

No. 681,995.

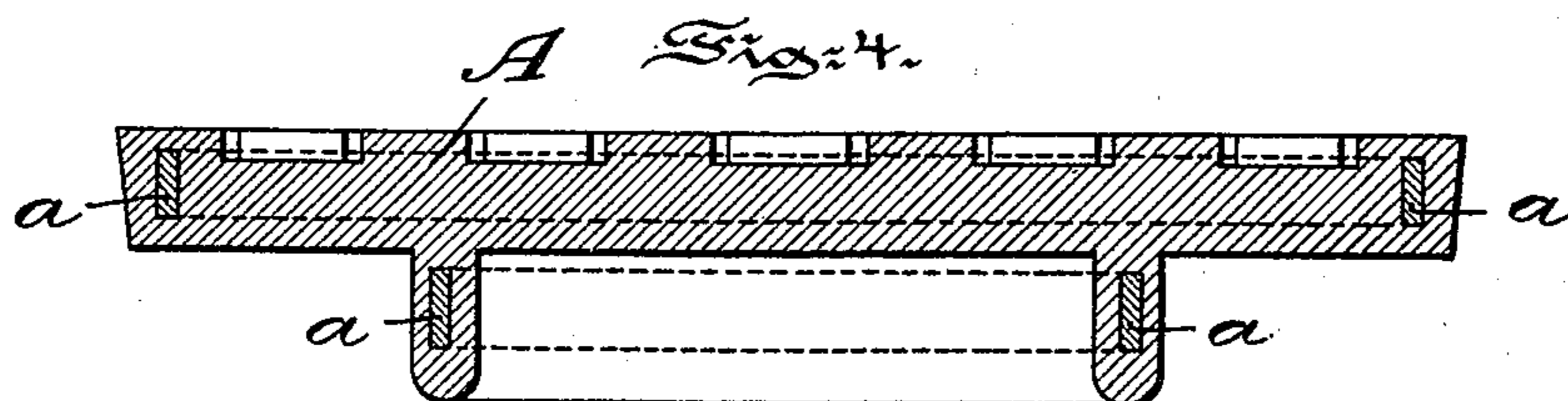
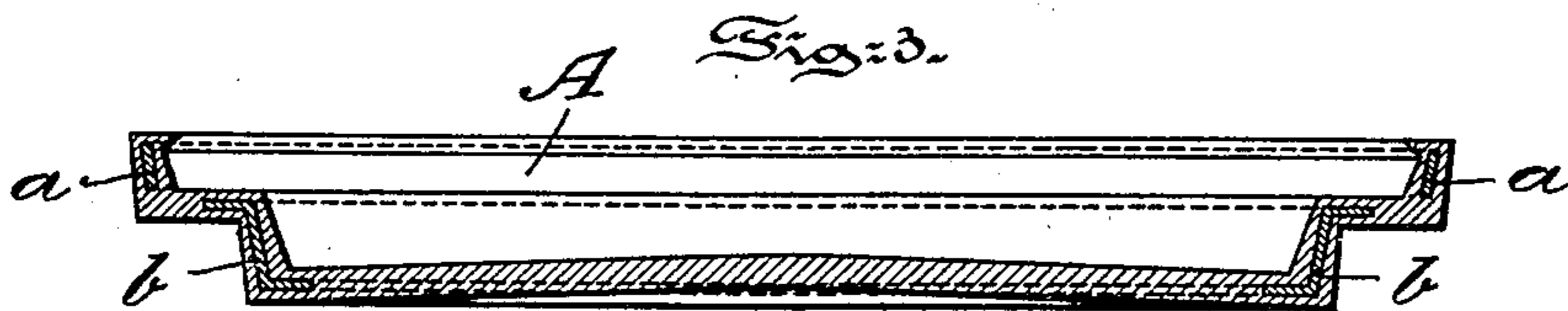
