March 2 1943. L. ZIMARIK 2,312,950

AGENT SUPPLYING ATTACHMENT FOR WASHING MACHINES

Filed Oct. 22, 1940 2 Sheets-Sheet 1

FIG.1

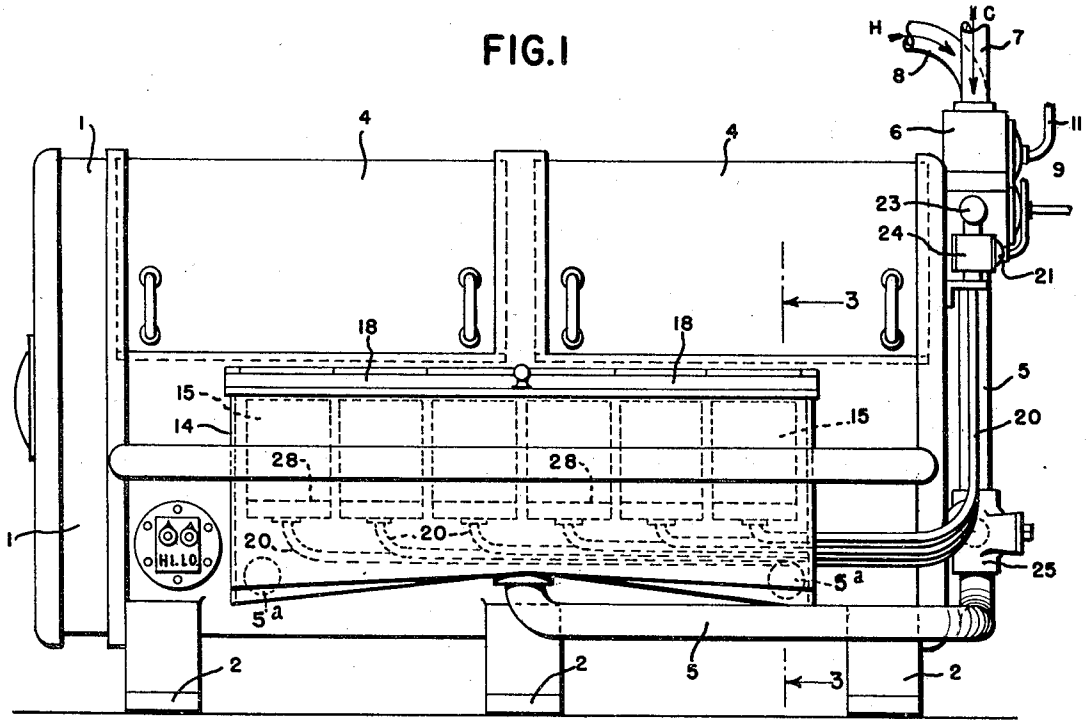


FIG.2

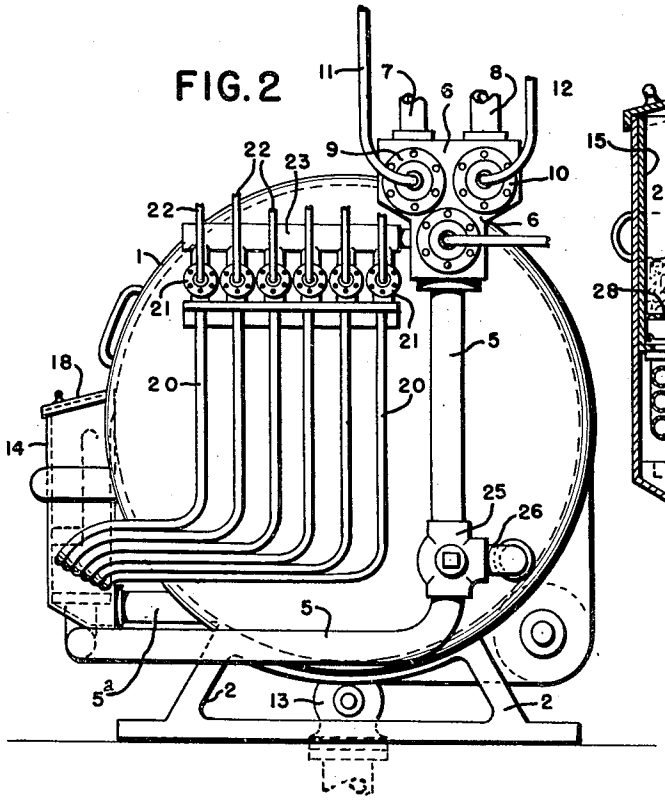
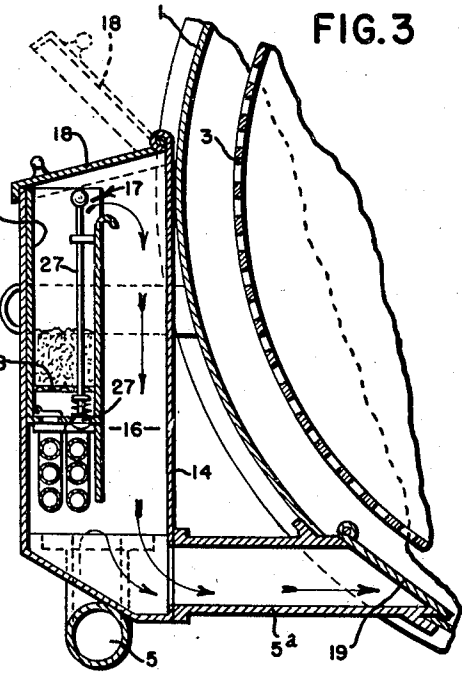


