No. 797,771. PATENTED AUG. 22, 1905.

W. HEISER.

MANHOLE FITTING FOR STORING AND OTHER VESSELS.

APPLICATION FILED JAN. 6, 1905.

2 SHEETS—SHEET 1.

FIG. 1.

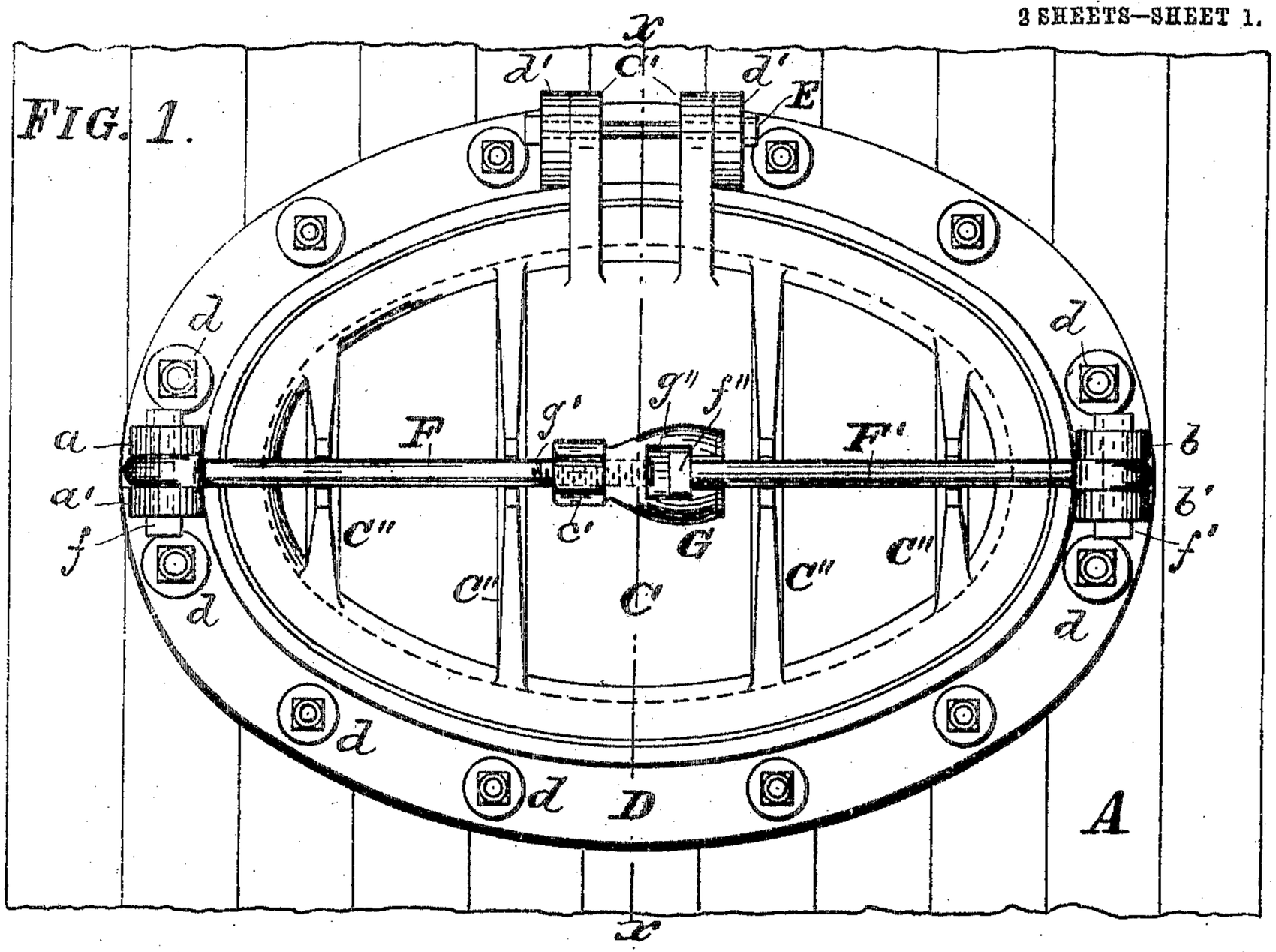
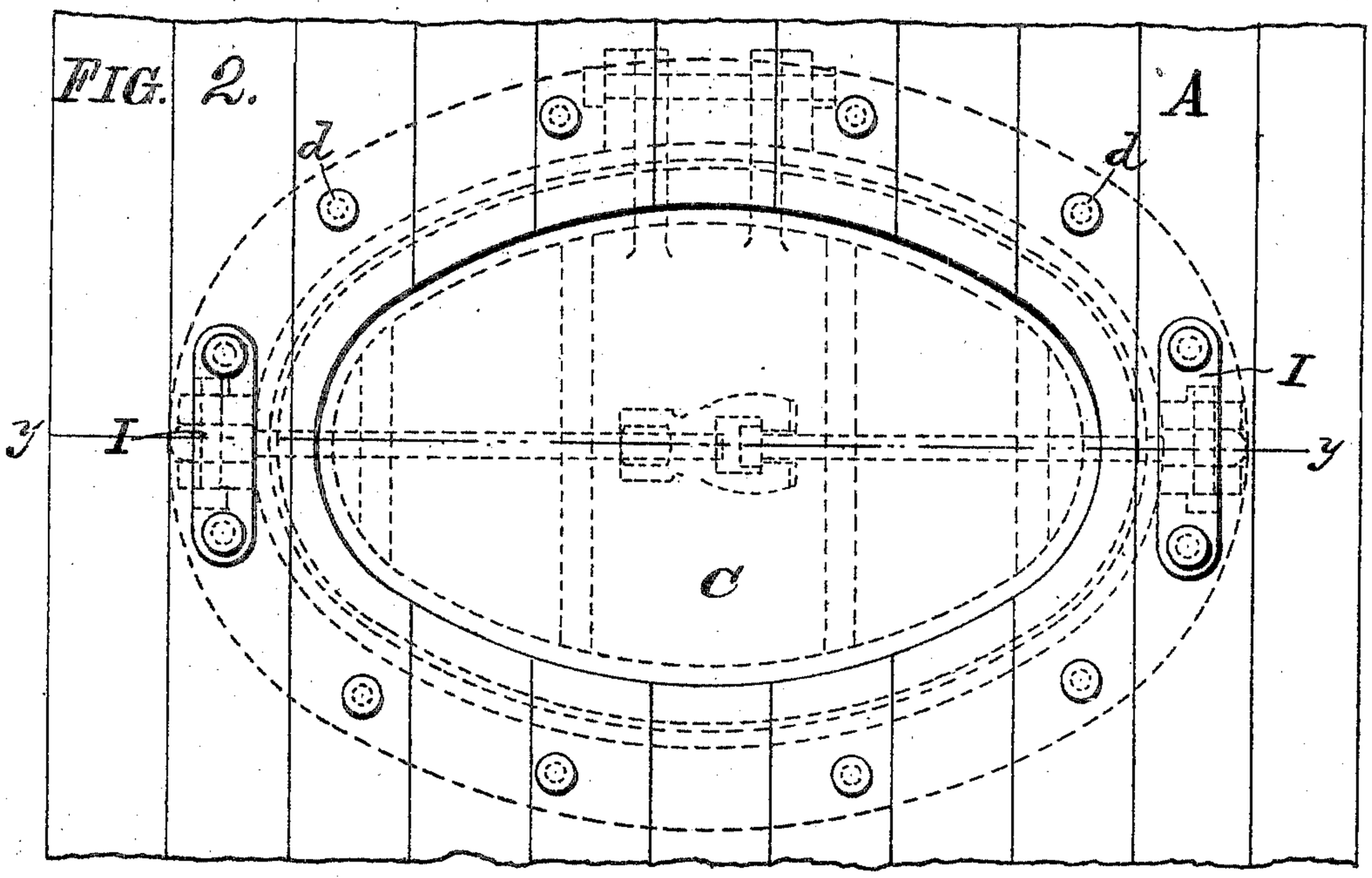


FIG. 2.



