A. DAVIS, JR.

TANK CLOSURE AND VENT.

APPLICATION FILED APR. 3, 1919.

1,383,389.

Patented July 5, 1921.

Fig. 1.

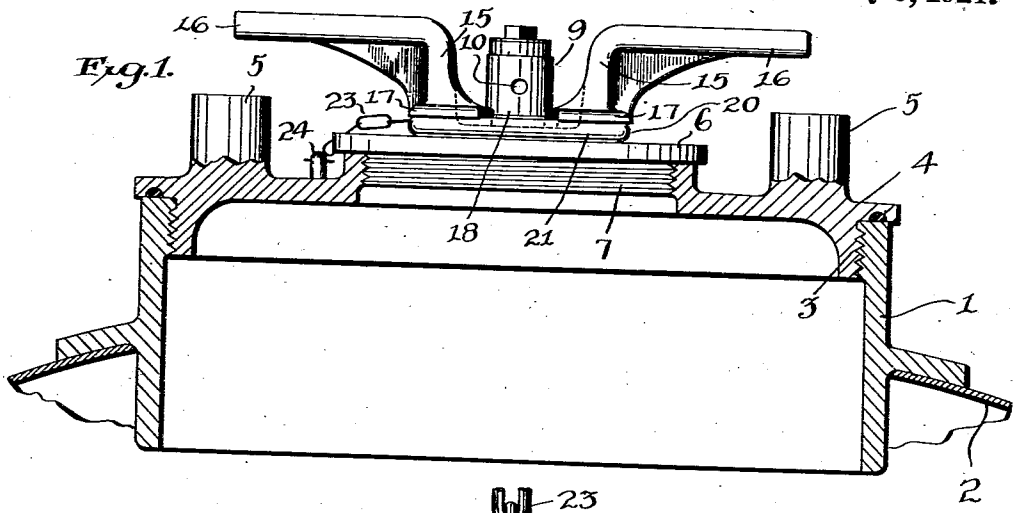


Fig. 2.

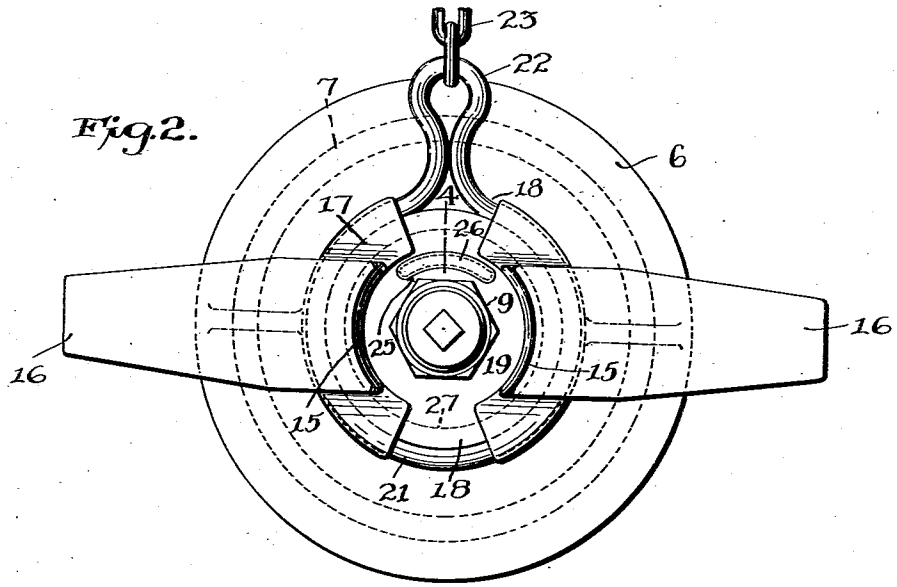


Fig. 3.