FIG.3



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FIG. 4

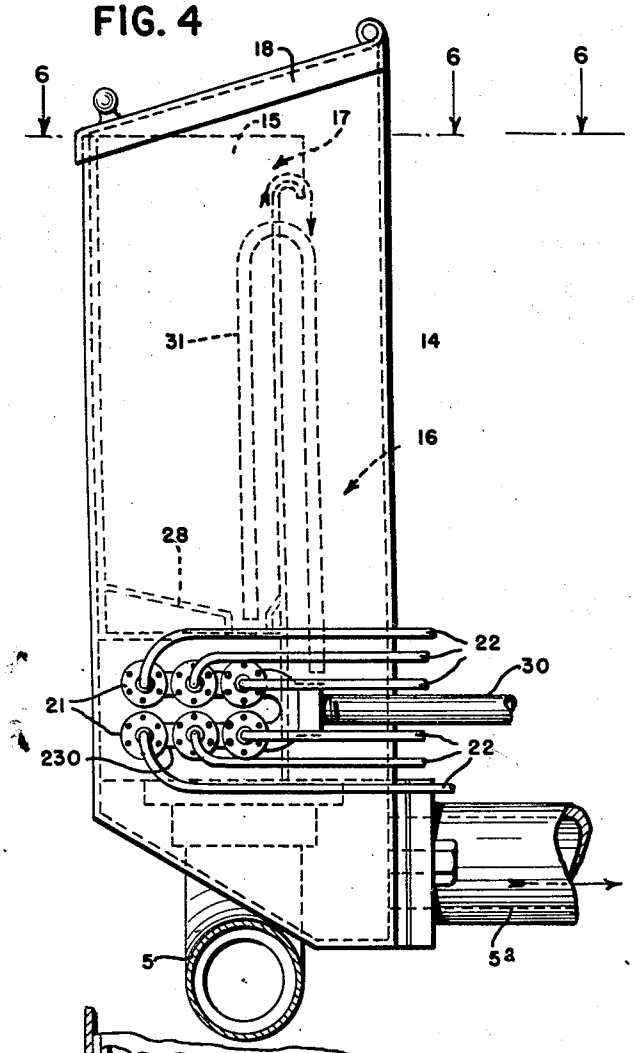
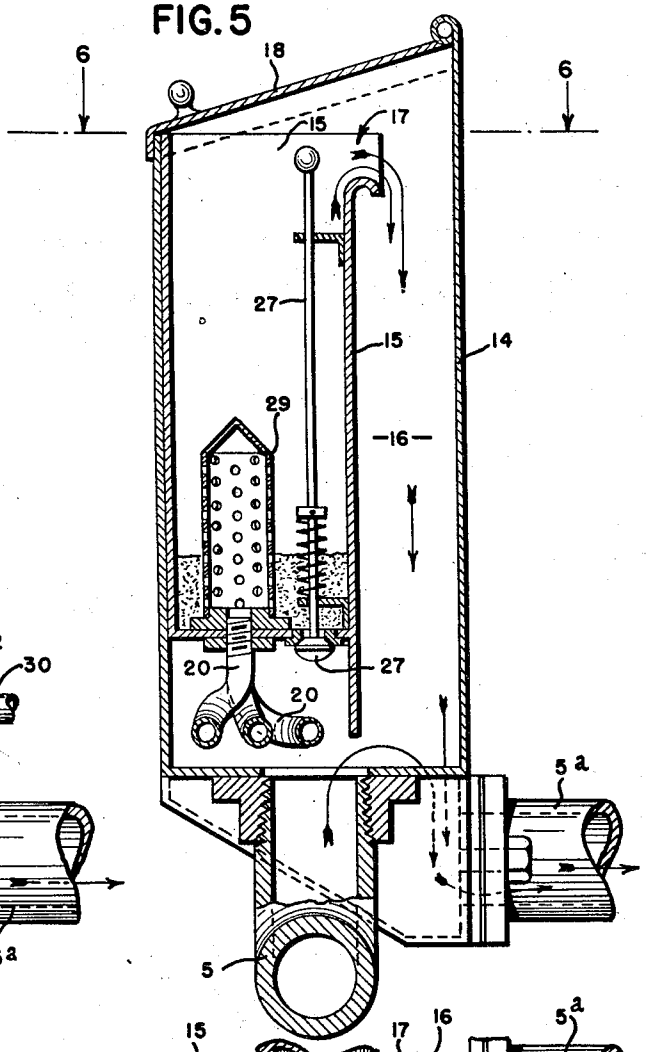


