Nov. 26, 1935. T. W. BIBB 2,022,271

OIL CAN

Filed April 29, 1935

Fig. 1.

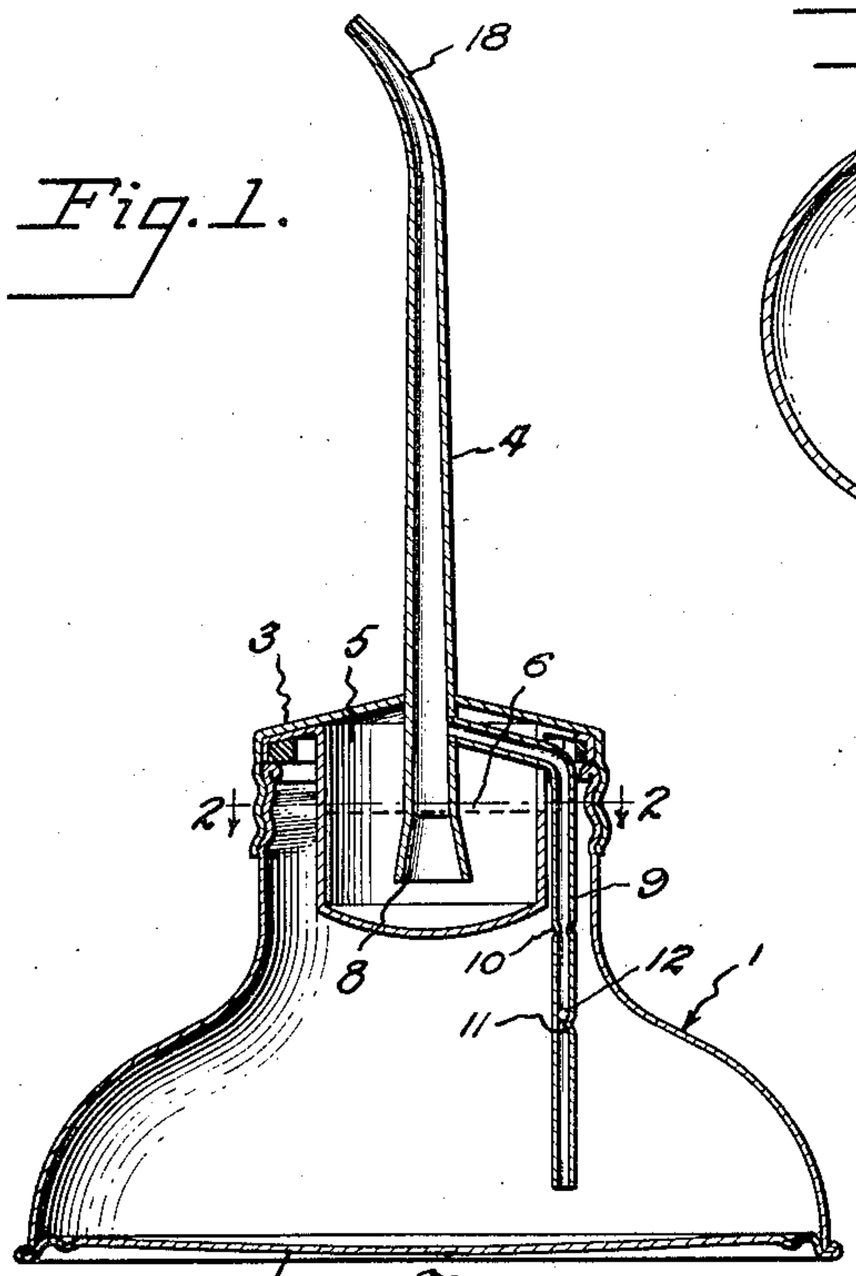


Fig. 2.

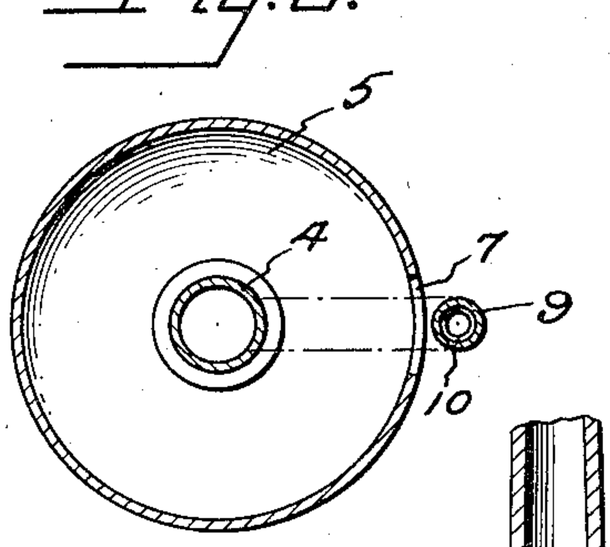


Fig. 3.

