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W. HEISER.

MANHOLE DOOR FOR BREWERS' OR OTHER VATS, TANKS, CASKS, &c.

APPLICATION FILED DEC. 28, 1904.

FIG. 1.

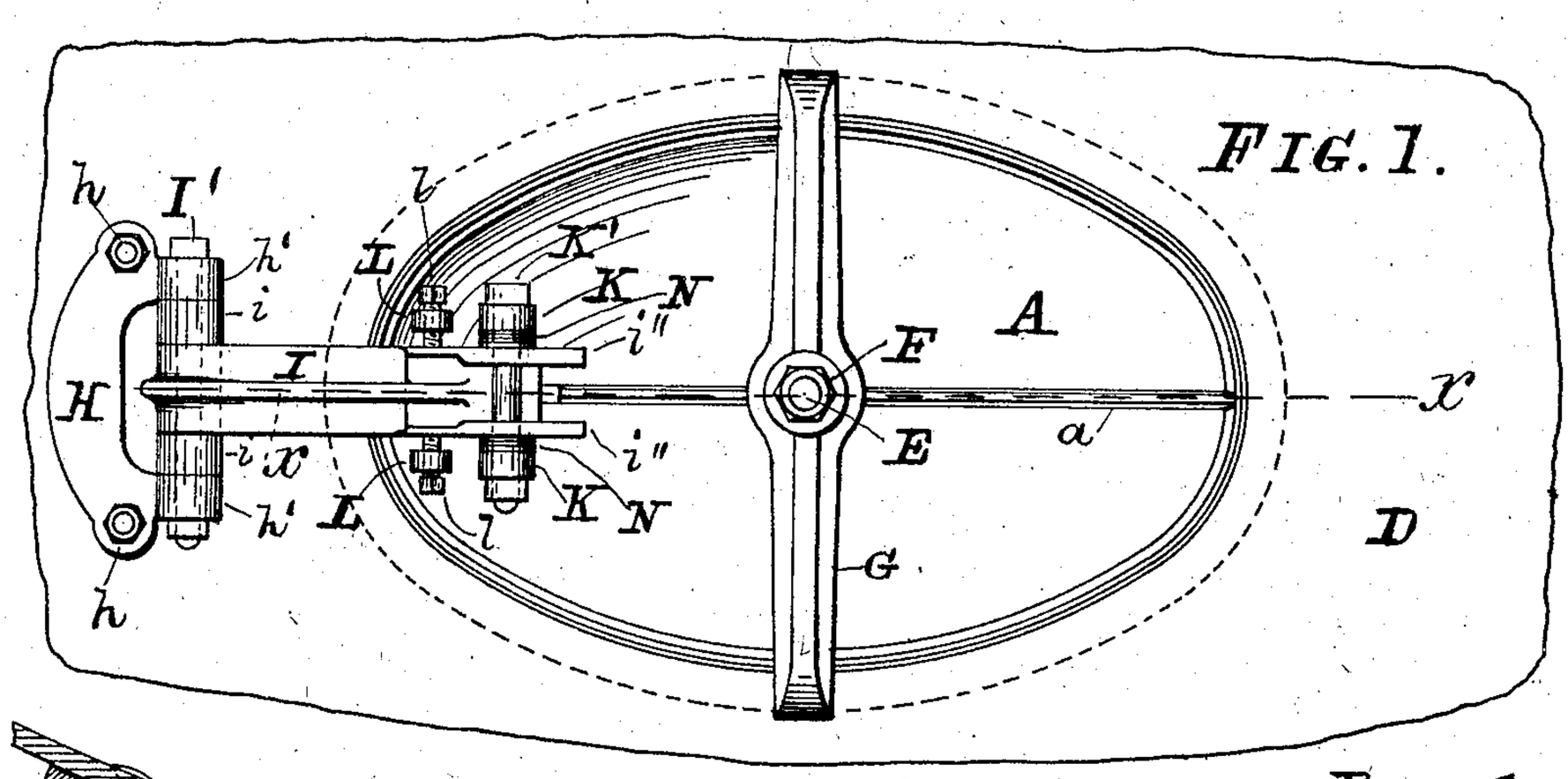



FIG. 2.

