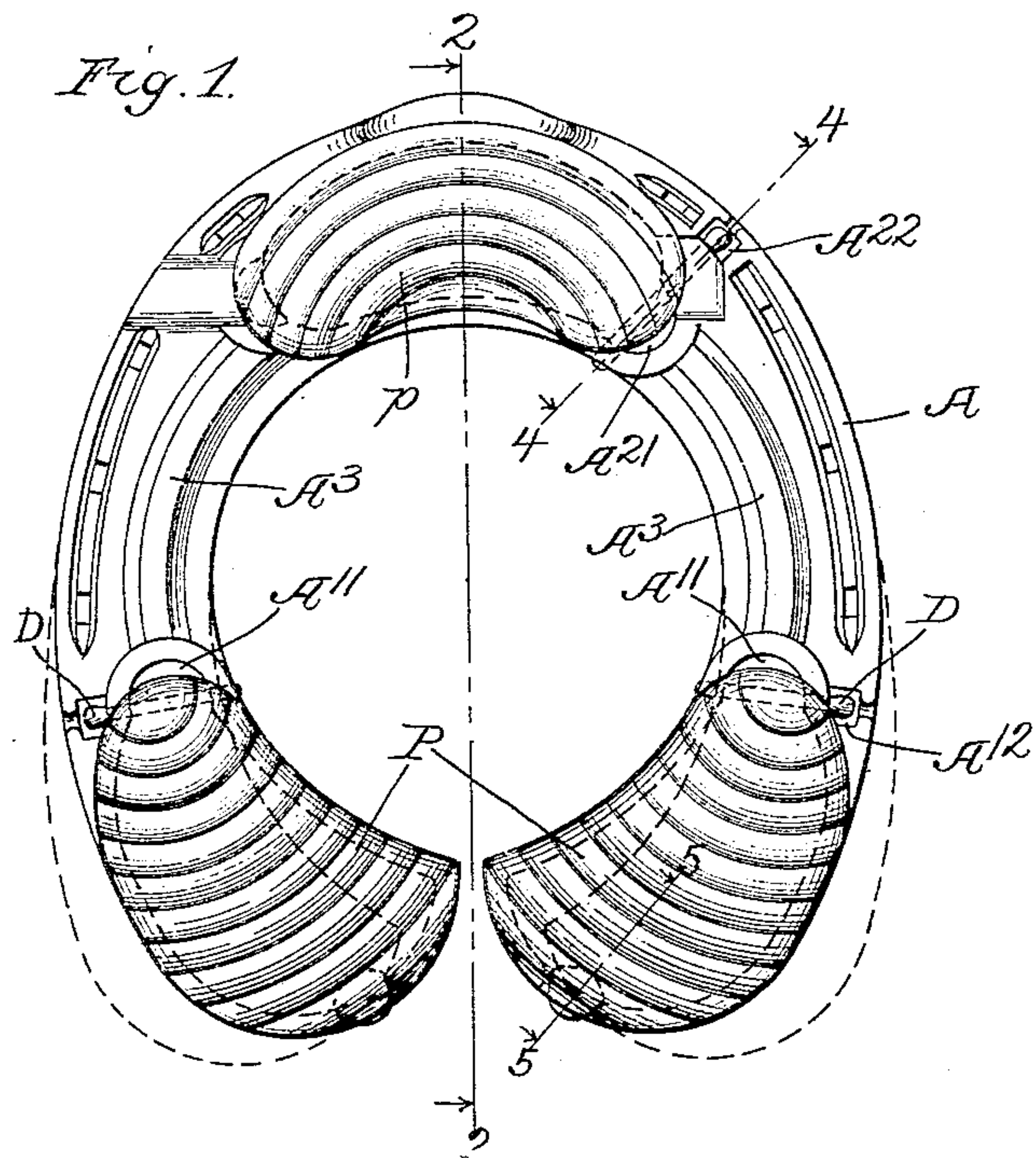
Patented July 8, 1902.

