Jan. 29, 1957 L. M. LEVINE 2,779,351

DEVICE FOR FILLING MEASURED QUANTITY OF MILK OR OTHER LIQUID

Filed Oct. 16, 1952 2 Sheets-Sheet 1

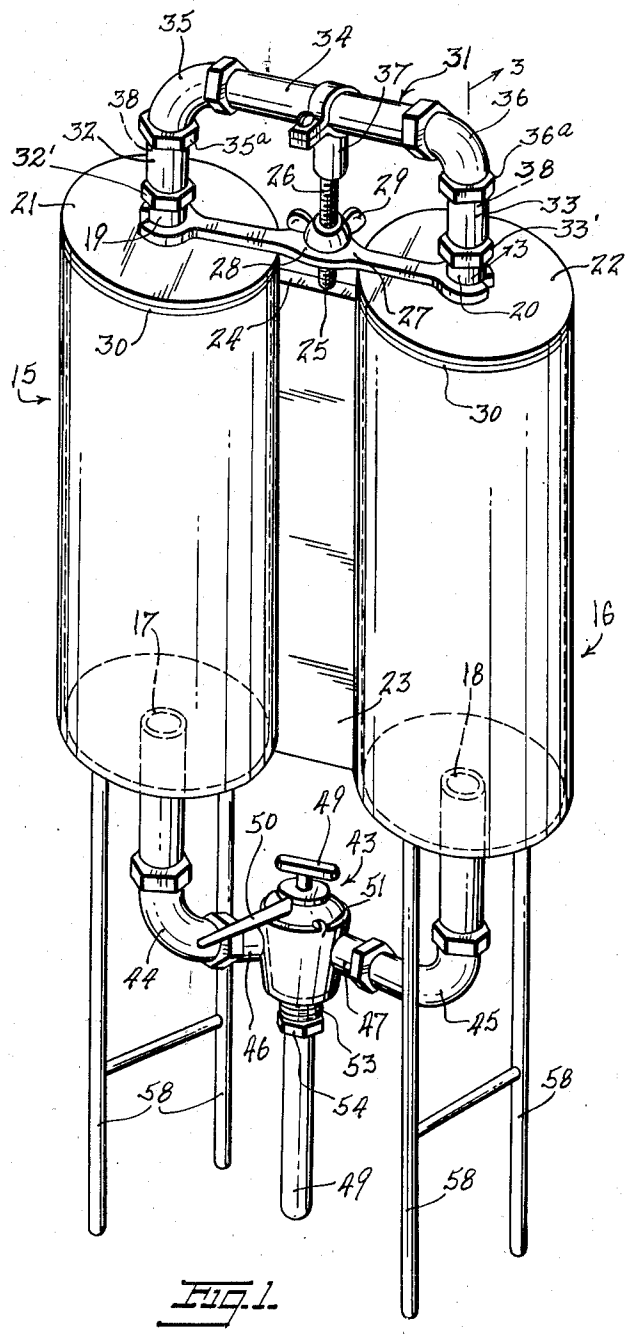


Fig. 1.

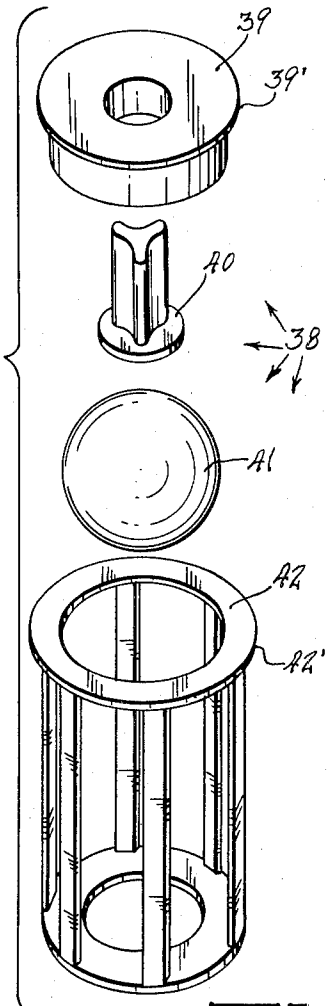


Fig. 2.