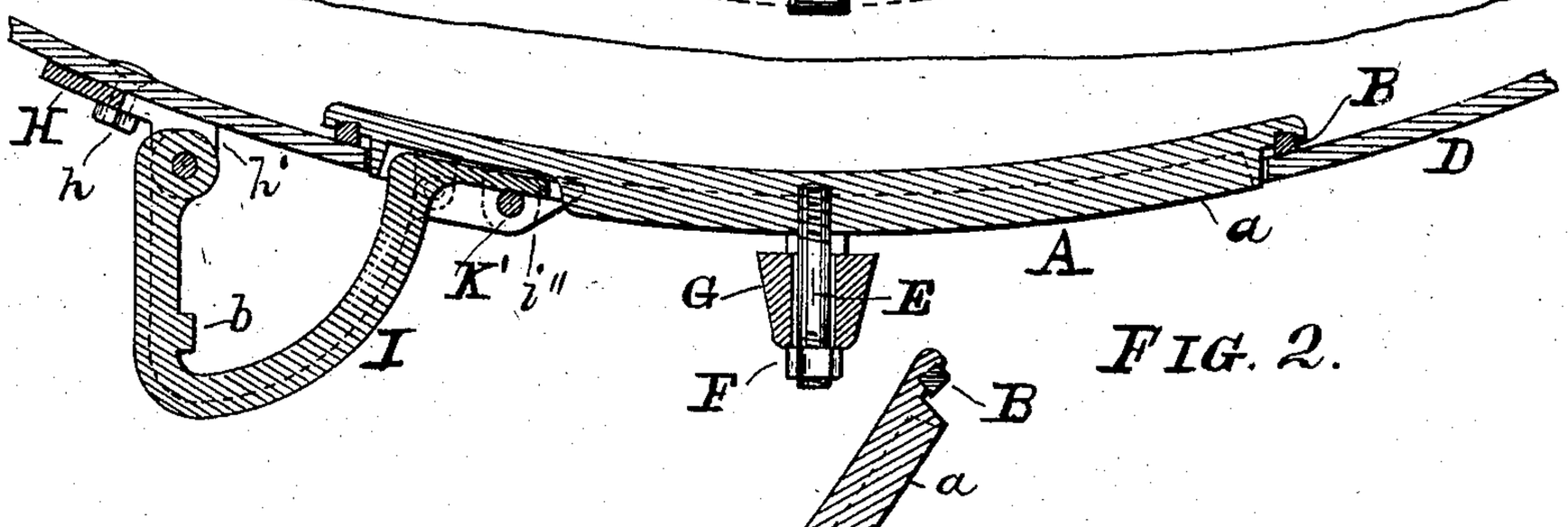
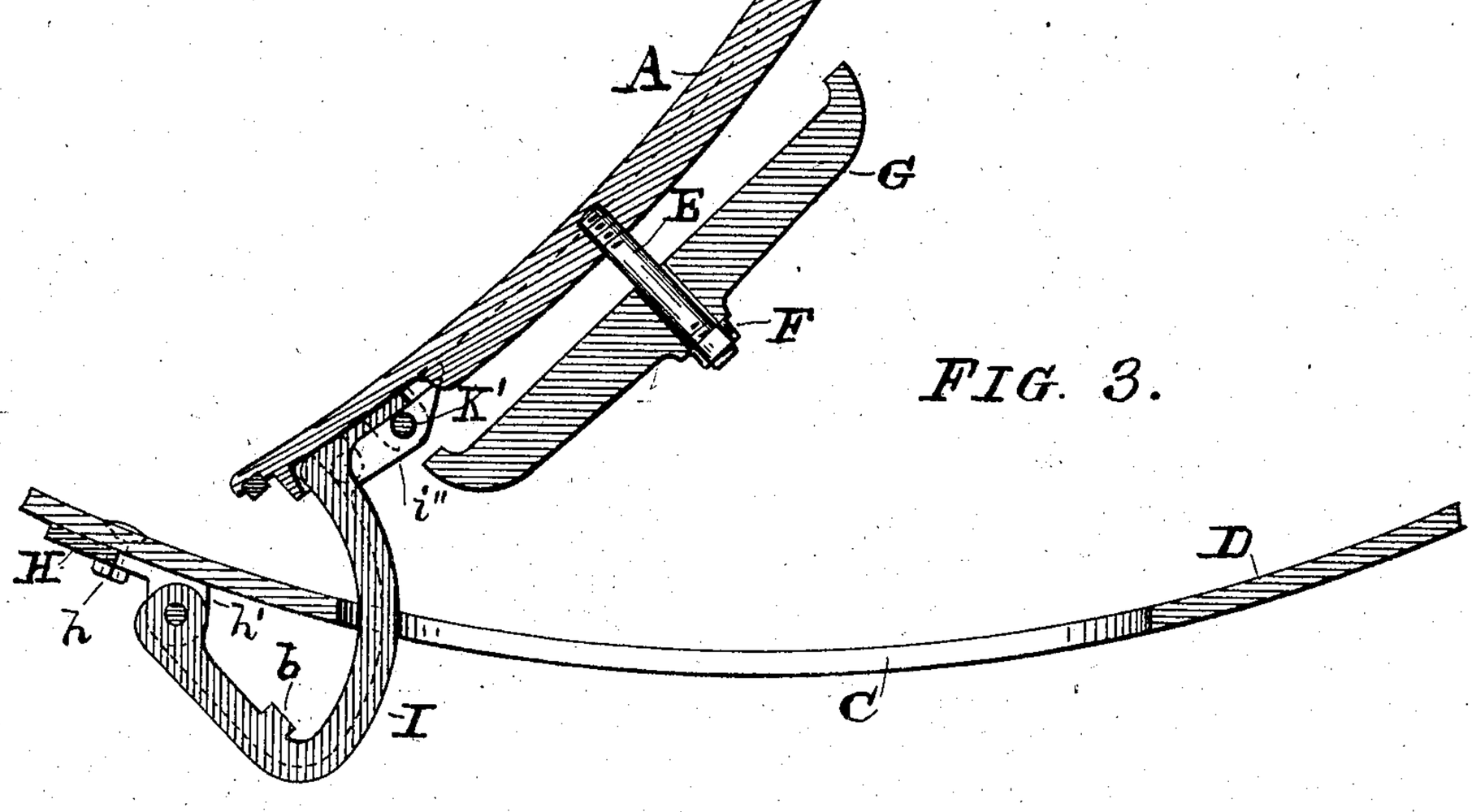