F. N. CLINE.  
HORSESHOE.

(Application filed Aug. 19, 1901. Renewed June 11, 1902.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses,  
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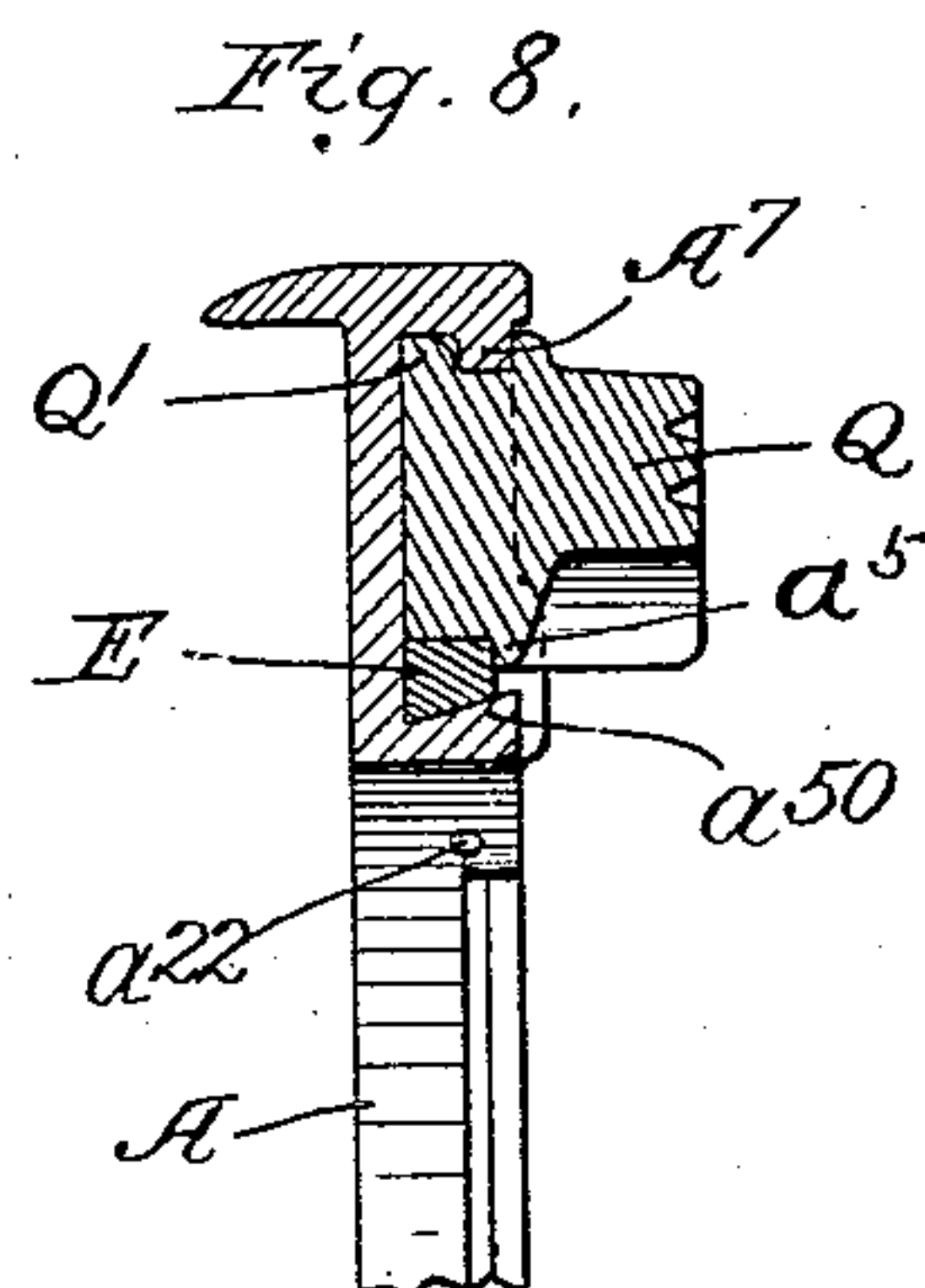
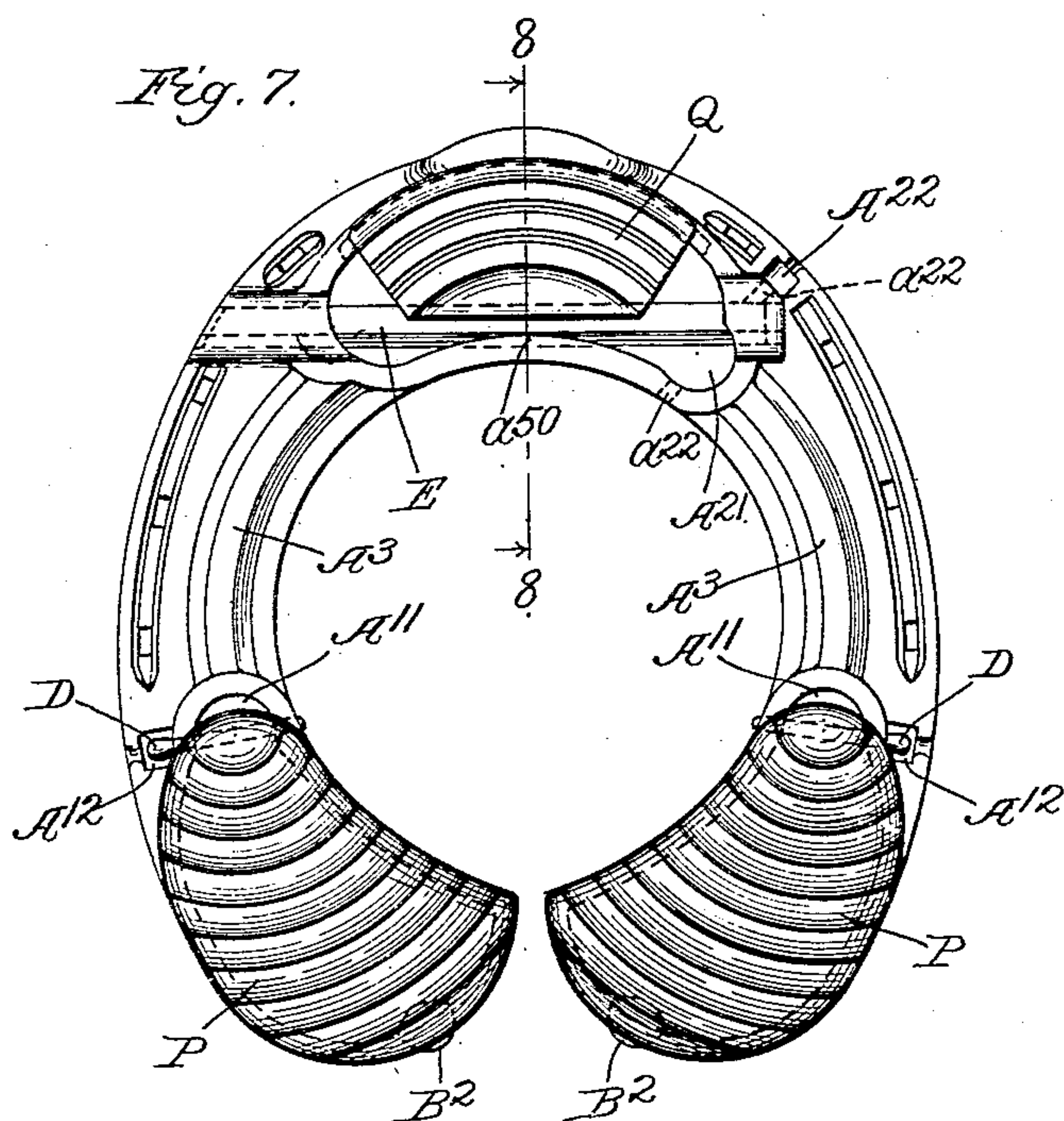


