

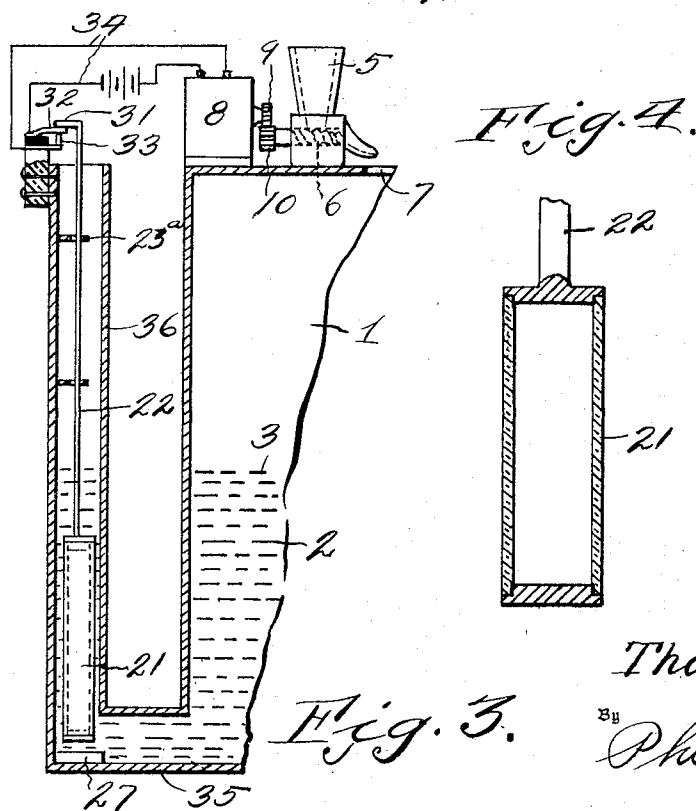
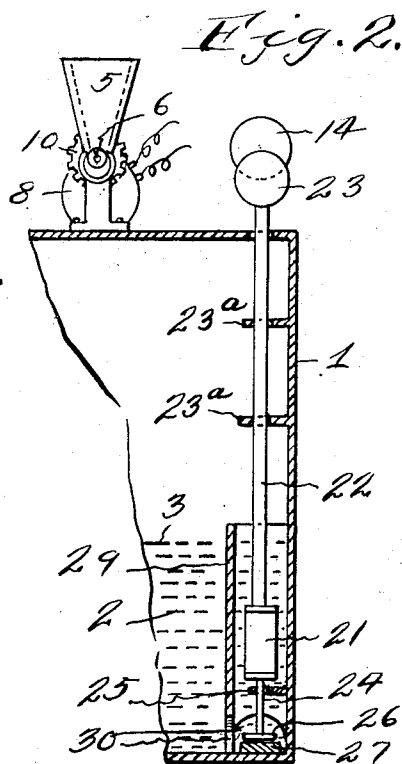
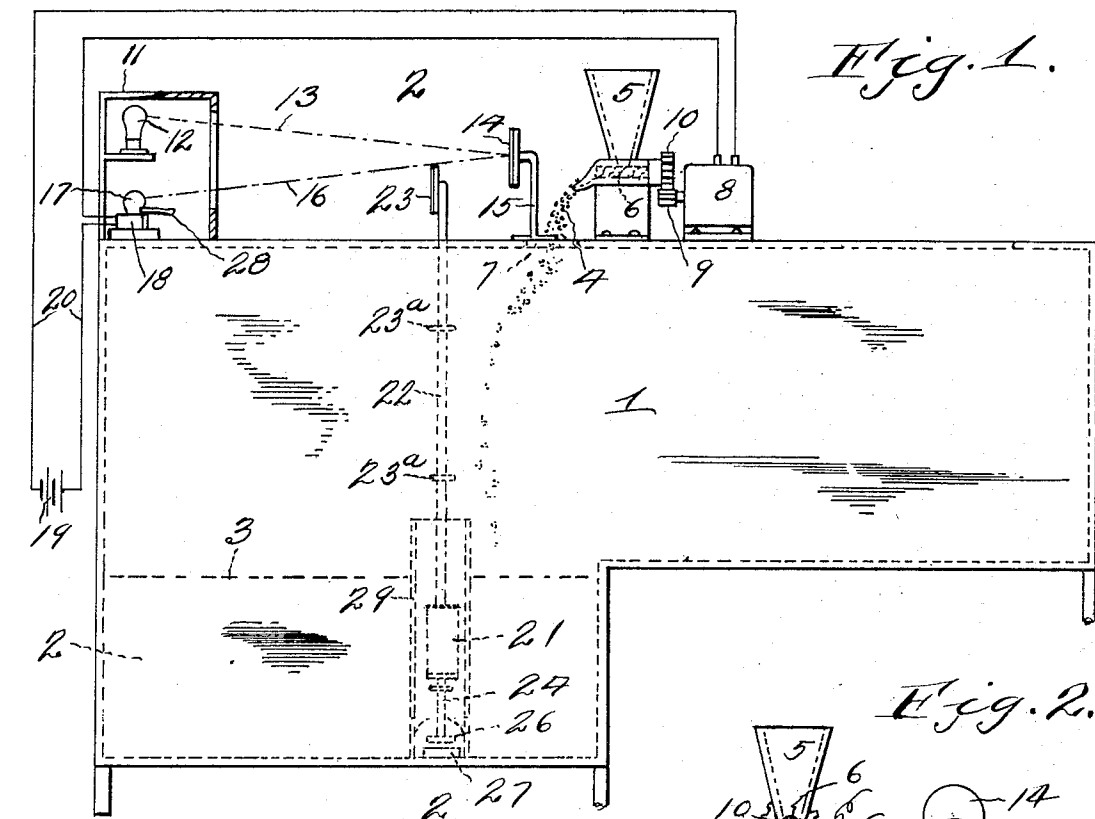
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ALKALINITY REGULATOR FOR WASHING MACHINE TANKS

