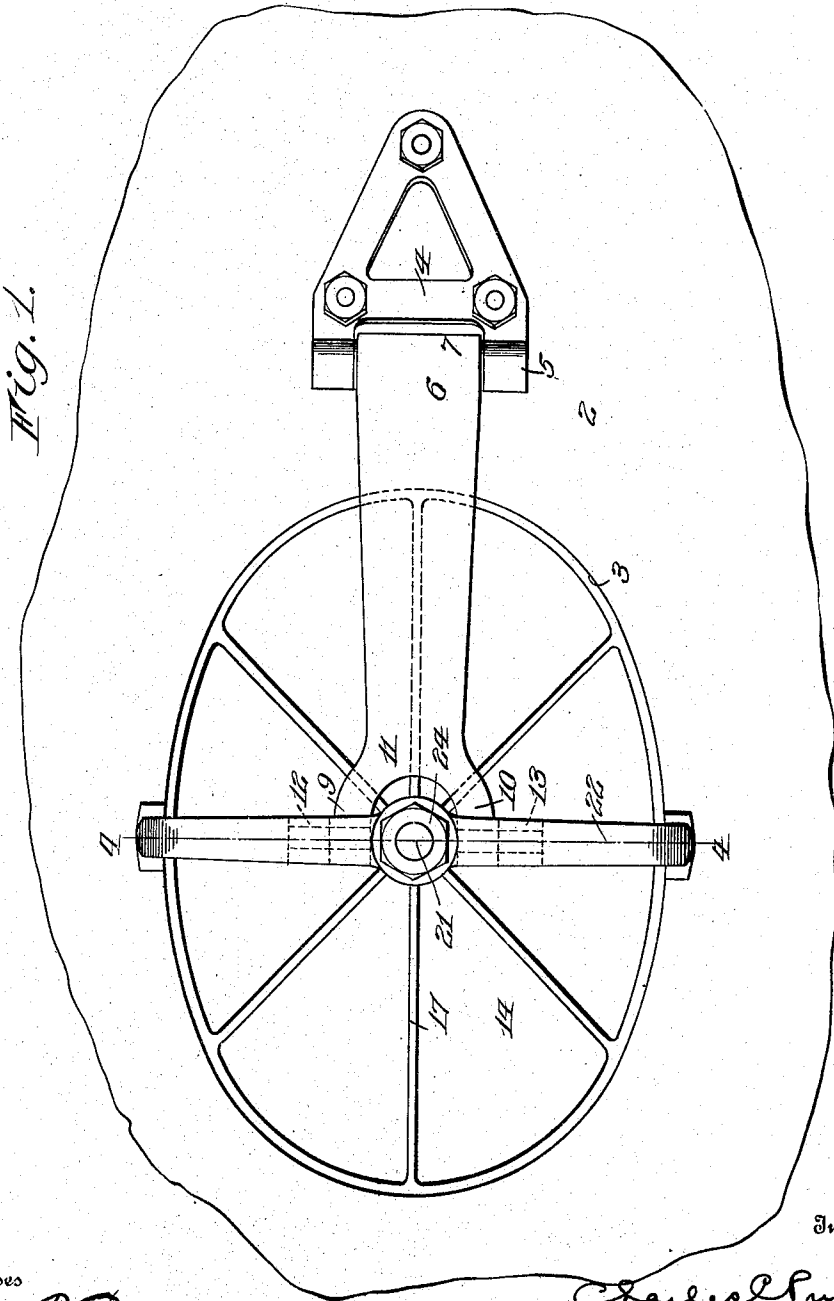


939,628.

Patented Nov. 9, 1909.
2 SHEETS—SHEET 1.



