A. Y. LEECH, JR.

POWDER TANK CLOSURE.

APPLICATION FILED MAY 18, 1920.

1,371,912. **Patented Mar. 15, 1921.**

Fig. 1.

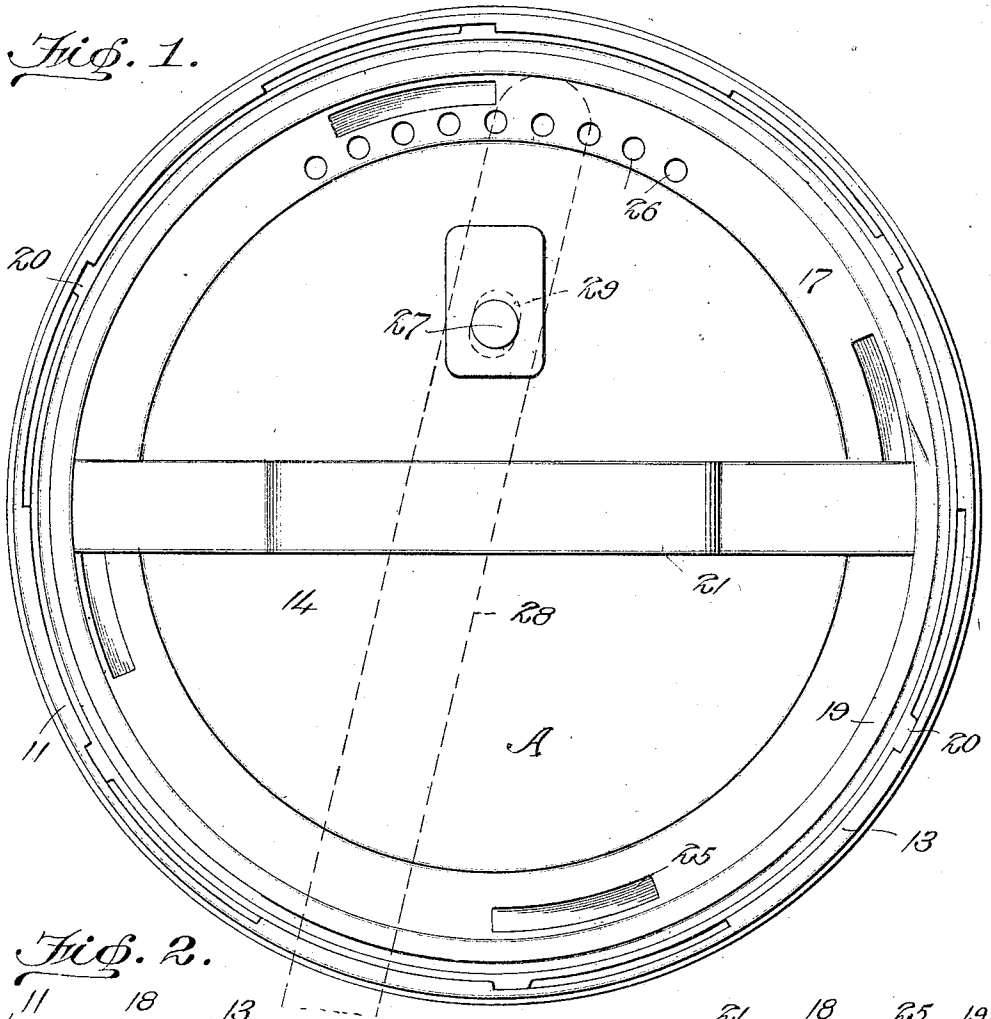
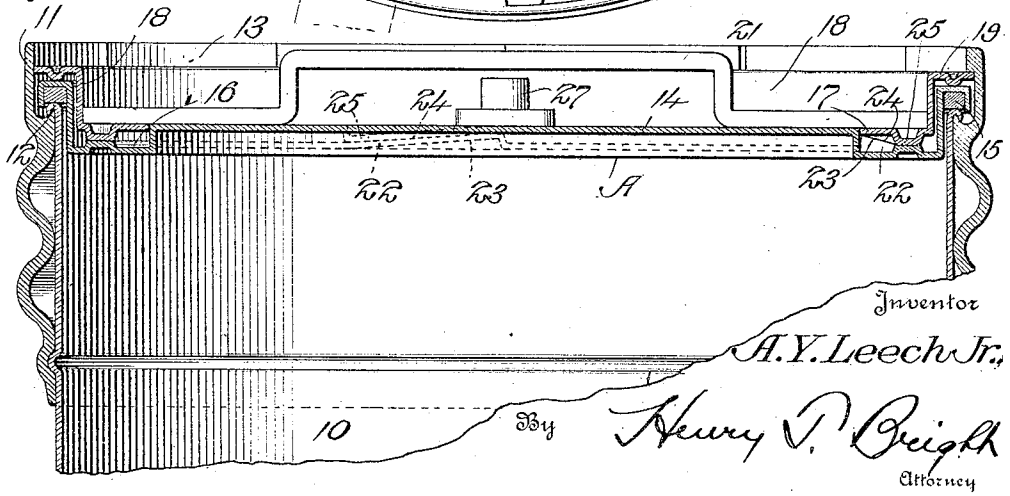