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ALKALINITY REGULATOR FOR WASHING
MACHINE TANKS

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1 Claim. (Cl. 68—17)

The invention relates to alkalinity regulators for liquids, particularly water, in tanks of various types of washing apparatus, and has for its object to provide a device of this kind wherein the alkalinity of the water is automatically maintained so the contents of the tank will have a uniform washing property, and at the same time washing compound will be fed into the water as desired to raise its alkalinity to a predetermined degree.

A further object is to provide a motor driven washing compound feeding device positioned to discharge into the tank and to control said motor by means of photo-electric cell actuating a circuit maker and breaker for starting and stopping the motor and feeding operation. Also to control the operation of the photo cell by means of a hydrometer disposed in the body of the liquid and downwardly movable when the alkalinity of the water decreases and the hydrometer with means movable across the ray from the photo-electric cell for stopping the motor when the alkalinity or acidity of the liquid has been raised to the desired degree.

A further object is to means for maintaining the alkalinity of the water within a tank through the medium of a hydrometer controlling a circuit maker and breaker, which in turn controls a motor for operating and stopping an alkalinity feeding mechanism.

A further object is to provide magnet means cooperating with the hydrometer at one end of its movement for causing a delayed action of the circuit maker and breaker at the starting of the feeding operation, thereby obviating rapid and continuous feeding of the washing powder into the tank.

With the above and other objects in view the invention resides in the combination and arrangement of parts as hereinafter set forth, shown in the drawing, described and claimed, it being understood that changes in the precise embodiment of the invention may be made within the scope of what is claimed without departing from the spirit of the invention.

In the drawing:

Figure 1 is a side elevation of a conventional form of washing machine tank, particularly the dish washing type.

Figure 2 is a vertical transverse sectional view taken on line 2—2 of Figure 1.

Figure 3 is a vertical longitudinal sectional view through one end of a tank, showing a modified control mechanism.

Figure 4 is a vertical transverse sectional view through the hydrometer.