FIG. 3.

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No. 791,779. Patented June 6, 1905.

# UNITED STATES PATENT OFFICE.

WILLIAM HEISER, OF BUFFALO, NEW YORK.

## MANHOLE-DOOR FOR BREWERS' OR OTHER VATS, TANKS, CASKS, &c.

SPECIFICATION forming part of Letters Patent No. 791,779, dated June 6, 1905.

Application filed December 28, 1904. Serial No. 238,696.

*To all whom it may concern:*

Be it known that I, WILLIAM HEISER, of Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Manhole-Doors for Brewers' or other Vats, Tanks, Casks, &c.; and I do hereby declare that the following description of my said invention, taken in connection with the accompanying drawings, forms a full, clear, and exact specification, which will enable others skilled in the art to which it appertains to make and use the same.

This invention has general reference to manhole-doors for metallic casks, vats, tanks, and similar vessels; and it consists, essentially, in the novel and peculiar combination of parts and details of construction, as hereinafter first fully set forth and described and then pointed out in the claims.

In the drawings already referred to, which serve to illustrate this invention more fully, Figure 1 is an elevation of a fragment of a tank, vat, cask, or similar vessel supplied with my improved manhole-door. Fig. 2 is a sectional plan in line *x x* of Fig. 1, showing the door in a closed position. Fig. 3 is a similar view showing the door in an open position.