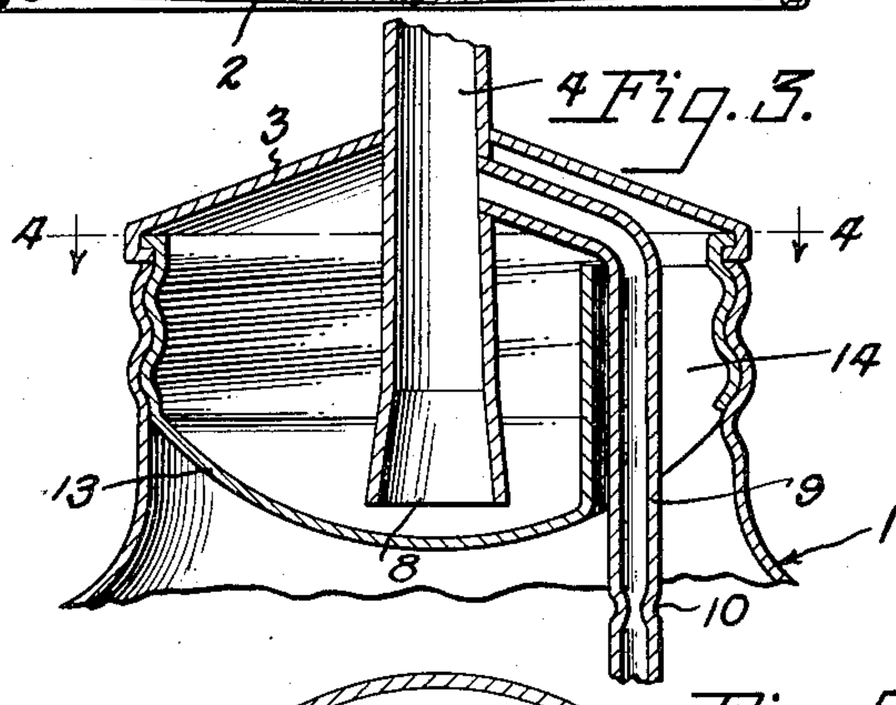


Fig. 4.

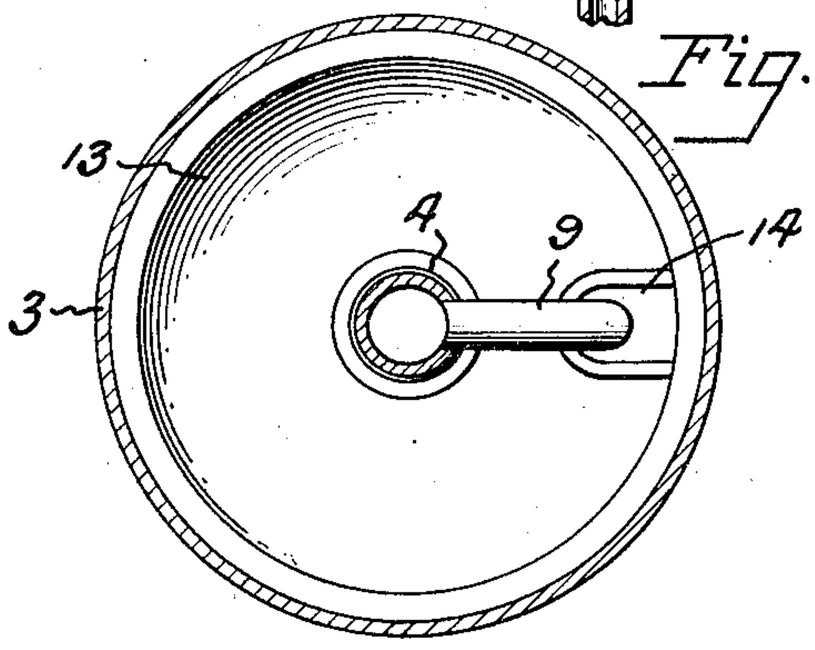
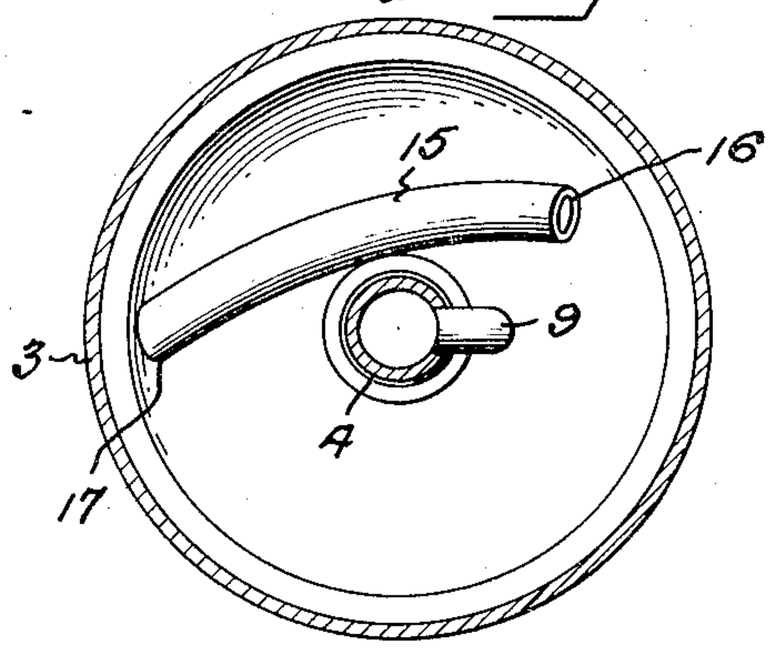


