

J. P. EUSTIS.
NON-CIRCULAR METALLIC INCLOSING FRAME.
APPLICATION FILED FEB. 27, 1906.

908,401.

Patented Dec. 29, 1908.

2 SHEETS—SHEET 1.

Fig. 1.

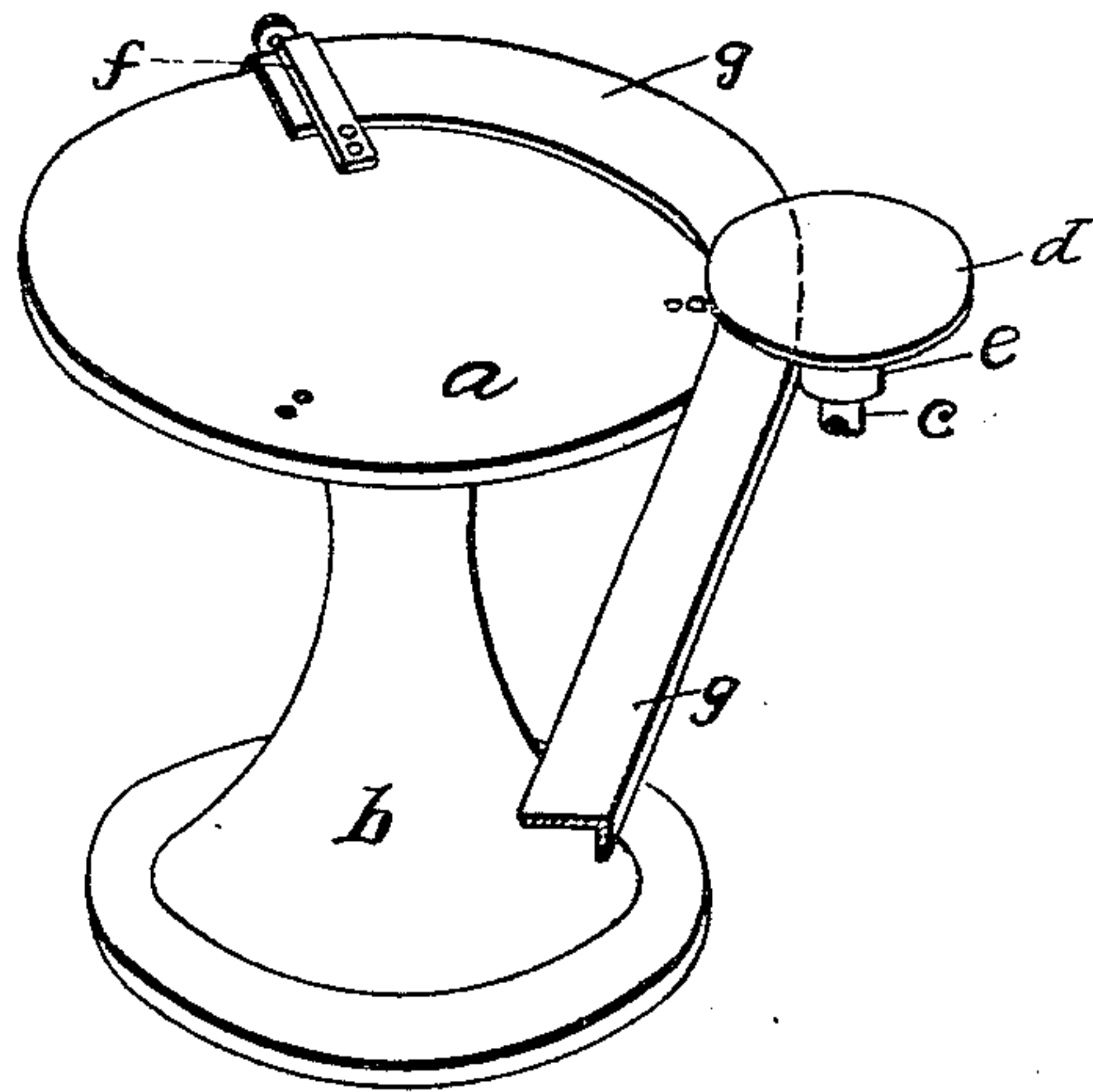


Fig. 2.

