

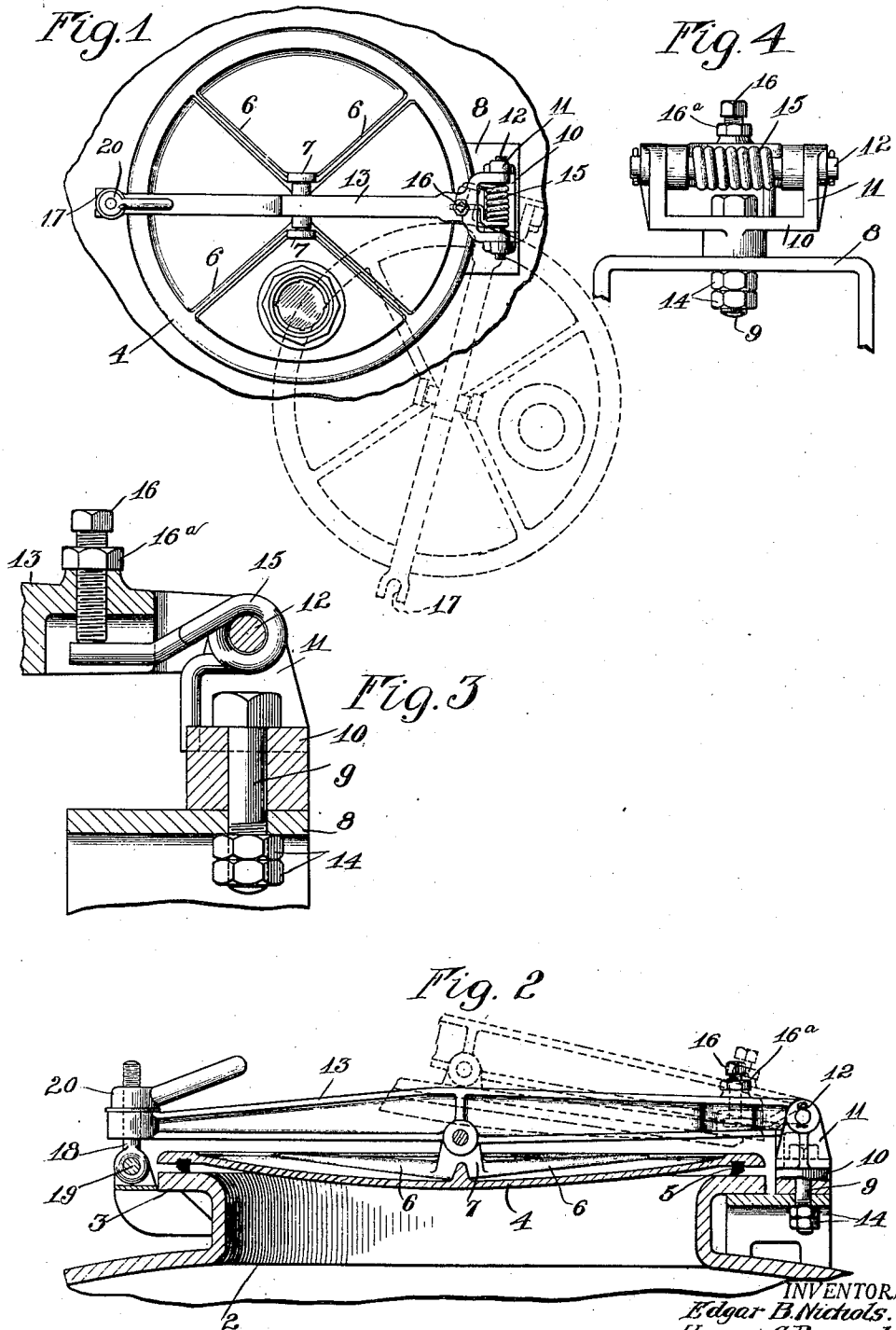
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E. B. NICHOLS ET AL

MANHOLE CLOSURE

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UNITED STATES PATENT OFFICE.

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MANHOLE CLOSURE.

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To all whom it may concern:

Be it known that we, EDGAR B. NICHOLS and HOMER C. BROWNLEE, of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Manhole Closures; and we 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.

Our present invention relates to improvements in closures for manholes or apertures in containers, tanks or other apparatus, and is particularly adapted for use on those in which the aperture is in the top of the container whereby when the cover or plate is released from the securing device it may be either automatically raised a sufficient distance above the aperture to clear the walls thereof and then swung laterally to permit free access to the aperture for any purpose desired, or its weight may be at least partially counterbalanced so that it may be manipulated without undue effort.

In the accompanying drawings:

Figure 1 is a plan view of a portion of a tank or container showing in dotted lines the closure swung to one side of the opening.