Fig. 9.

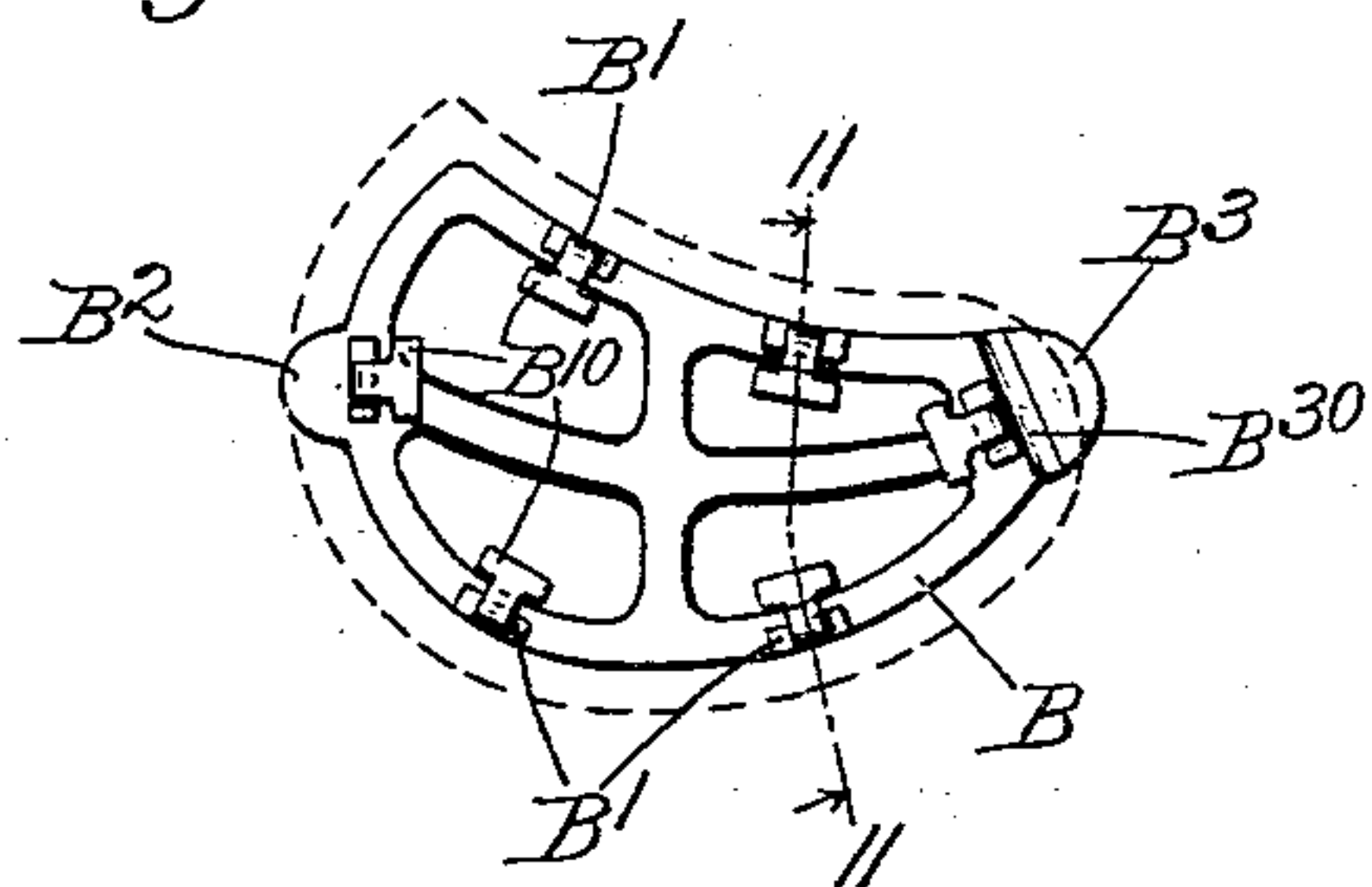


Fig. 10.

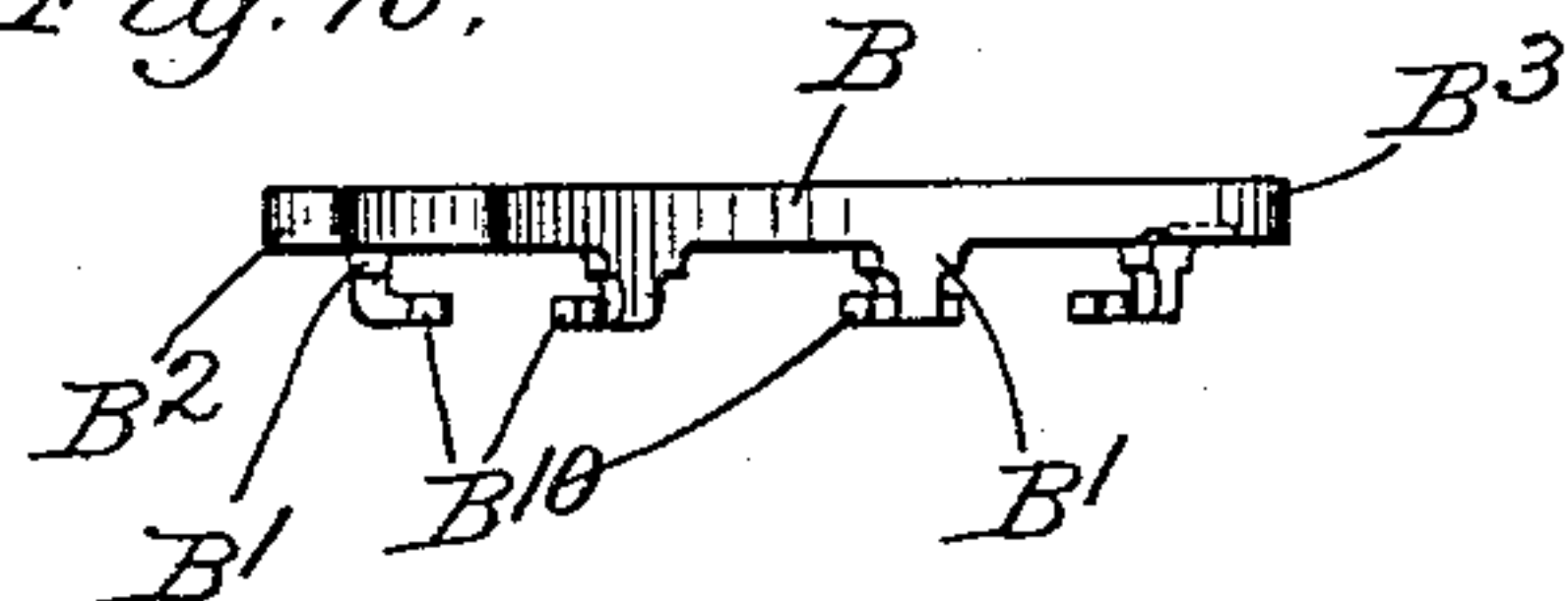


Fig. 12.

