

No. 835,012.

PATENTED NOV. 6, 1906.

D. CRAIG.  
MANHOLE CONSTRUCTION.  
APPLICATION FILED JAN. 18, 1905.

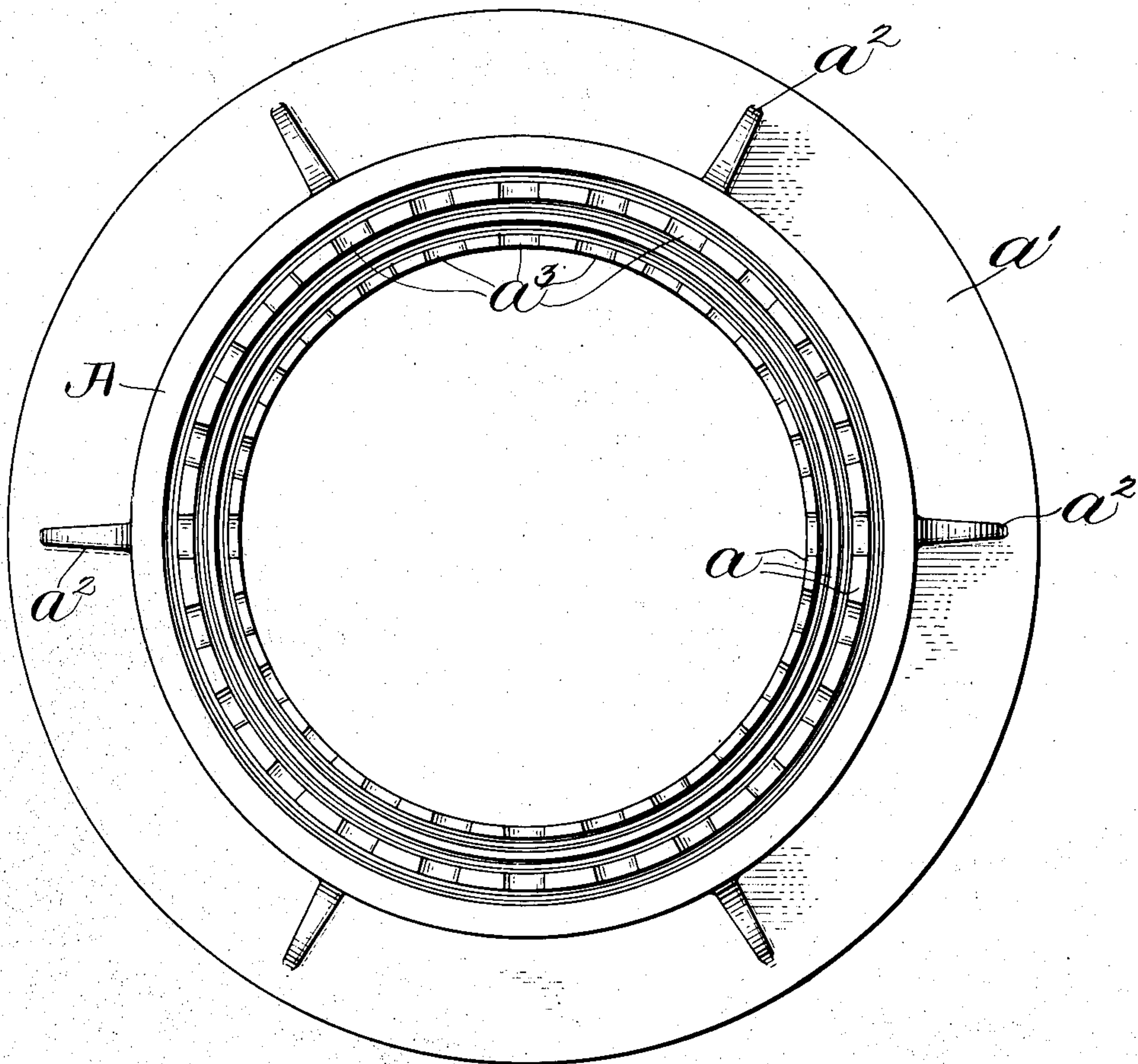
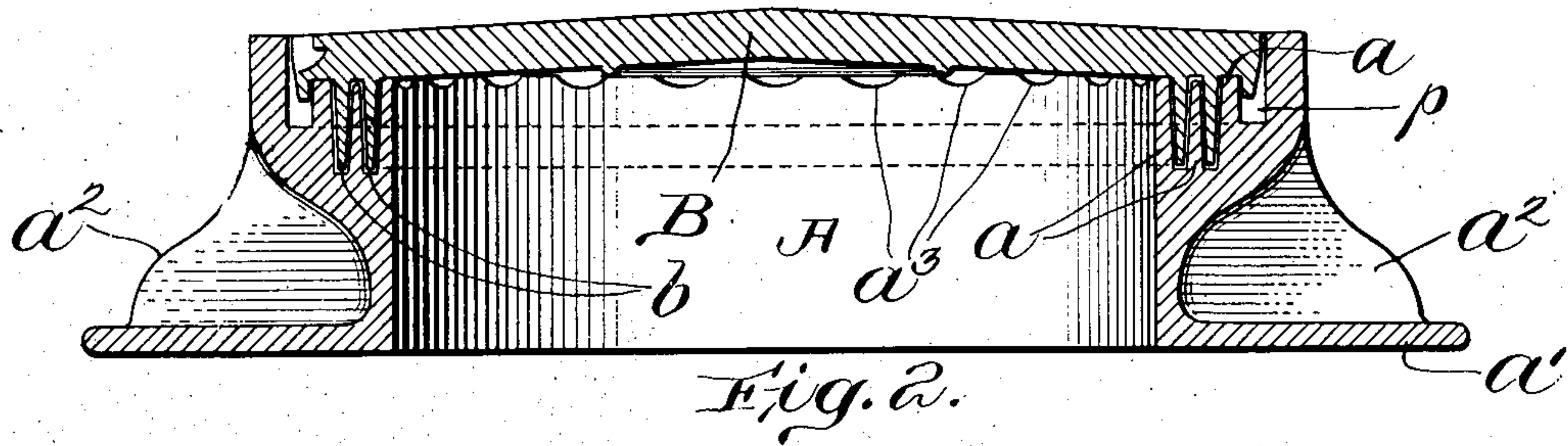