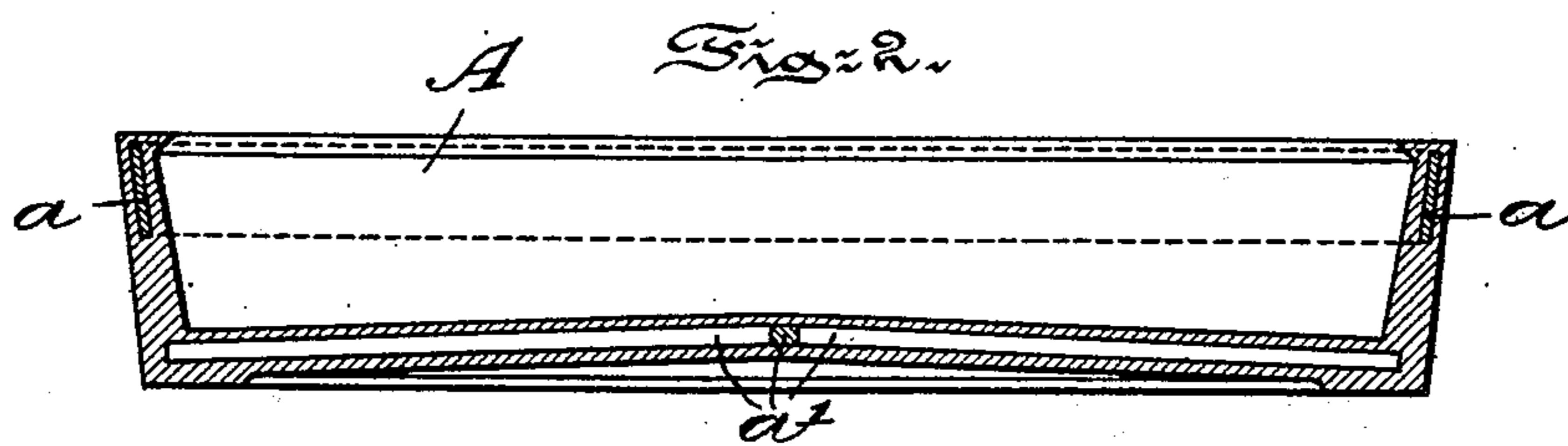
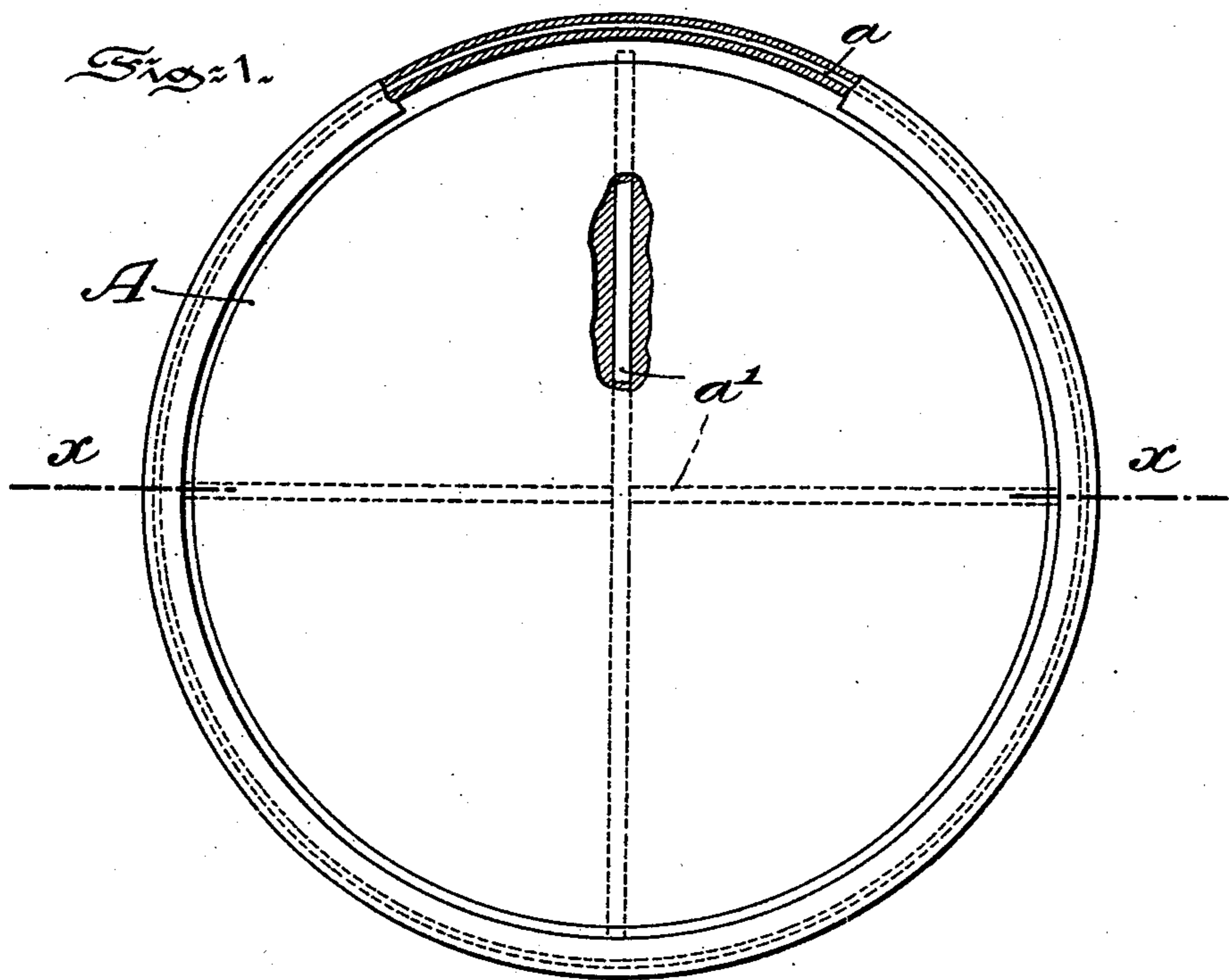
Patented Sept. 3, 1901.