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DEVICE FOR FILLING MEASURED QUANTITY OF MILK OR OTHER LIQUID

Filed Oct. 16, 1952 2 Sheets-Sheet 2

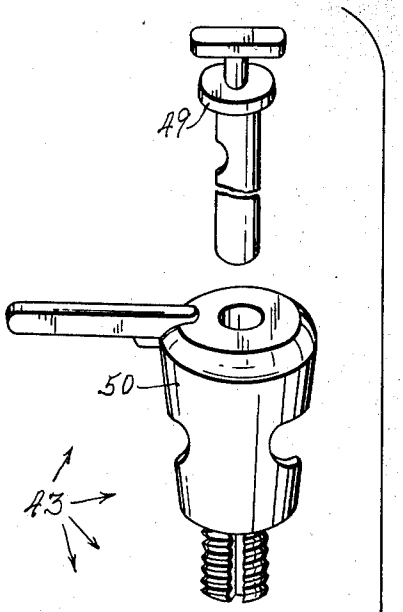


Fig. 4.

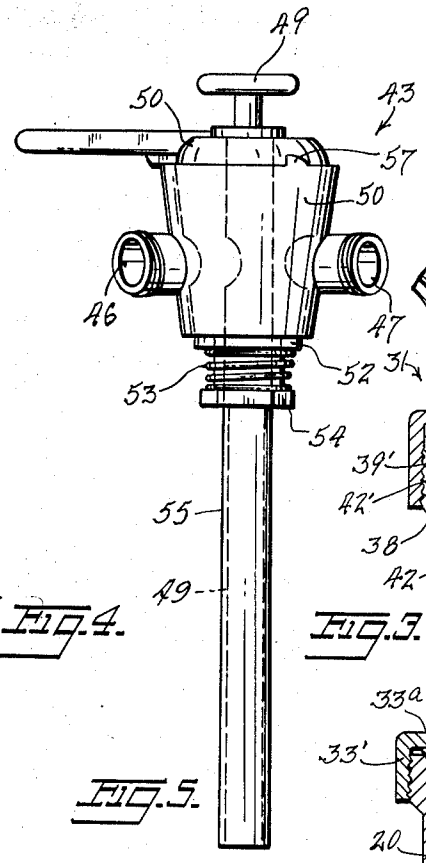


Fig. 5.

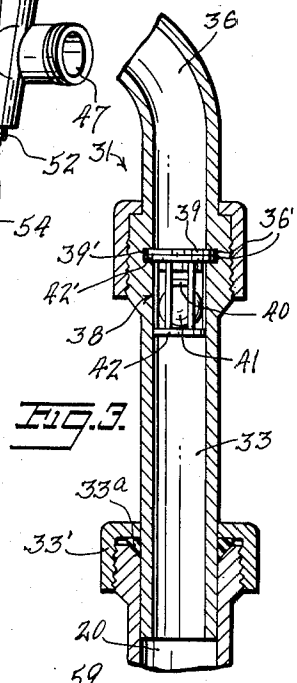


Fig. 3.

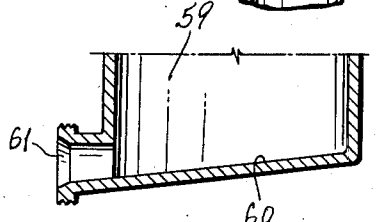


Fig. 7.

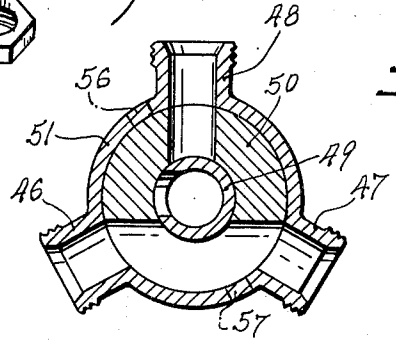


Fig. 6.

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2,779,351

DEVICE FOR FILLING MEASURED QUANTITY OF MILK OR OTHER LIQUID

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Application October 16, 1952, Serial No. 314,990

4 Claims. (Cl. 137—256)

This invention relates to new and useful improvements in machine for filling can or other containers with milk or other liquids.

More particularly, the present invention proposes the construction of an improved can filling machine which can be used to fill a container, such as a forty quart milk can, with a measured quantity of liquid while a second measured quantity is being collected.

Still further, the present invention proposes constructing a container filling machine which will receive a filling liquid, collect measured quantities of the liquid, and convey the measured quantities to containers.

As a further object, the present invention proposes arranging the improved container filling machine with two closed tanks having a common fill adjustment conduit with check and air relief valves disposed therein to aid in filling the tanks and to facilitate the emptying of them.