Like parts are designated by corresponding letters of reference in all the figures.

The object of this invention is the production of an inwardly-swinging door for the manhole of a tank, &c., which when closed shall have no part of the hinge and clamping mechanism within the tank.

While adapted for use on all kinds of metallic storage tanks, vessels, &c., this device is especially adapted for use in brewers' vats, which are now largely made of sheet metal and porcelain-lined, glazed, or enameled in their interior. Such vats require a manhole-door capable of being readily enameled and which shall present a perfectly-smooth surface within the vat, so that no projecting parts, crevices, or places exist therein which are not readily cleansed and where foreign matter can lodge and develop bacteria to contaminate the beer. Such a door in order to be adapted for glazing or enameling requires, furthermore, to be of substantially even thickness, owing to the high temperature to which it is subjected in the enameling process. To accomplish this object, I construct this door substantially of a curved casting A, of preferably oval shape and provided with suitable stiffening-ribs *a* and a groove near its outer periphery for the reception of a resilient packing-ring B, by means of which the manhole C in the wall D of the tank is hermetically closed.

Centrally in the door A there is a screw-threaded stud E tapped and fastened in the door and having on its outer end a nut F, by means of which and a yoke G, swiveling upon said stud, the door A may be closed against the inner surface of the tank D.

H is a bracket screwed to the exterior surface of the tank by bolts *h* and provided with two lugs *h' h'*, said bracket being one member of a hinge for the door, the other member being a curved arm I, having bosses *i i*, through which and the lugs *h'* a bolt I' is passed and upon which the hinge members turn. This curved arm I is bifurcated at its ends, the two members *i''* of which engage lugs K, located on the face of the door and preferably formed integral therewith, a bolt K' passing through these lugs and the members *i''* of the curved arm, enabling the door to slightly rock or rotate within the fork, whereby the door is better adapted for engaging the inner curved surface of the tank A and not requiring such exactitude in mounting that would be necessary were the door rigidly affixed to the said curved arm I.

Upon the face of the door there are further lugs L L, provided with adjusting-screws *l*, by means of which vertical adjustment of the door is effected by the said adjusting-screws *l* acting upon the curved arm I. Any further adjustment of the vertical position of the door, as well as any compensation for wear, is effected by a series of washers N, placed upon the bolt K' between the lugs K and the members *i''* of the arm I. Thus should the door sag downwardly in course of time owing to wear a washer N above the member *i''* may be removed and placed upon the bolt K' below the lower member *i''*, and this may be continued from time to time, as occasion may demand.

On the arm I there is formed a projection *b*, Figs. 2 and 3, near the crook therein. This projection is arranged to strike the outer surface of the tank D, and thereby form a stop for the door to prevent it from coming in contact with the enameling on the inner surface of said tank and which would be likely to injure the same.

It will now be observed that all the hinge mechanism of the inwardly-swinging door of this vat or tank is on the outside thereof, so that the inner surface of the door as well as the tank are perfectly smooth and present no crevices or projecting parts that cannot be readily reached and cleansed, thus producing an eminently sanitary manhole-door answering all the requirements of modern sanitation.

It will be further observed that in the preferred form of my invention the door is not rigidly secured to the curved arm I, (the second member of the hinge mechanism,) but movably attached thereto by means of the lugs *k k* on the door and the bolt K′ passing through said lugs and the fork on the end of said curved arm, which allows the door to slightly oscillate or rock on the end of the curved arm, and thereby to readily adapt itself to the inner curved surface of the tank. By hereinafter claiming in the claims as one of the elements "rocking mechanism for the door" I desire it to be understood that I have reference to these means of attaching the door to the curved arm, as heretofore described.