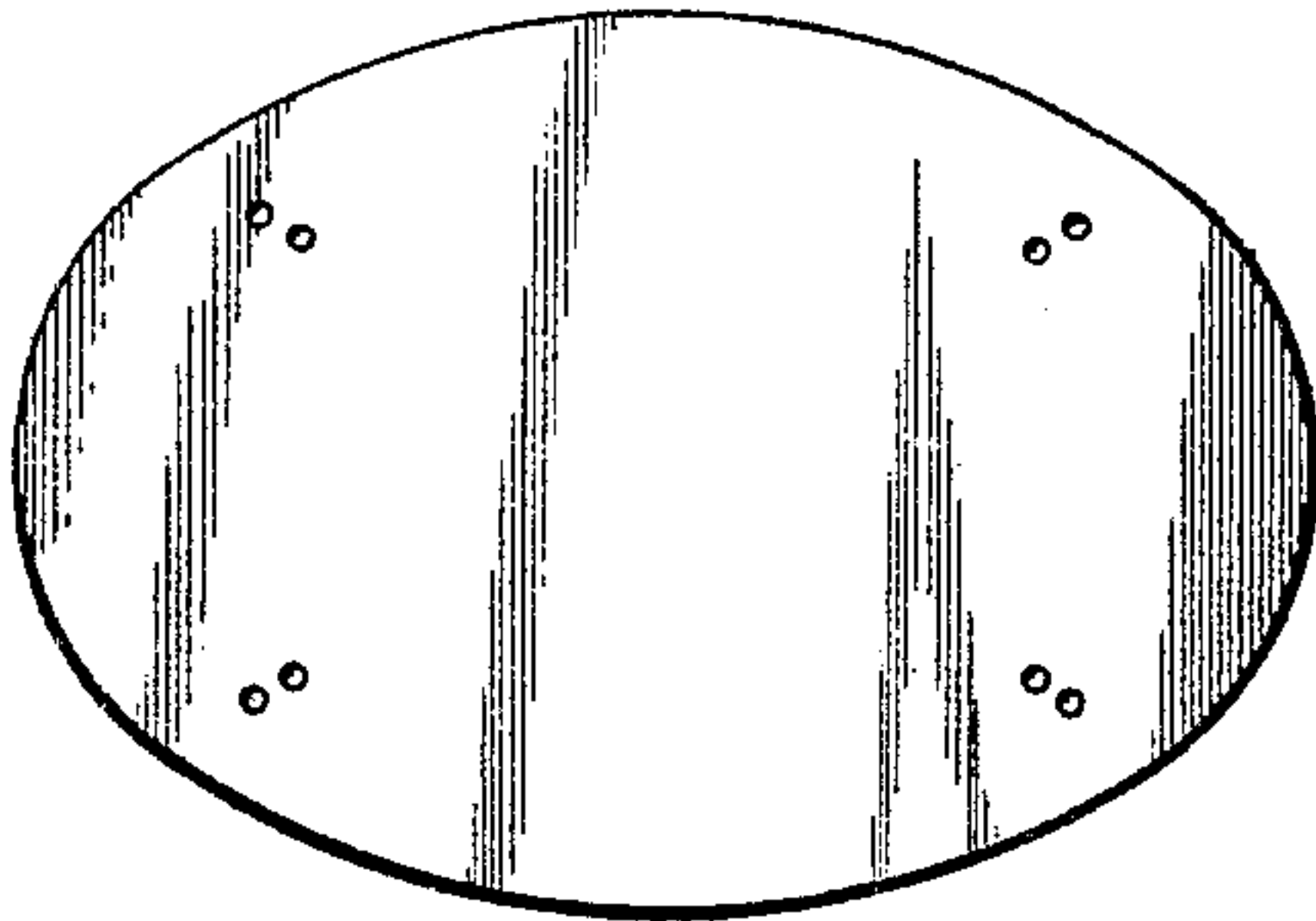
