

O. W. BAILEY.
VALVE STRUCTURE.
APPLICATION FILED APR. 16, 1912.

1,059,104.

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Fig. 1

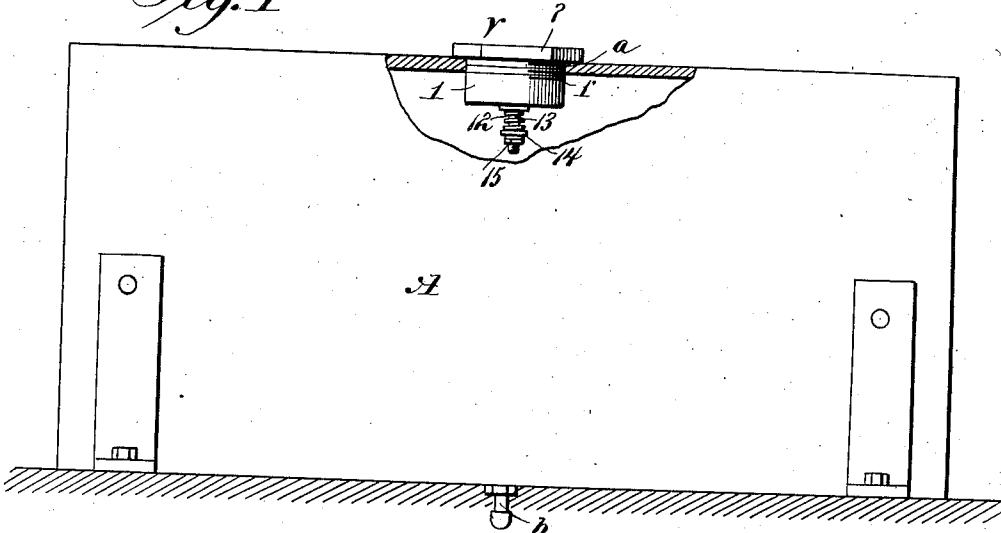


Fig. 2

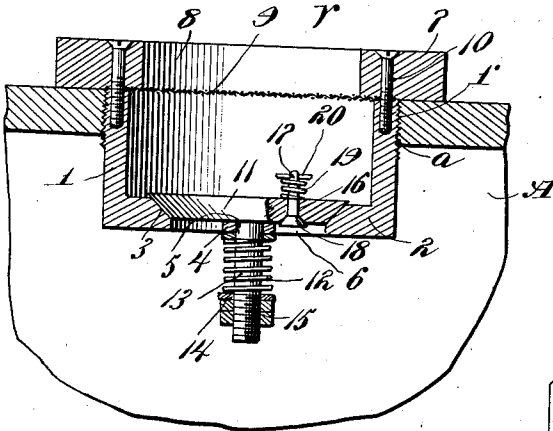


Fig. 3

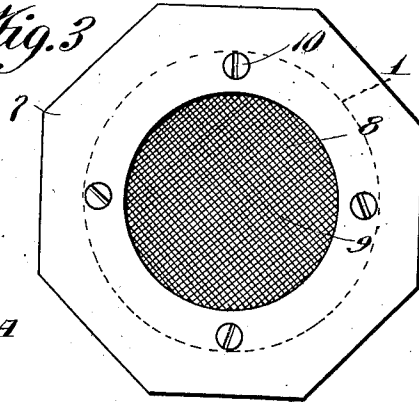
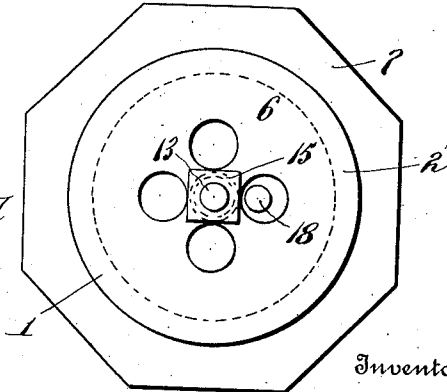


Fig. 4



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VALVE STRUCTURE.

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To all whom it may concern:

Be it known that I, OSCAR W. BAILEY, a citizen of the United States of America, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented new and useful Improvements in Valve Structures, of which the following is a specification.

My present invention relates to improvements in valve structures and has particular application to structures of this type for use in conjunction with storage tanks or reservoirs.

In the present instance, my invention is directed to a valve structure adapted to be used in conjunction with storage tanks, such as those carried by motor vehicles and the like, and adapted to contain highly explosive liquids, such as petroleum and its by-products.

In carrying out this invention, it is my purpose to provide a valve structure wherein by means of a pair of valves excess pressure within the tank or reservoir may be released to prevent an explosion, and the formation of a vacuum in such tank or reservoir prevented, thereby enabling the fluid within the tank to be taken therefrom with facility.

Furthermore, it is my purpose to provide a closure for gasolene tanks or reservoirs and the like which shall include a pair of valves operable in relatively opposite directions to prevent excess pressure accumulating within the tank and the formation of a vacuum therein.

With the above and other objects in view, the invention consists in the construction, combination and arrangement of parts hereinafter set forth in and falling within the scope of the appended claims.

