W. H. ANDERSON.

MAN-HOLE COVERS FOR OIL-TANKS.

No. 170,697. Patented Dec. 7, 1875.

Fig. 1.

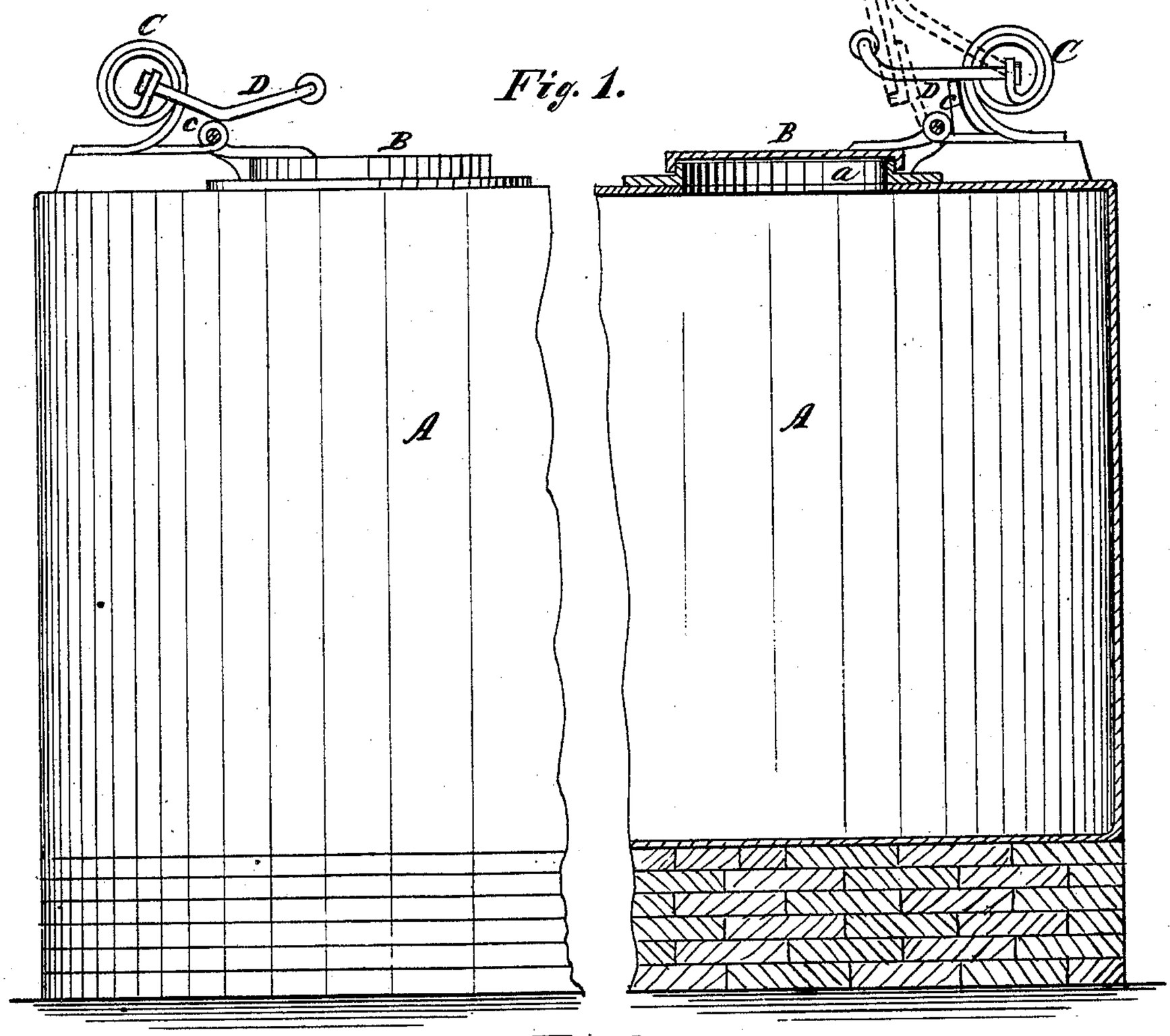
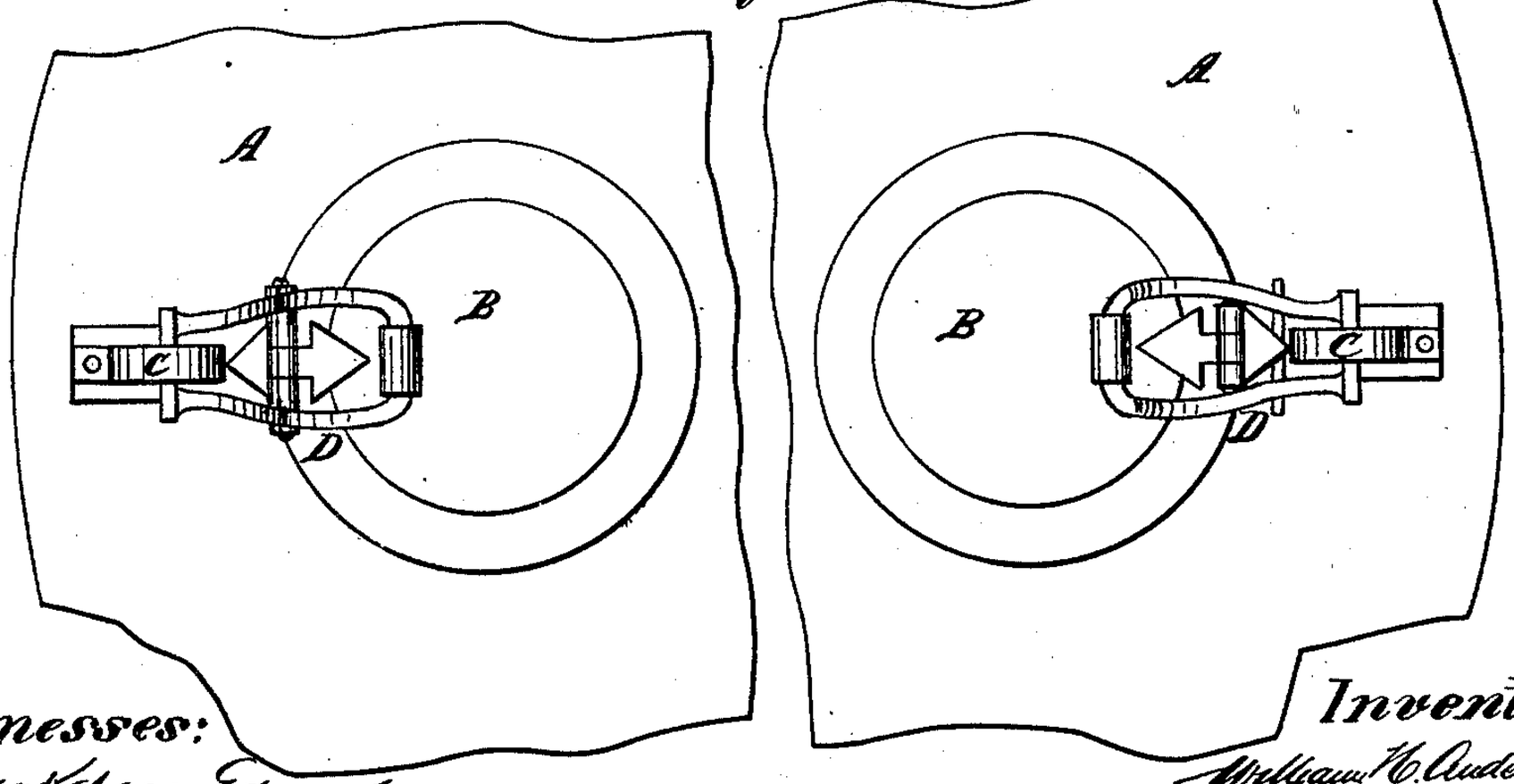