Fig. 1.

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# UNITED STATES PATENT OFFICE.

DAVID CRAIG, OF MELROSE, MASSACHUSETTS.

## MANHOLE CONSTRUCTION.

No. 835,012.

Specification of Letters Patent.

Patented Nov. 6, 1906.

Application filed January 18, 1905. Serial No. 241,588.

*To all whom it may concern:*

Be it known that I, DAVID CRAIG, a citizen of the United States, and a resident of Melrose, in the county of Middlesex and State of Massachusetts, have invented new and useful Improvements in Manhole Construction, of which the following is a specification.

My invention relates to the construction of manholes and similar openings adapted to afford access to the interiors of tunnels, conduits, and like underground chambers. Its objects are to provide a manhole-casing and the cover therefor which shall provide between them a seal against the entrance of water by means of the sinuous passage-way presently to be described; which shall also provide for ventilation when the seal is dry; the cover of which shall afford the shortest possible span between its lines of support, and consequently a maximum strength with a minimum weight for a manhole of given diameter, and otherwise to improve the construction of manholes and the covers therefor, as will hereinafter be pointed out.

Referring to the drawings, which illustrate one embodiment of my invention, Figure 1 is a plan view of the manhole-casing; and Fig. 2 is a vertical cross-section of the structure, showing the cover seated in place upon the casing.

