

Dec. 12, 1939.

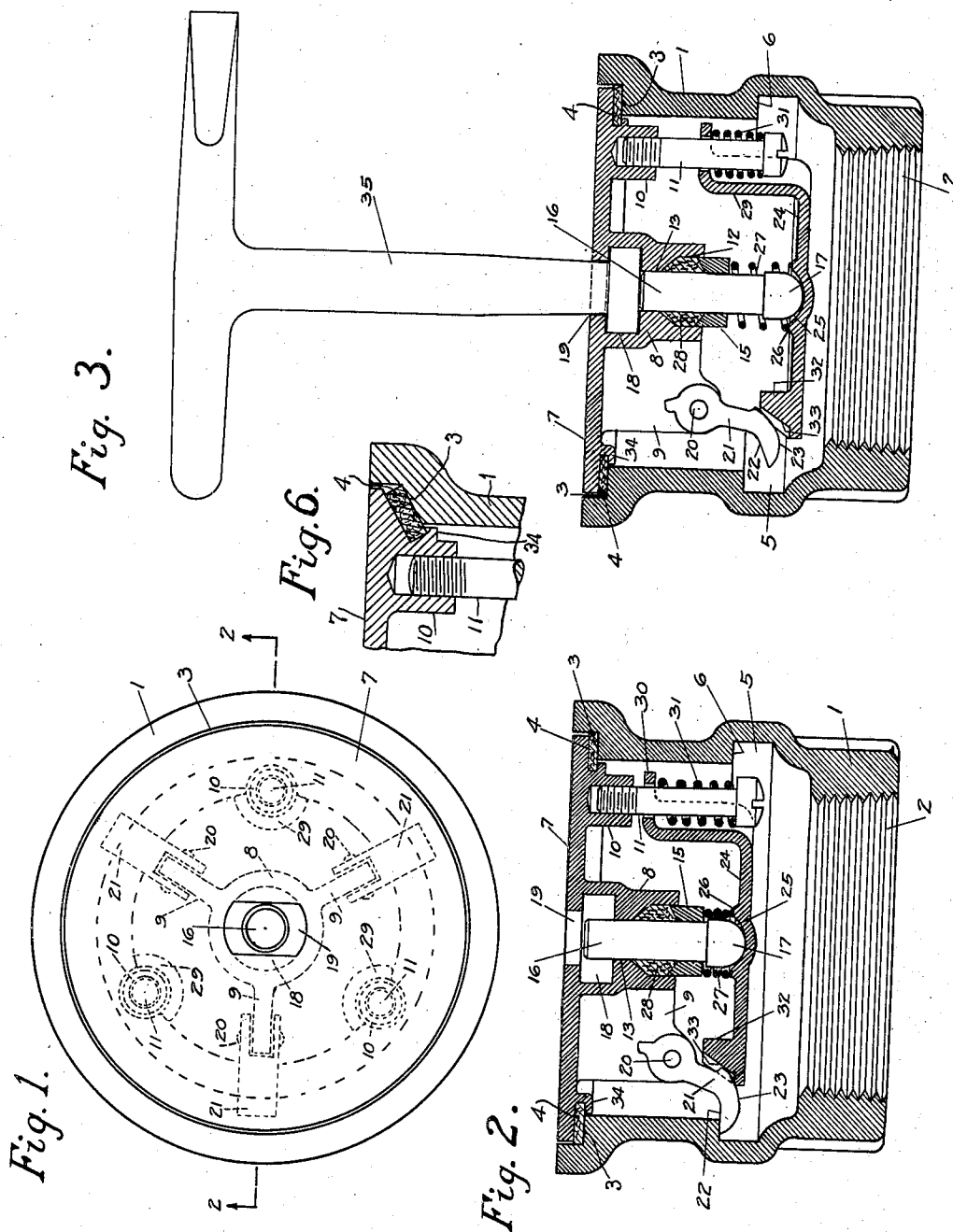
F. F. RIKE

2,183,282

FILL BOX

Filed Oct. 4, 1937

2 Sheets-Sheet 1



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Fig. 5.