W. O. STEELE.
MANHOLE FRAME AND COVER.

(Application filed Mar. 21, 1901.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses:
Wilhelm Fögl
Thomas M. Smith

Inventor:
William O. Steele,
by J. Walter Dwyer
Attorney.

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2 Sheets—Sheet 2.

Fig. 5.

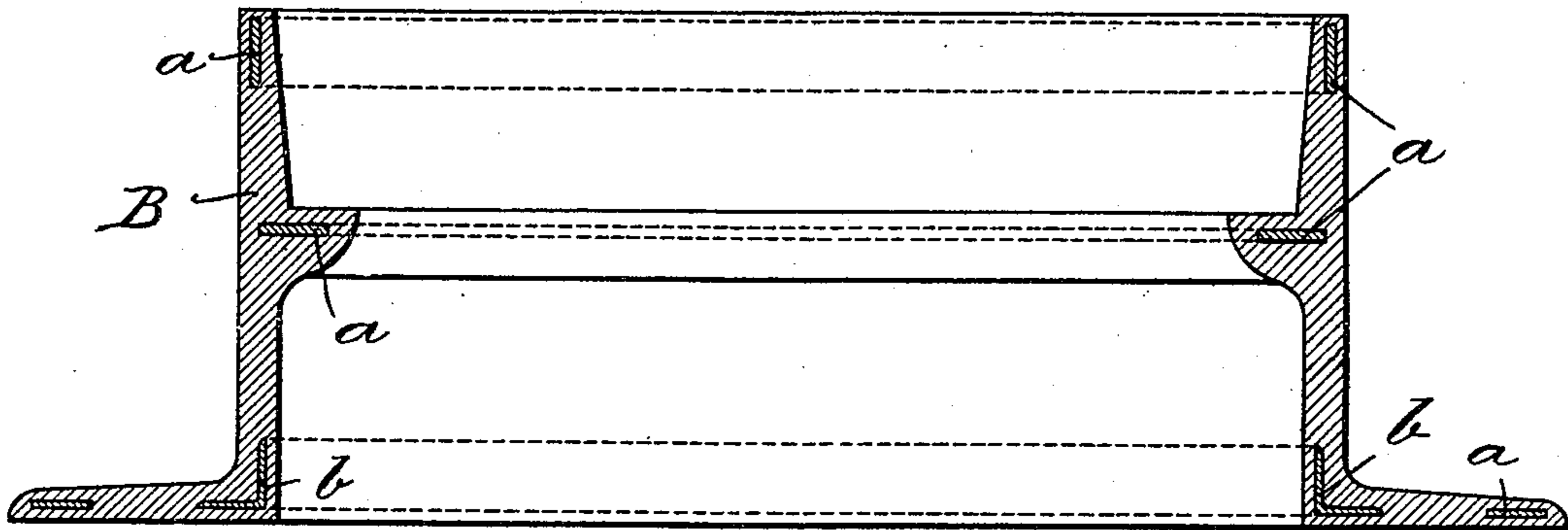


Fig. 6.

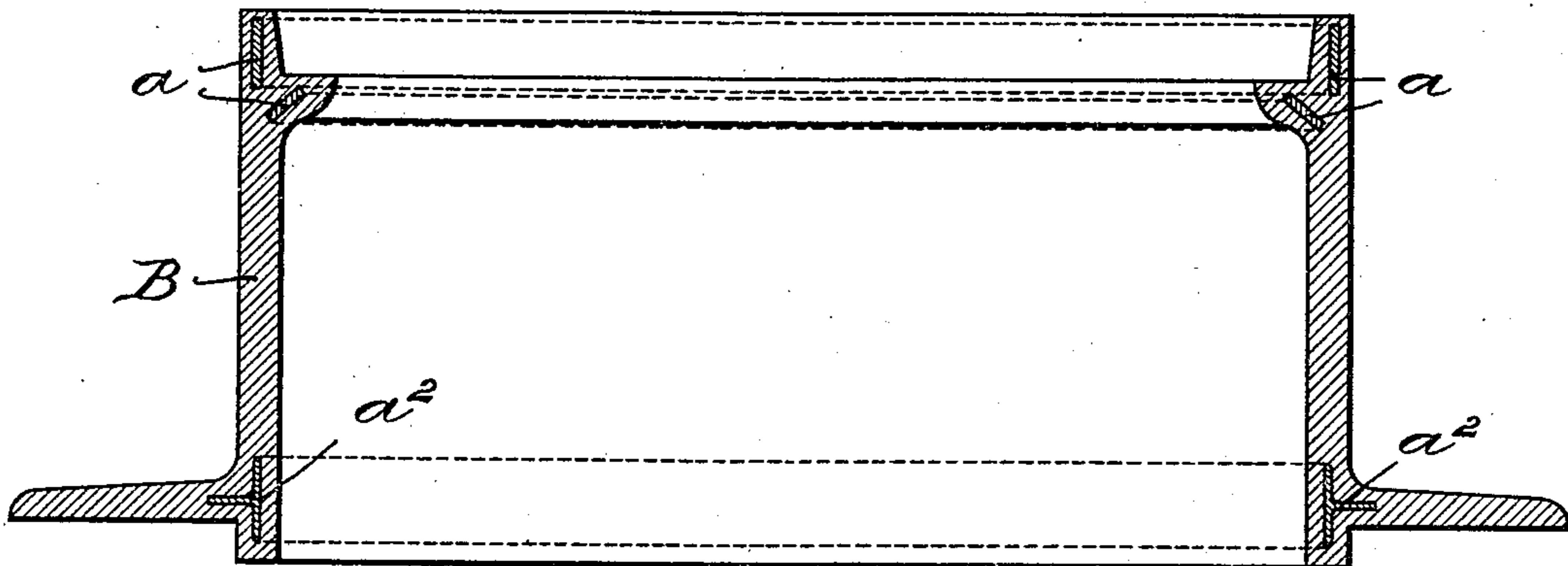
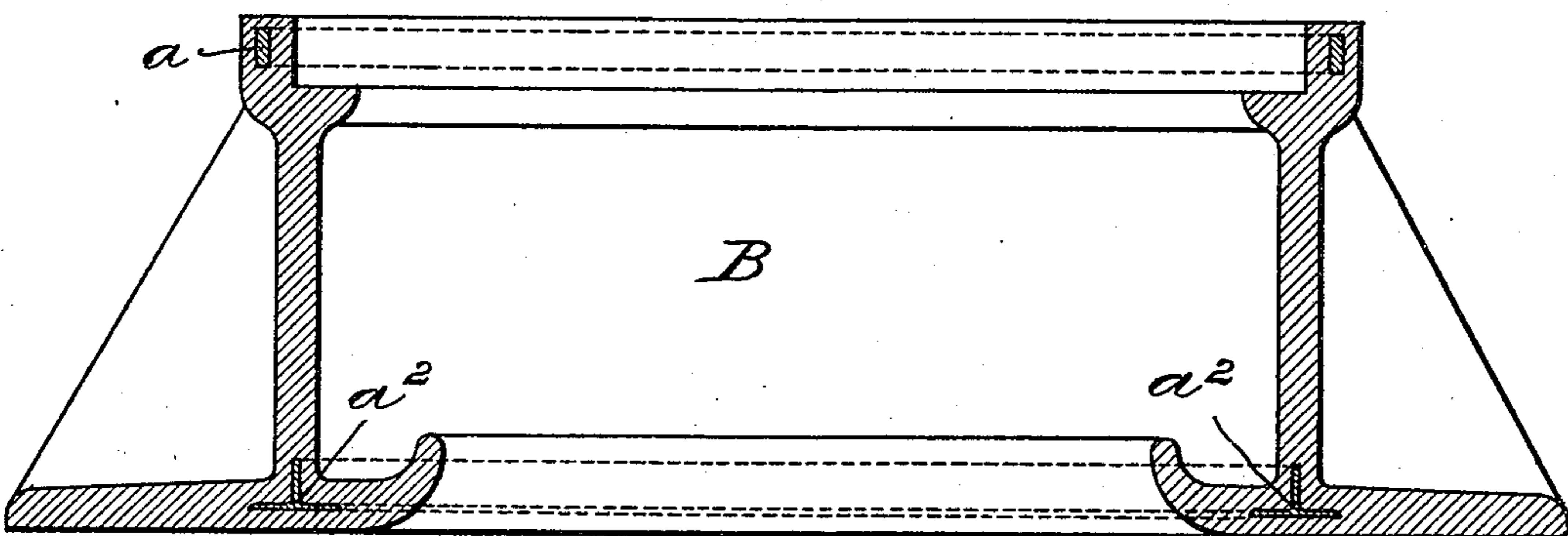