Figure 2 a vertical sectional view showing the supporting lever and bracket in elevation;

Figure 3 a sectional view on the line *x-x*, and

Figure 4 a rear elevation of the lever support.

Similar reference numerals throughout the several views indicate the same parts.

The tank or container to which our invention is shown applied, may be of any suitable construction, but is preferably constructed of metal having a manhole aperture 2 with an outwardly extending flange 3 surrounding it. 4 indicates the cover plate preferably downwardly bulged at the center and provided at its under side with a packing gasket 5. The upper surface of the cover is dished, provided with the strengthening ribs 6 and the centrally arranged perforated lugs 7.

At one side of the opening is provided a bracket or frame 8 securely fastened to the top of the container, preferably by welding it to the underside of the flange, this

bracket being provided with a vertically extending aperture through which extends a pintle 9 secured to or forming part of a yoke 10 having the ears 11 and carrying a pintle 12 upon which the support or lever 13 is pivoted to turn vertically, and at right angles to the pintle 9. We prefer to make the pintle 9 of an ordinary bolt, the upper part of which extends through the yoke 10 and is welded to it, vertical movement in the frame 8 being prevented by the nuts 14 which however are not tightened sufficiently to prevent the pintle from readily turning in the support.

The lever 13 has its rear end bifurcated and perforated for the passage of the pintle 12 and between the lugs thus formed and encircling said pintle is arranged a spring 15, one end of which engages the yoke and the other an adjustable bolt or stop 16 on the lever, secured in adjusted position by a lock nut 16. The free end of the lever 13 is slotted at 17 to receive a locking bolt 18 pivoted at 19 and provided with a clamping nut 20 so that when the lever and closure plate are in position over the manhole the bolt 18 may be swung up into the slot and by tightening the nut the plate and packing are held tightly in contact with the container top. The cover plate 4 being pivoted to the lever will readily find its proper seat. When the nut 20 is loosened the bolt may be turned down to release the lever.

The tension of the spring 15 may be adjusted by moving the stop 16 and preferably the lifting force exerted is sufficient to a little more than compensate for the weight of the plate and lever so that when released from the bolt 18 the lower part of the cover plate will be above the sides of the manhole opening and may be immediately swung to one side to permit access to it. To close the cover it needs only to be swung over the opening and sufficient pressure exerted to overcome the tension of the spring and then the bolt secured.

Although capable of general use for closing apertures of any kind, this construction is found to be admirably adapted for tanks or containers having the aperture in the upper side to facilitate access to the interior of the container as the weight of the cover is counterbalanced, and the spring may be adjusted for and the closure applied to covers of different sizes and weights.

We claim as our invention:

1. The combination with a container having a manhole, of a closure for said manhole comprising a support pivoted upon the container at one side of the opening and adapted to swing transversely of the opening, an operating and clamping lever pivoted upon the support to swing axially of the manhole opening, a cover plate for the manhole pivoted upon the lever, a spring arranged between the support and lever for moving the latter on its pivot and means for securing the lever when the plate is in closed position.
2. The combination with a container having a manhole, of a closure for said manhole comprising an operating and clamping lever swiveled on the container at one side of the opening and adapted to swing transversely and axially of the latter, a cover plate pivoted on the lever, a spring for operating the lever to remove the closure plate from the manhole, and means for securing the free end of the lever.
3. The combination with a container having a manhole, of a closure for said manhole comprising a support pivoted on the container to turn laterally of the manhole, a lever pivoted on the yoke to turn at right angles to the pivot of the latter, a cover plate pivoted at its center to the lever, a spring arranged between the support and lever for turning the latter on its pivot and means for securing the free end of the lever.

4. The combination with a container having a manhole, of a closure for said manhole comprising a support pivoted on the container at one side of the opening and adapted to swing transversely of the latter, a lever pivoted on the yoke to swing toward and from the opening, a spring connection between the yoke and lever to turn the latter on its pivot, a cover plate pivoted at its center to the lever, and means for securing the free end of the lever on the side of the opening opposite the pivot.

5. The combination with a container having a manhole, of a closure for said manhole comprising a yoke pivoted on the container at one side of the opening, a lever pivoted on a pin extending between the arms of the yoke to swing at right angles to the pivot of the latter, a spring on the pivot pin of the lever engaging the lever and support, a cover plate pivoted on the lever and means for securing the free end of the lever.

6. The combination with a container having a vertically opening manhole, of a closure for said manhole comprising a support pivoted at one side of the manhole to swing laterally thereof, a lever pivoted upon the support on a horizontal pivot, a cover plate pivoted at its center to the lever, a spring between the lever and support for raising the lever, and means for securing the free end of the lever.

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