WITNESSES:
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Jas Ryan.

INVENTOR:
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2 SHEETS—SHEET 2.

FIG. 3.

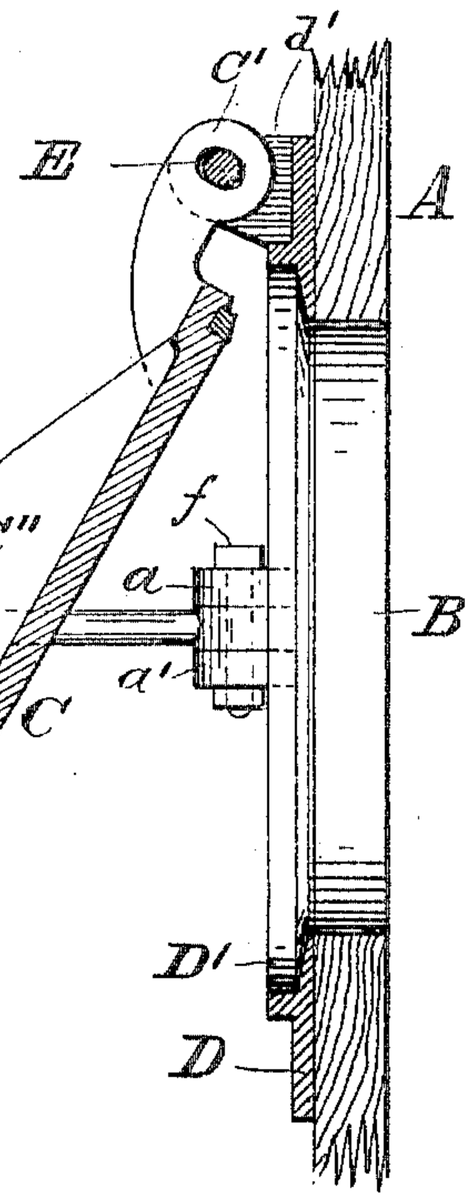


FIG. 8.

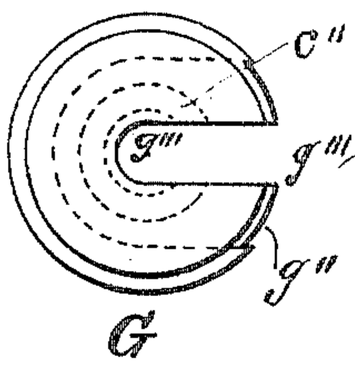


FIG. 4.

