

J. F. LAWRENCE.

STOPPER.

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1,060,913.

Patented May 6, 1913.

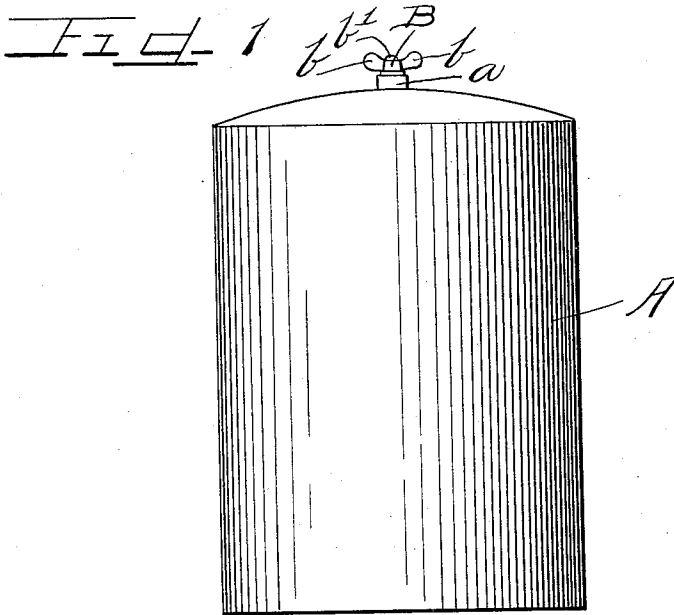


Fig. 2

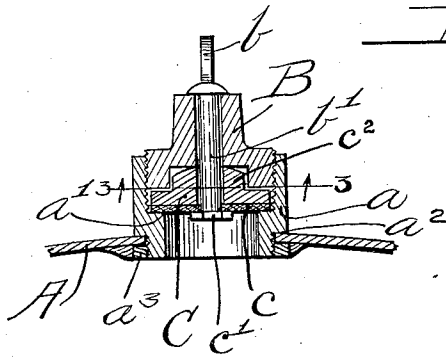
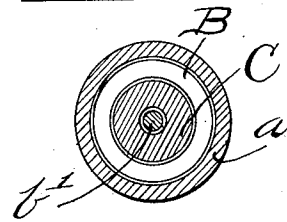


Fig. 3



WITNESSES

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STOPPER.

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To all whom it may concern:

Be it known that I, JAY F. LAWRENCE, a citizen of the United States, and a resident of the city of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Stoppers; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

The stoppers heretofore used in fluid and in other tanks adapted to contain fluid under pressure have frequently permitted the leaking or the escape of the gas or fluid, owing to the imperfect seating of the stopper. Furthermore, as such stoppers have usually been constructed when threaded into the orifice therefor the inner or packed end of the stopper has not always seated squarely to prevent leaking and in consequence, great pressure has been necessary on the stopper to force the same inwardly sufficiently to entirely close the tank. In consequence, it has usually been necessary to employ a wrench for the purpose of setting up or for removing the stopper.

The object of this invention is to provide a stopper of the class described having pivotally secured thereon a closure adapted when inward pressure is applied on the stopper to adapt itself automatically to the seat.

It is a further object of the invention to afford in connection with a stopper of the class described a closure pivotally engaged thereon through the axis and convex on the upper side and on which the main body of the stopper may rotate freely while threading into or out of the opening.

Finally, it is an object of the invention to afford an exceedingly simple, cheap and durable stopper as a whole adapted to be readily threaded into the opening without the aid of a wrench and to nevertheless effectually seal or stop the same, and of course, owing to the construction, adapted to be readily removed without the aid of a wrench even though subjected to great pressure within the tank.

The invention consists in the matters hereinafter described and more fully pointed out and defined in the appended claims.

In the drawings: Figure 1 is a side ele-

vation of a tank provided with a stopper embodying my invention. Fig. 2 is an enlarged, central, vertical section of a part of the top of the tank showing the stopper in place. Fig. 3 is a section on line 3—3 of Fig. 2.

