W. H. BROCK.

Man-Hole Cover for Oil-Tank.

No. 203,817. Patented May 21, 1878.

Fig. 1

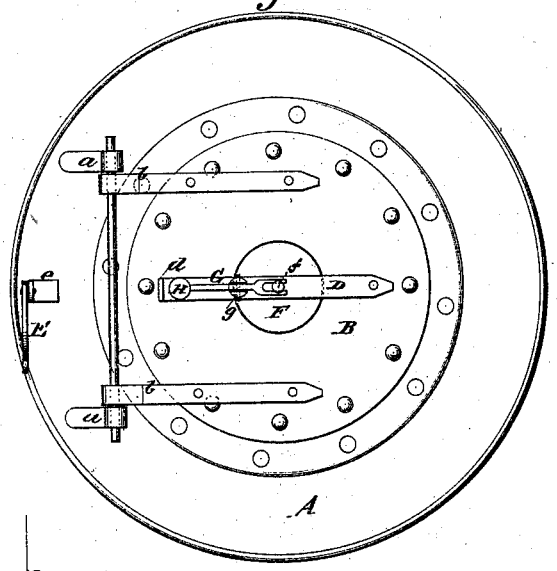


Fig. 2

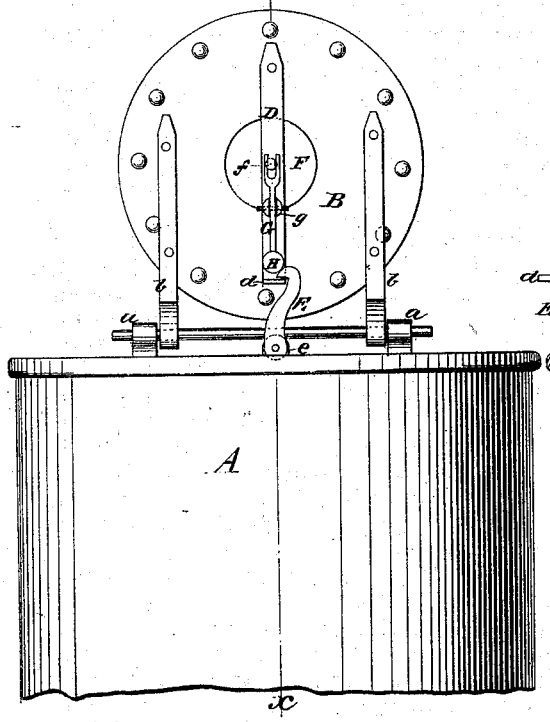
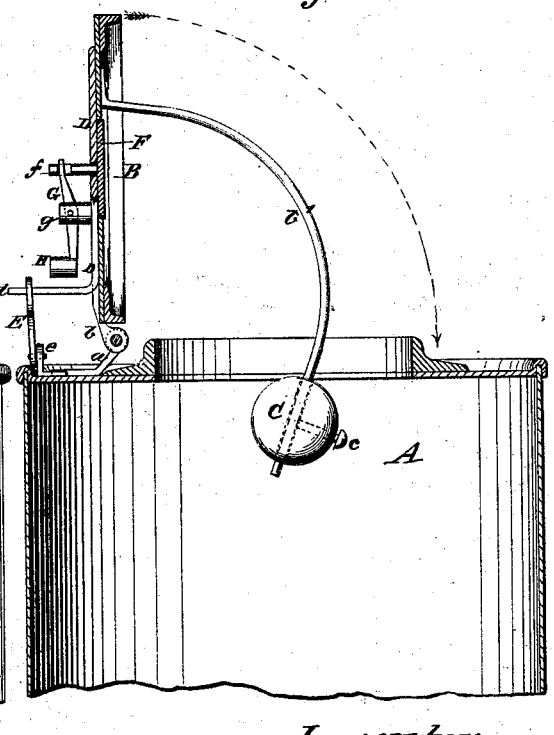


Fig. 3



Witnesses.