Fig. 7.



Witnesses:
Wilhelm Vogt
Thomas M. Smith.

Inventor:
William O. Steele,
by J. Walter Douglas
Attorney.

UNITED STATES PATENT OFFICE.

WILLIAM O. STEELE, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF
ONE-HALF TO CHARLES T. WRIGHT, OF SAME PLACE.

MANHOLE FRAME AND COVER.

SPECIFICATION forming part of Letters Patent No. 681,995, dated September 3, 1901.

Application filed March 21, 1901. Serial No. 52,157. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM O. STEELE, a citizen of the United States, residing at the city of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Manhole Frames and Covers, of which the following is a specification.

My invention has relation to a manhole frame and cover, and in such connection it relates to the particular manner of constructing and arranging such manhole frames and covers for various purposes.

The principal objects of my invention are, first, to provide a manhole frame and cover which is of less weight than such manhole frames and covers now used without sacrifice of the strength and durability thereof, and, second, to provide a manhole frame and cover in which a low grade of metal can be employed in the making of the same and in which the requisite degree of strength is obtained by reinforcing both the frame and cover during formation or casting by the application of strengthening devices in the body and forming and casting the material of the frame and cover around about the same to compensate for any weakness inherently in the frame or cover at points or parts subjected to the greatest strain and for the maintenance of the load in the case of filled covers with such material as asphaltum or granolithic matter.

