July 14, 1931. F. E. WHITE ET AL 1,814,068

DETACHABLE TANK FOR PRESSURE BURNERS

Filed Sept. 10, 1927 2 Sheets-Sheet 1

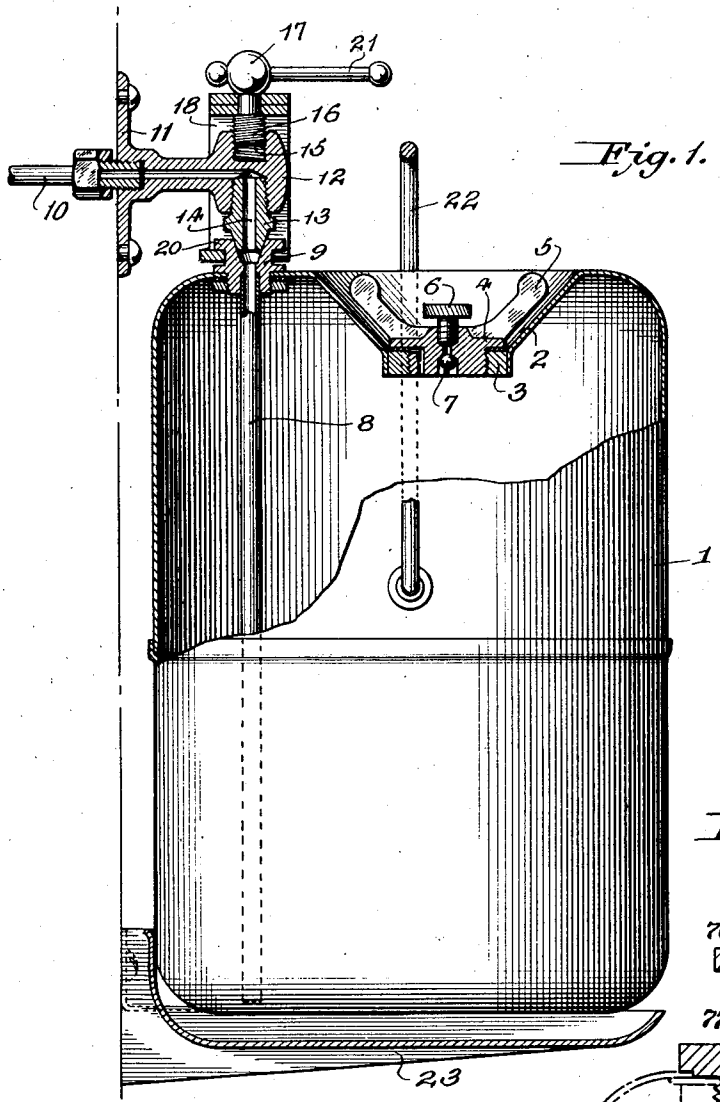

Fig. 1.

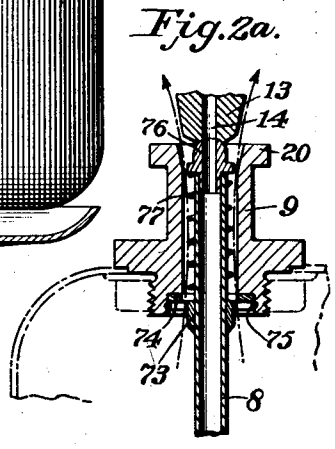

Fig. 2a.

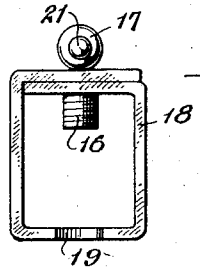

Fig. 3.

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DETACHABLE TANK FOR PRESSURE BURNERS