Fig. 5.

Fig. 6.



Inventor

Thomas W. Bibb

By Mason Fenwick & Lawrence

Attorneys

Patented Nov. 26, 1935 2,022,271

UNITED STATES PATENT OFFICE

2,022,271

OIL CAN

Thomas W. Bibb, Albany, Oreg.

Application April 29, 1935, Serial No. 18,955

6 Claims. (Cl. 221—32)

This invention relates to improvements in oil cans of that type which operates by flexing the bottom of the can.

The general object of the invention is to provide an oil can that will discharge with the spout vertically upward or in an upwardly inclined position as well as when the spout is directed downwardly.

One of the more specific objects of the invention is to provide an oil can having an auxiliary reservoir associated with the spout and in which the spout dips below the oil level, the auxiliary reservoir being in communication with the main reservoir above the oil level whereby the auxiliary reservoir is filled from the main reservoir when the oil can is inverted, and whereby pressure of the flexing bottom is transmitted through the atmosphere within the can to the oil level in the auxiliary reservoir, depressing said level and ejecting oil through the spout.

In view of the fact that the spout dips beneath the level of oil within the auxiliary reservoir, it becomes necessary to provide an air intake for the can and therefore one of the objects of the invention is to provide an air conduit opening on the intake movement of the bottom having a check valve automatically closing under pressure from within the can and by gravity when the can is inverted.

Still another object of the invention is to provide an auxiliary reservoir and its appurtenant parts as a unit with the spout so that the spout together with the structure peculiar to the present invention may be removed as a unit.

Other objects of the invention will appear as the following description of a preferred and practical embodiment thereof proceeds.

In the drawing throughout the several figures of which the same characters of reference have been employed to designate identical parts:

Figure 1 is a vertical section through an oil can embodying one form of the invention;

Figure 2 is a cross section of the auxiliary reservoir and air tube taken along the line 2—2 of Figure 1;

Figure 3 is a vertical section through the auxiliary reservoir and associated parts of another form of the invention;

Figure 4 is a cross section taken along the line 4—4 of Figure 3;

Figure 5 is a vertical section taken through the auxiliary reservoir, air tube and spout in still a third form of the invention; and

Figure 6 is a cross section taken along the line 6—6 of Figure 5.

Referring now in detail to the several figures, and first adverting to that form of the invention shown in Figures 1 and 2, the numeral 1 represents the body of an oil can having the flexible bottom 2 and the screw cap 3 removable for filling, the screw cap also carrying the spout 4. The bottom is slightly convex and functions as a diaphragm, being pressed inwardly by the thumb for ejecting oil and springing back to the normal position shown when the pressure of the thumb is removed. The structure which has up to this point been related is common to oil cans.

