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MIXING REGULATOR

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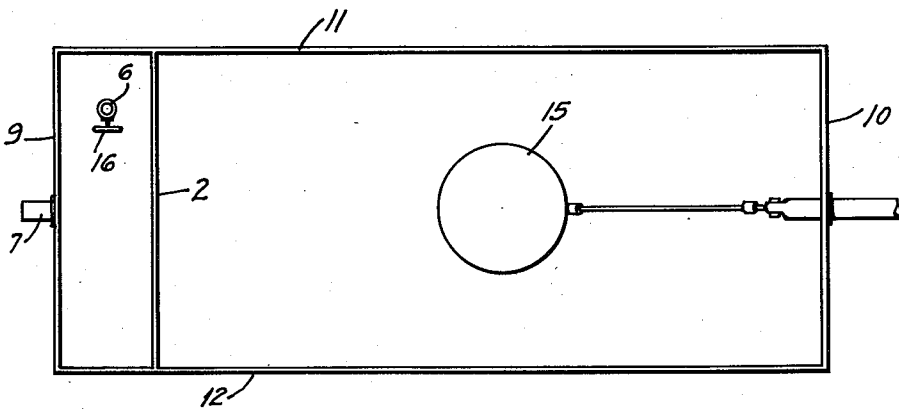
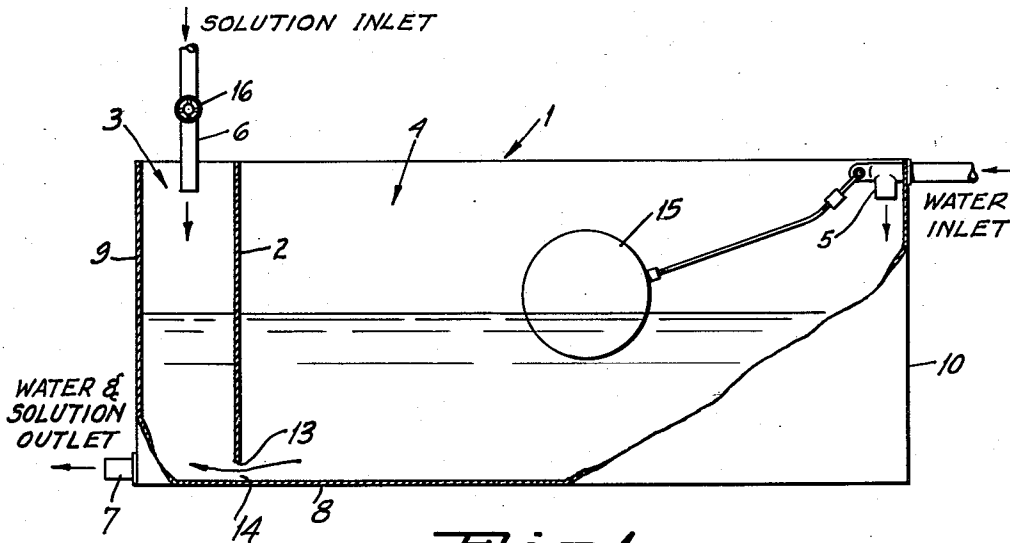


Fig. 2

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## MIXING REGULATOR

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4 Claims. (Cl. 137-68)

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The present invention relates to a mixing regulator, and its principal object is to provide a simple device for mixing liquids in desired proportions prior to the feeding of the mixture to a pump or other mixture consuming device.

My regulator was particularly developed for use in connection with the Malsbary machine for cleaning motor vehicles or heavy industrial machinery, one type of this machine being disclosed in the Malsbary et al. Patent Number 2,345,641 of April 4th, 1944.

In this machine the two liquids involved are pure water and a concentrated cleaning solution, these two liquids being fed to a pump in two separate conduits subject to the control of the operator. The pump again feeds the mixture to a coil in which the mixture is heated, and the coil discharges into one or more conduits terminating in nozzles through which the mixture is discharged for impingement upon the object to be cleaned.

While this arrangement works satisfactory, the arrangement of two separate pipe conduits leading to the pump is rather expensive, and in the present device it is proposed to provide a simpler method of mixing the two liquids, which has the further advantage of providing a sight feed for the solution or concentrate so as to give the operator a better opportunity of watching the amount of solution fed into the water.

While the present invention is intended particularly for use in connection with the machine referred to, it is adapted for other uses, and the present invention is directed therefore generally to a mixing regulator regardless of the manner in which it may be employed.

Further objects and advantages of my invention will appear as the specification proceeds, and the novel features of my invention will be fully defined in the claims attached hereto.

The preferred form of my invention is illustrated in the accompanying drawing, in which

Figure 1 shows a longitudinal section through my regulator, portions being shown in side elevation, and

Figure 2, a top plan view of the regulator.

While I have shown only the preferred form of my invention, I wish to have it understood that various changes and modifications may be made within the scope of the claims attached hereto without departing from the spirit of the invention.

Referring to the drawing in detail, my invention comprises in its principal features a tank 1 having a baffle 2 disposed therein to di-

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vide the same into two compartments 3 and 4, a float controlled valve 5 discharging into the compartment 4, a pipe 6 discharging into the compartment 3, and an outlet 7 for the latter compartment.

The tank 1 may be of any suitable form and proportions, but is here shown as being rectangular. In the regulator actually in use at the present time the total length of the tank is 12", its height is 5", and the normal volume of liquid contained in the tank is approximately two gallons. The tank has a flat bottom 8, end walls 9 and 10 and side walls 11 and 12.