Fig. 2.



Inventor

A. Y. Leech Jr.

By Henry V. Bright

Attorney

NORRIS PETERS, INC., LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

ABNER Y. LEECH, JR., OF WASHINGTON, DISTRICT OF COLUMBIA, ASSIGNOR TO UNITED STATES ORDNANCE COMPANY, OF WASHINGTON, DISTRICT OF COLUMBIA, A CORPORATION OF VIRGINIA.

POWDER-TANK CLOSURE.

1,371,912. Specification of Letters Patent. Patented Mar. 15, 1921.

Application filed May 18, 1920. Serial No. 382,218.

To all whom it may concern:

Be it known that I, ABNER Y. LEECH, Jr., a citizen of the United States, and resident of Washington, in the District of Columbia, have invented certain new and useful Improvements in Powder-Tank Closures, of which the following is a specification.

My invention relates to tank closures and while particularly adapted for use in connection with powder tanks it is capable of application without the exercise of invention to other forms of tanks and receptacles.

Heretofore, in powder tank closures which depend on a wedging action to effect their seal, considerable difficulty in machining the wedging surfaces has been experienced owing to the small range of error permitted and the relatively inaccessible location of the parts carrying the wedging surfaces.

It is therefore the purpose of my invention to provide a closure in which the seal is effected by wedging action and in which the parts carrying the wedging surfaces are so located as to be readily accessible to the workman and thus facilitate and simplify the machining of such surfaces and the process of manufacture of the closure as a whole.

At the same time it is also my purpose to provide a closure particularly adapted for use in connection with powder tanks which will be simple in construction and efficient in use.

I will describe my invention in the best form known to me at present and as applied to a powder tank, but it will be apparent that it is susceptible to changes in forms and proportions and desirable additions with the exercise of ordinary mechanical skill and without departing from the scope of the appended claims.

In the drawing chosen to illustrate my invention—

Figure 1 is a plan view of my invention applied to a powder tank; and

Fig. 2 a vertical section through the closure.

Referring to the drawings 10 indicates the body of the powder tank which has associated with its upper end in any desirable manner a top ring 11 which projects above the top of the body. This ring has formed on its interior a rib over which the upper end of the body 10 is turned, the combined elements thereby constituting a sealing ledge 12. The ring 11 is also provided at its upper end with spaced inwardly projecting retaining lugs 13 which coöperate with a locking ring to be presently referred to.

The closure further embodies a cover A having a dished central portion 14 suitably shaped at its periphery to carry a gasket 15 which coöperates with the sealing ledge 12. The bottom of the dished portion of the cover A is provided with an annular groove 16 opening upwardly. Disposed in this groove 16 is a locking ring 17 which includes a vertically extending portion 18 and a laterally directed portion 19 disposed at the upper end of the portion 18, which laterally directed portion is adapted to coöperate with the lugs 13 through the medium of spaced projections 20 formed thereon. A handle 21 is suitably welded to the cover portion of the locking ring to always maintain the ring and cover in assembly. On the bottom of the groove 16 I provide a plurality of bosses 22 having wedging surfaces 23 which coöperate respectively with corresponding wedging surfaces 24 formed on bosses 25 on the locking ring 17. The wedging surfaces 23 and 24 are disposed in opposed relation so that relative rotation or opposite rotation between the cover A and locking ring will effect wedging coaction of the surfaces to force the cover downwardly so as to seal the gasket 15 against the ledge 12 and at the same time force the locking ring upwardly so as to engage the extensions 20 thereof against the bottom faces of respective retaining lugs 13. Any suitable means may be employed for effecting opposite rotation of the cover A and the ring 17 to effect locking of the closure. In this instance I provide the locking ring 17 with a series of recesses 26 and mount upon the cover A a stud or spindle 27. For coöperation with the recesses 26 and the spindle 27

I employ a tool of the type shown in dotted lines in Fig. 1 which simply consists of a metallic bar 28 having an elongated slot 29 therein and a projection or pin at one end for engagement in a respective recess 26. The spindle 27 engages in the slot 29 simultaneously with the engagement of said pin in a recess 26. With the tool thus disposed it will be obvious that force applied laterally to the end thereof remote from the spindle 27 will effect rotation opposite the locking ring and cover and cause the desired sealing coaction between the wedging surfaces.