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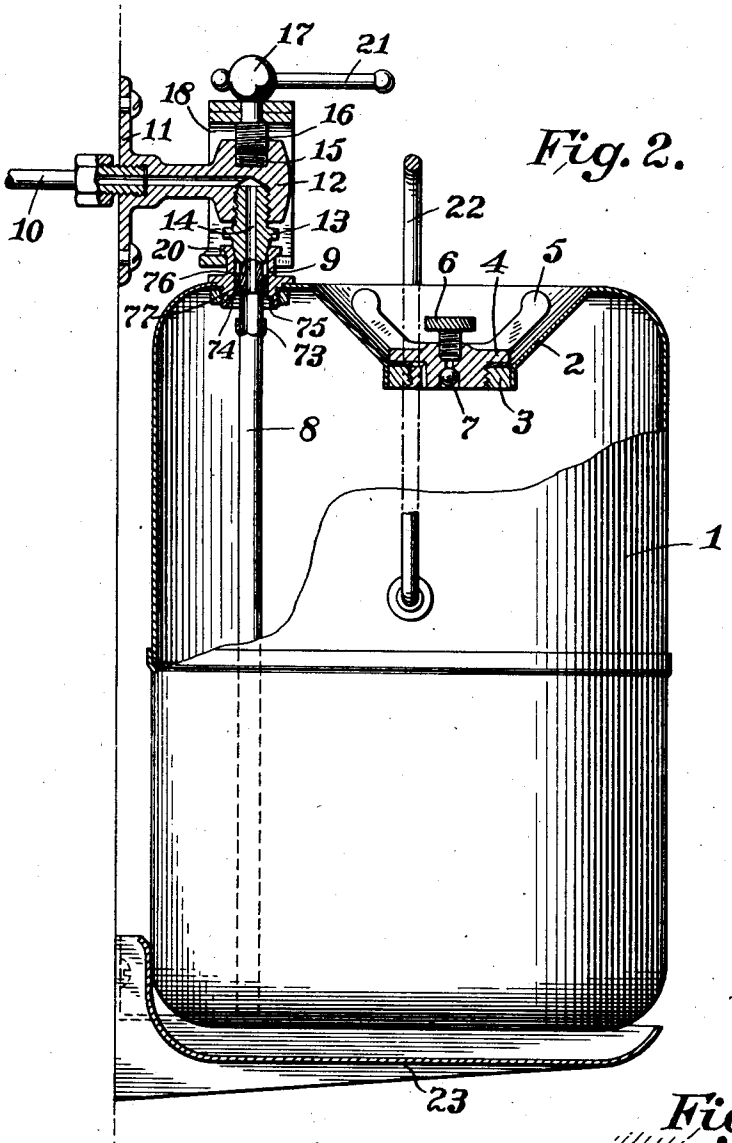


Fig. 2.

Fig. 2b.

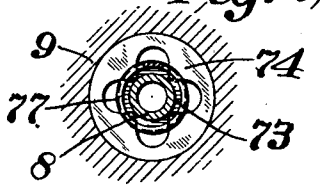
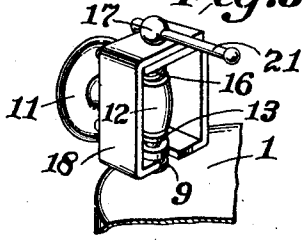


Fig. 3a.



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UNITED STATES PATENT OFFICE

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DETACHABLE TANK FOR PRESSURE BURNERS

Application filed September 10, 1927. Serial No. 218,663.

This invention relates to a form of tank to be used as the fuel supply with a burner when pressure is necessary to force fuel to the burner. The invention is not concerned with the type of burner but only with the tank structure and the means whereby the same is made readily detachable to the fuel line.

The principal object of the invention is the provision of a tank as above described which may be readily and quickly, without the use of complicated tools, detached for refilling and then replaced and attached to the fuel line and still maintain the requisite pressure to feed fuel to the burner. As such devices are for the most part used by housewives who are not mechanically inclined, it is essential to an efficient device that it be of a simple nature.

To this end the invention consists in one aspect, of a container adapted to hold a fluid under pressure either with or without self-contained means to create such pressure, and means to attach said tank to an outlet or feed line so that fluid within the tank may be fed to the line.

The invention further consists in the tank and its assembly per se, and in the novel arrangements, combinations and construction of parts shown and described.

In the drawings:—

Figure 1 is a side elevation partly in section of an assembly embodying our invention.

Fig. 2 is a similar view of an assembly including a different form of oil exit tube connection.

Fig. 2*a* is a somewhat enlarged detail view of the oil exit connection of Fig. 2 in a different position.

Fig. 2*b* is a horizontal section taken through the lower part of the head 9, and showing the washer forming a bearing for the spring and an abutment for the collar on the pipe.

Fig. 3 is a detail view of the clamp of Fig. 1.

Fig. 3*a* is a perspective detail of the clamp of Fig. 1 applied to the fixture and tank head.