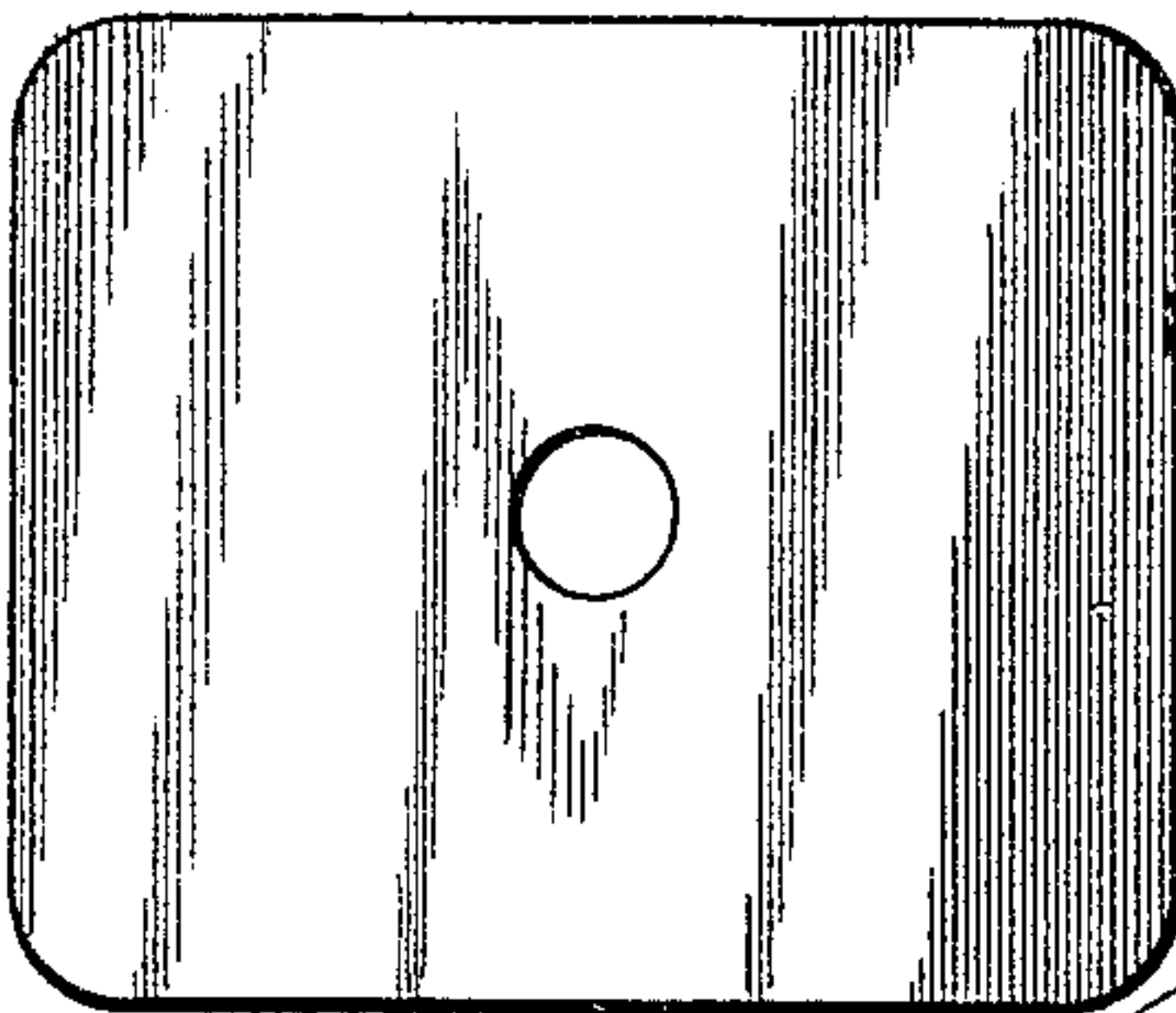


