

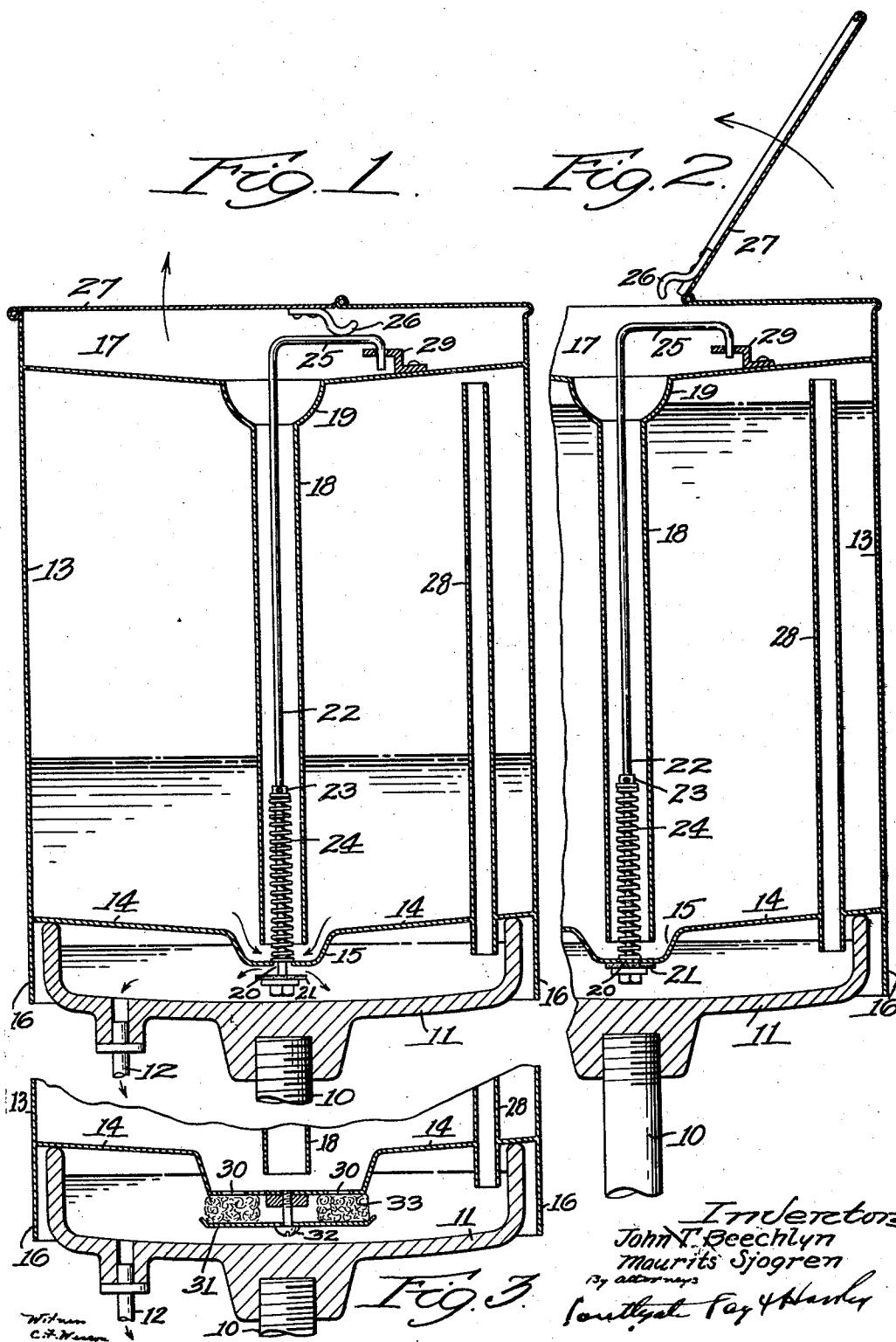
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FEEDING TANK FOR LIQUIDS

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FEEDING TANK FOR LIQUIDS

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This invention relates to a feed tank for liquids such as oil for heating purposes and for any liquid.

The principal object of the invention is to combine the ordinary so-called "gravity" type of feed tank which is arranged right side up and provided with a float needle valve and the inverted type and to secure the advantages of both and permit the introduction of the liquid at any time from the top without having to take the tank off or invert it and without the disadvantage of the float needle valve, thus eliminating the disadvantages of both types.

Other objects of the invention are to provide a feed tank having a distribution cup which will be fed automatically by the feed tank and kept at a predetermined level in combination with a supply tank located above it right side up and having a central tube down through it, through which the liquid can be introduced while the apparatus is running and without disturbing its operation and also to provide a cover having means for automatically closing a valve when the cover is opened, thus permitting the introduction of liquid into the tank up to any desired level without causing or allowing it to be discharged from the bottom of the tank around said valve, while under increased pressure during the filling operation.

Other objects and advantages of the invention will appear hereinafter.

Reference is to be had to the accompanying drawings in which

Fig. 1 is a diametrical sectional view of a feed tank constructed in accordance with this invention showing it in its normal operating condition feeding liquid to the point of consumption;

Fig. 2 is a similar view showing the position of the parts when in condition for the introduction of liquid, and

Fig. 3 is a view similar to Fig. 1 of a modification.