Fig. 2.



Witnesses:

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H. Wells Jr.

Inventor

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per James A. Whitney

Atty

UNITED STATES PATENT OFFICE.

WILLIAM H. ANDERSON, OF BROOKLYN, E. D., NEW YORK, ASSIGNOR OF ONE-HALF HIS RIGHT TO A. J. POUCH, OF SAME PLACE.

IMPROVEMENT IN MAN-HOLE COVERS FOR OIL-TANKS.

Specification forming part of Letters Patent No. **170,697**, dated December 7, 1875; application filed November 12, 1875.

To all whom it may concern:

Be it known that I, WILLIAM H. ANDERSON, of Brooklyn, E. D., in the county of Kings and State of New York, have invented an Improvement in Man-Holes for Oil-Tanks, of which the following is a specification:

This invention relates to that class of devices designed to provide a ready exit through the man-hole for the exploded gases evolved in petroleum-tanks when struck by lightning, and for the instantaneous closure of the man-hole after the gases have escaped, in order to prevent the rupture of the tank or the ignition of its liquid contents. This is done by providing a man-hole cover, held in place by its own weight, or, at most, so lightly loaded as to present, practically, no resistance to the outward pressure of the evolved gases, the said cover being in such relation with a spring or springs as to be at once thrown back to its closing position, after being thrown open by the exploding gases.

The spring or springs hitherto combined with the cover, for the purpose aforesaid, have been of flat or leaf form, and were, apparently well adapted to the purpose; but I have found, in the trial of them upon large tanks, with explosions artificially produced, that such do not, and cannot, withstand the violent impact upon them, but are suddenly broken, and thereby render the apparatus useless at the very moment that its operation is imperative.

The object of my present invention is to obviate this unlooked-for obstacle; and it consists in a novel combination of a bearing-arm and coiled or helical spring with the man-hole cover of an oil-tank, whereby the desired result is effectually secured.

Figure 1 is a side view and partial section of an oil-tank fitted with my invention; and Fig 2 represents the said invention in plan or top view.

The tank A is of any ordinary construction, and furnished with one or more man-holes, *a*, in its top, of the usual size and configuration. The man-hole *a* is provided with the cover B, hinged to the top of the tank, as shown at *b*. C is a coiled or helical spring, attached at one end to the top of the tank in suitable relation to the cover B, and having attached to its opposite or free end an arm, D, which extends over the cover B at such distance above the said cover that the cover may rise to partially uncover—say, to the extent of one-third—the man-hole *a* before coming in contact with the aforesaid arm.

As the coil of the spring C is in such direction as to tend to move the arm D downward, a stop, *c*, is provided. This stop may be constituted, either simply by the top of the hinge, as shown in the left-hand portion of the figures, or by a stud or spur affixed to the top of the tank underneath the arm, as represented in the right-hand portion of said figures.

In the event of the tank (the latter containing petroleum, as in the ordinary use of the said tank) being struck by lightning, the expanded gases evolved within the tank will suddenly throw upward the man-hole cover B, as indicated in dotted outline in Fig. 1, and escape through the man-hole. As the cover comes in contact with the arm D, the latter bears against the said cover with all the quick, but gradually-accumulated, force of the coiled spring C, the upward movement of the arm contracting said spring so that its force increases in proportion to the aforesaid upward movement of the arm.

By this means, an elastic pressure, so gradual as not to break the spring itself, or jar the cover from its hinge, and, at the same time, so sudden as to instantaneously force the cover back to its closed position, is exerted upon the cover.

By this means the man-hole is shut so quickly and securely after the escape of the gases, just hereinbefore set forth, that any communication of the flame to the liquid contents of the tank is prevented, and the disastrous explosions and conflagrations frequently resulting from the striking of oil-tanks by lightning are guarded against, the peculiar combination of parts herein described as constituting my invention being capable of with-

standing the severe usage to which the parts are necessarily subjected when in operation, and thereby attaining a degree of security for petroleum in storage hitherto unknown.

What I claim as my invention is—

The combination, with the cover B of an oil-tank, A, of the arm D, and coiled or helical spring C, the whole provided for use and operation, substantially as and for the purpose set forth.

WILLIAM H. ANDERSON.

Attest:

W. M. EDWARDS,

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