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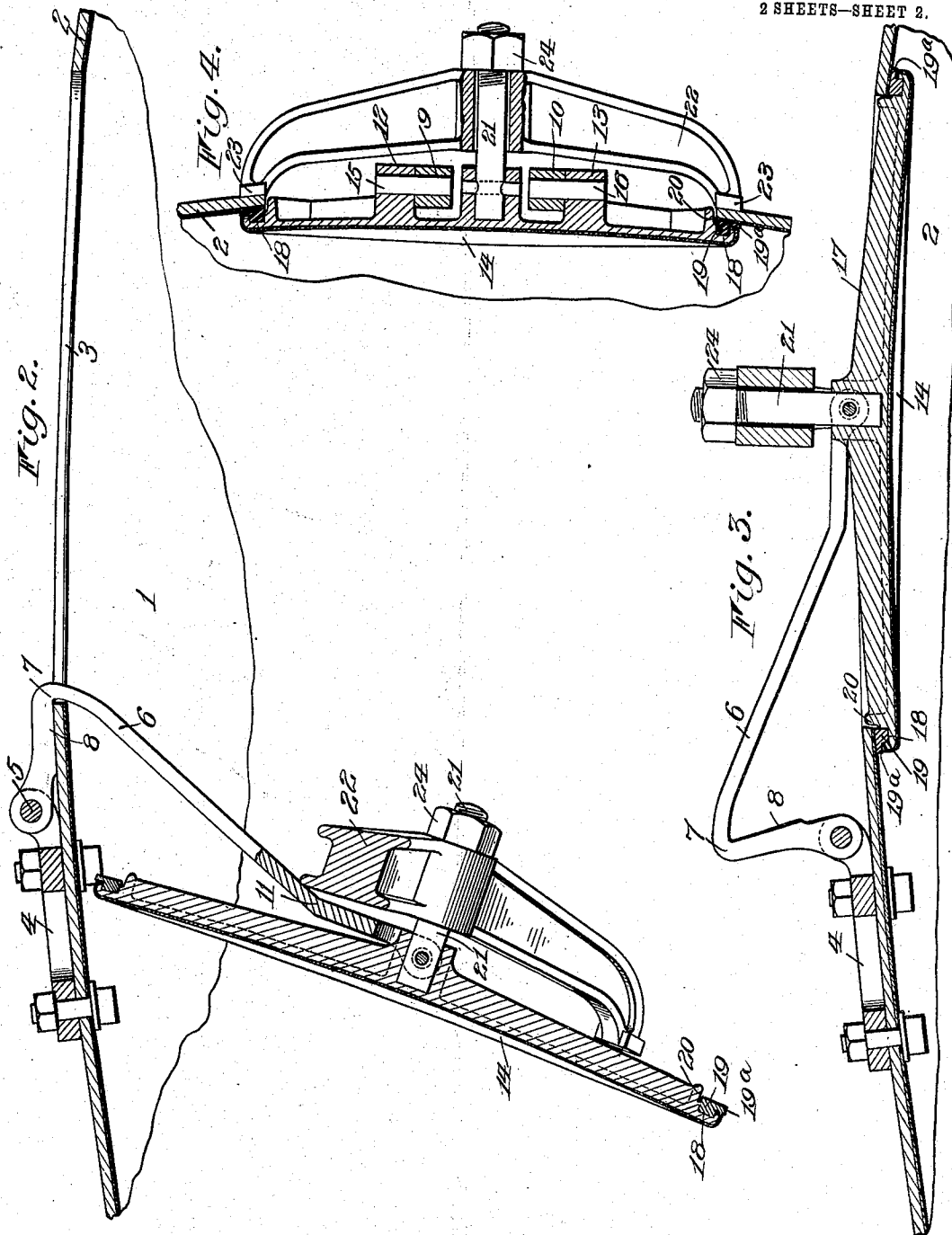
Clarence A. Bateman

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C. C. PUFFER.
MANHOLE CLOSURE.
APPLICATION FILED JAN. 23, 1905.

Patented Nov. 9, 1909.

2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

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MANHOLE-CLOSURE.

939,628.

Specification of Letters Patent.

Patented Nov. 9, 1909.

Application filed January 23, 1905. Serial No. 242,299.

To all whom it may concern:

Be it known that I, CHARLES C. PUFFER, of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Manhole-Closures; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the reference-numerals marked thereon.