Fig. 3.



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2 SHEETS—SHEET 2.

Fig. 4.

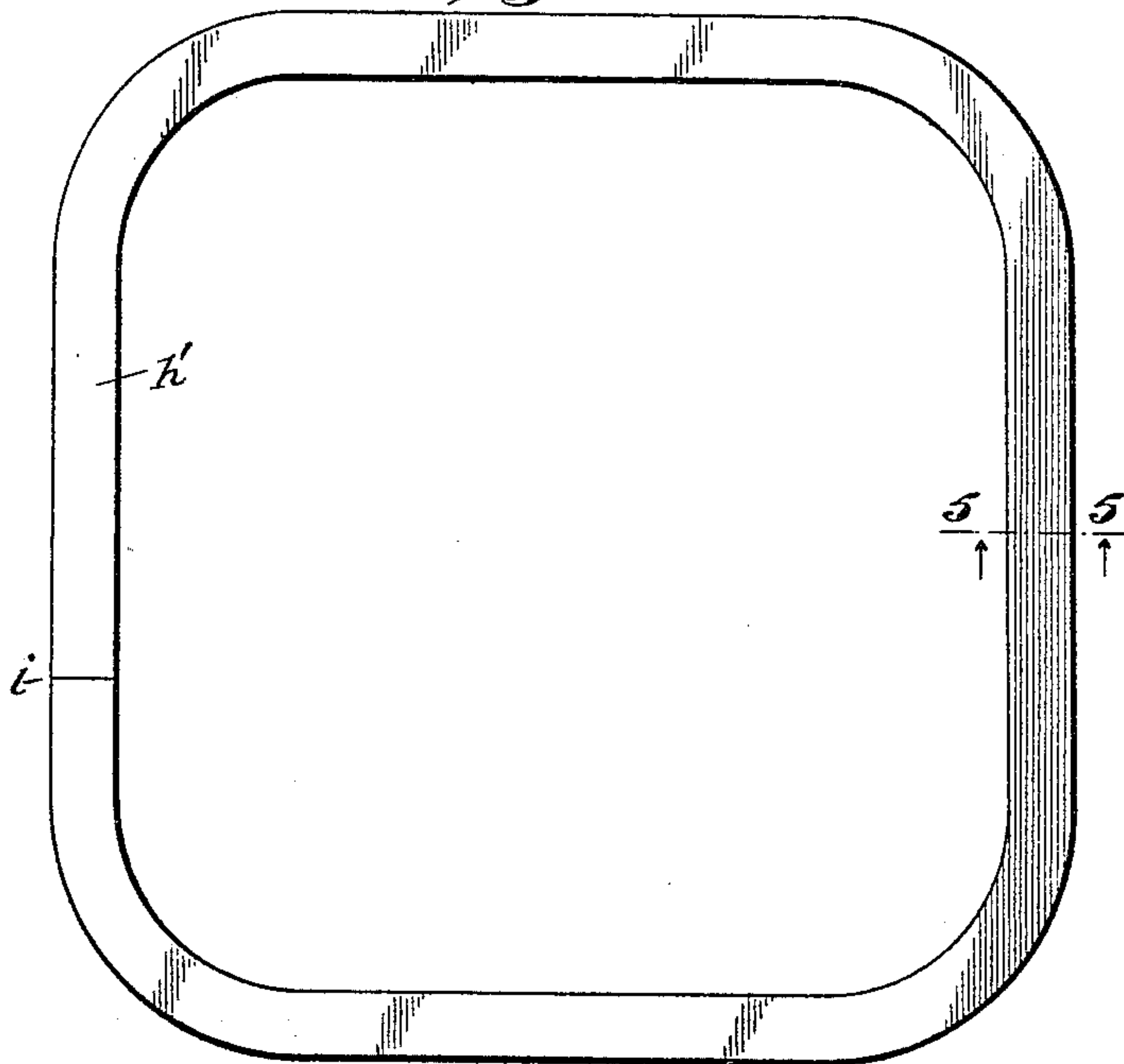


Fig. 5.