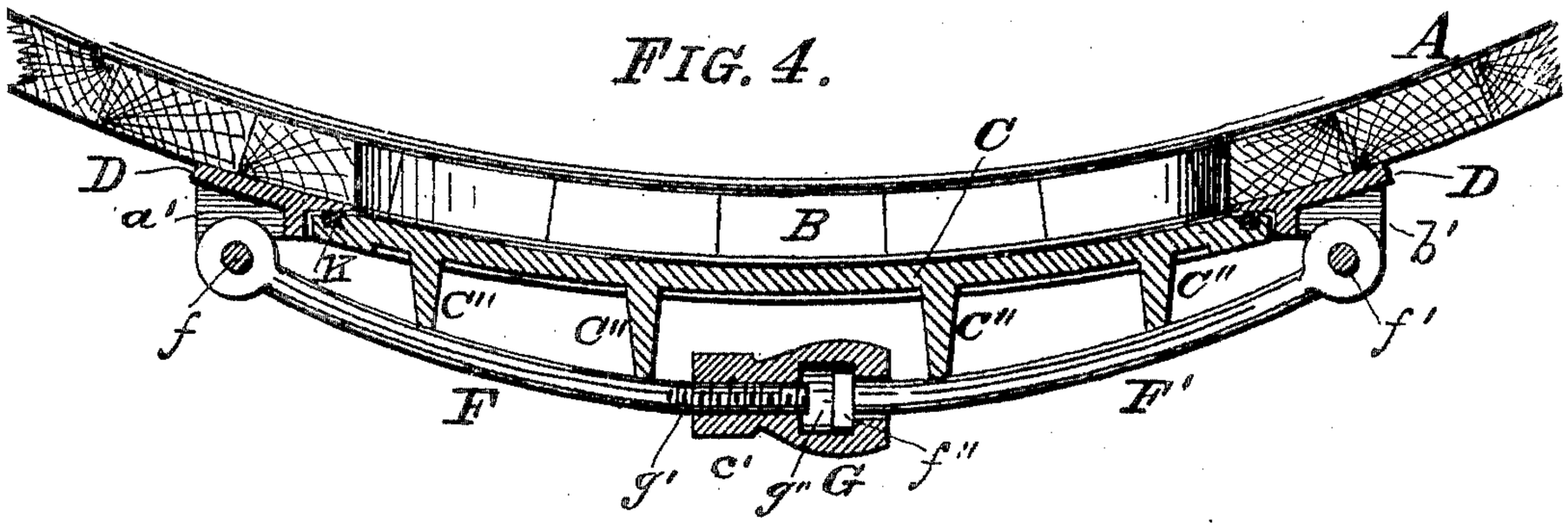


FIG. 6.

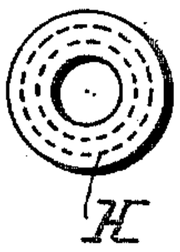


FIG. 5.

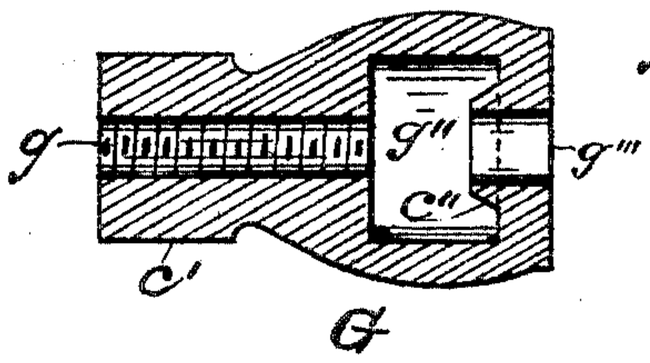
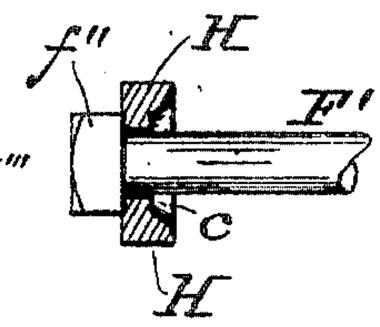


FIG. 7.



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UNITED STATES PATENT OFFICE.

WILLIAM HEISER, OF BUFFALO, NEW YORK.

MANHOLE-FITTING FOR STORING AND OTHER VESSELS.

No. 797,771. Specification of Letters Patent. Patented Aug. 22, 1905.

Application filed January 5, 1905. Serial No. 239,807.

To all whom it may concern:

Be it known that I, WILLIAM HEISER, a citizen of the United States, and a resident of Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Manhole-Fittings for Storing, &c., Vessels; 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-fittings for storage vats, tanks, casks, and other vessels having a manhole through which access is had to the interior thereof, and which manhole must be hermetically closed when the said vessel is in use for storing liquids—such as wine, beer, cider, &c.; 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 mentioned, which serve to illustrate this invention more fully, Figure 1 is an elevation of a portion of a vat, tank, cask, and similar vessel, showing this improved manhole-fitting applied to the outer surface thereof. Fig. 2 is a similar view of the device as seen from the inside of the said tank, &c. Fig. 3 is a vertical sectional elevation in line *x x* of Fig. 1. Fig. 4 is a horizontal section in line *y y* of Fig. 2. Fig. 5 is a sectional plan of the swivel-nut employed in this device. Fig. 6 is an end view of the clamping-washer. Fig. 7 is a sectional view of a portion of the tie-rod and the clamping-nut. Fig. 8 is an end view of the swivel-nut, the latter four figures being drawn to a larger scale.

