Sept. 17, 1940. A. T. THOMPSON 2,215,412

PRESSURE VESSEL CLOSURE

Filed Oct. 26, 1937

Fig. 1.

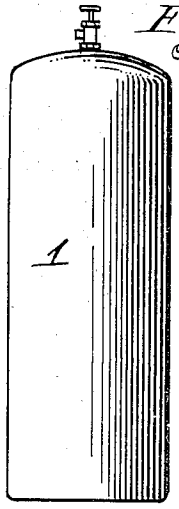


Fig. 2.

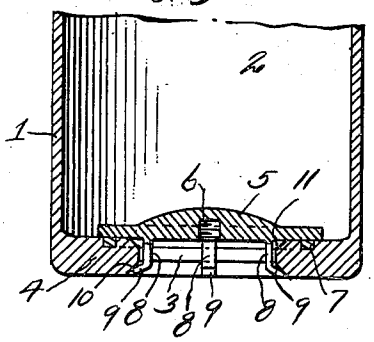


Fig. 3.

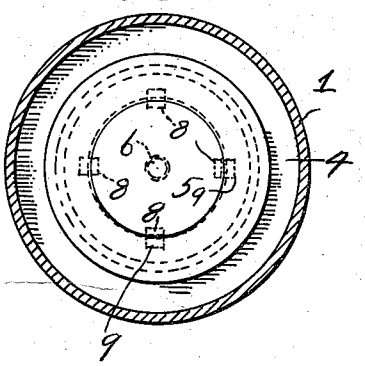


Fig. 4.

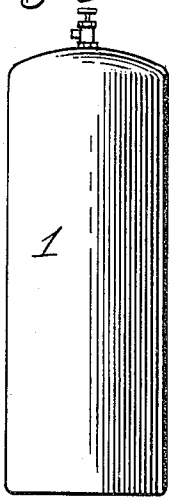


Fig. 5.

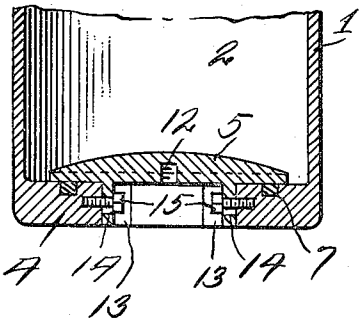
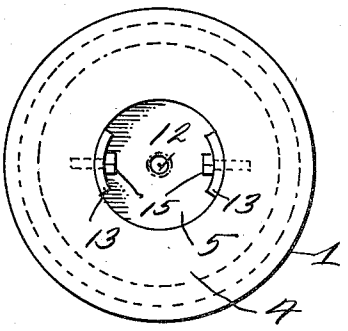


Fig. 6.



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PRESSURE VESSEL CLOSURE

Albert T. Thompson, New Orleans, La.

Application October 26, 1937, Serial No. 171,152

1 Claim. (Cl. 220—3)

The invention relates to closures for pressure vessels, and has for its object to provide a closure disposed within the chamber of the vessel, and having initial holding means for holding the closure in closed position until pressure is built up within the vessel.

A further object is to provide the closure with downwardly extending spring arms adapted to be forced inwardly by engagement with a bevelled surface around the filling opening, on the inner side thereof, and to spring over an annular flange within the filling opening and engage a bevelled surface around the outer side of the filling opening so the spring action of the spring arms will cause a seating of the cover against the gasket and prevent leaking.

A further object is to provide the outer ends of the spring arms with outwardly and downwardly extending portions cooperating with the outer bevelled surface for insuring the proper seating of the cover at all times.

A further object is to provide, in connection with an internal closure within the chamber of a receptacle, arms carried by the closure and extending into the filling opening and provided with vertically elongated bolt receiving apertures for bolts carried by the wall of the filling opening for initially holding the closure in closed position until pressure is built up within the receptacle for compressing the gasket and forming a leakproof connection.

