May 18, 1926. 1,585,512

W. M. ROADES

TANK CLOSURE

Filed June 4, 1923 2 Sheets-Sheet 1

Fig. 1.

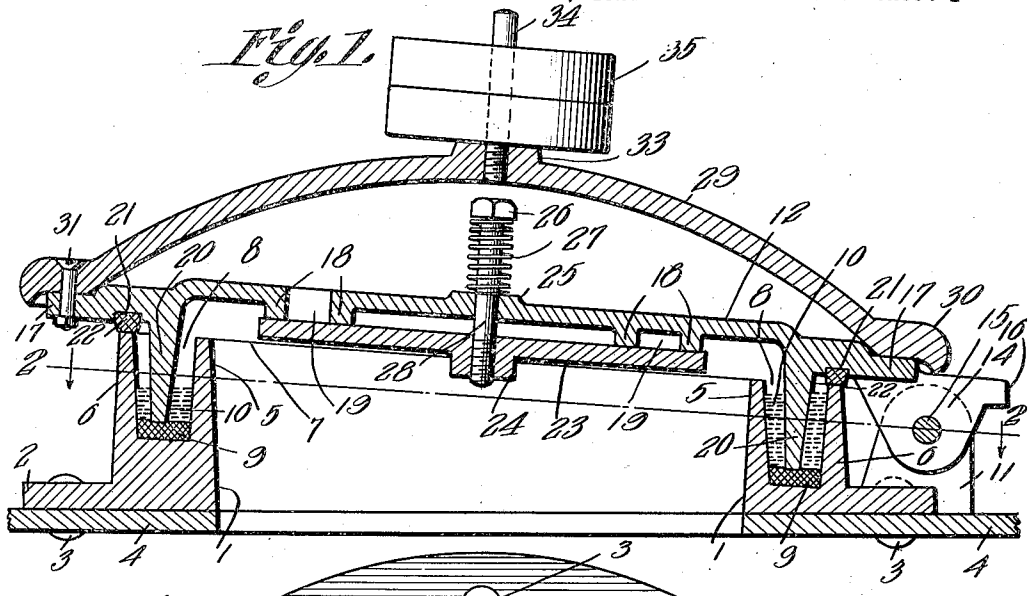
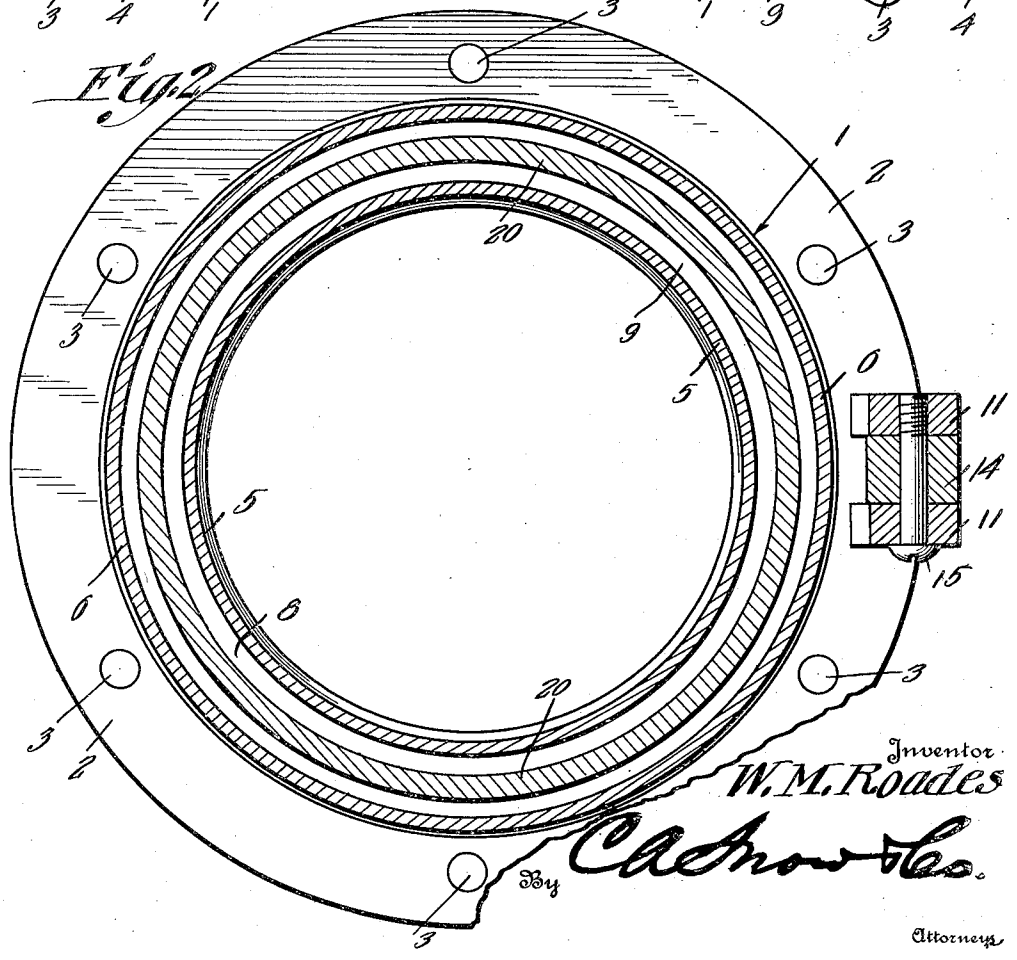