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

The object of this invention is the production of an efficient, durable, serviceable, and comparatively cheap manhole-fitting for brewers' vats, casks, tanks, and other liquid-storing vessels made from wood, although the same fitting may also be effectively employed on sheet-metal tanks, &c., without change or modification. To attain these objects, I provide the vat A, having the manhole B, with a hinged door C, which is adapted to be closed so as to hermetically seal the manhole by a peculiar fastening device, which will hereinafter be fully described.

To the vat A and surrounding the manhole B (which is usually of an oval or elliptical contour, but may be square, rectangular, or round) I secure a metallic face-plate D, being a ring having a recess or rabbet D′, into which the door C fits, and which ring is secured to the vat by a sufficient number of bolts *d* in any desirable manner. Upon the face of this ring D and preferably on both sides of the central minor axis of the oval are provided two lugs *d′ d′*, within which the door C is hinged upon a bolt E, passing through the lugs *d′ d′*, and two lugs C′ C′, formed on the door C. There are upon this ring D and on both sides of the center line of the major axis of the oval further lugs *a a′ b b′*, within which are hinged two tie-rods F F′ by means of bolts *f f′*, of which the tie-rod F is screw-threaded at its free end *g′*, while the rod F′ has on its free end a head or collar *f″*, (shown in detail in Fig. 7,) connection between the two tie-rods being made by a swivel-nut G, having on one end an internally-screw-threaded passage *g* for engagement with the screw-threaded end *g′* and having its other end T-slotted at *g″ g‴* for the reception of the head *f″* and a portion of the tie-rod F′, a cavity *g″* and slot *g‴* serving to receive and retain said head, together with a clamping-washer H. The inner wall of this cavity *g″* is formed cone-shaped at *c″*, Fig. 5, and the washer H is provided with a corresponding conical depression *c*, adapted to engage the conical projection *c″*, so that when the tie-rods are placed under stress, as hereinafter to be mentioned, the conical depression in the washer prevents the slotted end of the swivel-nut from spreading.

The two tie-rods are curved, as illustrated in Fig. 4, and when in position to close the door C they bear upon a series of cross-ribs C″, formed on the door C, as shown in Figs. 1 and 4.

In order to reinforce the face-plate D at the two places where the two tie-rods F F′ are pivoted thereto, I place within the vat A strengthening-plates I, Fig. 2, which are engaged by those of the bolts *d* which are nearest to the lugs *a a′ b b′*, as shown in Fig. 2.

I will now describe the operation of this door and its fastening mechanism. Assuming the door open and the tie-rods swung back against the outer wall of the vat A, the door is closed by swinging it upon its hinge to engage the rabbet in the face-plate. Now the tie-rods are swung over the door and the swivel-

nut G unscrewed from the tie-rod F sufficiently to allow the head f'' and clamping-washer H on the tie-rod F' to enter the cavity g'', after which the swivel-nut is screwed farther onto the tie-rod F. This has the effect of shortening the tie-rods, or, in other words, to straighten them, and thereby to bear with sufficient force upon the ribs C'' on the door C to press the latter tightly upon the face-plate, an elastic gasket K, placed into a groove in the said door, assisting in making a tight joint, a few turns of the said swivel-nut by means of a wrench applied to a polygonal section c' on said nut being sufficient to clamp the door tightly into position or to release the same.

The door may be hinged to the face-plate so as to either swing upwardly when being opened or downwardly, it being immaterial as far as the clamping mechanism is concerned in which direction the door is made to swing, the downwardly-swinging position being, perhaps, preferable, for the reason that the door needs no means for retaining it in an open position. It is obvious that this door and its face-plate can be produced in either the process of stamping in sheet metal or casting in any of the casting metals and that the parts may be galvanized, tinned, enameled, or otherwise coated to protect them from rusting, and they are specially well adapted for enameling, owing to their practically uniform thickness.

It will now be observed that all the parts of the manhole-fitting are located on the outside of the vat and that the door presents to the interior of the vat a perfectly smooth surface devoid of any projecting parts and cavities wherein deleterious substances or matter may lodge and prevent ready removal and cleansing and which would seriously affect the liquids stored in these vessels.