The present invention further proposes an improved can filling machine easily disassembled for cleaning and particularly adapted for use by the dairy industry or for the handling of similar fluid products which must be kept in a sanitary condition.

For further comprehension of the invention and of the objects and advantages thereof, reference will be had to the following description and accompanying drawings, and to the appended claims in which the various novel features of the invention are more particularly set forth.

In the accompanying drawings forming a material part of this disclosure:

Fig. 1 is a perspective view of a container filling machine constructed and arranged in accordance with the present invention.

Fig. 2 is an exploded view of one of the check and air valves located in the top conduit between the two tanks shown in Fig. 1.

Fig. 3 is an enlarged sectional view taken on line 3—3 of Fig. 1.

Fig. 4 is a view similar to Fig. 2 of the three-way valve shown near the bottom of Fig. 1.

Fig. 5 is an assembled view of the parts shown in Fig. 4.

Fig. 6 is a sectional view of the operating or three-way valve shown in Fig. 5 taken on a plane through the tank connecting ports.

Fig. 7 is a fragmentary view illustrating a modification.

Referring more particularly to the drawings, the container filling machine or device of the present invention has two closed measuring tanks 15 and 16, each having a common inlet and outlet opening 17 and 18 respectively, in its bottom or lower end portion. The tanks 15 and 16 preferably are made of stainless steel but may be made of plastic, glass, molded fiberglass, glass lined steel or of other common tank construction materials.

Tanks 15 and 16 have top openings 19 and 20 respectively at their upper ends. The top openings 19 and 20 preferably are threaded ferrules forming a part of removable lids or covers 21 and 22, which close the upper ends of tanks 15 and 16, respectively.

The tanks 15 and 16 are connected together rigidly by a cross-brace 23 extending between them. Centrally disposed in the upper face 24 of the cross-brace is a threaded opening 25, adapted to receive a threaded stud 26 and hold it in a vertical position extending upwardly above the top of the tanks. Preferably the stud 26 is permanently soldered in opening 25 of the cross-brace.

A hold-down cross bar 27 having a central opening 28 larger in diameter than the stud 26 slidably fits over the stud and bears against each lid or cover 21 and 22.

A wing nut 29 on the stud 26, bears the cross bar 27, removably to hold the lids on the tanks. Each lid fits liquid tight to its tank, a sealing ring 30 being provided between each lid and its tank. This arrangement permits easy access to the tanks for cleaning them but assures securely closed tanks.

A fill adjusting conduit 31 connects the top openings 19 and 20 of tanks 15 and 16. The conduit 31 has two upstanding portions or fill adjusting pipes 32 and 33 and one cross piece or connecting pipe 34 with elbows or joints 35 and 36 connecting the cross piece 34 and the two upstanding portions 32 and 33. These pipes, 32 and 33, slidably fit over ferrules 19 and 20 to provide means to adjust the height of these portions. Cap nut clamps 32′ and 33′ provide the means to hold the pipes 32 and 33 at the desired position on ferrules 19 and 20.

The construction for one pipe and associated ferrule is shown in Fig. 3, the other side being similarly constructed with a nut clamp 32′. In Fig. 3, cap nut clamp 33′ has internal threads mating with external threads on the upper end of ferrule 20. The upper end of ferrule 20 is tapered inwardly adjacent pipe 33 to seat O ring or ring washer 33*a* normally loosely fits around the pipe 33 permitting the pipe 33 to slide in the ferrule 20. But when the cap nut clamp 33′ is tightened, this compresses the ring washer and prevents relative movement of the pipe and ferrule.

A conduit clamp 37 having a threaded opening engageable with the threaded stud 26, holds the conduit 31 in place over the tops of the tanks, the conduit clamp being screwed on the upper free end of the stud 26.

A check and air relief valve 38, is provided for each tank. Both valves 38 are located in the conduit 31, one at the top of each upstanding portion or fill adjusting pipe 32 and 33. The valves 38 contain a seat and guide member 39 (see Fig. 2), a fluted check and air relief valve member 40, a float ball 41 to act as a lift for member 40 and a guide cage 42. The entire assembly shown in Fig. 2 forms a valve one of which fits in the upper part of each upstanding portion or fill adjusting pipe 32 and 33 of the conduit 31. Cap nuts, 35*a* and 36*a* hold the elbows 35 and 36 to the pipes 32 and 33 respectively, the upper end of the pipes being threaded.