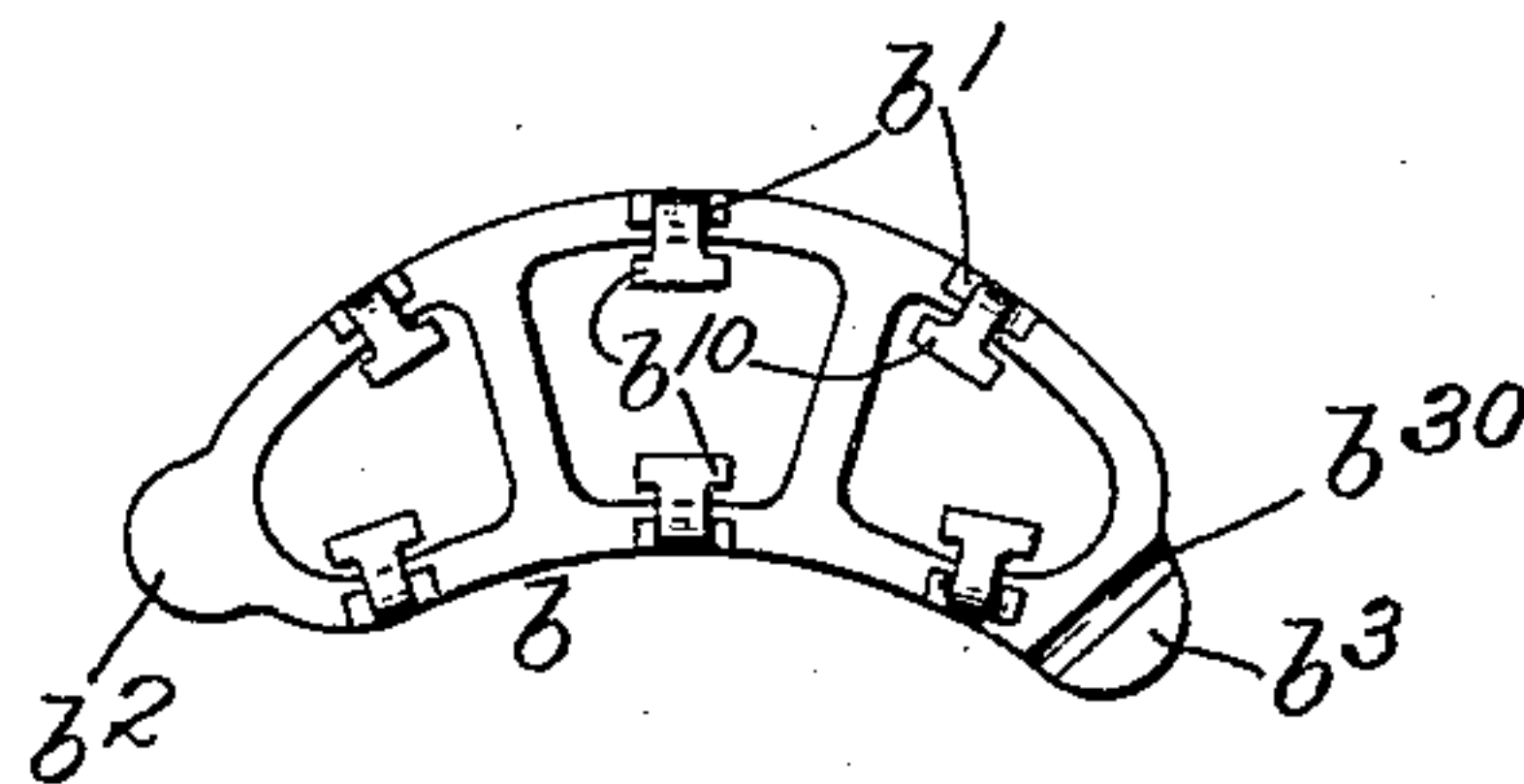


Fig. 13.