Fig. 2.



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Fig. 3.

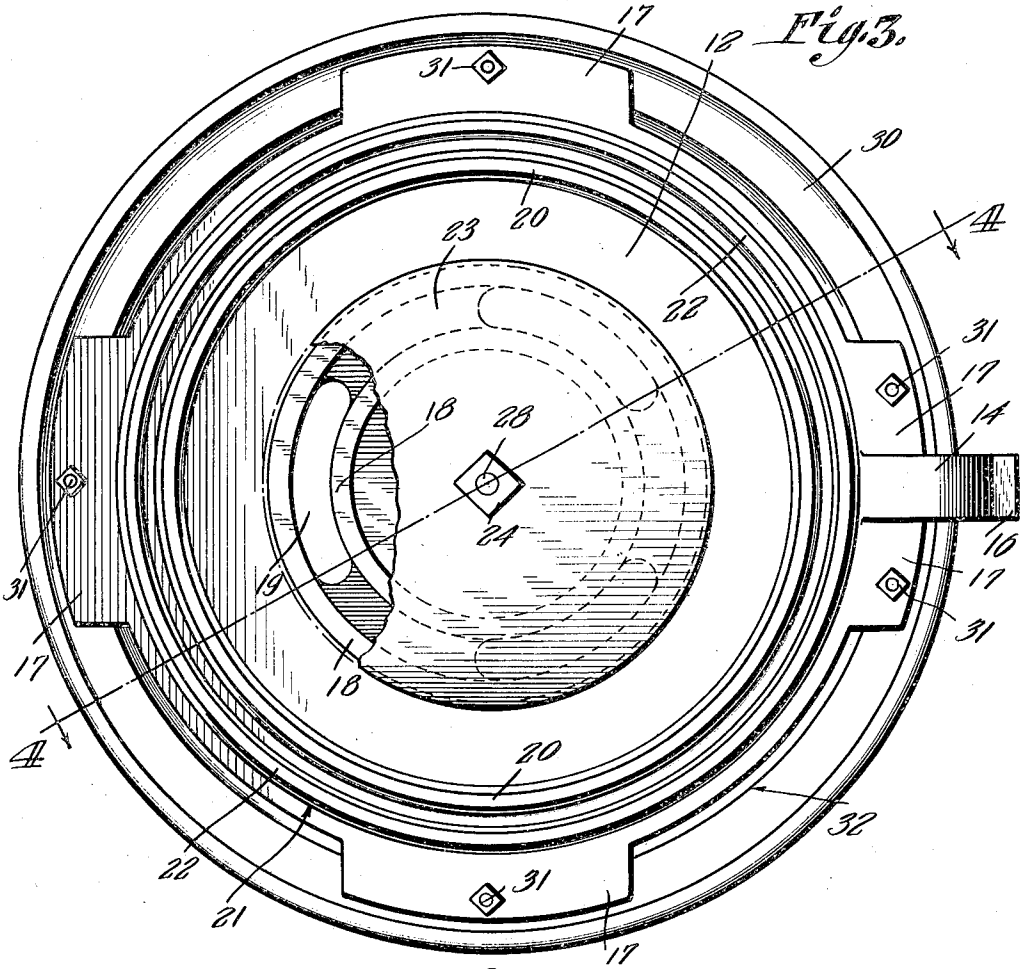
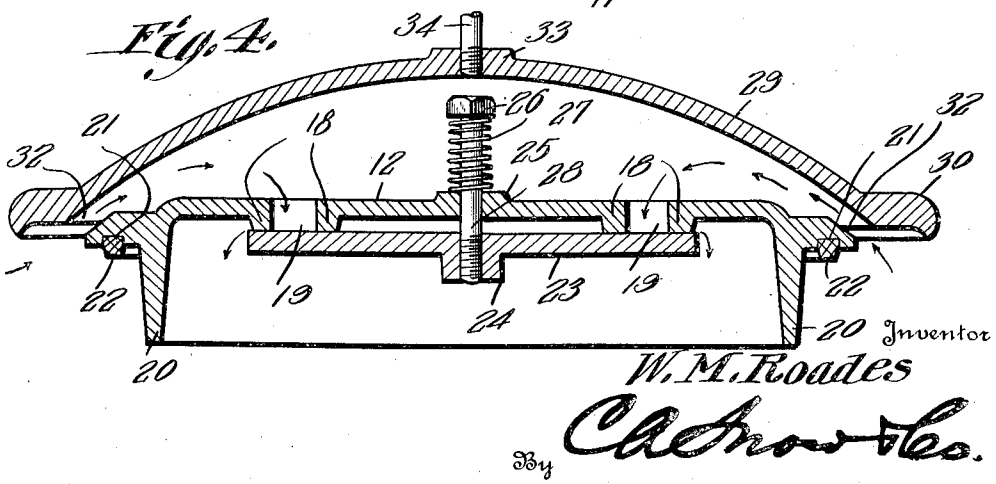