Lips 39′ and 42′ are provided on the upper edges of the seat and guide member 39 and on the guide cage 42 respectively. Mating recesses 36′ are provided on the upper edge of pipe 33 and on the abutting edge of the elbow 36 to receive the lips 39′ and 42′ and hold the valve suspended in pipe 33.

The height adjusting feature of the upstanding portions 32 and 33 of fill adjusting conduit 31, permits the deliverable measured quantity of fluid in tanks 15 and 16 to be reduced by lowering the cross piece 34 or increased by raising the cross piece. In this manner, adjustments in the deliverable quantities of fluid in the tanks can be made.

At the bottom of tanks 15 and 16, an operating or three-way valve 43 is connected with the inlet and outlet openings 17 and 18 of the two tanks by elbow pipe fittings 44 and 45, respectively. Furthermore, the operating valve 43 has tank connecting ports 46 and 47, and a fluid receiving port 48 for connection to a supply of filling fluid

and is connected with a filling tube 49 of the valve long enough to extend substantially into a container to be filled so as to prevent excessive foaming during the filling operation.

The operating valve has a plug 50 (Figs. 3 and 4) to to control the flow of liquid through the valve and to permit the operator selectively to connect either tank with the fluid receiving port 48 of the operating valve while the other tank is connected with filling outlet tube 49 and to shut off all flow through the valve.

In addition, operating valve 43 has a hollow body 51, a keyed washer 52, a spring 53, and a nut 54, to control spring tension. A plastic transparent condensate and protective shield 55 is removably secured around the outlet port 49. A pair of spaced stops or abutments 56 and 57 are provided on the valve body 51 for the plug 50 for stopping the plug at the proper position.

Legs 58 extending from the tanks support the tanks with the container filling tube 49 downwardly disposed and dependent from the operating valve.

It will be apparent from the foregoing description and the drawings that the operating valve and associated structure permits a filling fluid to flow into the filling tube 49 from one measuring tank and at the same time directs the fluid from the source of supply to enter the other measuring tank. When the operating valve is turned to the opposite side, the tank that was just filled is drained and the other tank is filled. When the operating valve is put into the middle position of either side, it stops all flow of filling fluid. This enables the operator to drain any desired quanity of fluid from either tank.

The modification of the present invention illustrated in Fig. 7, is characterized by forming the tanks with sloping bottoms such as that of tank 59 shown. Tank 59 has a sloping bottom 60 pitched downwardly to a side opening 61 which is adapted for connection to the operating valve by suitable sanitary elbow fittings, ordinary unions, and nuts so that a complete daily breakdown can easily be accomplished for washing. This arrangement also will keep the operating valve disposed level and will reduce the number of fittings necessary to bring the valve into a workable position.

While I have illustrated and described the preferred embodiments of my invention, it is to be understood that I do not limit myself to the precise constructions herein disclosed and the right is reserved to all changes and modifications coming within the scope of the invention as defined in the appended claims.

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

1. A machine for filling containers with a fluid comprising two closed measuring tanks each having a single inlet and outlet opening and a fill adjusting opening, a conduit connecting said fill adjusting openings, a check and air relief valve for each tank in the conduit, and an operating valve connected with the inlet and outlet opening in each tank, said operating valve also having a fluid receiving port and a filling outlet tube for both tanks with means selectively to connect the fluid receiving port with one measuring tank and simultaneously to connect the filling outlet tube with the other tank and to shut off all flow through the valve, a cross brace between the two tanks, said tanks each having a removable lid, liquid seals between the lids and the tanks, a hold-down cross bar across the lids, said bar having an opening therein and said cross brace having a threaded opening, a threaded stud engageable with the threaded opening and adapted to pass through the cross bar opening, a nut on the stud bearing against the cross bar removably to hold the lids on the tanks, and a conduit clamp having a threaded opening engageable with the threaded stud to hold the conduit in place, said conduit having two upstanding portions and one cross piece with elbows connecting the cross piece and the two upstanding portions, means to adjust the height of the upstanding portions said check and air relief valves being disposed in the upstanding portions, legs extending from the tanks, said filling outlet tube being dependent from the operating valve, said legs supporting the tanks with the filling outlet tube positioned to extend substantially into a container to be filled.