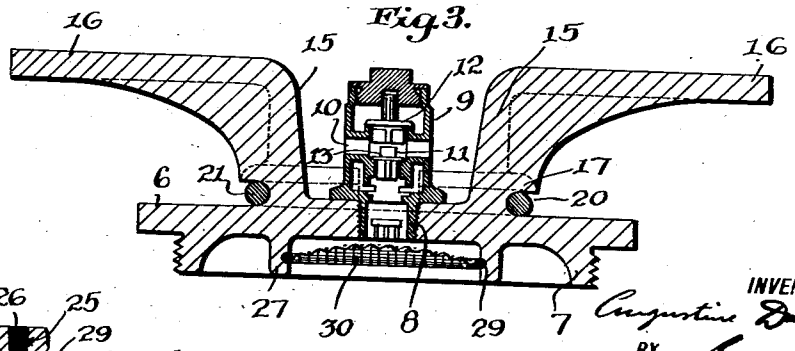
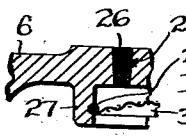


Fig. 4.



INVENTOR

Augustus Davis, Jr.

BY

J. Blandenburg.

ATTORNEY

UNITED STATES PATENT OFFICE.

AUGUSTINE DAVIS, JR., OF COVINGTON, KENTUCKY.

TANK CLOSURE AND VENT.

1,383,389. Specification of Letters Patent. Patented July 5, 1921.

Application filed April 3, 1919. Serial No. 287,218.

To all whom it may concern:

Be it known that I, AUGUSTINE DAVIS, JR., a citizen of the United States, and a resident of Covington, in the county of Kenton and State of Kentucky, have invented a new and useful Tank Closure and Vent, of which the following is a specification.

The invention comprises certain improvements in respect to tanks, and more particularly in the screw filling closures of traveling oil tanks. The objects are to facilitate the application and removal of a closure of this character, to protect a vent structure mounted thereon, to guard against introduction of water or dirt into the tank when the closure is unscrewed from the filling-opening, to shackle the closure to the manhole cover or tank without interfering with the screwing thereof, to provide an emergency vapor escape which is operative only in event of fire, and to secure these and other results and advantages by a construction and combination at once simple and effective.

In the accompanying drawings forming a part hereof:

Figure 1 is a side elevation of a filling closure embodying the invention, shown occupying a filling-opening in a manhole cover, the latter and the part of the tank with which it coöperates being shown in vertical section;

Fig. 2 is an enlarged plan view of the filling closure;

Fig. 3 is a vertical section therethrough; and

Fig. 4 is a fragmentary vertical section on the line 4—4 of Fig. 2.

The drawing represents a manhole frame 1 secured in a top opening of a tank 2, which may be understood to be the tank of an oil tank vehicle or car. The manhole opening in the frame is provided with a screw-thread, which receives a screw-threaded flange 3 on the manhole cover 4, the latter being screwed in or out by the aid of lugs 5 on its outer portion at opposite sides of the center. In the middle of the manhole cover is a screw-threaded filling-opening, which is closed by a disk 6 with screw-threaded flange 7.

In the center of the closure disk 6 is an aperture, also screw-threaded, which receives the threaded stem 8 of a vertical vent-plug 9. Vent plugs of this kind are known and I do not limit myself to the precise form. Generally it consists of a hollow cylindrical body formed with lateral ports 10 opening into a central vestibule chamber 11. Gravity valves 12 and 13 normally close this vestibule from the interior space 14 of the plug which is in communication through the stem with the interior of the tank. The upper valve 12 lifts to admit air when liquid is drawn from the tank, while the lower valve 13 will be raised by an excess of internal pressure to permit vapors to escape.

Such vent-plugs are important elements of these traveling tanks, and, projecting as they ordinarily do, it not infrequently happens that they become damaged or broken off, which creates a dangerous condition. In accordance with the present invention the vent structure is protected by a pair of reversely-disposed horn-handles 15, the standards of which rise adjacent opposite sides of the plug. The outwardly projecting grips 16 of these handles enable the closure 6 to be readily screwed in or out by direct manual operation, without the use of a wrench and without danger of the operator injuring his hand upon the lugs 5 of the manhole cover. The horn-handles rise substantially above these lugs, and toward or above the level of the top of the vent-plug.