The baffle 2 extends cross-wise of the tank, from side to side and its upper edge is on a level with the top of the tank, while its lower edge 13 is spaced slightly from the bottom of the tank so as to provide a passage 14 between the two compartments which normally causes the liquids in the two compartments to find a common level. The baffle 2 is located fairly close to the end wall 9, preferably at a distance of about 1½", so that the compartment 3 may be considered a minor compartment and the compartment 4 a major one.

The compartment 4 is intended to hold a body of clear water which is fed therinto through the water inlet 5, and which is held at a constant level by means of the float 15 controlling the inlet 5.

The minor compartment 3 is intended to serve as a feeder for a concentrated cleaning solution which is admitted therinto through the pipe 6 controlled by a metering valve 16 which is manipulated manually.

The outlet 7 is disposed in the end wall 9, near the bottom thereof so as to be substantially opposite the passage 14 between the two compartments.

The outlet 7 may discharge into the atmosphere or may be connected to any suitable apparatus in connection with which my regulator is to be used. In my present installation it is connected to the intake side of the pump which feeds the coil in the cleaning machine.

When used in connection with the cleaning machine previously mentioned, the operation of my regulator may be described as follows: The two compartments 3 and 4 may first be filled with clear water to the level determined by the float control, the water naturally seeking a common level in the compartments. When the pump is placed in operation, with the valve 16 closed, the nozzle will discharge clear water.

The concentrated solution is slightly heavier

than the clear water, possibly about one-quarter of a pound to the gallon. When the valve 16 is opened to feed concentrated solution into the compartment 3, the solution finds its way to the outlet 7 almost immediately, which for all practical purposes may be considered almost instantaneous. The larger compartment holds approximately 2 gallons of water and the smaller compartment about one and a half pints. The capacity of the line between the regulator and the discharge end of the nozzle is approximately 3 gallons, and the nozzle discharges at the rate of one and a half gallons per minute so that the time of travel between the regulator and the end of the discharge nozzle is approximately 2 minutes.

I have observed in the use of many machines in which my regulator is used that after the valve 16 is opened to discharge concentrated solution into the smaller compartment, it takes approximately 2 minutes for the discharge to change from clear water to a soap solution which can be readily established by the appearance of soap suds on the surface against which the nozzle discharges.

When the valve 16 is closed, it again takes approximately 2 minutes for the solution to change to clear water, which time corresponds to the 2 minutes of travel between the regulator and the discharge nozzle, so that for all practical purposes the control operates instantaneously.

In addition to the simplicity of the regulator there is the further advantage that the solution feed is in plain sight of the operator and allows the latter, with some little experimenting, to quickly adjust the metering valve 16 to the particular solution desired for a certain operation.

While I have described my regulator principally for use in connection with a cleaning machine, it is apparent that it may be used for other purposes and for mixing any other liquids having similar characteristics particularly with respect to specific gravity.

It should also be understood that any conventional element, such as a valve for the outlet pipe 7, or an adjustable shutter for the passage 14 may be added without involving invention.

I claim:

1. In a mixing regulator, a tank having an end wall and a baffle near said end wall to divide the tank into two compartments, one adjacent the end wall and the other on the distant side of the baffle, the bottom of the baffle being slightly spaced from the floor to provide a narrow passage between the compartments, means for feeding water into the second compartment including means for maintaining the water at a constant level, an outlet in the end wall near the bottom thereof adapted to draw on both compartments, means for feeding a concentrated cleaning solution into the first compartment, and a metering valve for controlling the latter means.

2. In a mixing regulator, a tank having an end wall and a baffle near said end wall to divide the tank into two compartments, one adjacent the end wall and the other on the distant side of the baffle, the bottom of the baffle being slightly spaced from the floor to provide a narrow passage between the compartments, means for feeding water into the second compartment including means for maintaining the water at a constant level, an outlet in the end wall near the bottom thereof adapted to draw on both compartments, a pipe for feeding a concentrated cleaning solution into the first compartment, and a metering valve for controlling the pipe feed, the discharge end of the pipe being disposed above the level of the water to bring the pipe discharge into plain sight for observation purposes.

3. In a mixing regulator, a tank having an end wall and a baffle near said end wall to divide the tank into two compartments, one adjacent the end wall and the other on the distant side of the baffle, the bottom of the baffle being slightly spaced from the floor to provide a narrow passage between the compartments, means for feeding water into the second compartment including means for maintaining the water at a constant level, an outlet in the end wall near the bottom thereof adapted to draw on both compartments, means for feeding a concentrated cleaning solution into the first compartment, and a metering valve for controlling the latter means, the first compartment being much smaller in horizontal section than the second compartment.

4. In a mixing regulator, a tank having an end wall and a baffle near said end wall to divide the tank into two compartments, one adjacent the end wall and the other on the distant side of the baffle, the bottom of the baffle being slightly spaced from the floor to provide a narrow passage between the compartments, means for feeding water into the second compartment including means for maintaining the water at a constant level, an outlet in the end wall near the bottom thereof adapted to draw on both compartments, a pipe for feeding a concentrated cleaning solution into the first compartment, and a metering valve for controlling the pipe feed, the discharge end of the pipe being disposed above the level of the water to bring the pipe discharge into plain sight for observation purposes, and the first compartment being much smaller in horizontal section than the second compartment.

CLARENCE L. PRITCHARD.

#### REFERENCES CITED

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