FIG. 5



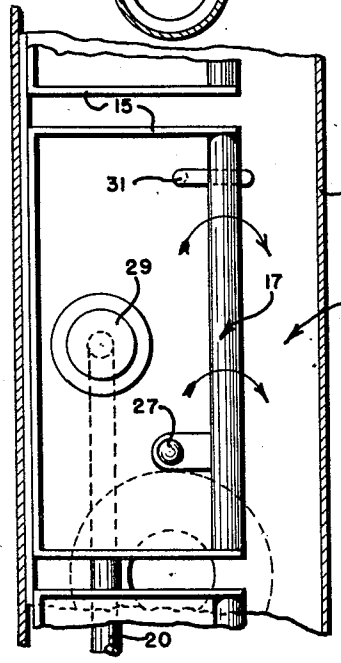


FIG. 6

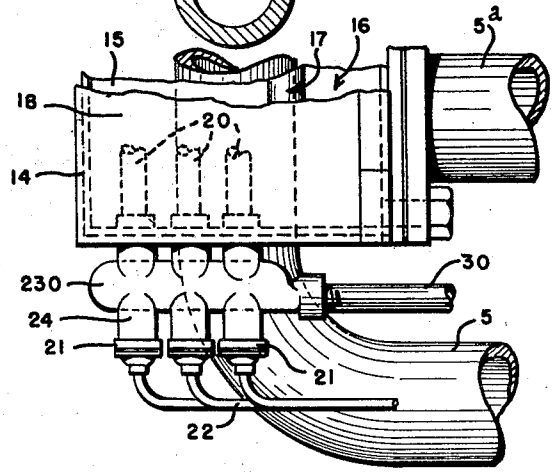


FIG. 7

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AGENT SUPPLYING ATTACHMENT FOR WASHING MACHINES

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Application October 22, 1940, Serial No. 362,254

7 Claims. (Cl. 68—17)

This invention relates to washing machines or similar apparatus to which ingredients or agents are added to the washing fluid during different periods of a washing operation, and has for its object an agent or ingredient supplying attachment which is readily applied or added to the washing machine without materially modifying the construction of the machine, and an attachment which is applied to the machine by coupling into the fluid or water intake conduit of the machine.

It further has for its object an agent supplying attachment in which at least a portion of the water being fed into the machine passes or washes through receptacles containing the ingredients or agents so that the agents are thoroughly mixed with the water and also the receptacles thoroughly cleaned of the ingredients.

It further has for its object an agent supplying attachment in which the water enters the bottom of the receptacle or receptacles, mixes with the ingredients therein, and overflows the upper edge of the receptacle into a tank or passage common to all the receptacles, and discharges into the washing machine.

It also has for its object an ingredient supplying apparatus in which this tank discharges into the machine through the intake or feed conduit and is a portion or section of the feed conduit.