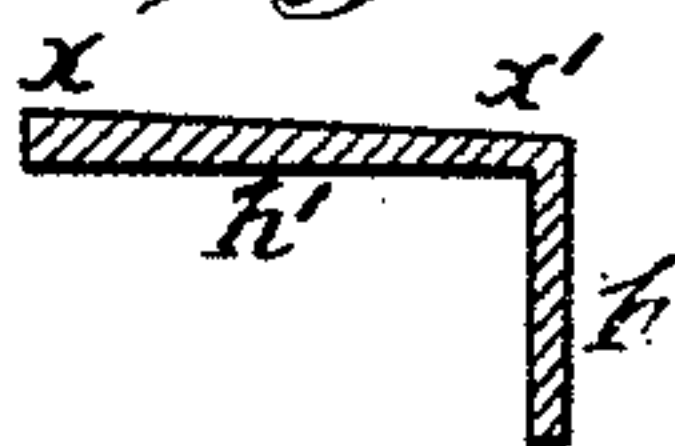
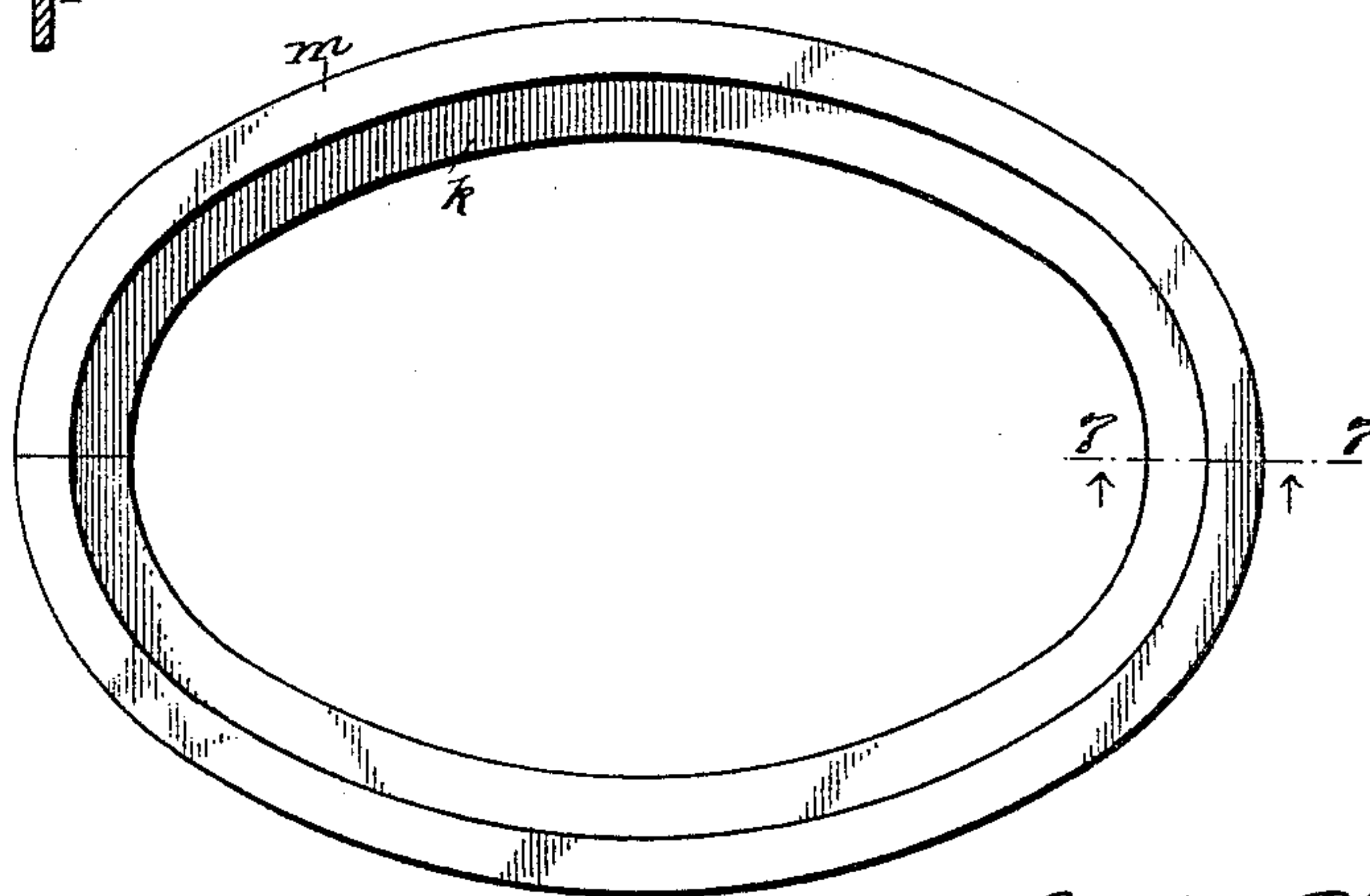