Figure 1 shows that the cap is provided on its lower side with an auxiliary reservoir 5 of such size as to fit within the main body of the oil can, leaving some space all around. The auxiliary reservoir is adapted to contain oil up to a certain level, for example, the level 6 indicated in Figure 1. At one side the auxiliary reservoir is provided with a port 7 placing the atmosphere which lies above the oil level in the auxiliary reservoir into communication with the atmosphere which fills the main reservoir above the body of oil in said main reservoir. The spout 4 extends downwardly into the auxiliary reservoir below the level of oil therein to the point 8, for example, which is adjacent the bottom of the auxiliary reservoir. An air tube 9 communicates at one end with the spout 4 above the oil level and at the other end it dips down nearly to the bottom of the oil can. At two points 10 and 11, the air tube is suitably constricted or throttled and a check valve 12 is slidable within the air tube between the limits defined by the points of constriction and by which it is retained in place. The check valve opens when it is in lowermost position and closes when it reaches its upper limit of movement. Thus air can get into the oil can by way of the air tube, but cannot get out. It will be observed that the dimensions of the auxiliary reservoir and air tube are such that by unscrewing the cap the entire unit may be removed through the mouth of the body of the oil can.

The operation will now be explained. The cap 3 having been removed with those parts which are unitary therewith by unscrewing, a suitable quantity of oil is poured into the body 1, the cap is then replaced. The oil can is inverted whereupon the oil in the body or main reservoir 1 runs into the narrow part of the body and passes through the port 7 into the auxiliary reservoir. The can may then be reverted to its normal position and a body of oil will be trapped in the auxiliary reservoir having its level, for example, at 6. With the spout vertically upward as shown, the bottom 2

is pressed. Pressure is thus imparted to the contents of the can, the first effect of which will be to elevate the check valve 12 and cause it to close the air tube preventing egress of air. The pressure is then transmitted through the atmosphere within the body 1, through the port 7 upon the atmosphere within the auxiliary reservoir and upon the level of oil within said reservoir, depressing said level and raising a column of oil in the spout 4. Since the inward flexing of the bottom is a snap action, the pressure has the nature of an impact blow and the oil is ejected. The oil can will operate in this manner just so long as there is enough oil in the auxiliary reservoir to submerge the lower end of the spout. When the oil becomes depleted below this point, it is merely necessary to again replenish the oil from the main supply through the port 7.

When the pressure is removed from the bottom 2, it automatically recovers its position, permitting the check valve 12 to drop to its lower limit and admitting air through the spout and through the air tube 9. When the oil can is inverted, the check valve 12 automatically drops to closed position against the point of restriction 10, preventing oil from running out of the spout through the air tube 9 and also creating a seal which prevents displacement of the air within the body 1, until the bottom 2 is pressed. This prevents oil running out of the spout 4 when the latter is inverted except under the impulse of the pressure applied to the bottom.

On account of the fact in this form of the invention that the port 7 is located on one side of the auxiliary reservoir, it may happen when inclining the spout downwardly, if the port 7 should be on the lower side of the can and oil in the main reservoir nearly depleted, that the oil in the auxiliary reservoir will run out through the port 7 so that the can will not discharge. If the oil can were turned to a diametrically opposite position with the port 7 uppermost, it is obvious that the oil would be retained in the auxiliary reservoir. Therefore, as an indicator of the position in which the can should be held when nearly empty, the nozzle 18 of the spout is inclined in the normal position for oiling, that is to say, opposite to the position occupied by said port.

Figures 3 and 4 show a form of the invention in which the auxiliary reservoir is formed as a shell or casing 13 having one side indented as at 14 forming a channel through which the air tube 9 extends. The channel constitutes an air and oil inlet between the main body of the oil can and the auxiliary reservoir. Since the air tube is accommodated within the recess 14, it is not necessary to provide an annular space about the outside of the auxiliary reservoir, consequently, it is shown as being of the same diameter as the neck of the body 1 and being threaded so as to directly engage the threads on the neck of the oil can.

In Figures 5 and 6, a form of the invention is illustrated which is quite similar to that shown in Figures 3 and 4, excepting that the air tube 9 passes through the bottom of the auxiliary reservoir in a fluid-tight manner, thus permitting the reservoir to be the full width of the neck of the oil can. The conduit which places the auxiliary reservoir into communication with the main reservoir is an inclined tube 15 having its upper end 16 above the oil level on one side of the axis of the can, and its lower end 17 passing through the bottom of the auxiliary reservoir and in fluid-tight relation thereto on the other side of said axis. The advantage of this construction is that when the oil can is inverted, or laid on its side in any circumferential position, the body of oil in the auxiliary reservoir cannot drain back into the main reservoir inasmuch as one end of the tube 15 will always be above the oil level in the auxiliary reservoir.

It will be understood to those skilled in the art that the specific forms of oil can as disclosed in the drawing and described in the foregoing specification are merely illustrative of the principle of invention and not to be regarded as limiting the scope of the invention as claimed.