Other objects will appear throughout the specification.

The invention consists in the novel features and in the combinations and constructions hereinafter set forth and claimed.

In describing this invention, reference is had to the accompanying drawings in which like characters designate corresponding parts in all the views.

Figure 1 is a front elevation of one form of washing machine to which this agent supplying attachment is applied.

Figure 2 is an end elevation looking to the left in Figure 1.

Figure 3 is an enlarged fragmentary view on line 3—3, Figure 1.

Figure 4 is an enlarged end elevation of the attachment showing the attachment as mounted in or attached in the section of the water feed conduit of the washing machine.

Figure 5 is a sectional view similar to Figure 3, parts being omitted, of a modified form of the invention.

Figure 6 is a sectional view of the container with the cover open taken on line 6—6 of Figure 5.

Figure 7 is a fragmentary plan view of parts seen in Figure 4.

I have here shown this invention as embodied in, or applied to, a conventional type of laundry washing machine including a cylindrical outer casing and a clothes container or drum mounted to rotate about a horizontal axis in the casing, the casing having peripheral loading and unloading doors, and the drum also having similar doors which are brought into register with the doors of the casing to load and unload the articles into and out of the drum. The attachment may, however, be applied to other types of machines. For brevity and convenience, the term water is used in referring to the washing fluid. It will be understood that the term water comprehends other fluids, solvents, etc.

1 designates the outer cylindrical casing suitably supported on bases 2. 3 designates the inner article container or washing drum. 4 designates the loading and unloading doors. The drum 3 has similar doors not shown arranged to be brought into register with the doors 4.

The container 3 may be actuated in any well known manner. 5 designates a feed conduit through which the water is filled into the washing machine or the casing 1 and the drum 3. The conduit is connected to any suitable source of supply, and as here shown is connected through a header 6 to pipes 7 and 8 leading to separate sources of hot and cold water. The flow through the pipes 7 and 8 into the conduit 5 is controlled by valves located in the header 6. These valves are usually automatically operated and their operation controlled by a timer.

9 and 10 designate respectively outer casings of fluid motors for opening the valve controlled pipes 7 and 8, which valves are self-closing. The movable member of these fluid operated motors is usually a diaphragm, and the casings 9, 10 are diaphragm chambers. The pressure sides of the chambers are connected to a source of compressed air through pipes 11, 12 respectively. The opening and closing of the valves is controlled by a cycle timer. As the timed and automatic operation of a washing machine is well known, and form no part of this invention, further description of the valve operating and timing means therefor is though to be unnecessary. Valves in other pipes and conduits are similarly operated and timed, as will hereinafter appear.

All washing machines, regardless of their types,

have a feed conduit or conduit for conducting the water to the washing machine, a dump valve, as 13, for emptying the machine of the washing fluid.

The agent supplying attachment constitutes the subject matter of this invention and comprises a receptacle for the agent, a pipe communicating with the receptacle and with the conduit 5, and a passage leading from the receptacle to the machine, and preferably communicating with the machine or casing 1 through the conduit 5. The pipe conducting water to the receptacle opens into the bottom portion, so that the incoming water or fluid mixes with the agent in the receptacle and the mixture overflows from the receptacle at the top thereof into the passage that discharges into the washing machine or the casing 1 thereof.

A complete laundry washing operation comprises one or more treatments with water at various temperatures including a solvent or a soap, one or more rinsing operations during some of which other agents, as bleach, sour, etc., are added. Also, the washing operations may include treating the articles being washed with various chemicals. This attachment therefore comprises a plurality of receptacles for the various ingredients. The attachment comprises a tank 14, a plurality of receptacles 15 therein, the tank being in the form of a box or trough. The receptacles 15 are located along one side wall of the tank and spaced apart from the other side wall and also spaced apart from the bottom of the container providing a passage or manifold 16 common to all of the receptacles, the receptacles opening at their tops at 17 into the tank to permit the overflow of agents or ingredients mixed with water into the tank, that is, the passage 16. The tank is coupled into or communicates with the conduit 5 to receive the water therefrom and also discharges into the machine or casing 1 thereof. The tank is therefore a portion or section of the feed conduit 5.