My present invention relates to improvements in manhole closures, and it relates more particularly to that class of devices such as are employed for covering the manhole or similar openings in tanks, boilers and other closed vessels, and it is the purpose of my invention to provide devices for supporting the closure so that it may be moved into and out of operative position relatively to the manhole without the necessity of exercising particular care in positioning the closure, and which precludes the possibility of damage to the interior of the vessel by the dropping of the closure while it is being handled, a device of this character being particularly desirable for use in connection with tanks or vessels which are provided with an interior lining of enamel or other frangible material.

To these and other ends the invention consists in certain improvements and combinations of parts all as will be hereinafter more fully described, the novel features being pointed out in the claim at the end of the specification.

In the drawings: Figure 1 is a fragmentary view of a vessel to which a manhole closure embodying my invention is shown applied. Fig. 2 is a sectional view through the walls of a vessel adjacent to the manhole therein showing the manhole closure unfastened and swung into open position. Fig. 3 is a view similar to Fig. 2 showing the manhole closure in fastened position, and Fig. 4 is a sectional view through the manhole closure and adjacent parts on the line 4-4 of Fig. 1.

The same reference numerals designate similar parts in the several views.

In using casks or vessels of large capacities such as are commonly employed in the processes of manufacturing beer and other liquids, it frequently becomes necessary to

obtain access to the interior thereof for the purpose of cleansing or removing other deposits, and as these casks or vessels are usually provided with an interior lining of enamel or other frangible substances which are liable to become fractured or otherwise damaged, when brought into contact with metallic or other hard bodies, it has been found necessary to avoid the liability of dropping the manhole closure upon the lining of the vessel while it is being removed, or otherwise handled, and the device which I employ in the present instance embodies generally a hinged carrier upon which the closure is mounted which prevents the dropping of the closure when it is removed from the manhole and which insures its proper positioning when it is moved into operative position to close the manhole.

In the present embodiment of my invention 1 designates a hollow vessel, which in the present instance, is provided with a convex or spherical head 2 which is provided with a manhole 3. To the head 2 at one side of the manhole 3 is secured a hinge member 4 which is provided with a pivot pin 5 upon which is hinged the carrier 6. This carrier is provided with an elbow 7 which is located at a sufficient distance from the pivot 5 to enable the free end of the carrier to be swung into the vessel through the manhole 3, a seat 8 being provided on that portion of the carrier between the elbow 7 and the pivot which is formed to engage the adjacent exterior surface of the vessel, and thereby act as a stop to limit the motion of the hinged carrier 6, and this will prevent those parts which are mounted on the carrier from striking upon the interior walls of the vessel when the manhole is swung inwardly.

On the free end of the hinged carrier 6 are provided the bearing knuckles 9 and 10 respectively which are carried upon the upper and lower arms of the forked portion 11. At either side of these bearings 9 and 10 of the hinged carrier are adapted to fit the bearings 12 and 13 respectively, of the manhole closure 14, pins 15 and 16 being passed through the corresponding bearings of the hinged carrier and the closure to permit a pivotal motion of the closure relatively to the carrier 6 preferably in a plane substantially parallel to the plane of motion

of the said carrier. This closure may be constructed in the usual way and provided with the reinforcing ribs 17 to resist pressure and other strains to which the closures are usually subjected, the periphery of the closure being channeled as at 18 to receive an annular gasket 19 which may be of rubber or other packing material for forming a tight joint between the closure and the adjacent walls of the vessel when the manhole is closed, the shoulder 20 being provided on the closure at the inner edge of the gasket and arranged to enter the manhole to retain the closure properly centered therein. This gasket 19 is provided with an overhanging flange 19^a which projects outwardly beyond the channel 18 of the closure and extends either to or slightly beyond the adjacent peripheral edge of the closure. This is an advantageous construction when used in connection with tanks or vessels which are to contain liquids which are subjected to fermentation or other processes, for it will be obvious that when the closure 14 is secured in position over the manhole, the body portion of the gasket is of sufficient depth or thickness to insure a firm seating of the gasket against the adjacent walls of the vessel, and the overhanging flange 19^a will be tightly compressed between the peripheral edge of the closure and the adjacent wall of the vessel, and this will prevent deposits from lodging within the joint.