The door proper may be produced in the process of casting in either gray or malleable iron, steel, or other metal, in which case the lugs K and L may be formed integral therewith, or it may be produced in the process of stamping or pressing in sheet metal and the said lugs properly secured thereto, such a pressed door besides being well adapted for enameling possessing the additional advantage of lightness and superior strength.

In carrying out this invention many changes may be made in the details of construction or in the shape of the parts—for instance, the door may be made circular or rectangular in contour, clamps may be substituted for the yoke G, &c.—without departing from the scope of this invention. The door is also capable of being readily tinned instead of being enameled, especially so when made from sheet metal.

Having thus fully described this invention, I claim as new and desire to secure to me by Letters Patent of the United States—

1. A tank, vat or similar vessel having a manhole for obtaining access to its interior, a door located within the tank and adapted to swing inwardly within the same when being opened, a hinge adapted to connect the door to the tank, one member of said hinge being secured to the outside of the tank and the other member of said hinge being connected to the outer surface of the door, a resilient packing interposed between the door and the inner surface of the tank, and clamping mechanism for the door, as set forth.

2. In a tank, vat, or similar vessel having a manhole for obtaining access to its interior, an inwardly-swinging door located within the tank; hinge mechanism for said door located on the outside of the tank and the door, and rocking mechanism connecting the hinge mechanism with the door.

3. In a tank, vat, or similar vessel having a manhole for obtaining access to its interior, an inwardly-swinging door for said manhole located within the tank; a bracket on the outside of the tank and in close proximity thereto; a curved arm pivoted to said bracket; means for movably connecting the door to the curved arm, and clamping mechanism for the door located on the outside thereof.

4. In a tank, vat, or similar vessel having a manhole for obtaining access to its interior, an inwardly-swinging door located within the tank; hinge mechanism for said door located on the outside of the tank and the door, and rocking mechanism connecting the hinge mechanism with the door.

5. In a tank, vat, or similar vessel having a manhole for obtaining access to its interior, an inwardly-swinging door for said manhole located within the tank; a bracket on the outside of the tank and in close proximity to the manhole; a curved arm pivoted within said bracket; means for connecting the door with the curved arm, and clamping mechanism for the door, all of which are located outside of the tank.

6. In a tank, vat, or similar vessel having a manhole for obtaining access to its interior, a door for said manhole; a bracket having hinge members and located on the outside of the tank near the manhole; an arm pivoted to said bracket with one end and provided with a fork at the other end; lugs on said door engaging said fork, and a stop on the said arm to limit its movement.

7. A brewer's vat having a manhole for obtaining access to its interior, a door within the said tank adapted to close the said manhole; hinge mechanism for said door, rocking mechanism connecting the hinge mechanism with the door, and means in the rocking mechanism for adjusting the door vertically independent of the hinge mechanism, said means consisting of a series of washers located above and below the rocking mechanism.

8. In a brewer's or other vat having a manhole for obtaining access to its interior, a bracket on the outside of the vat and provided with one of a pair of hinge members; a door within said vat; an arm engaging said bracket and forming the second member of said hinge; a fork on the end of this arm; lugs on the door engaging said fork, and further lugs on said door above and below said fork and pro-

vided with adjusting-screws acting upon said fork.

9. In a brewer's or other vat having a manhole for obtaining access to its interior, a door for closing the said manhole; a pair of hinge members one of which is secured to the outside of the door and the other to the outside of the vat; rocking mechanism connecting one of the hinge members with the door; a stud centrally in said door, and a revolving clamp upon said stud the ends of which are adapted to engage the vat.

10. In a brewer's or other vat having a manhole for obtaining access to its interior, a bifurcated bracket on the outside of the vat; a curved arm; bosses on said arm engaging said fork; a bolt connecting the bracket with the arm; a fork on the end of the arm; a door within the tank; lugs on the face of said door engaging the fork on the arm; a bolt passing through the lugs and the fork, and a series of washers upon the said bolt between the forks of the arm and the lugs on the door.

In testimony that I claim the foregoing as my invention I have hereunto set my hand in the presence of two subscribing witnesses.

WM. HEISER.

Witnesses:

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