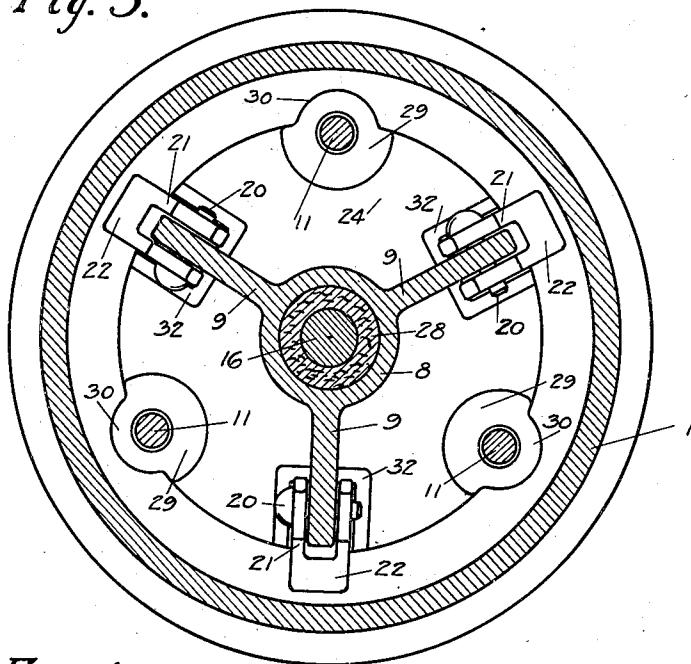
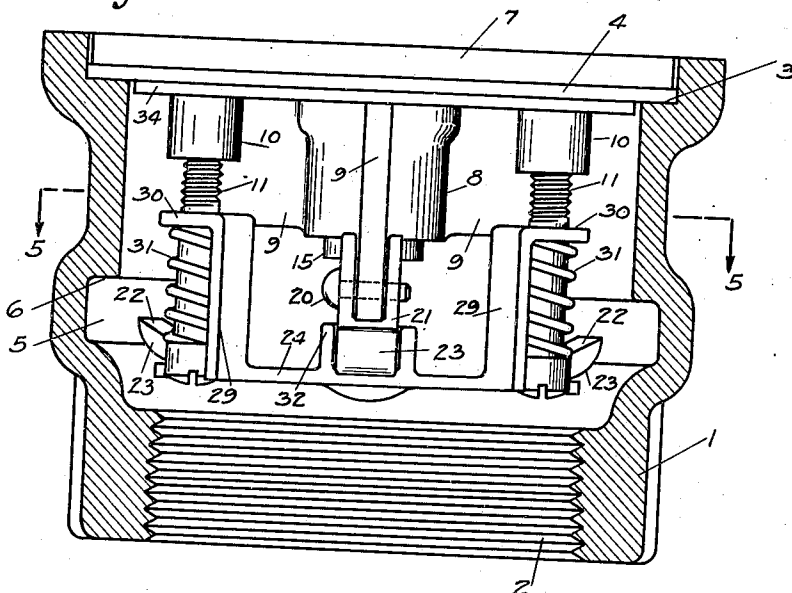


Fig. 4



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2,183,282

FILL BOX

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Application October 4, 1937, Serial No. 167,155

6 Claims. (Cl. 220—57)

This invention relates to fill boxes and, in particular, to fill boxes of the flush type.

It is an object of this invention to provide a fill box construction comprising a body member adapted for rigid connection to a fuel oil storage tank or the like and a lid member so associated therewith as to be readily removable therefrom for filling the oil storage tank or the like through the fill cap.

It is a further object of this invention to provide such a fill box construction which is extremely strong, fool-proof and efficient in operation and wherein the attachment to and detachment from the body member of the fill cap may be accomplished with the greatest ease and facility.

It is a further object of this invention to provide such a construction wherein the lid member is resiliently and securely engaged, by resilient means carried thereby, with the body member of the fill box construction in order to provide a liquid and gas-proof seal therebetween.

It is a further object of this invention to provide such a structure wherein accidental removal of the lid member from the body member is totally prevented, but wherein, by the use of suitable wrench means, the lid may be readily, and with great facility, removed from the body member to provide access to the tank or the like to which the body member is secured.

These and other objects and advantages will appear from the following description taken in connection with the drawings.

In the drawings:

Figure 1 is a top plan view of a fill box construction according to the principles of this invention;

Figure 2 is a section taken substantially on the line 2—2 of Figure 1;

Figure 3 is a view similar to Figure 2, but showing the lid structure in released position and the wrench member in place thereon;

Figure 4 is a view similar to Figure 3, but showing the body member in section and the lid structure in elevation;

Figure 5 is a section taken on the line 5—5 of Figure 4; and

Figure 6 is an enlarged fragmentary sectional view illustrative of a modified lid and seat structure.

Formerly, in the construction of fill boxes, it has been customary to screw-threadedly attach the lid member to the body member of the fill box. This necessitated the expenditure of a substantial amount of labor and time in opening and closing fill boxes; and furthermore, due to

the tendency of the screw threads to seize or bind under the influence of vapor inside the fill box and weathering outside the fill box, it was often necessary, in order to remove the lid member from the body member of the fill box, to lubricate the screw threads thereof, which in many cases caused extensive damage to washer members disposed between the lid member and its seat upon the body member of the fill box.