Secured to the closure 14 and extending laterally therefrom is the usual securing or fastening bolt 21 which passes loosely through the securing yoke 22 so as to enable the latter to be rotated thereon. This yoke 22 may be formed in the usual way, the seats 23 which are formed on the ends thereof being sufficiently spaced as to span the manhole preferably at its narrowest diameter, bearing upon the adjacent walls of the vessel to draw the closure 14 firmly against the opposite walls of the vessel when the nut 24, which coöperates with the bolt 21, is tightened, the parts occupying the relative positions shown in Figs. 1, 3 and 4 of the drawings when the closure is in its secured position.

When it is desirable to unfasten the closure and uncover the manhole, the nut 24 is unscrewed on the bolt 21 to relieve the pressure from the yoke 22, and when this pressure has been sufficiently released the yoke 22 may be swung around on the bolt 21 into approximately axial alinement with the longest diameter of the manhole, and this will permit the said yoke to pass freely through the manhole as the hinged carrier 6 is rotated about its pivot 5. In order to permit the closure to swing through a sufficient angle to permit adequate access to the interior of the vessel through the manhole, I locate the pivot 5 at a point beyond

or removed from the adjacent edge of the manhole, and by providing the elbow 7 in the hinged carrier 6, it will be obvious that the manhole closure may swing through a considerable angle before it is arrested by the stop 8, and this may occur without liability of the adjacent edge of the closure from striking the wall of the vessel opposite to the pivot 5.

A manhole closure embodying my invention is particularly applicable to vessels wherein it is desirable to enable the manhole closure to be readily removed and replaced without the necessity of lifting the parts or exercising special care in positioning the closure relatively to the manhole, and as the closure is supported while it is being moved into and out of operative position by the use of the hinged carrier, it will be obvious that a device of this kind is particularly useful when used in connection with vessels, the linings or other parts of which are liable to become damaged by the striking or dropping of the closure or other parts.

In mounting the closure upon the tank or vessel upon which it is to be employed, it is preferable to place the hinged carrier 6 so that it will operate in substantially a horizontal plane, and as it is preferable to provide a pivotal connection between the hinged carrier and the closure 14 in order that the gasket 19 may accurately seat itself around the manhole, it is advantageous to so arrange the pivotal connection between this carrier and the closure so that the latter may also swing in substantially a horizontal plane, and by so arranging the pivots it will be obvious that it will be unnecessary to lift any of the parts which are usually massive, while they are being moved into or out of operative position, and as the yoke 22 is pivotally mounted on the bolt 21 it will be obvious that it may be handled with ease during the operation of fastening and unfastening the closure, and there is no possibility of any of the parts dropping from the carrier. Moreover, by mounting the carrier and its connected parts all on the exterior of the vessel, they are not exposed to the liquid contained by the vessel as would be the case should they be inclosed within the vessel, and this arrangement is essential in tanks and other apparatus used in the processes of manufacturing and otherwise treating beer and similar liquids, as deposits cannot find lodgment in these parts which are liable to decompose and thereby contaminate or otherwise deleteriously affect the liquid under treatment, and in addition to this, by arranging the hinged carrier and its coöperating parts all on the exterior of the vessel and arranging the closure so as to swing inwardly, the interior of the vessel will be entirely free of obstructions and is

not defaced, and this is particularly advantageous when a lining of enamel or other frangible material is employed.

I claim as my invention:

5 In a manhole closure for tanks or similar vessels, the combination with a wall having an aperture, a cover therefor adapted to fit the inner surface of the wall having an annular peripheral groove in its outer face
10 and a gasket lying in said groove and provided with a flanged edge projecting laterally beyond the edge of the cover, of an arm hinged to the exterior face of the wall and

having a bifurcated extremity extending to the center of the cover and forming two 15 separated bearing portions, lugs on the latter embracing said bearings and hinge pins uniting them, an outwardly projecting bolt on the cover located between the bearings and a yoke mounted thereon and adapted to 20 engage the outer face of the wall.

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