My invention, stated in general terms, consists of a manhole frame and cover, the respective parts of which are constructed and arranged substantially as hereinafter described and claimed.

The nature and characteristic features of my invention will be more fully understood from the following description, taken in connection with the accompanying drawings, forming part hereof, in which—

Figure 1 is a top or plan view of an asphaltum or granolithic filled cover embodying features of my invention cast from a low grade of metal and provided in the body with inserted strengthening or reinforcing means during the casting or formation of such cover.

Fig. 2 is a vertical longitudinal sectional view

of the cover on the line *xx* of Fig. 1, showing the inserted reinforcing or strengthening means provided in the body of the cover. Fig. 3 is a similar view of a modified form of such a filled cover, showing the inserted strengthening or reinforcing means in the body of the same in the form of bands or hoops and angle-irons inserted in the casting or formation of the cover at points or parts of the same which in use are subjected to the greatest strain or load and to enable a low grade of metal to be employed in the casting or formation thereof with the maintenance due to the inserted reinforcing or strengthening means therein of the same degree of strength as is obtained by the construction of the cover of a greater quantity and of more expensive metal. Fig. 4 is a similar view of a still further modified form of cover embodying features of my invention of the reinforcing or strengthening means in the form of hoops or bands inserted in the casting or formation of the same, and such a cover being produced to not only lighten the cover, but also to secure the requisite strength therefor. Figs. 5, 6, and 7 are respectively vertical longitudinal sectional views of different forms of frames adapted for the reception of covers of the type of Figs. 1 to 4, inclusive, and which frames in the casting or formation of the same are reinforced or strengthened similar to the covers made of a low grade of metal.

Referring to the drawings, A represents the series of manhole-covers of Figs. 1 to 4, and B the series of frames of Figs. 5 to 7, adapted for the reception and holding of the same in position. These covers and frames may be made of the forms illustrated or of any other preferred forms. The metal composing said frames and covers A and B preferably consists of a low grade of iron, and these frames and covers in the casting or formation of the same are provided in the body with inserted bands, hoops, angle-irons, or the like *a* and *b*, as illustrated. These bands, hoops, angle-irons, or the like are preferably composed of a metal of a greater density and strength than the metal constituting the structure of the frames and covers, and by the manner of their introduction into the structures in the forma-

tion of the same become practically an integral part of the same. Moreover, they enable the frames and covers to be made far less in weight and of a metal of a lower grade than they are now being made of without such strengthening or reinforcing devices as parts thereof. In Fig. 2 in the bottom of the frame the reinforced or strengthening means a' are illustrated in the form of sheets or plates. In Fig. 5 one of the angle-irons in the frame is L-shaped, while in Figs. 6 and 7 in one portion of the frames the inserted reinforcing or strengthening means a^2 are shown as T-shaped. It is, however, to be distinctly understood that I do not limit myself to the making of the reinforcing or strengthening means in the body of the frames and covers in any particular shape, but broadly of inserting a metal reinforce or strengthener in the body of the frame and cover, in which such inserted device is of a different density and metal from the metal constituting the structure of the frame and cover, and thus to not only strengthen the structure, but also lessen the quantity of metal used in the structures without sacrificing the degree of durability required and with the employment of far less

expensive metal in the manufacture of the frames and covers.

Having thus described the nature and objects of my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A manhole frame and cover having a main or body portion formed of low-grade cast metal, and strengthening or reinforcing pieces of higher grade metal of greater tensile strength than the low-grade cast metal, said pieces inserted in and covered by the low-grade casting at points where the casting is subjected to greatest strain or shock.

2. A manhole frame and cover, consisting of a low grade of metal and inserted reinforcing or strengthening devices of a different metal internally introduced into the structure in the casting or formation thereof, substantially as and for the purposes described.

In testimony whereof I have hereunto set my signature in the presence of two subscribing witnesses.

WILLIAM O. STEELE.

Witnesses:

J. WALTER DOUGLASS,
THOMAS M. SMITH.