Fig. 7.



Fig. 6.



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UNITED STATES PATENT OFFICE.

JOHN P. EUSTIS, OF NEWTON, MASSACHUSETTS.

NON-CIRCULAR METALLIC INCLOSING FRAME.

No. 908,401.

Specification of Letters Patent.

Patented Dec. 29, 1908.

Continuation of applications Serial No. 98,562, filed March 17, 1902, and Serial No. 187,652, filed January 4, 1904.

This application filed February 27, 1906. Serial No. 303,303.

To all whom it may concern:

Be it known that I, JOHN P. EUSTIS, a citizen of the United States of America, residing at Newton, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Non-Circular Metallic Inclosing Frames, of which the following is a specification.

The invention relates to conformed non-circular metallic inclosing frames, such as frames for mirrors, pictures, and like articles, which are formed of strips of angular malleable sheet metal, preferably suitable brass.

The invention is particularly adapted to brass, inasmuch as this possesses the requisite softness or malleability, and such metal will conform to a suitable templet or form.

Heretofore such frames have each been made of a number of pieces of sheet metal mitered and soldered, or brazed, together at the corners, which treatment of the corners softens the metal and weakens the corners, while the corner joints of the frames are apt to become unsightly and are liable to corrosion when located in toilet rooms where they are exposed to moisture and may become unsanitary.

It is the purpose of my invention to make use of a single strip only of angular planished sheet metal, such as malleable brass, for an inclosing frame for mirrors, pictures and the like.

Among the objects accomplished by my invention are the lessening of the cost of such inclosing frames, while increasing their strength and providing a more sightly and sanitary article by omitting some of the joints; the provision of a frame having but a single, and that a "butt" joint; the provision of an inclosing frame in which a butt joint is provided which is located away from the corners so as not to be noticed; and the obtaining of a great advantage in appearance over frames made by former processes, by the provision of an inclosing frame formed from strip sheet metal having a plain surface adapted to receive a high polish and to be readily cleaned owing to the absence of surface projections. There is a great objection to a frame, which some have tried to bend from a single strip of angle metal, owing to the fact that in the bending of the strip the metal wrinkled, twisted

and otherwise partook of an undesirable shape.

To these ends my invention consists in a novel conformed non-circular frame of angular sheet metal, as will be hereinafter fully described and then particularly pointed out in the claims.

In order that my invention may be understood, I will proceed to describe the same with reference to the accompanying drawings, in which,

Figure 1 is a perspective view of simple means for bending up a frame of my improved construction, the templet there shown being oval; Fig. 2 is a plan view of the templet; Fig. 3 is a plan view of a templet having rounded corners; Fig. 4 is a front elevation of an inclosing frame formed in one piece, having parallel sides and curved corners, and constructed from a single piece of right-angle sheet metal and having a single joint; Fig. 5 is a transverse section thereof on the line 5—5 of Fig. 4; Fig. 6 is a front elevation of my improved inclosing sheet metal frame in oval shape formed in one piece from a single strip of angular sheet metal, having a single joint; Fig. 7 is a transverse section thereof taken on the line 7—7 of Fig. 6.