Referring to the drawing, the numeral 1 designates a tank of the type used in connection with laundry or dish washing machines, and into which the articles to be washed are placed in any suitable manner. In the type shown the liquid 2 is maintained at a liquid level 3, however for efficient washing, it has been found necessary to maintain the liquid at a predetermined alkalinity, and to accomplish this object the washing powder 4 is fed from a hopper 5 by a feed screw 6. The washing powder is discharged through an opening 7 in the tank. Disposed adjacent the hopper 5 is a motor 8 having a drive pinion 9 which meshes with a gear 10 carried by the feed worm 6, therefore it will be seen that when the motor is in operation soap powder or other material will be fed to the liquid 2 for raising the alkalinity thereof to the desired degree.

One end of the tank 1 is provided with a bracket 11 having thereon a light source 12, the ray 13 of which is projected against a mirror 14 carried by a bracket 15. Ray 13 is then projected as shown at 16 against a photo-electric cell 17 within the bracket and controls a relay 18 which closes the circuit from the source of power 19 over the wires 20 to the motor 8 for operating the feeding mechanism. It is obvious that if an object is passed between the mirror 14 and the cell 17 the circuit will be again broken through the medium of the relay 18 and the feeding mechanism will stop. To accomplish this result a hydrometer 21 is provided within the water 2, and this hydrometer is provided with an upwardly extending stem 22 which passes through guide eyes 23^a to a position above the tank and terminates in a non-reflecting disc 23 which passes across the ray 13, thereby stopping the operation of the machine and feeding mechanism when sufficient washing powder has been fed to the water 2, as the alkalinity of the water is raised the hydrometer also rises, and when the desired alkalinity is obtained the disc 23 will cut off the ray 13 and stop the machine. This operation continues, consequently an accurate degree of alkalinity is maintained at all times during the washing operation.

The lower end of the hydrometer is provided with a stem 24 guided in an eye 25, and this stem terminates in a metallic member 26 which moves into the field of a magnet 27, and held downwardly under the magnetic attraction so that there is a delayed upward movement of the hy-

drometer thereby obviating a rapid successive operation of the motor and allowing the alkalinity of the water to be raised with the minimum operation of the motor. The relay 18 may be provided with a conventional switch 28 for manual operation if desired.

The hydrometer is disposed within the casing 29 so it will not be affected by currents in the water or be easily damaged, and this casing is open at its upper end and also provided with openings 30 at its lower end so that the water will easily pass over the hydrometer for actuating the same.

Referring to the modified form shown in Figure 3, a photo-cell is not used, and the hydrometer has its rod 22 provided with an angularly disposed arm 31, which, upon its downward movement, engages a spring contact arm 32 which cooperates with a contact 33, thereby closing the circuit 34 to the motor 8. In this form the end of the tank 1 is provided with an extension 35 which terminates in a vertical tubular member 36 in which the hydrometer is disposed, and into which the liquid level extends.

From the above it will be seen that means is provided for automatically maintaining a predetermined degree of alkalinity in water, and the material is automatically fed into the water through the medium of a hydrometer. Although washing powder has been described, it is obvious

any kind of material may be used and applicant does not limit himself in this particular.

The invention having been set forth what is claimed as new and useful is:

- 5 A unit for controlling the specific gravity of solution comprising a tank for the solution, a motor controlled dispensing device for feeding soap particles into the tank and solution, a vertically disposed hydrometer tube to the outside
- 10 of the tank and having a passage of communication with the chamber of the tank at the lower end of the hydrometer tube and the tank, the upper end of said tube being open whereby the solution level in the tank and hydrometer tube
- 15 will be substantially at the same level at all times, a hydrometer in the solution in the hydrometer tube, an upwardly extending rod carried by the hydrometer, the upper end of said rod terminating above the upper open end of the tube and
- 20 controlling the motor of the motor controlled soap dispensing device above the tube, according to the desired density of the solution in the tank and means cooperating with the lower end of the hydrometer in the bottom of the tube within the
- 25 fluid therein for causing a delayed action in the upward movement of the hydrometer when the liquid level in the tube and tank fall to a predetermined point.

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