With the above and other objects in view the invention resides in the combination and arrangement of parts as hereinafter set forth, shown in the drawing, described and claimed, it being understood that changes in the precise embodiment of the invention may be made within the scope of what is claimed without departing from the spirit of the invention.

In the drawing:

Figure 1 is a view in elevation of the receptacle.

Figure 2 is a vertical transverse sectional view through the lower end of the receptacle and the cover.

Figure 3 is a horizontal sectional view through the lower end of the receptacle, showing the closure in top elevation.

Figure 4 is a view in elevation of another form of receptacle.

Figure 5 is a vertical transverse sectional view through the lower end of the receptacle, shown in Figure 4.

Figure 6 is a bottom plan view of the receptacle.

Referring to the drawing, the numeral 1 designates a conventional form of metallic receptacle in which gas or other material is stored, which may or may not generate pressure. The receptacle 1 is provided with a chamber 2 having a relatively large filling opening 3, which allows access to the chamber 2 for filling, cleaning sterilizing purposes. The filling opening 1 extends through the bottom 4 of the receptacle.

Disposed within the chamber 2 is a closure 5, which closure may be of the internal captive type if desired. Closure 5 is provided with a central threaded aperture 6 for the reception of a tool or bolt for snapping the closure to closed position. When in closed position, the closure 5 seats on and compresses a gasket 7 on the inner side of the bottom 4. Extending downwardly from the under side of the closure 5 are a plurality of spring arms 8, which are relatively heavy and which terminate in outwardly and downwardly extending angular portions 9, which spring into engagement with the bevelled outer portion 10 of the filling opening for taking up any play which may develop and insuring a constant compression of the gasket 7. The upper side of the filling opening 3 is provided with an annular bevelled surface 11, with which the arms 9 engage when the closure is clamped to closed position. Surfaces 11 spring the arms 9 inwardly until they spring over the filling opening into frictional engagement with the bevelled surface 10, hence it will be seen that the closure can be easily and quickly snapped to closed position by the operator, and a sealing of the closure will be maintained at all times, no matter whether there is pressure within the chamber 2 or not.

In handling the closure, the operator inserts a tool or bolt into the threaded opening 12 in the under side of the closure, therefore it will be seen that sufficient power can be obtained for springing the arms 8 through the filling opening.

Referring to Figures 4 to 6 inclusive, in this form, the closure 5 is provided with downwardly extending rigid members 13, which are preferably arcuately shaped for engaging the periphery of the filling opening 3 for properly centering the closure, and in engagement with the gasket 7. In this form the members 13 are provided with vertical elongated apertures 14, through which bolts 15 extend. After the closure has been placed in closed position, and the bolts inserted through the elongated apertures 14, it will be seen that pressure, built up within the cham-

ber 2 of the receptacle 1, will force the closure into tight engagement with the gasket for a sealing operation. The elongated apertures 14 allow movement of the cover under pressure. Figure 5 shows the cover under pressure, and it will be noted that while under extreme pressure the members 13 will not extend to the outside of the filling opening 3 where the cover would be effected during the handling of the receptacles.

From the above it will be seen that a pressure vessel closure is provided which is simple in construction, and one which may be easily closed, and the closure shown in Figure 2 may be snapped to closed position by a single operation, and it will take up any play which may develop through the medium of its spring arms 8.

The invention having been set forth what is claimed as new and useful is:

A receptacle closure disposed within the chamber of a receptacle over a filling opening, outwardly extending spring arms carried by the closure and extending through the filling opening in spaced relation to the wall of the filling opening, said spring arms terminating in outwardly diverging arms, said outwardly diverging arms engaging a bevelled surface forming the outer portion of the filling opening, a bevelled surface forming the inner portion of the filling opening and adapted to be engaged by the diverging arms for flexing the spring arms inwardly when the closure is forced to closed position, said spring arms and diverging arms being entirely disposed within the opening when the closure is in closed position.

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