This invention applies particularly to conformed non-circular frames composed of angular sheet metal such as oval frames or frames with straight sides and round corners, in which there are at least two sharply curved turns in the perimeter of the body, because the frames being produced or made from a strip of some suitable malleable metal in the manner described, are, at such sharp curves or turns in particular, free from any cracks or the usual twists and wrinkles which must be tediously hammered out.

Referring to Fig. 1, the templet *a* there shown is oval, and is fixed stationary on a suitable support *b*. This templet imparts the final contour to the frame of sheet metal which is to be produced. Mounted on a shaft *c*, parallel with the support *b*, or at right-angles to the templet, is a drawing and stretching member, consisting of a restraining disk *d*, and a pressing and bending roll *e*. The restraining disk is large enough to lap over the flat surface of the templet *a*, and its smooth flat surface is ex-

posed to and parallel with the smooth flat surface of the templet. The periphery of the pressing and bending roll *e* is directly opposite and in the plane of the periphery of the templet *a*. A suitable clamp *f* is attached to the peripheral portion of the templet at one of several possible points. This clamp *f* is for the purpose of binding and clamping one end of the angular sheet metal strip, such as *g*.

The drawing and stretching member *d*, *e*, is arranged to follow closely the contour of the templet. Such being the case, and starting at the fixed end of the angular strip *g*, the drawing and stretching member presses and rolls the angular strip upon the templet. In so doing, the pressing and bending roll *e* presses and bends that portion *h* of the angular strip shown in section in Fig. 5, which is to form the peripheral flange of the frame, upon the periphery of the templet. Simultaneously therewith the opposing surfaces of the templet and the restraining disk *d* are ironing down and restraining the flange *h*¹ which is to form the face flange of the frame against wrinkling or roughing. It will be understood that the gap or pass between the templet and the drawing and stretching member is of the width of the thickness of the angular strip *g*. Obviously the action of the combined parts of the drawing and stretching member on the angular strip is to draw and stretch the flange *h*, which is to form the peripheral flange of the frame, and the contiguous portion of the other flange. This results in a strip curved to the contour of the templet, having an outer periphery and an inner periphery necessarily of less length than the outer.

Whenever a non-circular frame of other shape than oval is desired, a corresponding templet is substituted. If a templet as shown in Fig. 3 is used, an oblong frame with rounded corners of small radius is obtained.

For producing the frames such as shown in Figs. 4-7, a smooth angular sheet metal strip, preferably of yellow brass, is employed, which will require little or no finishing after being curved by suitable means to produce the desired outline. The ends of the strip are brought together and connected at *i* to form a butt joint, which is soldered or brazed so as to obtain a permanent connection between the ends and to form a continuous integral frame.

The inclosing frame shown in Figs. 4 and 5 has the back member or flange omitted, and this is preferable and is the form usually adopted. The frame is formed in one piece from an angular sheet metal strip having two curved members *h*, *h'*, at right-angles to each other, and providing a curved face member *h*¹ and a curved peripheral

member *h*, extending at substantially right angles from the outer edge of the curved face member *h*¹. In Fig. 5 the proportions are somewhat exaggerated for the sake of clearness, but in Figs. 4 and 5 the eventual shape or condition of the bent up and curved angular strip is shown. Here it will be observed that the inner edge *x* of the face flange *h*¹ is thicker than the outer edge *x*¹ adjacent the flange *h*. This is due to the peculiar action of the process of rolling and bending the angular strips. As before stated, the portion *x*¹ of the flange *h*¹ is drawn and stretched but it is obvious that the metal of the inner edge is somewhat condensed, all due to cold flowing of the metal. The result is that, if there be any slight unevenness in the flange *h*¹ back of the edge *x* of the inner periphery of the frame which might otherwise lift said edge *x* away from the mirror plate or glass plate, the said edge will fit snugly all around on the plate, to hold the plate firm and to keep out dust. This is also favored by reason of the greater thinness of the flange at *x*¹. The thicker portion *x* of the flange *h*¹ will also stiffen the thinner portion.