Fig. 4.



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UNITED STATES PATENT OFFICE.

WESLIE MARCH ROADES, OF OKMULGEE, OKLAHOMA.

TANK CLOSURE.

Application filed June 4, 1923. Serial No. 643,304.

This invention aims to provide a closure for tanks so constructed that it will remain closed until a predetermined pressure has accumulated in the tank, whereupon the closure will open and relieve the pressure. Another object of the invention is so to construct the closure that when a partial vacuum is created in the tank, the diminution of pressure will be relieved, thereby preventing the tank from collapsing inwardly. A further object of the invention is to provide a novel seal, so that the tank will remain hermetically closed.

It is within the province of the disclosure to improve generally and to enhance the utility of devices of that type to which the invention appertains.

With the above and other objects in view, which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that, within the scope of what is claimed, changes in the precise embodiment of the invention shown can be made without departing from the spirit of the invention.

In the accompanying drawings:

Figure 1 shows in vertical transverse section, a device constructed in accordance with the invention, sundry parts appearing in elevation; Figure 2 is a section on the line 2—2 of Figure 1, parts being broken away; Figure 3 is a plan showing the under surface of the lid and the cover, parts being broken away; Figure 4 is a section on the line 4—4 of Figure 3.

The device forming the subject matter of this application comprises an annular base 1, provided with an outstanding flange 2, held by securing elements 3 on the top 4 of a tank. The base 1 embodies an inner upstanding annular flange 5 and an outer upstanding annular flange 6, the flanges 5 and 6 cooperating to define an annular groove 8. A compressible packing 9 is seated on the base of the groove 8, and in the groove, a liquid 10 of any desired sort may be placed. If desired, the upper edges of the flanges 5 and 6 may be located in a plane, which, as denoted by the numeral 7 is disposed at an acute angle to the lower surface of the base 1 and the flange 2. The flange 2 of the base 1 has upstanding ears 11.

The numeral 12 designates a lid, having a depending lug 14, received between the ears 11 on the flange 2 of the base 1, a pivot element 15 passing through the lug and the ears, the construction being such that the lid is hinged to the base for swinging movement. The lug 14 on the lid 12 may be supplied with a projecting finger 16, adapted to cooperate with the edge of the flange 2 on the base 1 to limit the movement of the lid 12 when the lid is swung to an open position. The lid 12 is provided at its margin with circumferentially spaced outstanding lips 17, the lug 14 being formed integrally with one of these lips. On its under surface, the lid 12 has annular ribs 18. Circumferentially elongated ports 19 are formed in the lid 12 and are located between the ribs 18. The lid 12 is equipped with a depending annular flange 20, adapted to enter the groove 8 in the base 1 and to press against the packing 9 the flange dipping into the liquid seal 10. Outwardly of the flange 20 the lid 12 is provided in its under surface with an annular groove 21, wherein is seated a packing ring 22, adapted to engage the upper edge of the flange 6 on the base 1. It will be observed that a triple seal is provided, in that the flange 20 of the lid 12 dips into the liquid seal 10 and engages the packing 9, the packing ring 22 on the lid being pressed against the flange 6 on the base.