As shown in the drawings: A, indicates a tank of sheet metal or other suitable material adapted to stand pressure from within. Secured in the top of the tank is the filling tube a , which consists of a metallic tube internally threaded at its outer end and provided at the inner end of the thread with an upwardly facing, peripheral shoulder affording a seat. Said tube or pipe at its inner end is externally threaded and provided with a downwardly directed shoulder a^2 , adapted to bear on the top of the tank A, and adapted to be engaged by a nut a^3 , within the tank to firmly lock said pipe in place. Having secured the filling pipe or tube in place in the tank, the same is usually soldered in place or dipped in a bath of molten block tin, so as to effectually seal the joint between the pipe and the tank top.

The stopper comprises a main body B, externally threaded to fit within the filling pipe having a cylindric, axial aperture there-through and a recess in its inner end. Laterally directed wings b , are provided on the outer end of the body B, whereby the same may be threaded into or out of the filling pipe. Rotatably secured on the threaded plug B, is a closure embracing a washer C, provided with an upwardly directed boss c^2 , which is spherically convex on the upper side and as shown, in Fig. 2, the diameter of the boss is less than the diameter of the recess and the thickness of the boss is such as to prevent the washer contacting the inner end of the plug B. It is thus seen that only the convex surface of the boss contacts the plug B, and the closure is adapted to oscillate or rock to tightly seat regardless of the unevenness of the seat. The closure C, and boss c^2 , are provided with a central aperture therethrough to receive the pivot bolt b' , which passes through the plug B, washer C, and through the packing washer c , on the under side of said washer C, and a nut c' , is secured on the end of the stem which loosely secures the closure C, to the plug B, permitting free rocking of the closure to tightly seat and without rotation of the closure.

The operation is as follows: In threading

the plug into the filling pipe on the nozzle, the washer and its packing are forced inwardly without rotation until the packing comes into bearing on the seat, at which time the closure swings or automatically adjusts itself to the seat. Owing to the small surface of the washer engaged by the plug, great amplitude of automatic adjustment is provided and very slight effort serves to close the filling pipe effectively, owing to the washer and packing adapting itself perfectly to the seat because of the spherically convex upper surface of the washer. Escape of the gas or the fluid through the packing washer, is, of course, entirely prevented inasmuch as the collar or nut *c'*, at the inner end of the bolt or stem, bears firmly on the packing, such bearing being augmented by any internal pressure, and in consequence, a perfect seal is assured. Whatsoever the pressure from within exerted on the packing, leakage will therefore not occur, and when it is desired to release the plug or stopper, even though the internal pressure may be very high, it is found in practice that the plug may be readily retracted by reverse rotation when the pivot bolt immediately lifts the closure from the seat and permits discharge.

Of course, I am aware that details of the construction may be varied and I therefore do not purpose limiting this application for patent otherwise than necessitated by the prior art.

I claim as my invention:

1. A stopper embracing a filling member provided with a seat, an axially apertured plug threaded into said member, lateral wings thereon, and a flat inner end, a closure adapted to seat on said seat and having a flat under face and a spherically convex upper face adapted to bear against the flat end of the plug, a bolt extending through both the washer and plug and uniting the same permanently but yieldingly together and packing material on the inner side of said washer.

2. In a device of the class described a filling tube having an external seat and an internal seat, said external seat adapted to bear on a container, a plug provided with a central recess in its lower side and an aperture extending centrally through the plug from the recess, a closure adapted to seat on the internal seat in the tube having a central boss to fit loosely in the recess and having a convex bearing face, a washer on the under face of the closure, said closure, boss and washer apertured in alinement with the aperture in the plug and a pivot bolt securing the parts together.

In testimony whereof I have hereunto subscribed my name in the presence of two subscribing witnesses.

JAY F. LAWRENCE.

Witnesses:

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LAWRENCE REEBSTEIN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."