In the accompanying drawing there has been illustrated one practical and preferred embodiment of my invention, and in this drawing; Figure 1 is a side elevation of a gasolene tank, such as are carried by automobiles, equipped with the present invention. Fig. 2 is an enlarged vertical sectional view of my combined closure and valve structure. Fig. 3 is a top plan view of the same, and Fig. 4 is a bottom plan view thereof.

Similar reference characters designate like parts throughout the several views.

Referring now to the accompanying drawing in detail, A indicates a tank or reservoir

adapted to contain a highly explosive liquid, such as petroleum, gasolene, naphtha and the like, this tank being, in the present instance, of the type usually employed for carrying the fluid of the propelling engines of motor boats, automobiles and the like motor vehicles, and is provided with a filling opening *a*, and an outlet *b*, piped up to the engine, as usual.

My improved closure or valve structure is indicated by the letter V and embraces an annular open body 1 provided at one end with an inturned flange 2 beveled for a portion of its thickness to provide a valve seat 3 and equipped, immediately below such seat, with a web 4 formed with a centrally located opening 5 and a plurality of openings 6 arranged concentrically about the opening 5. Mounted upon the upper free end of the annular body 1, is a non-circular manipulating flange member 7 provided with a central enlarged opening 8 designed to establish communication between the body 1 and the atmosphere, a suitable screen 9 being interposed between the flange 7 and the proximate end of the body 1 to prevent dirt, grit, and foreign matter of a like nature entering the tank. This flange 7, in the present instance, is detachably connected to the body 1 by means of screws 10 passed through apertures in the flange alining with threaded apertures in the adjacent edge of the body. The flange and body, in the present instance, produce a clamping action upon the screen to hold the same in its applied position. The body 1 is screw threaded for a portion of its length and upon its outer circumference, as at 1', so that the same may engage the walls of the filling opening *a* in the tank to effectively close the same.

Seated upon the beveled valve seat 3 on the flange 2 of the body, is a disk valve 11 having its peripheral edge beveled to engage the seat 3, and this valve 11 is adapted to open outwardly of the tank in the event of excess pressure accumulating therein, with the effect to relieve the pressure and consequently obviate the danger of an explosion, incident to the accumulation of a pressure within the tank. The valve 11 is normally maintained in engagement with its seat by a tension means which in the present instance consists of a coiled expansion spring 12 encircling a stem 13 formed integral with the valve 11 and passed through the opening 5

and the web 4, one extremity of the spring 12 bearing upon the walls of the aperture 5, while its opposite extremity engages a washer 14 carried upon the valve stem 13. Suitable means is employed to regulate the tension of the spring 12 and consequently its effect upon the valve 11, and in this embodiment of the invention consists of jam nuts 15 threadedly engaging the valve stem 13 and operable to move the washer 14 upon the valve stem to increase or decrease the tension of the spring.

In accordance with my invention, means is provided to prevent the formation of a vacuum within the tank, incident to the discharge of the fluid therefrom, and this last-named means consists of a valve operable in the direction reverse from that of the valve 11. In the present instance, the disk valve 11 at one side of its center line, is provided with an aperture 16, in which is mounted a valve stem 17 carrying a valve 18 disposed upon the under surface of the valve 11 and provided with a beveled surface coöperating with a similar wall formed contiguous the opening 16 in the disk 11. Upon the side of the stem 17 opposite from the valve 18, is a coiled expansion spring 19 encircling said stem and bearing at one extremity on the proximate surface of the valve 11, and having its opposite extremity in engagement with a pin 20 passed through an aperture in the valve stem 17. This valve 18, is adapted to open inwardly of the tank and in doing so permits air to be drawn into the tank to facilitate the discharge of the liquid therefrom, the increased diameter of the opening 16 with respect to the valve stem 17 permitting such ingress of air.

From the foregoing description taken in connection with the accompanying drawing, the construction, mode of operation and manner of employing my invention will be readily understood. Should a pressure accumulate within the tank A, the valve 11 will open outwardly of the tank and thereby relieve such pressure, the spring 12 serving to return the valve to its normal position

upon the excess pressure being released. By adjusting the nuts 15, the tension of the spring 12 may be so regulated as to permit the operation of the valve 11 at a predetermined pressure. On the contrary, should a vacuum tend to form in the tank A, the valve 18 will open thereby permitting the inrush of air to the tank and the consequent destruction of the vacuum.

If desired, the spring 19 on the valve stem 17 of the valve 18 may be subject to adjustment.

While I have herein shown and described one preferred form of my invention by way of illustration, it is to be understood that I do not limit myself to the exact details of construction herein described and delineated, as modification and variation may be made within the scope of the claims.

I claim:

1. The combination with a tank, of a closure therefor, said closure comprising a body having a valve seat therein, a valve upon said seat and adapted to open outwardly of the tank to relieve excess pressure therein and formed with a valve seat at one side of the center line thereof, and a second valve coöperating with the last-mentioned seat formed in the first valve and adapted to open inwardly of the tank to prevent the formation of a vacuum therein, and tension means normally holding said valves inactive.

2. The combination with a tank, of a closure therefor, said closure comprising a body, a manipulating flange on the body, a screen interposed between the body and said manipulating flange, and valves carried by the body and adapted to open in relatively opposite directions to relieve excess pressure in the tank and prevent the formation of a vacuum therein.

In testimony whereof I affix my signature in presence of two witnesses.

OSCAR W. BAILEY.

Witnesses:

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