In Figs. 6 and 7 the inclosing frame is formed in one piece from an angular sheet metal strip, and is composed of three curved members or flanges *k*, *l*, *m*; the curved face flange or member *k* and the curved back flange or member *m* occupying planes parallel to each other and at right-angles to the curved intermediate peripheral member *l* which connects the outer edge of the curved face flange or member *k* with the inner edge of the curved back flange or member *m*, as shown in Fig. 7.

The metal of the conformed frame is true, and is not twisted, and does not require to be hammered. The flanges or members of the angular sheet metal strips are simultaneously bent, the right-angle flanges or members edgewise and the peripheral flanges or members flatwise, without cracking the corners formed by the juncture of the said flanges or members.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. A conformed non-circular finished inclosing frame for mirrors having at least two sharply curved turns in the perimeter of the body, said frame being formed, in one piece, from a single strip of angular malleable sheet metal, with a flat face flange or member having curved edges, and a curved peripheral flange or member at right angles to the said face flange; the outer sides of the turns or curves of the strip being stretched relatively to the portions of the strip between such turns or curves, and the transverse end edges of the strip directly abutting and being permanently joined to-

gether, for substantially the purposes set forth.

2. A conformed non-circular finished inclosing frame for mirrors having at least two sharply curved turns in the perimeter of the body, said frame being formed in one piece, from a single strip of angular malleable sheet metal, which is in stretched condition at said turns or curves, with a flat face flange or member having curved edges, a back flange or member having curved edges, said flanges lying in substantially parallel planes, and a curved intermediate member peripheral to the face and back flanges or members; the transverse end edges of the strip directly abutting and being permanently joined together, for substantially the purposes set forth.

3. A conformed non-circular finished inclosing frame for mirrors having at least two sharply curved turns in the perimeter of the body, said frame being formed, in one piece, from a single strip of angular malleable sheet metal, with a flat face flange having curved edges and the inner part of which is thicker than the outer part, while the latter, at said turns or curves, is stretched relatively to the other portions of the perimeter of the strip, and an outer peripheral flange, the transverse end edges of said strip of metal forming the frame being directly and permanently joined together, for substantially the purposes set forth.

4. A conformed non-circular rigid finished inclosing frame for mirrors having at least two sharply curved turns in the perimeter of the body, said frame being formed, in one piece, from a single strip of angular malleable sheet metal, with a

face flange or member having curved edges, and a curved peripheral flange or member at right angles to the said face flange; the transverse end edges of the strip directly abutting and being permanently joined together, for substantially the purposes set forth.

5. A conformed non-circular rigid finished inclosing frame for mirrors having at least two sharply curved turns in the perimeter of the body, said frame being formed in one piece, from a single strip of angular malleable sheet metal, with a face flange or member having curved edges, a back flange or member having curved edges, said flanges lying in substantially parallel planes, and a curved member peripheral to the face and back flanges or members; the transverse end edges of the strip directly abutting and being permanently joined together, for substantially the purposes set forth.

6. A conformed non-circular rigid finished inclosing frame for mirrors having at least two sharply curved turns in the perimeter of the body, said frame being formed, in one piece, from a single strip of angular malleable sheet metal, with a face flange having curved edges, the inner part of which is relatively condensed and thicker than the outer part, and an outer peripheral flange, the transverse end edges of said strip of metal forming the frame being directly and permanently joined together, for substantially the purposes set forth.

Signed at Boston, Massachusetts, this 24th day of February, 1906.

JOHN P. EUSTIS.

Witnesses:

F. A. COAN,
H. A. SEWALL.