The bases of the horn-handles are formed by two arcuate ribs 17 projecting from the top of the disk 6 and integral therewith and with the handles, these ribs constituting a low, substantially circular circumvallation about the vent-plug. The spaces 18 left between the ends of the ribs at opposite sides of the plug are for the purpose of draining the annular inclosure 19 between the base of the plug and the ribs. The bottoms of these escape ports are accordingly as low as the floor of said inclosure, and their width is made ample for their purpose without materially affecting the circularity of the wall. The closure is thus kept free of accumulation of water or dirt, which would otherwise be likely to find its way into the contents of the tank, to the ultimate derangement of the functioning of the carbureters in which the fuel was used.

The circular ported wall formed by the curved ribs or laterally extended handle bases 17 has an external circumferential groove 20, which loosely holds a circular shackle-loop 21, having an eye 22, by which it is connected to one end of a chain 23, the other end of which is fastened to a staple 24 on the manhole cover or elsewhere on the tank. The said wall thus constitutes a

shackle-loop seat, which may turn inside the loop with the turning of the closure 6 when screwing in either direction.

In event of fire in the vicinity of the tank, vapors may be generated from the oil faster than they can be passed by the valved vent-plug, or the latter might fail to work for some reason, in either of which events the internal pressure might rise to such point as to rupture the tank, throwing blazing oil about and greatly increasing the conflagration. To overcome this danger I form a curved tapered slot 25 through the closure disk within the annular space between the wall 17 and the plug, and fill this slot with cast-in low-fusing metal 26 which normally forms to all intents and purposes an integral part of the closure. When, however, this filling is subjected to such seat as would be produced by a nearby fire, it melts and runs out of the slotted opening, thus affording a free passage of substantial area for the escape of confined vapors, so as to relieve the tank walls of strain.

An annular flange 27 projects downward from the under side of the closure, including within its perimeter the central vent-plug opening and the slotted opening 25, and the inner surface of this flange is provided with a circular groove into which is snapped a ring 29 carrying a domed fire screen 30. The said screen prevents the propagation of flame into the interior of the tank when the filling 26 is destroyed, and also serves to catch the particles of metal and keep them from dropping into the oil.

While the closure 5 has been illustrated as occupying a filling opening in a manhole cover, it will be understood that the invention is not so limited and that the closure may be screwed into a filling opening in a tank where there is no manhole.

From the foregoing it will be understood that the primary function of the horn-handles is to do away with the wrench which is generally used to screw and unscrew these closures. Where a wrench is used it is often lost, and in many cases the driver does not trouble to tighten the closure, but screws it in with his fingers and consequently it comes loose. The horn-handles constitute a permanent, effective wrench, and in addition perform the important function of protecting the vent. The same construction also provides a rotary bearing for the shackle, and the design is such that accumulation of dirt or water within the inclosure is prevented.

What I claim as new is:

1. A screw closure for tank filling-openings comprising a disk having a central aperture with a vertical upwardly-projecting vent-plug therein, and reversely-disposed horn-handles rising from the disk at opposite sides of the vent-plug and protecting the same.

2. A screw closure for tank filling-openings comprising a disk having a central aperture with a vertical upwardly-projecting vent-plug therein, a circumvallation integral with the disk about the base of the vent-plug, and reversely-disposed horn-handles rising integrally from said circumvallation at opposite sides of the vent-plug.

3. A screw closure for tank filling-openings comprising a disk having a central aperture with a vertical upwardly-projecting vent-plug therein, a circumvallation integral with the disk about the base of the vent-plug, and reversely-disposed horn-handles rising integrally from said circumvallation at opposite sides of the vent-plug, said circumvallation being interrupted at one or more points to afford escape ports for the area around the vent-plug.

4. A screw closure for tank filling-openings comprising a disk having a central aperture with a vertical upwardly-projecting vent-plug therein, a circumvallation integral with the disk about the vent-plug and grooved upon the outside to receive a shackle-loop, and reversely-disposed horn-handles rising integrally from said circumvallation at opposite sides of the vent-plug.

5. A screw closure for tank filling-openings comprising a disk having a central aperture with a vertical upwardly-projecting vent-plug therein, a circumvallation about the base of the vent-plug, with reversely-disposed horn-handles rising from the circumvallation and protecting the plug, there being an opening through the disk between the circumvallation and the vent-plug, and a filling of low-fusing metal in said opening.

AUGUSTINE DAVIS, JR.