We are aware of the fact that, particularly in the feeding of fuel oil to burners, there are two types of feeders. In one of these, called the gravity type, the tank is arranged

right side up and provided with a float needle valve for controlling the feed level. This valve besides involving considerable mechanism, is liable to clog from impurities and cause dangerous overflow. In the other type the tank is filled and then inverted and then, of course, in order to refill it it has to be taken off and inverted again. This is a complicated and dangerous operation. We have used the desirable features of both kinds and eliminated the disadvantages thereof.

Referring to Figs. 1 and 2 it will be seen that there is a base or support 10 having at the top a distributing cup 11 which is open to the air at the top and discharges normally and constantly, according to the demands, through a pipe 12 to an oil burner or the like. The purpose of the rest of the device is to keep the oil up to the desired level in this cup so the cup will always feed whenever there is a demand and in accordance with the demand. The supply tank 13 is provided with a conical bottom 14 having a depression 15 at the center and the side wall 16 projects down beyond the bottom 14, which latter rests on the top of the cup 11. By this construction the tank 13 is kept centered and the weight of the oil in it holds it down in proper position and the cup 11 and tank 13 appear substantially as one element and practically never have to be separated in use except for cleansing or repairs. Also the tank 13 can be lifted off and put down on a surface supported by the flange around the bottom.

This tank is provided with a filling cup 17 at the top which communicates with the interior of the tank through a central tube 18 having a receiving cup 19 at the top and open at the bottom in the depression 15. Obviously when oil is poured into the receiving cup 17, there is nothing whatever to interfere with its quiet and even flow into the interior of the tank.

In order to prevent the rush of oil out of the tube 18 and into the cup 11 through a port 20, a valve 21 for this port is mounted on a valve stem 22 which is provided with a collar 23. Between the collar 23 and the bottom of

the cup 15 is arranged a coil spring 24 which would normally hold the valve 21 closed and prevent all feeding. However, this valve stem 22 is provided with a top arm 25 which is engaged by a bracket 26 on the cover 27 of the receiving tank and held down when the cover 27 is closed, as will be seen by comparison of Figs. 1 and 2. The valve stem is guided to move vertically by a bracket 29.

The feeding conditions are correct when this cover is closed but when it is open for filling the spring 24 immediately closes the valve 21, as shown in Fig. 2, and the filling can be accomplished without introducing any oil into the cup 11, although that cup is operative to feed into the burner all the time during the filling operation.

We have also shown the usual vent pipe 28. This is supported in the bottom 14 and extends down below the level of the liquid in the cup 11 and up into the tank 13 above the level of the liquid therein. This pipe 28 serves for conducting the air when filling the tank and acts as a check valve. Excessive flow of the liquid through the port 20 is prevented by the formation of a partial vacuum by any drop of the level of liquid in the tank 13. The port 20 allows air to bubble up through the liquid to provide for normal feeding. The level in the cup 11 is kept constant and even with the bottom of the tube 18 slightly above the level of the bottom of the pipe 28.

In the form shown in Fig. 3 the situation is substantially the same except that there is no valve 21. In place of it there are ports 30 in the depression at the center of the bottom 14 and there is a plate 31 connected to the bottom by a screw 32 and spaced from it and carrying a wicking 33 or packing which permits only slow seepage of the oil there-through. No valve is required in this case but the wick or packing has to be selected with particular reference to the characteristics of the particular liquid being used. This packing restricts the flow under the momentary high pressure during the filling operation but is not sufficiently impenetrable to prevent the normal low consumption rate of flow. This packing also acts as a filter and prevents foreign substances getting into the cup.

Of course, it will be understood that this feeding device can be used for practically all liquids and is not restricted to oil, although it is designed particularly for oil for oil burners.

Although we have illustrated and described only two forms of the invention, we are aware of the fact that other modifications can be made therein by any person skilled in the art without departing from the scope of the invention as expressed in the claims.

Therefore, we do not wish to be limited in this respect but what we do claim is:—

1. In a storage and supply device for liquids, the combination with a distributing cup for receiving the liquid, of a storage tank having its bottom resting on said cup and a flange extending down around the cup to center it, the bottom of said tank being depressed and having a discharge port, a valve below said port for normally closing it, a valve stem extending upwardly through the storage tank, a spring on the valve stem resting on the bottom for normally raising the valve to keep it closed, a floor or wall extending across the tank at a distance below its top and forming a receiving cup at the top into which the valve stem extends, means for guiding the valve to move vertically, a pipe extending down from the said receiving cup and surrounding said valve stem and open at the bottom, and a cover at the top of the receiving cup having a bracket thereon which, when the cover is closed, engages the top of the valve stem and holds the valve open.

2. In a storage tank for liquids, the combination with a bottom having a discharge port and a valve below said port for normally closing it, of a valve stem extending upwardly through the storage tank, a spring on the valve stem resting on the bottom for normally raising the valve to keep it closed, a floor or wall extending across the tank at a distance below its top and forming a receiving cup into which the valve stem extends, a pipe extending down from the said receiving cup and surrounding said valve stem and open at the bottom, and a cover at the top of the receiving cup having means thereon which, when the cover is closed, engages the valve stem and holds the valve open.

3. In a storage and supply device for liquids, the combination with a distributing cup for receiving the liquid, of a storage tank, the bottom of said tank being depressed and having a discharge port, a valve below said port for normally closing it, a valve stem extending upwardly through the storage tank, means for normally raising the valve to keep it closed, a receiving cup at the top into which the valve stem extends, a pipe extending down from the said receiving cup and open at the bottom, and a cover at the top of the receiving cup having a bracket thereon which, when the cover is closed, engages the top of the valve stem and holds the valve open.

In testimony whereof we have hereunto affixed our signatures.

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