By the use of the construction according to the principles of this invention, the above disadvantages of the above structures are totally obviated, as I have, by utilizing the principles of my invention, provided a fill box structure, wherein the lid member, when in closed position, is firmly resiliently held in engagement with the body member of the fill box in such manner that it is impossible that accidental removal, or loosening thereof, should occur. At the same time, by the use of a suitable wrench member, the lid member may be released and removed from the body member by simply pressing the wrench member downwardly to effect the release, and twisting or rotating the wrench through a small arc as, for instance, a quarter turn in order to lock the lid construction in released position.

When the wrench is in such position as to lock the lid construction in released position, the wrench is, in effect, a part of the lid construction because it is rigidly secured thereto and, by raising the wrench member, the lid construction may be moved upwardly out of the body member without necessity for any manual contact therewith.

To close the fill box, it is merely necessary that the wrench member be engaged and moved to replace the lid member upon its seat in the body member of the fill box and then rotate the wrench member a quarter turn with respect to the lid member in order to unlock the lid construction from released position and permit it automatically to return to locked position with respect to the body member.

Referring to the drawings in detail, the illustrative body member of the fill box is designated 1 and is provided at its lower end with suitable screw threads 2, by means of which it may be attached to suitable means on oil storage tanks and the like in known manner. The body member 1 is provided at its upper end with an annular seat 3, which is adapted to support washer means 4 associated with the lid member, herein-after more clearly described.

Intermediate its ends, the body member 1 is provided with an internal annular groove 5 hav-

ing at its upper end the substantially horizontally disposed annular shoulder 6, which is adapted to be engaged, as hereinafter more clearly described, by means for retaining the lid or cap member in firm engagement with the body member 1.

The lid member is generally designated 7 and, as shown, is circular. The lid member comprises a substantially flat plate having a central annular boss 8 extending downwardly from the under side thereof, and which boss has a plurality of rigid webs 9 extending radially outwardly therefrom. A plurality of radially spaced bosses 10 also extends downwardly from the lower side of the plate portion of the lid member 7 and are each provided with suitable screw-threaded bores for receiving the screw-threaded end of the respective thrust member supporting bolts, or supporting bolts, 11.

The central boss 8 is provided at its lower end with a bore 12 which is joined by an inclined annular surface with a smaller or restricted bore 13. The lower bore 12 forms a stuffing box adapted to receive suitable stuffing which is compressed therein by means of the gland member 15. The gland member 15 is provided with a central bore which is aligned with, and of the same size as the bore 13 in the boss 8, and the thrust pin member 16 extends through and is slidable in these bores. The thrust pin is provided at its lower end with a head member 17 which is adapted to serve a purpose which will hereinafter more clearly appear.

Above the bore 13, the boss 8 is provided with an enlarged bore 18 which communicates with the bore 13 and which communicates through the elongated slot 19 with the upper surface of the plate portion of the lid member 7. Each web 9 is provided adjacent its lower and outer end with a pin 20 which pivotally supports the upper end of a locking member 21. The lower end of each locking member 21 is provided on its upper side with a straight surface 22 adapted to engage the shoulder 6 in the valve body 1, as shown in Figure 2. The under surface of the lower end of each locking member 21 is provided with an arcuate surface 23 which is adapted to engage a suitable cam surface on thrust means hereinafter more clearly described.

The thrust means comprises the plate-like member 24 having a central arcuate upwardly directed surface 25 adapted to be engaged by the head member or portion 17 of the thrust pin member 16. Surrounding the arcuate surface 25 is an annular step or abutment 26 which is adapted to support the lower end of the compression spring 27 which has the upper end thereof engaged with the lower end of the gland member 15. The gland member 15 is thus constantly resiliently thrust upwardly against the packing 28 in the bore 12 in such manner as to maintain a proper seal between the thrust pin member 16 and the boss 8. The plate-like member 24 is provided with a plurality of brackets or hangers 29 which extend upwardly therefrom and which are each provided at their upper end with a substantially horizontal portion 30 provided with a suitable bore adapted to slidably receive a supporting bolt 11.

Between each horizontal portion 30 and the downwardly disposed head of the corresponding supporting bolt 11 is a compression spring 31 which normally urges the bracket or hanger members 29 and the integral plate-like member 24 upwardly with respect to the supporting bolts

11 and the lid member 7, to which they are rigidly secured. The plate-like member 24 is also provided with a plurality of cam members 32. Each cam member 33 has an inclined outer surface which is adapted for engagement with the arcuate surface 23 on a locking member 21, and the cooperation of these surfaces causes upward movement of the thrust member 24 with respect to the lid member 7 to be translated into outward swinging movement of the locking members 21 for engagement of the surfaces 22 thereof with the shoulders 6 of the groove 5, as shown in Figure 2.