What I claim is:

1. Oil can comprising means forming main and auxiliary reservoirs, the former having a diaphragm bottom, the auxiliary reservoir being above the main reservoir when the can is upright, said auxiliary reservoir having an opening communicating with the main reservoir for admitting oil from said main reservoir to said auxiliary reservoir when said can is inverted, and determining the maximum oil level in said auxiliary reservoir when said can is upright, a spout extending into said auxiliary reservoir below the plane of the maximum oil level therein, and an air tube within said oil can communicating with said spout above the plane of said maximum oil level, and an inwardly opening check valve in said tube.

2. Oil can comprising means forming main and auxiliary reservoirs, the former having a diaphragm bottom, the auxiliary reservoir being above the main reservoir when the can is upright, said auxiliary reservoir having a port communicating with the main reservoir for admitting oil from said main reservoir to said auxiliary reservoir when said can is inverted, and determining the maximum oil level in said auxiliary reservoir when said can is upright, a spout extending into said auxiliary reservoir below the plane of the maximum oil level therein, and an air tube within said oil can communicating with said spout above the plane of said maximum oil level, passing through said port and extending to a point adjacent the bottom of said main reservoir, and an inwardly opening check valve in said tube.

3. Oil can comprising a body forming a main reservoir having a diaphragm bottom, and a cap carrying a spout for closing said body, means forming an auxiliary reservoir united with respect to said cap and removable therewith, said auxiliary reservoir being above the bottom of the main reservoir when the can is upright and having an opening communicating with said main reservoir for admitting oil from the main to the auxiliary reservoir when said can is inverted and for determining the maximum oil level in said auxiliary reservoir when the can is upright, said spout extending into said auxiliary reservoir below the plane of the maximum oil level therein, and an air tube within said oil can communicating with said spout above the plane of said maximum oil level and an inwardly opening check valve in said tube.

4. Oil can comprising a body having a threaded neck, the lower part of said body constituting a main reservoir having a diaphragm bottom, a closure for said body comprising a shell forming an auxiliary reservoir, the walls of which are formed with threads screwing into said threaded neck, a cap forming a closure for said auxiliary reservoir and unitary therewith, a spout carried by said cap, said auxiliary reservoir being above the main reservoir when the can is upright and hav-

ing an opening communicating with the main reservoir admitting oil from said main to said auxiliary reservoirs when said can is inverted, and determining the maximum oil level in said auxiliary reservoir when said can is upright, said spout extending into said auxiliary reservoir below the plane of the maximum oil level therein, and an air tube within said oil can communicating with said spout above the plane of said maximum oil level, and an inwardly opening check valve in said tube.

5. Oil can comprising a body having a threaded neck, the lower part of said body constituting a main reservoir having a diaphragm bottom, a closure for said body comprising a shell forming an auxiliary reservoir, the walls of which are formed with threads screwing into said threaded neck, a cap forming a closure for said auxiliary reservoir and unitary therewith, a spout carried by said cap, said auxiliary reservoir being above the main reservoir when the can is upright and having a depression in one side forming a channel between said shell and neck, communicating with the main reservoir, admitting oil from said main to said auxiliary reservoir when said can is inverted, and determining the maximum oil level in said auxiliary reservoir when said can is upright, said spout extending into said auxiliary reservoir below the plane of the maximum oil level therein, and an air tube within said oil can communicating with said spout above the plane of said maximum oil level, extending through said channel and into the lower part of said main reservoir, and an inwardly opening check valve in said tube.

6. Oil can comprising a body having a threaded neck, the lower part of said body constituting a main reservoir having a diaphragm bottom, a closure for said body comprising a shell forming an auxiliary reservoir, the walls of which are formed with threads screwing into said threaded neck, a cap forming a closure for said auxiliary resesvoir and unitary therewith, a spout carried by said cap, said auxiliary reservoir being above the main reservoir when the can is upright, an open tube within said auxiliary reservoir having one end near the top of said reservoir on one side of the axis of the oil can determining the maximum oil level in said auxiliary reservoir when said can is upright, the opposite end of said tube penetrating said shell below the plane of said maximum oil level and communicating with the main reservoir on the opposite side of the axis of said oil can, admitting oil from said main to said auxiliary reservoir when said can is inverted, said spout extending into said auxiliary reservoir below the plane of the maximum oil level therein, and an air tube within said oil can communicating with said spout above the plane of said maximum oil level, and extending into said main reservoir, and an inwardly opening check valve in said tube.

THOMAS W. BIBB.