2. A milk can filling machine comprising two measuring tanks of stainless steel, a fluid tight lid removably secured to each tank, a fill adjusting opening in each lid and a single inlet and outlet opening in each tank, a conduit connecting the fill adjusting openings, a check and air relief valve for each tank in the conduit, means removably to hold the conduit in place, means to adjust the height of said conduits an operating valve connected with the inlet and outlet opening of each tank, said operating valve having a fluid receiving port and a filling outlet tube, and a transparent sanitary shield around the filling outlet tube.

3. A machine for filling containers with a fluid comprising two closed measuring tanks each having a single inlet and outlet opening and a fill adjusting opening, a conduit connecting said fill adjusting openings, a check and air relief valve for each tank in the conduit, and an operating valve connected with the inlet and outlet opening in each tank, said operating valve also having a fluid receiving port and a filling outlet tube for both tanks with means selectively to connect the fluid receiving port with one measuring tank and simultaneously to connect the filling outlet tube with the other tank and to shut off all flow through the valve, a cross brace between the two tanks, said tanks each having a removable lid, liquid seals between the lids and the tanks, a hold-down cross bar across the lids, said bar having an opening therein and said cross brace having a threaded opening, a threaded stud engageable with the thread opening and adapted to pass through the cross bar opening, a nut on the stud bearing against the cross bar removably to hold the lids on the tanks, and a conduit clamp having a threaded opening engageable with the thread opening and adapted to pass through the cross bar opening, a nut on the stud bearing against the cross bar removably to hold the lids on the tanks, and a conduit clamp having a threaded opening engageable with the threaded stud to hold the conduit in place, said conduit having two upstanding portions and one cross piece with elbows connecting the cross piece and the two upstanding portions, said check and air relief valves being disposed in the upstanding portions, said fill adjusting openings being ferrules and said upstanding portions of the conduit being pipes, each having one end slidably fitting into one of said ferrules, the upper end of each ferrules having external threads, a cap nut clamp for each ferrule having a central opening slidably to receive and pass the pipe slidably fitting into that ferrule and having threads to engage these on the ferrule, and a compressible ring washer to fit around each pipe in the adjacent cap nut clamp and abut the upper edge of the adjacent ferrule for compression by the cap nut clamp to lock the pipes and ferrule together.

4. A machine for filling containers with a fluid comprising two closed measuring tanks each having a single inlet and outlet opening and a fill adjusting opening, a conduit connecting said fill adjusting openings, a check and air relief valve for each tank in the conduit, and an operating valve connected with the inlet and outlet opening in each tank, said operating valve also having a fluid receiving port and a filling outlet tube for both tanks with means selectively to connect the fluid receiving port with one measuring tank and simultaneously to connect the filling outlet tube with the other tank and to shut off all flow through the valve, a cross brace between the two tanks, said tanks each having a removable lid, liquid seals between the lids and the tanks, a hold-down cross bar across the lids, said bar having an opening therein and said cross brace having a threaded opening, a threaded stud engageable with the threaded opening and adapted to pass through the cross bar opening, a nut on the stud bearing against the cross bar removably to hold the lids on the tanks, and a conduit clamp having a threaded opening engageable with the threaded stud to hold the conduit in place, said conduit having two upstanding portions and one cross piece with elbows

connecting the cross piece and the two upstanding portions, said check and air relief valves being disposed in the upstanding portions, said fill adjusting openings being ferrules and said upstanding portions of the conduit being pipes, each having one end slidably fitting into one of said ferrules, the upper end of each ferrule having external threads, a cap nut clamp for each ferrule having a central opening slidably to receive and pass the pipe slidably fitting into that ferrule and having threads to engage those on the ferrule, and a compressible ring washer to fit around each pipe in the adjacent cap nut clamp and abut the upper edge of the adjacent ferrule for compression by the cap nut clamp to lock the pipes and ferrule together said pipes having external threads on their upper ends and said elbows each having a flange at one end, said flanged ends of the elbows abutting the upper ends of the pipes, and a pair of cap nuts, each having a central opening slidably to fit over one of the elbows and each having threads engageable with the threaded upper end of one of the pipes to hold the pipes and elbows together, mating recesses in the abutting ends

of the pipes and elbows, each check and air relief valve having a seat and guide member with outstanding lips at its upper edge, a guide cage with outstanding lips on its upper edge, a float ball in the cage and a fluted valve member resting on the ball, said lips being disposed in the recesses with a check and air relief valve dependent in each pipe.

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