A represents the body of the manhole-casing having a central aperture, as shown, with substantially vertical walls. Upon the top of the casing and surrounding the central aperture are a plurality of flanges  $a$ , forming endless channels between them. The innermost of said flanges is so proportional with reference to the others by making it a little longer, for instance, as to constitute a line of support or bearing for the cover. The outermost of said flanges  $a$  is also adapted to furnish a line of support or bearing for the cover. Projecting from the lower part of the casing A is the foot or supporting-ledge  $a'$ , which supports the structure and holds it in place when set in the highway over a tunnel or in other appropriate environment. The outer walls of the casing are in form flaring from the bottom toward the top, as shown in the drawings, in order to provide a seat for the cover of sufficient breadth to accommodate the channels above described and at the same time to eliminate unnecessary weight and material. A number of strengthening-webs  $a^2$   $a^2$  are provided between the

foot or ledge  $a'$  and the outer walls of the casing proper.

B represents the manhole-cover, provided near its edge with a plurality of depending flanges  $b$ , registering with and projecting into the channels of the casing. The cover rests upon the top of the innermost and the outermost of the flanges of the casing. It will thus be seen that the line of support or bearing between the casing and the cover bounds an area considerably smaller in span or diameter than the whole diameter of the cover, which enables a much lighter cover to be employed than when the cover is supported at its outer periphery, as has hitherto been usual. This construction and the consequent lightening of the cover affords great advantages, both in the ease of manipulating the cover and in the matter of the cost of manufacture.

The flanges and channels provided upon the cover and casing form a sinuous passage-way which constitutes a seal upon the principles set forth in my Patent No. 725,937. Said flanges are preferably of tapered form in cross-section to guard against the effects of freezing. If straight flanges are used, it is found in practice that the freezing of water contained in the passage-way between the flanges and its consequent expansion tends to crack or break the flanges. Such injurious effects are eliminated by the use of tapered flanges, and, furthermore, the cover may be more readily removed when pried up from one side, as is the usual practice, if tapered flanges are used than if straight flanges are used.

As the seal is intended to operate only when water appears on top of the structure, it is obvious that a large part of the time, as in dry weather, the seal will be dry. When there is no water to be excluded, it is desirable that ventilation be afforded through the passage-way. As the innermost and outermost flanges of the casing engage with the cover, I provide ventilating-apertures in those flanges.

While various forms of apertures may be employed, I prefer the notches or scallops shown at  $a^3$   $a^3$ . The better to insure good ventilation I provide an enlargement or pocket in the passage-way formed between the cover and the casing below the outer or upper end of the passage-way, as indicated at  $p$ . This is accomplished by making the



bottom of the outermost channel of the casing broader and deeper than the entering flange of the cover. Dust or dirt which might sift in through the crevice and close the passage against ventilation if the channel fitted the flange closely will tend to fall into the pocket and keep the passage free from clogging.

The object of the line of bearing for the cover at the outermost flange as well as the innermost flange is to prevent the possibility of any tilting of the cover and its consequent tendency to slide laterally or to "skate" if weight should be applied to the edge.

What I claim is—

1. A manhole construction, comprising a manhole-casing; a plurality of flanges on the upper side of the casing forming channels between them, said flanges being so proportioned that the innermost flange affords a line of support or bearing for the cover, said supporting-flange being provided with ventilating-apertures; and a cover resting on said supporting-flange and provided upon its under side with a plurality of depending flanges extending into the channels of the casing.

2. A manhole construction comprising a manhole-casing a plurality of flanges on the

upper side of the casing forming channels between them, said flanges being so proportioned that the innermost and outermost of said flanges afford lines of support or bearing for the cover, said supporting-flanges being provided with ventilating-apertures; and a cover resting on said supporting-flanges and provided upon its under side with a plurality of depending flanges extending into the channels of the casing.

3. A manhole construction comprising a manhole-casing; a plurality of flanges on the upper side of the casing forming channels between them, said flanges being so proportioned that the innermost flange affords a line of support or bearing for the cover, the top of said supporting-flange being notched or scalloped to afford ventilation; and a cover resting on said supporting-flange and provided upon its under side with a plurality of depending flanges extending into the channels of the casing.

Signed by me at Boston, Massachusetts, this 17th day of January, 1905.

DAVID CRAIG.

Witnesses:

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