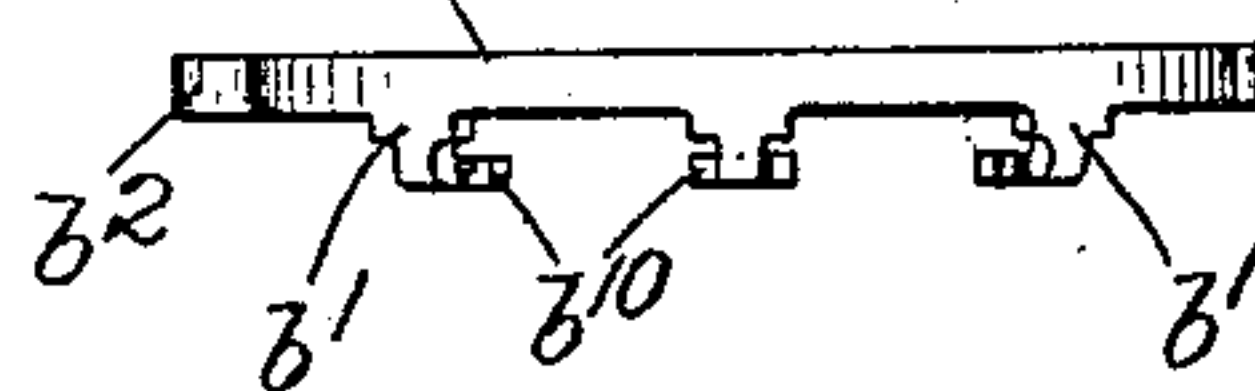
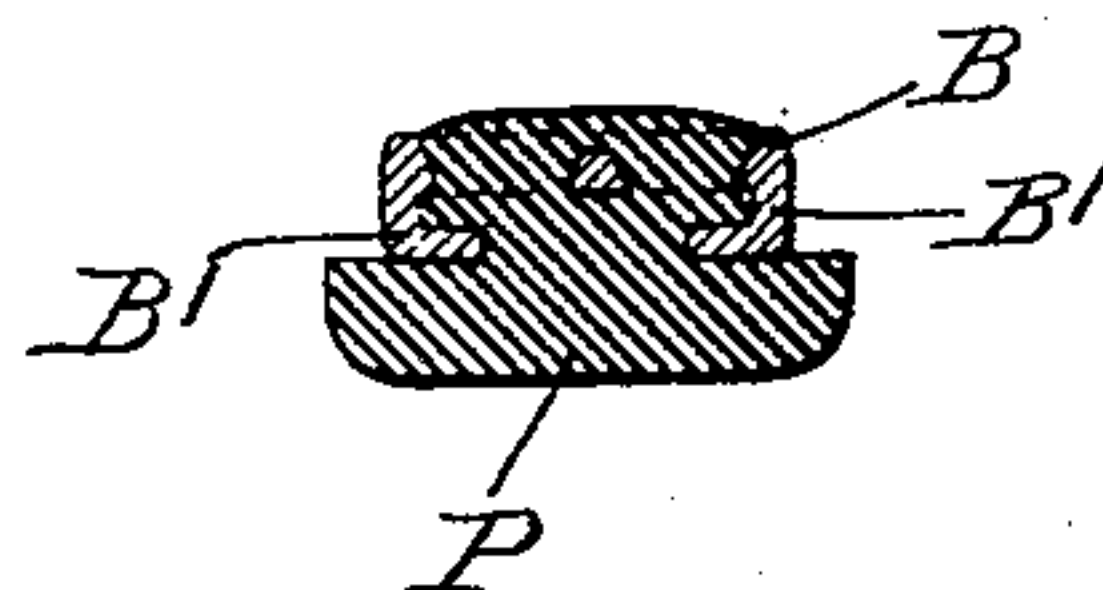


Fig. 11.



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# UNITED STATES PATENT OFFICE.

FRED N. CLINE, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF TO A. G. THOMPSON, OF CHICAGO, ILLINOIS.

## HORSESHOE.

SPECIFICATION forming part of Letters Patent No. 704,175, dated July 8, 1902.

Application filed August 19, 1901. Renewed June 11, 1902. Serial No. 111,139. (No model.)

*To all whom it may concern:*

Be it known that I, FRED N. CLINE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Horseshoes, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof.

The purpose of this invention is to provide an improved horseshoe having elastic calks and also, secondarily, adapted to have an interchangeable elastic calk and steel calk at the toe.

It consists in the structure of the metal body or base of the shoe adapted to retain removable calks, in the specific structure of the elastic calks, which are made of rubber or like material molded upon a metal or other rigid skeleton, in the means of retaining the calks in place in the base of the shoe, and in the structure of the steel and elastic toe-calks made interchangeable and interchangeably secured in the shoe-base.