In Figs. 1 and 2 is shown a tank or container 1 of any desired contour, and of a one or more piece construction provided at the top with a filling orifice located in an inverted frusto-conical depression 2. Secured around the orifice is a reenforcing ring 3 threaded on the inside to receive screw cap 4 having wings 5. A removable screw plug is shown at 6 which is to be replaced by any desired type of pump (not shown) for creating pressure within the tank, all as is well known. The usual valve 7 to prevent release of pressure is located beneath the plug 6.

To one side of the filling aperture an oil exit tube 8 is provided and in the form of Fig. 1 is suitably secured to the top of the tank, in a fluid-tight manner and having a flared inverted frusto-conical head 9. The bottom of tube 8 extends to or near the tank bottom.

The oil feed or supply line is shown at 10 and projects into and is attached to a bracket 11 having an enlarged hub projection 12. In the lower portion of the hub, is screwed a nipple 13 having an end face corresponding to the frusto-conical portion of the feed tube head 9. An axial bore 14 communicates with the oil line 10. The upper portion of the hub 12 is provided with a screw threaded recess 15 adapted to receive the similarly threaded end 16 of the clamp screw 17. This screw is rotatably carried by a clamp proper 18 conveniently comprising a band of metal bent upon itself and having its ends joined.

The lower horizontal portion of the clamp is provided with a slot 19 adapted to slip between the shoulders 20 on the feed tube head. It will be thus seen that by inserting the frusto-conical face of the nipple 13 into the corresponding portion of the feed tube head, and locating the slot 19 as above described, upon rotating the handle 21, the feed tube head 9 may be tightly drawn into contact with the nipple 13 and a fluid-tight joint effected. By reversing the operation, the tank may be readily detached from the pipe line for refilling.

A wire bail or handle 22 is provided and attached to the tank to facilitate handling thereof.

A tray or supporting shelf 23 may be located beneath the tank.

As shown, the top of the outlet pipe is above the level of the filler cap so that in filling no oil will flow out of this pipe. By placing

the filling aperture off center in the tank top, surrounded by the funnel like recess 2, the tank may be easily and quickly filled and when carelessly overfilled, by tipping the tank, this excess will flow into the tank proper, whereupon the filler cap may be replaced. As the walls of the funnel like recess extend down a considerable distance into the tank proper, it insures a large air space above the fluid. This air pocket assists in prolonging the air pressure within the tank.

In the modified form of fitting shown in Figs. 2, 2*a* and 2*b*, the oil exit tube 8 is provided with a collar 73 secured thereto. A recess in the bottom of the fixture is provided to receive a washer 74 having an irregularly shaped aperture therein (Fig. 2*b*), the washer having portions projecting towards its center which engage the collar 73 and prevent upward movement of the collar 73 of tube 8 beyond the washer 74. A spring ring 75 prevents dropping of the washer 74.

The exit tube 8 is provided with an apertured cap 76 disposed in the top of the tube, the top of the cap being rounded to fit a corresponding concavity in the end of the nipple 13. A coil spring 77 resting upon the washer 74 and engaging cap 76 normally tends to thrust the exit tube into the position shown in Fig. 2*a*. Of course, when the nipple 13 is coupled to the fixture 9 the exit tube will be depressed against the action of the spring 77 until the beveled walls of the nipple 13 are seated tight in the fixture 9 as shown in Fig. 2. The advantage of this modified structure is that when the tank 1 of Fig. 1 is detached for refilling, if there is enough fuel left therein to cover the bottom of the exit tube some of the fuel will be forced up through the tube and will spill out over the top of fixture 9 under impulse of air pressure as soon as the nipple 13 is released from the fixture. It will be readily apparent that by the use of the combination in Figs. 2, 2*a*, and 2*b*, as soon as the nipple 13 is released from contact with the fixture 9, as in Fig. 2*a*, the air pressure within the tank will escape in the direction of the two arrows thus preventing spilling of the fuel.

What is claimed is:

1. In combination, a feed line, a fixture secured thereto having a bore through which fuel is adapted to pass, a hollow nipple carried by the fixture, said nipple having a frusto conical terminal face, a fuel tank having a tube through which fuel is delivered to the feed line, a bored head extending above the tank top, said tube projecting within the head, means to maintain a fluid tight joint between the end of the tube and the nipple, a frusto conical recess in the top of the head, and means to press the frusto-conical face of the nipple against the frusto-conical face of the recessed head, whereby a fluid tight joint may be secured.