It will be further observed that this device is extremely simple in construction and that the component parts thereof are comparatively cheap and can be readily produced without any considerable machining.

The device heretofore described is susceptible of many modifications, among which I may mention a single tie-rod hinged to a pair of lugs on the face-plate and provided with means for engaging the opposite set of lugs, and a sufficient number of screw-studs in the door adapted to tension the tie-rod, and thereby to force the door to its seat. So may in place of two pairs of lugs for the tie-rods one lug on each side of the face-plate be substituted and the tie-rods provided with double eyes to engage these lugs. These and other modifications which will readily suggest themselves to a skilled mechanic may be installed without departing from the scope of this invention.

I have heretofore described and in Figs. 5, 6, and 7 I have illustrated tie-rod F being provided with a head f'' and a washer H, having a cavity c engaging a tapering projection c'' in the swivel-nut G. While this construction embodies the preferred form of the clamping device, I desire it to be understood that the washer H, as well as the tapering projection c'' in the swivel-nut, may be dispensed with, if desired, and the head f'' caused to directly engage with the nut, as shown in Figs. 1, 2, 3, and 4, thereby somewhat cheapening the construction and simplifying the device. Therefore I do not confine myself in the claims to the specific construction shown in Figs. 5, 6, and 7 and claim, broadly, tie-rods and a nut having swiveling engagement therewith, irrespective of the particular and specific construction of these parts.

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

1. In a brewer's vat and other storage tank and vessel having a manhole for obtaining access to its interior, a fitting for said manhole consisting, essentially, of a face-plate; lugs on said face-plate forming one member of a pair of hinges; further lugs upon said face-plate adapted to engage tie-rods; a door; lugs on said door engaging the said hinge members; tie-rods engaging the other remaining lugs, and a swivel-nut adapted to engage the free ends of the tie-rods.

2. In a manhole-fitting for storage-vats and the like vessels, a face-plate; a door, a set of tie-rods and a nut connecting the free ends of the tie-rods, whereby said tie-rods are adapted to force the door upon the face-plate.

3. In a manhole-fitting for storage-tanks and the like, a face-plate; a door, and a set of tie-rods hinged with one end to said face-plate and adapted to engage one another by an intermediary capable of shortening the tie-rods between their hinge-points, whereby the rods are put under tension and the door forced to its seat in the face-plate.

4. In a manhole-fitting, a face-plate; a hinged door adapted to seat upon the face-plate; tie-rods hinged to the face-plate with one end, and a swivel-nut having screw engagement with one of said tie-rods and a swiveling engagement with the other tie-rod.

5. In a manhole-fitting, a face-plate; a hinged door adapted to seat upon the said face-plate; tie-rods hinged to the face-plate with one end, and a swivel-nut engaging the opposite ends of said tie-rods to force the door upon its seat.

6. In a manhole-fitting, a face-plate; a hinged door adapted to seat upon said face-plate; tie-rods hinged to said face-plate with one end; a swivel-nut having screw engagement with one of said tie-rods and provided with a T-slot; and a head on the free end of the remaining rod adapted to engage the T-slot in said swivel-nut.

7. In a manhole-fitting, a face-plate having one member of a pair of hinges and lugs for the reception of tie-rods; a door provided with

lugs forming the second member of a pair of hinges; a bolt through said lugs; ribs on said door; a pair of tie-rods hinged to the lugs on the face-plate already mentioned; a screw-thread on the end of one of said tie-rods; a collar at the free end of the other tie-rod; a swivel-nut having screw engagement with the threaded end of said tie-rod, and a cavity for engagement of the collar on the other tie-rod, said tie-rods being adapted to press upon the ribs on said door when tensioned to force the door upon its seat.

8. In a manhole-fitting, a face-plate; a door adapted to seat upon said face-plate; tie-rods on said face-plate; a swivel-nut having screw engagement with one of said tie-rods; a head on the free end of the other tie-rod; a washer behind said head and provided with a tapering recess, said swivel-nut having a cavity and a tapering projection therein adapted to engage the recess in said collar.

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:

CHARLES H. RIBBEL,

JOHN C. COLLINS.