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UNITED STATES PATENT OFFICE.

WILLIAM H. BROCK, OF BROOKLYN, ASSIGNOR TO A. J. POUCH, OF SAME PLACE, AND J. A. BOSTWICK, OF NEW YORK, N. Y.

IMPROVEMENT IN MAN-HOLE COVERS FOR OIL-TANKS.

Specification forming part of Letters Patent No. **203,817**, dated May 21, 1878; application filed March 16, 1878.

To all whom it may concern:

Be it known that I, WILLIAM H. BROCK, of the city of Brooklyn, in the county of Kings and State of New York, have invented certain Improvements in Man-Hole Covers for Tanks Holding Petroleum or other Hydrocarbon Liquids, of which the following is a specification:

The object of this invention is to prevent the disastrous consequences which often follow from the ignition of vapors generated within tanks when partially filled with inflammable substances, by novel combinations which provide for the gradual but constant emission of the vapors or gases from the man-hole of the tank when partially filled with the inflammable liquid while in its unignited, quiescent state, and also in cases of ignition of the vapors by lightning or other cause, for the instantaneous escape of the expanding gas, and for the immediate closing of the man-hole by the return of its cover, whereby the incipient flame engendered by ignition of the vapor is instantly quenched before its communication to the liquid contents of the tank, and destructive conflagration and rupture of the tank averted.

Figure 1 represents this invention in plan or top view with cover down; Fig. 2, the side elevation, showing the back of the cover when elevated; and Fig. 3 is a central vertical sectional view of the same with cover elevated, showing the ball and rod.

To the inside of the hinged man-hole cover B of the tank A, as shown in Fig. 3, is fastened a curved rod, *b'*, upon which is a ball or weight, C, so adjusted by means of a set-screw, *c*, as to exert, when the man-hole is closed by the cover, a repellent or upward force so nearly in counterpoise to the natural weight of the cover or plate as to hold the same in easy and light contact with the surface-edge of the man-hole, so that the cover at once and continuously responds, by lifting upward, to any pressure of the gases within the tank A, whether from their natural spontaneous expansion, or as resulting from accidental ignition of the vapors therein gathered.

This constant emission of the gases greatly diminishes the chances of disaster by keeping the explosive matter evolved within the tank in so reduced and tenuous a state as to lessen the liability of combustion when exposed to ignition.

When the cover is raised, at whatever angle of elevation, the rod and ball in this novel combination, by their downward force, act as a dead weight in returning it to its normal position in closing the man-hole, so that, when the cover is thrown upward by a sudden puff of the exploded gas within the tank, its immediate return closes the man-hole, extinguishes any flame at the outset, and, excluding the external air, prevents ignition of the liquid contents of the tank.

Figs. 2 and 3 of the accompanying drawing show the novel combination with the cover B of the supporting or cross bar D, and by the arm *d* of the catch E pivoted to its lug *e*, which is affixed to the top of the tank in convenient contiguity to the man-hole.

By this device the cover, when elevated, is held in position at such an angle of elevation that whenever the gaseous mixture present within a tank partially filled with inflammable liquid chances to become ignited, and serious conflagration ensues by communication to the liquid in the tank, the flame and expanded air, rushing from the man-hole, force back the cover sufficiently to detach the catch E, which then acts as a cam, and the cover, oscillating between the counter-resistance of the upward force of the flame and the downward force of the weight C, soon resumes its normal position in contact with the man-hole, and smothers the flame within the tank.

What I claim as my invention is—

The combination, with the hinged cover B of a tank, A, for holding petroleum or other hydrocarbon liquids, of the curved rod *b'* and weight C, with the set-screw *c* of the cross-bar D, and hinged catch and cam E, substantially as herein set forth, and for the purposes as above described.

WILLIAM H. BROCK.

Witnesses:

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R. W. KEENE.