In the machine here illustrated, the tank is located along the front side of the casing beneath the doors 4, this being the place in this type of washing machine where the agents or ingredients are usually fed by hand into the washing machine of this type. In other types, the receptacles or the container may be otherwise located. The tank 14 also has a suitable cover 18 at its top, which, when open, gives access to the receptacles to supply the ingredients thereto. The tank discharges at its opposite ends into the casing 1 through sections 5a, the bottom wall of the tank preferably sloping from its intermediate portion toward its ends. In order to prevent surging of the water through the pipes 5a into the tank 14, a suitable valve, as a flapper valve 19, is provided at the inner ends of the conduit sections 5a.

Each of the receptacles 15 is connected by its own individual pipe 20 to the intake conduit, and each of the pipes 20 is controlled by a timer operated valve. 21 designates the diaphragm chambers of these valves, said chambers being similar to the diaphragm chambers 9, 10 having pipes 22 leading to a suitable source of compressed air, the pipes 22 being controlled by timer operated valves. As here shown the pipes 20 communicate with the feed conduit 5 through a header 23, which is connected to the header 6, and a timer operated control valve, similar to the valves 9, 10 may be provided for controlling the flow of fluid into the header 23. 24 designates the casing of the diaphragm chamber operating this valve.

The conduit 5 is shown as provided with a valve 25 operable into one position to permit the flow of water through the conduit 5 and into the washing machine through the tank 14, as just described, and into another position to permit the water to enter directly into the washing machine through a branch conduit 26 without passing through the tank 14. When the water is being filled into the machine through the branch 26, a portion of it may also be passed or shunted through the header 23 and pipe 20 to the agent receptacles 15. Thus, the machine may be operated by passing all the water into the machine through the tank 14 or by operating the valve 25 into its second position just described. By filling the water directly into the washing machine through the branch pipe 26, and a part only thereof by-passed through the agent receptacles and the container 14, the valve controlled by the diaphragm chamber 24 is opened by the timer, and any valve in any one of the pipes 20 is open. The pipes 20 open into the lower portion or through the bottom of the receptacles 15 respectively. Also, a suitable manually operable dump valve 27 is provided for each receptacle, this dump valve being accessible for manual operation, when the cover 18 is open. Instead of a dump valve 27, a siphon pipe 31 (Figure 4) may be used to empty the residue that would otherwise remain in the receptacle. When the water starts filling into or flowing through the receptacle, it also rises in the inner leg of the siphon and the level of the water rises above the bend in the siphon. The siphon will begin to operate and continue to operate until substantially all the water is siphoned out of the receptacle 14. The lower end of the inner leg of the siphon is located in a well 31a in the bottom of the receptacle. The washing machine is also provided with suitable control devices for controlling the temperatures of the water.

In the form shown in Figure 1, the receptacles are formed with perforated, foraminous or mesh diaphragms 28 spaced apart from the bottoms thereof on which the agent, if granular or powdered, rests so that the incoming water passes up through the mesh.

In the form shown in Figures 5 and 6, the receptacle is provided with a perforated stand-pipe or tower 29 spaced apart from the side walls of the receptacle and through the bottom of which the waterpipe 20 communicates with the interior of the stand-pipe or tower. When the pipe 20 is open, the water enters the tower, passes laterally out of the perforations thereof and thoroughly mixes with the agents or ingredients, particularly when the ingredient is granular or a powder.

In the embodiment of the invention shown in Figure 1, the header 23 is shown as adjacent the intake pipe conduit 5 at one end of the casing 1.

In Figures 4 and 7, a header 230 is shown differently located, or as located adjacent the ends of the tank 14 and communicating with the pipe or conduit 5, or the header 6 thereof, through a pipe 30.

Owing to the unitary character of the container and the receptacle 15, an agent supplying attachment can be readily applied to or built into a washing machine without modifying the structure of the washing machine itself, as the attachment is applied to the machine by connecting

it in the water system or the water intake conduit of the machine.