As is shown in Figure 2, the compressive force of the springs 31, which is transmitted through the brackets or hangers 29 to the thrust member 24 causes the swinging locking members 21 to be normally urged outwardly into engagement with the shoulder 6 of the groove 5 in the body member 1. By this means, the lid member 7 is normally resiliently urged into firm engagement with the seat 3 of the body member 1. The washer member 4 is preferably retained or carried by the lid member 7, and for this purpose the annular retaining flange 34 is provided on the under surface of the plate portion of the lid member 7.

The locked or closed position of the fill box is illustrated in Figure 2, and it will be seen that, in that position, the upper end of the thrust pin 16 extends upwardly and into the enlarged bore 18 for a substantial distance. The compression of springs 31 urges the thrust member 24 and lid member 7 toward one another and also urges the locking members 21 outwardly, so that the surfaces 22 thereof engage the shoulders 6 of the groove 5.

If it is desired to unlock the fill box, it is merely necessary to insert the head of the wrench member 35, which is of the same shape as the slot 19, into the slot 19 and thrust downwardly upon the wrench member 35 to place the thrust pin member 16 in the position shown in Figure 3. It will then be possible to twist or turn the wrench member 35 in such manner that the end flanges of the head portion thereof engage the upper surfaces of the enlarged bore 18 below the bore 19, as shown in Figure 3. In that position, the thrust pin member 16 is retained in lowermost position by the head portion of the wrench member 35 and the inclined surfaces 33 of the cam members 32, having been moved downwardly, permit the locking members 21 to swing downwardly and inwardly in such manner that the outermost ends thereof will clear the walls of the body member 1 upon upward movement of the wrench member 35 with the rigidly attached lid member 7. The lid member 7 may then be readily removed from the body member 1 to open the fill box.

When it is desired to close the fill box, the lid member 7 is replaced in the body member 1 in the position illustrated in Figure 3, and the wrench member 35 is then turned or rotated in either direction to align the head portion thereof with the slot 19 in such manner that the compressive force of springs 31 exerted upwardly upon the thrust pin member 16 will force the wrench member 35 upwardly and outwardly, and the thrust pin member 16 will take the position illustrated in Figure 2. In that position, the fill box is closed.

It will be understood that the above described structure is merely illustrative of the manner in which the principles of my invention may be utilized and that I desire to comprehend within

my invention such modifications as come within the scope of the claims and the invention.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In a fill box, a stationary body member with a groove therein and having a seat, a removable lid member on said seat, swingable locking members on said lid member, a thrust member on said lid member and resiliently urged thereagainst, cam means on said thrust member adapted to swing said locking members outwardly to lockingly engage said groove, and slidable pin means on said lid member engaging said thrust member and manually operable to urge said thrust member away from said lid member and disengage said cam means from said locking members.
2. In a fill box construction, a lid member having a thrust member supported thereby, and resiliently urged thereto, a manually slidable pin member adapted to urge said thrust member away from said lid member, a packing box surrounding said pin, gland means slidable with respect to said pin member and said packing box, and means between said thrust member and said gland means for urging said gland means into said packing box.
3. In a fill box lid construction, a lid member having a thrust member resiliently supported thereby and urged thereagainst, a manually slidable releasing pin adapted to urge said thrust member away from said lid member, a packing box surrounding said releasing pin, and gland means slidable with respect to said pin and said packing box, said gland means being disposed between said lid member and said thrust member and being resiliently urged toward said packing box to form a tight seal between said releasing pin and said lid member.
4. In a fill box construction, a body member having a retaining groove and a lid supporting seat, a lid member on said seat and having expansible locking members, a thrust member sup-

ported by said lid member and resiliently urged thereto, said thrust member having cam means for expanding said locking members against said retaining groove, a pin member adapted to urge said thrust member away from said lid member to release said cam means from said locking members, a packing box surrounding said pin, and gland means between said lid member and said thrust member and slidable with respect to said pin and packing box, said gland means being resiliently urged toward said packing box.

5. In a fill box construction, a body member having a lid supporting seat and retaining groove means, lid means on said seat having members expansible to engage said retaining groove means, means supported by said lid means and normally resiliently urged thereagainst for expanding said groove engaging members, pin means slidable in said lid member for releasing said last-named means, socket means in said lid member providing access to said pin means, and wrench means manually engageable with said socket means for moving said pin means to releasing position for removal of said lid means from said lid supporting seat.

6. In a fill box construction, a body member having a lid supporting seat and retaining groove means, lid means on said seat having locking members movable outwardly to engage said retaining groove means, thrust means supported by said lid means and normally resiliently urged thereagainst for moving said locking members outwardly to engage said retaining groove means, releasing pin means movable in said lid member for moving said thrust means away from said lid means to release said locking members from said retaining groove means, aperture means in said lid member providing access to said pin means, and wrench means manually engageable with said aperture means for moving and locking said pin means in releasing position for removal of said lid means from said lid supporting seat.

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