A disk-like valve 23 is disposed below the lid 12 and engages the annular ribs 18 of the lid, the valve 23 being supplied with a depending strengthening boss 24 wherein is secured the lower end of a stem 28 slidable in a guiding boss 25 on the lid 12. At its upper end, the stem 28 is equipped with a head 26. A compression spring 27 surrounds the stem 28, one end of the spring engaging the head 26, and the other end of the spring engaging the boss 25. It will be obvious that the spring 27 serves to hold the valve 23 in such a position that the ports 19 in the lid 12 will be closed normally.

The device embodies a dome-shaped cover 29 which serves to prevent foreign matter of any kind from finding its way into the ports 19, the cover having an outstanding rim 30 which is engaged by the lips 17 of the lid 12, securing elements 31 connecting the lips with the flange of the cover. The periphery of the lid 12 is spaced from the inner edge of the rim 30 to form passages 32. At its crown, the cover 29 carries an upstanding knob 33 wherein a projection 34 is

mounted. Any desired number of weights 35 may be mounted on the projection 34. The knob 33 strengthens the cover 29 to receive the projection 34, and serves to space the weights 35 from the cover, so that the lowermost weight can be grasped readily when it is desired to remove the weights. The weights need not be used until occasion requires their employment.

In practical operation when a predetermined pressure has built up within the tank 4, the closure, comprising the lid 12 and the cover 29, will swing to an open position and relieve the pressure. When a diminution of pressure, below atmospheric pressure, occurs in the tank, the valve 23 will move downwardly to an open position with respect to the ports 19, air being admitted to the tank through the openings or passages 32 and the ports 19, the spring 27 moving the valve 23 to a closed position when the diminution of pressure has been relieved.

What is claimed is:

1. In a device of the class described, a base provided with upstanding annular flanges, defining a groove, a packing seated in the groove, a liquid seal in the groove, above the packing, a lid hinged to the base and provided with an annular flange, the said flange entering the groove, dipping into the seal, and engaging the packing, and an annular packing carried by the lid and cooperating with one of the flanges of the base; a valve mechanism slidable in the lid, the lid being provided with a port which is controlled by the lower part of the valve mechanism, a cover secured to the lid and housing the port and the upper portion of the valve mechanism, means being provided for admitting air between the cover and the lid, and a removable weight carried by the cover and serving to increase the weight of the cover and the lid, thereby to cause the flanges and the packings to coact.

2. In a device of the class described, a base provided with upstanding annular flanges defining a groove, a packing in the groove, a liquid seal in the groove, above the packing, a lid hinged to the base and provided with an annular flange, the flange entering the groove, dipping into the seal, and engaging the packing, individually removable weights, and means for supporting the weights on the lid, thereby to cause the packings and the flanges to cooperate.

3. In a device of the class described, a base provided with upstanding annular inner and outer flanges defining a groove, a packing seated in the groove, a liquid seal in the groove, above the packing, a lid hinged to the base and provided with an annular flange, the flange of the lid entering the groove, dipping into the seal, and engaging the packing, an annular packing carried by the lid and cooperating with the outer flange of the base to prevent external air from having access to the liquid seal, and means for holding down the lid, with the flange of the lid engaged with the packing in the groove and dipping into the seal, and with the outer flange of the base engaged with the packing on the lid, to form a triple seal.

4. In a device of the class described, a base, a lid hinged to the base and provided with ports, an inwardly opening valve controlling the ports, and including a stem projecting outwardly through the lid, means assembled with the stem for holding the valve closed, and a cover secured at its periphery to the lid and housing the ports and the stem, the cover being extended away from the lid to afford room for the stem, and there being air admission ports at the periphery of the cover.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature.

WESLIE MARCH ROADES.