In operation, receptacles are filled by hand or by automatic measuring and dispensing devices, with the agents to be used during the next washing operation. When the water is free to flow from either or both of the pipes 7, 8 into the conduit 5, and also when the valve controlling the flow into the header 23 is open, and the valve in one or more of the pipes 20 is open, the water flows through the conduit 5 into the bottom portion of the tank 14 and distributes throughout the length of the tank 14 and discharges through the conduit sections 5a into the washing machine. Also, the water passes from the header 23 into any one of the pipes 20, the valve in which is open, to the bottom of the corresponding receptacle 15 and flows upwardly through the same, picking up and mixing with the agents or ingredients therein, which mixture overflows at 17 into the passage 16 of the tank 14 and passes with the main stream of water coming through the conduit 5 into the washing machine through the conduit sections 5a. The flow upwardly through the receptacles continues during the entire filling operation and the agents or ingredients are thoroughly washed out of the receptacle and mixed with the water before the washing machine or casing 1 is filled to its predetermined level. Hence, the receptacles are free of any liquid mixture during the latter period of the filling operation of the machine or casing 1. When the receptacles are being refilled for the next operation, any water remaining in the receptacle may be drained out by opening the valve 27 by hand preliminary to placing the ingredients therein.

What I claim is:

1. An agent supplying attachment for washing machines having a valve controlled conduit through which the water is filled into the machine comprising a tank connected in the feed conduit in series therewith and formed with a receptacle located therein for the agent, the receptacle opening at its upper portion into the tank, and a valve controlled pipe communicating with the feed conduit and opening into the bottom portion of the receptacle, all whereby when the feed conduit and the pipe is open, the water passes upwardly through the receptacle and overflows into the tank and joins the water passing through the tank.

2. An agent supplying attachment for washing machines having a valve controlled feed conduit through which water is filled into the machine, the conduit including a tank portion having a plurality of receptacles for the different agents, the receptacles being located in the tank, and valve controlled pipes communicating with the feed conduit and with the bottom portions of the receptacles respectively, the receptacles overflowing at their upper ends into the tank portion, all whereby the water passes from the feed conduit, when open, through any of the pipes that are open, into the bottom portions of the corresponding receptacles, mixes with the ingredients therein and overflows into the tank and flows with the main stream into the machine.

3. An agent supplying attachment for washing machines comprising a tank for connection in a feed conduit having a plurality of receptacles therein spaced apart from the bottom of the tank and being arranged to overflow at their tops into the tank, the tank having a water inlet, and a water outlet discharging into the washing machine, and a valve controlled water inlet for each of the receptacles.

4. An agent supplying attachment for washing machines including a boxlike tank having a water intake at one end a water outlet at the other end for connection in the feed pipe of a washing machine, so that the water flows through the tank when passing to the washing machine, and a plurality of agent receiving receptacles supported within the tank as a unit therewith, the receptacles being open at their tops to overflow into the tank and connected at their bottoms individually through valve-controlled pipes to a water supply.

5. The combination with a washing machine having a feed conduit through which water is filled into the machine, the conduit having a control valve therein, said conduit also having a branch discharging directly into the washing machine, of an agent supplying attachment comprising a tank connected in the feed conduit and constituting a section of the feed conduit, said valve in the feed conduit being operable to close the feed conduit to the passage of water to the tank when operated to one position to permit the water to flow through the branch into the washing machine and operable to close said branch and to open said conduit to the flow of water through the tank, when the control valve of the feed conduit is operated to another position, the tank having a plurality of ingredient receiving receptacles supported therein and open at their upper portions to overflow into the tank, and valve controlled conduits connected to the feed conduit and to the bottom portions of said receptacles respectively.

6. An agent supplying attachment for washing machines having a valve controlled conduit through which the water is filled into the machine comprising a tank connected in the feed conduit in series therewith and formed with a receptacle for the agent, the receptacle opening at its upper portion into the tank, and a valve controlled pipe communicating with the feed conduit and opening into the bottom portion of the receptacle, all whereby when the feed conduit and the pipe is open, the water passes upwardly through the receptacle and overflows into the tank and joins the water passing through the tank, and means for draining from the receptacle the water left in the receptacle after the overflowing ceases.

7. An agent supplying attachment for washing machines having a valve controlled conduit through which the water is filled into the machine comprising a tank connected in the feed conduit in series therewith and formed with a receptacle for the agent, the receptacle opening at its upper portion into the tank, and a valve controlled pipe communicating with the feed conduit and opening into the bottom portion of the receptacle, all whereby when the feed conduit and the pipe is open, the water passes upwardly through the receptacle and overflows into the tank and joins the water passing through the tank, means for draining from the receptacle the water left in the receptacle after the overflowing ceases, comprising a siphon pipe having the lower end of one leg opening into the receptacle near the bottom of the receptacle and the lower end of its other leg discharging into the tank.

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