In the drawings, Figure 1 is a bottom plan of a shoe of my improved construction having all the calks elastic. Fig. 2 is a section at the line 2 2 on Fig. 1. Fig. 3 is a bottom plan of the metal body or base of the shoe with the calks removed. Fig. 4 is a detail section at the line 4 4 on Fig. 1, showing the method of securing the calks at one end. Fig. 5 is a detail section at the line 5 5 on Fig. 1, showing the method of securing the calks at the opposite end. Fig. 6 is a section at the line 6 6 on Fig. 3. Fig. 7 is a bottom plan of a shoe, showing a steel toe-calk substituted for the elastic calk which is shown in place in Figs. 1 and 2. Fig. 8 is a detail section at the line 8 8 on Fig. 7. Fig. 9 is a plan of the metal skeleton for one of the rubber heel-calks. Fig. 10 is an edge elevation of the same. Fig. 11 is a section at the line 11 11 on Fig. 9. Fig. 12 is a plan of the metal skeleton of the elastic toe-calk. Fig. 13 is an edge elevation of the same.

A is the metal body or base of my improved shoe. It is formed with three recesses for three calks, A' A' being recesses for the heel-calks and A<sup>2</sup> the recess for the toe-calk. These recesses are bounded by flanges pro-

jecting from the general plane of the under face of the base A.

A<sup>3</sup> A<sup>3</sup> are ribs projecting from the general plane of the base as high as the flanges which bound the recesses A' A' and A<sup>2</sup> and extending at the opposite sides between the toe-calk and the two heel-calks, respectively.

B b are rigid skeletons for the elastic heel and toe calks P and p, respectively. They are made of malleable iron or any other suitable metal, being formed with lugs B' and b', which as originally cast project directly from the plane of the skeleton, but which are designed to be bent inward, as shown in the drawings, so that they project parallel to the plane of the skeleton. They terminate in cross-bars B<sup>10</sup> b<sup>10</sup>. The skeleton is designed to be placed in the mold in which the rubber calk is formed and is thus embedded in the rubber, as seen in the sectional views, Figs. 2, 5, and 11, the form of the bent lugs having the cross-bar terminals described, causing them to retain the rubber securely. In addition to this the reticulated form of the skeleton, of which the several bars are beveled on the under side, as seen most clearly in Fig. 11, permits the rubber to substantially encompass the frame, and being molded so that it projects in a slight swell at the upper side, as seen in Fig. 11, it not only encompasses all the intersecting bars of the reticulated skeleton, but also forms a yielding cushion between the skeleton and the bottom of the recess in which the calk is ultimately lodged when it is placed in the shoe-body, thus tending to render it firm in position and free from rattling, as is necessary in order that the animal wearing the shoe should not have a sense of insecurity in his tread.

At the rear end of the skeleton B of the heel-calk it has a lug B<sup>2</sup>, adapted to take into an opening made at A<sup>10</sup> in the wall or boundary of the recess A' at the rear end of the base of the shoe, said opening being made through the flange which bounds the recess and also through the web of the shoe, so that the shoe-body is readily cast with such opening, and the lug is readily introduced thereinto before the forward end of the calk with the rubber mounted on the skeleton is passed



down fully into the cavity A'. The forward end of the skeleton has a similar lug B<sup>3</sup>, for which a suitable recess is provided at the forward end of the cavity A', and the flange bounding the cavity at that point is pierced at both sides of the said recess A<sup>11</sup> to receive a nail D, which has a globular or knob-like head, and the face of the web of the shoe just outside the flange is provided with a depression A<sup>12</sup>, in which such knob-like head of the nail may lodge when the nail has been passed through outside or under the lug B<sup>3</sup>, which may have a slight groove B<sup>30</sup> to accommodate it, the nail springing slightly in being thus driven home to permit the globular head to pass the margin bounding the depression A<sup>12</sup> at the outside and become lodged in said depression by reacting from such springing, or if the nail should be soft enough to bend in the process of being thus forced home a slight tap of the hammer will sink the globular head of the nail into the depression A<sup>12</sup>, and in either case the nail will be securely retained and will thus lock the calk in the cavity.

The frame or skeleton of the toe-calk has a lug b<sup>2</sup> corresponding to the lug B<sup>2</sup> of the heel-calk, and the lug b<sup>3</sup> corresponding to the lug B<sup>3</sup>, and having a groove b<sup>30</sup> corresponding to the groove B<sup>30</sup>, and the shoe is similarly constructed at the toe portion to receive the lugs b<sup>2</sup> and b<sup>3</sup> and the globular-headed nail D, which secures the toe-calk. The aperture for the lug b<sup>2</sup> at the toe is, however, made to serve also another purpose in connection with the steel calk interchangeable with the elastic toe-calk, as will now be explained.