2. In combination, a feed line for oil stoves or the like, a fixture secured to said feed line and having a bore communicating with said feed line, said fixture having a downwardly disposed tapered frusto-conical face at its lower end, a fuel tank having a feed tube therein for supplying said feed line, a bored head secured in the top wall of said tank and projecting above the tank top and having a flange spaced from said tank top, said feed tube being received at its upper end within the bore of said head, said head having a correspondingly tapered frusto-conical recess therein to receive the tapered end of the fixture and to align with the bore thereof, a clamp carried by said fixture and adapted for detachable engagement beneath the flange to press the two tapered frusto-conical faces into fluid-tight engagement.

3. In combination, a feed line for oil stoves or the like, a bored fixture communicating with said feed line, a fuel tank, a delivery tube in the tank movably mounted in an opening in the wall of said tank and being adapted to extend through the wall of the tank into communication with the free terminal of said bored fixture, said movable mounting including yieldable means carried by the tank and urging the tube into fluid tight communicating engagement with said bored fixture.

4. Apparatus according to claim 3 in which said tube is of smaller external diameter than the opening in the wall so that clearance is provided therebetween leading to the upper part of the tank chamber, said free terminal of said bored fixture being of a size adapted to close said clearance when brought into said opening and into engagement with the wall defining the opening, said yieldable means including a spring maintaining fluid tight communication between said tube and fixture whether said clearance is closed or open.

5. In combination, a feed line for oil stoves or the like, a fixture secured to said feed line and having a bore communicating with said feed line, said fixture having a contact face at the free terminal of its bore, a fuel tank, a bored head secured in the wall of said tank and projecting without the tank, a feed tube within the tank movably mounted within the bore of the head, means for maintaining a fluid tight communicating joint between the end of the tube and the end of the fixture, said head presenting a contact face at its outer end, and means to clamp together the contact faces of the fixture and the head with their bores in alignment to provide a fluid tight joint, said tube being of smaller external diameter than the bore of the head so that a passage space is provided therebetween communicating with the upper part of the tank chamber, said passage being closed by said fixture when said contact faces are closed by said clamp means, and said joint maintaining means including a spring maintain-

ing the fluid tight joint between the tube and fixture whether said passage is closed or open.

6. Apparatus according to claim 5 in which said fixture contact face is of tapered frusto-conical form and said head contact face comprises a correspondingly tapered frusto-conical upper portion of the head bore, a projection on the tube and a cooperating projection on the head for limiting upward movement of the tube in the head, said head projection also forming a seat for one end of said spring, said tube at its outer end having a shoulder forming a seat for the opposite end of said spring, said fixture having a reverse taper at the free end of its bore and said tube having a correspondingly shaper projecting portion to seat in said reverse taper in a fluid tight manner.

7. In combination, an oil line, a fixture to afford a support for a tank, said fixture having a depending nipple with a vertical bore therethrough communicating with the horizontal bore in the fixture which communicates with the oil line, a removable oil tank having an oil discharge tube, a head secured to the tank having a bore to receive said tube and having a seat for the depending nipple in the fixture, said nipple and head having complementary frusto-conical contact surfaces to make a liquid tight joint, and means to hold the tank to the fixture with the nipple and seat in the head in fluid-tight contact, said tank thereby being suspended from said fixture.

8. In combination, a oil line, a fixture having a bore and a bored nipple to lead oil to said line, a tank having a delivery tube, a bored head on the tank into which said tube extends, said head having a seat for the nipple, and a discharge passage from the top of the tank extending to said seat, said nipple when seated closing said passage against the passage of air from the top of the tank, but permitting the discharge of air from the top of the tank when unseated, said nipple forming the communication between the tube and the bore of the fixture for the discharge of oil to the oil line, and means for holding the nipple seated in the head with fluid tight contact, substantially as described.

9. Apparatus according to claim 1 in which said tube is of smaller external diameter than the bore in said head so that a free air passage to atmosphere is provided therebetween, said passage being closed when the frusto-conical face of the nipple and the frusto-conical face of the recess are pressed together by said means.

In testimony whereof, we affix our signatures.

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ALFRED RUTTIMAN.