It will be observed that the handle 21 serves to always hold the cover A and locking ring 17 in assembled relation and that when the projections 20 of the locking ring register with the spaces between the retaining lugs 13 then the entire closure can be lifted out of the top ring through the instrumentality of the handle 21 and likewise the entire closure can be applied to the tank through the instrumentality of the handle.

In the manufacture of the closure it will be obvious that the top or cover A and the locking ring 17 are constructed separately and by reason of this fact the wedging surfaces 23 and 24 are easily accessible to the workman so that the progress of the particular operation is facilitated and simplified.

While I have shown four pairs of wedging surfaces 23 and 24 in the present instance it will be obvious that the number of these surfaces can be increased if desired to more uniformly distribute the pressure as might be necessary in tanks of larger caliber.

I claim—

1. In a tank closure, the combination with a tank body having closure retaining lugs and a sealing ledge; of a cover comprising independently rotatable sections, and means between the sections operable by rotation of one section relatively to the other to force said sections in opposite directions against the retaining lugs and sealing ledge respectively.

2. In a tank closure, the combination of a tank body having closure retaining lugs and a sealing ledge; of a cover comprising independently rotatable sections, and wedging means between the sections operable by rotation of one section relatively to the other to force said sections in opposite directions against the retaining lugs and sealing ledge respectively.

3. In a tank closure, the combination with a tank body having closure retaining lugs and a sealing ledge, of a cover comprising independently rotatable sections having cooperating wedging surfaces on their adjacent faces operating during rotation of one section relatively to the other to force said sections in opposite directions against the retaining lugs and sealing ledge respectively.

4. In a tank closure, the combination with a tank body, of a closure comprising independently rotatable sections engageable respectively when the closure is sealed, with abutments disposed at opposite ends of the closure, and means operable by rotation of one section relatively to the other to force said sections away from each other and into engagement with respective abutments.

5. In a tank closure, the combination with a tank body, of a closure comprising independently rotatable sections engageable respectively when the closure is sealed, with abutments disposed at opposite ends of the closure, and wedging means operable by rotation of one section relatively to the other to force said sections away from each other and into engagement with respective abutments.

6. In a tank closure, the combination with a tank body; of a closure comprising independently rotatable sections engageable respectively when the closure is sealed with abutments disposed at opposite ends of the closure, said sections having their adjacent faces provided with coöperating wedging surfaces operating during rotation of one section relatively to the other to force said sections away from each other and into engagement with respective abutments.

7. In a powder tank closure, the combination of a top ring having spaced retaining lugs, a sealing ledge, a cover carrying a sealing element for coöperation with the sealing ledge, a locking ring between the cover and retaining lugs rotatable independently of the cover, and means between the locking ring and cover operable by rotation of the locking ring relative to the cover in one direction to force the ring against the retaining lugs and the cover in another direction to effect sealing engagement between the ledge and sealing element.

8. In a powder tank closure, the combination of a top ring having spaced retaining lugs, a sealing ledge, a cover carrying a sealing element for coöperation with the sealing ledge, a locking ring between the cover and retaining lugs rotatable independently of the cover, and wedging means between the locking ring and cover operable by rotation of the locking ring relative to the cover in one direction to force the ring against the retaining lugs and the cover in another direction to effect sealing engagement between the ledge and sealing element.

9. In a tank closure, the combination of a top ring having spaced inwardly directed retaining lugs, a sealing ledge, a cover carrying a sealing element for coöperation with the sealing ledge, said cover having an annular groove, a locking ring between the

cover and retaining lugs and having a portion disposed in said groove, a handle secured to the cover and extending over a portion of the locking ring to retain the locking ring and cover in assembly, and means between the locking ring and cover operable by rotation of the locking ring relatively to the cover in one direction to force the ring against the retaining lugs and the cover in a direction to effect the sealing engagement between the ledge and sealing element.

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

ABNER Y. LEECH, JR.

Witnesses:

EDITH STOWELL,

HENRY T. BRIGHT.