A<sup>21</sup> is the recess in the cavity A<sup>2</sup>, which receives the lug b<sup>3</sup> of the toe-calk, and the recess for the head of the securing-nail is seen at A<sup>22</sup>, the flange bounding the recess being pierced for the nail at a<sup>22</sup> a<sup>22</sup>, as indicated in dotted line in Figs. 3 and 7.

At A<sup>20</sup> there is formed a pocket for the lug b<sup>2</sup>, corresponding to and having the same function as the aperture A<sup>10</sup>, which receives the lug B<sup>2</sup> of the heel-calk. From this pocket an aperture A<sup>5</sup> extends out through the edge of the shoe of the shape which is indicated in Fig. 8 by that of the key E, which is inserted through this aperture, engaging under the undercut lip a<sup>50</sup> at the middle point of the shoe and entering a similarly-shaped socket A<sup>50</sup> at the opposite side immediately adjacent to the recess A<sup>21</sup>, which receives the lug b<sup>3</sup>. This key is used to secure the steel toe-calk Q, which at the forward side is conformed in outline to the metal skeleton b of the elastic toe-calk p, but has a forwardly-projecting flange Q', which engages under the undercut lip or flange A<sup>7</sup>. (See Fig. 8.) This flange, extending in the arc of a circle, makes it impossible for the calk Q to be lifted out of its place at the forward side without being first moved so as to withdraw the flange Q' directly from the recess under the lip A<sup>7</sup>, and such withdrawal is prevented by the key

E, inserted through the aperture, as described, as seen in Figs. 7 and 8. The elastic calks P P and p are made with their exposed surfaces corrugated, the corrugations of the toe-calk being substantially concentric about the center of the shoe, but those of the heel-calks being preferably in lines more or less nearly radial to the center of the shoe and preferably in concentric arcs struck about centers near the forward end of the calks—that is to say, somewhere near the transverse medial line of the shoe, clearly apparent in the drawings. (See Figs. 1 and 7.) The elastic calks are all made increasing in height or depth from front to rear, as most clearly apparent in Fig. 2. The steel calk may be formed with its exposed surfaces substantially parallel with the base of the shoe, but corrugated in arcs of circles of smaller radius than the forward end of the shoe, as seen in Figs. 7 and 8.

It will be understood that the base of the shoe may be spread so as to carry the heel-calks apart to any desired distance. An ordinary range of spreading is indicated in Fig. 1, wherein the calks are shown in full line quite close together and in dotted outline considerably spread.

I claim—

1. A horseshoe comprising a metal body or base, having cavities for heel and toe calks, and undercut recesses or apertures at a point in the periphery of each of said cavities; removable calks adapted to be lodged in the cavities and having projections adapted to enter said undercut recesses, the shoe-base having the bounding walls or flanges of said cavities at points opposite said undercut recesses respectively, pierced in position to admit a retaining device to prevent withdrawal of the projections from the recesses respectively.

2. In a horseshoe, in combination with the base A, having the cavities for the calks provided with undercut recesses at one end, calks adapted to be lodged in said cavities, having lugs to enter the recesses; the flanges or bounding walls of the cavities at the opposite ends being pierced to receive a retaining-pin, and the web of the shoe outside the wall having a depression to lodge the head of such pin; in combination with a headed pin inserted through said flanges in position to retain the calks, and having its head lodged in said depression.

3. A horseshoe, having its body or base provided with a cavity for a toe-calk, such cavity having its forward wall recessed or undercut, in combination with a calk having a rigid base adapted to enter the cavity, provided with a flange or bead adapted to enter the undercut recess; the body of the shoe being apertured transversely back of the calk, and a key inserted endwise through the edge of the shoe, behind the calk, to hold the same engaged in the undercut recess.

4. A horseshoe, having at the forward side



a cavity for a toe-calk, whose forward wall is forwardly convex and undercut, in combination with a calk adapted to enter the cavity and having its forward edge curved to conform with the outline of the cavity, and provided with a bead or flange entering the undercut recess of the forward wall of the cavity, and a key inserted transversely through the shoe, behind the calk, preventing its direct withdrawal from the recess.

5. A horseshoe, having the heel-calks cor-

rugated in concentric arcs convex rearward about centers at the opposite sides of the shoe.

In testimony whereof I have hereunto set my hand, at Chicago, Illinois, this 9th day of 15 August, A. D. 1901, in the presence of two witnesses.

FRED N. CLINE.

In presence of—

ADNA H. BOWEN, Jr.,

EDWARD T. WRAY.