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DISPENSER FOR LIQUID DETERGENTS

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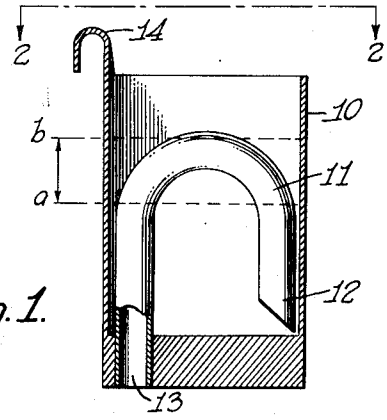


Fig. 1.

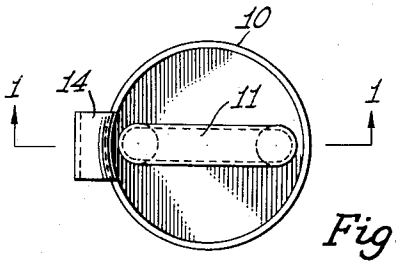


Fig. 2.

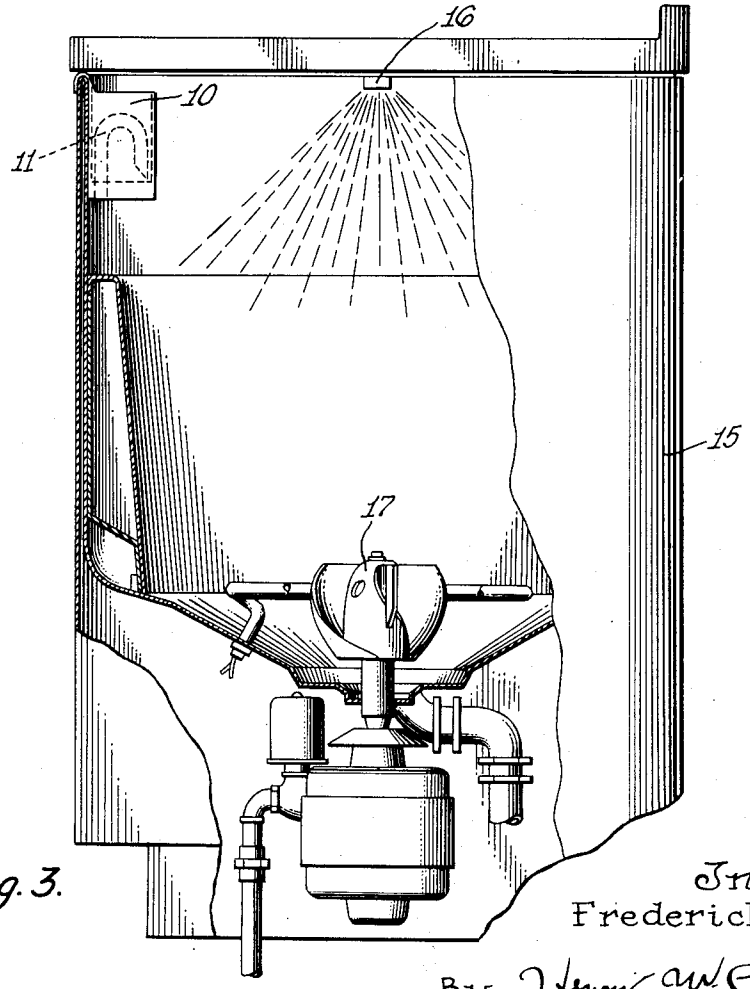


Fig. 3.

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DISPENSER FOR LIQUID DETERGENTS

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4 Claims. (Cl. 134—56)

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This invention relates to a dispenser for liquid detergents and more particularly for a dispenser for liquid detergents in an automatic dish washing machine and the like.

Automatic dish washing machines as well as automatic clothes washing machines and the like operate on an automatic cycle having, for example, the following sequence of operation after the dishes have been loaded and the machine started in the case of a dish washing machine: Introduction of water in a pre-rinse period with the drain open, closing of the drain and introduction of the water and detergent for the wash period, draining and rinsing with water, and drying. In order to make the machine entirely automatic, some means is required to add a detergent at the beginning of the wash period. Automatic devices for this purpose are known, but they are devised for the introduction of solid detergents and the present invention is directed to a device for the introduction at the proper time of liquid detergent automatically.

It is an object of the present invention to provide a liquid detergent dispenser.

It is a further object of the present invention to provide a liquid detergent dispenser in combination with an automatic washing machine.

It is a further object of the present invention to provide a liquid detergent dispenser in combination with an automatic washing machine adapted to deliver the liquid detergent only during the wash cycle of the machine.

These and other objects are attained by the present invention wherein there is provided a receptacle adapted to hold a liquid detergent, open at the top and having a siphon tube therein adapted to siphon the liquid out of the receptacle and into a washing machine when the liquid level in the receptacle rises above a predetermined point. The receptacle is adapted to contain sufficient liquid detergent for the particular washing operation up to a level within the receptacle below the upper bend in the siphon tube such that the liquid detergent will not be siphoned from the receptacle until water from the washing machine splashing into the top of the receptacle brings the total liquid level to the top of the bend in the siphon tube.

The drawings illustrate one preferred embodiment but it will be understood that the invention is not limited thereto.

Fig. 1 is a cross-sectional view of the dispenser taken on the lines 1—1 of Fig. 2.

Fig. 2 is a top view of the dispenser.

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Fig. 3 is a view of the dispenser shown in Figs. and 2 in combination with a conventional dish washing machine shown partly cut away.

Referring to the drawings, it will be seen that the device comprises a cylindrical receptacle 10 open at the upper end having contained therein a siphon tube 11 having an opening 12 within the receptacle and an opening 13 extending through the bottom of the receptacle. The receptacle is provided with a hook 14 for attaching to the edge of a washing machine or the like, but it will be understood that other known attaching means may be used. In Fig. 3 there is shown one of the known types of automatic dish washing machines 15 with the dispenser of Figs. 1 and 2 attached inside the dish washing machine, for example at the upper edge thereof. The details of the dish washing machine need not be described herein since the particular arrangement of parts is not essential to the present invention and the machine is illustrated to show the combination with the dispenser. The location, however, of the dispenser is important since for proper operation it should not receive water used for rinsing indicated as entering the machine by valve 16 from the top center, but only the water used for the washing cycle which is vigorously distributed through the machine by agitator 17.

In the operation of the device the dispenser is filled with liquid detergent to a level indicated by *a* in Fig. 1 or below that level. In the initial rinsing cycle of the machine the water used for the rinsing is not agitated so as to cause the rinse water to enter the receptacle which is preferably located just under the upper cover of the machine. During the washing cycle, however, the water is agitated by the machine to such an extent that water will enter the receptacle and when the combined liquid level reaches the liquid level indicated at *b* at Fig. 1, the dispenser will empty itself. When the liquid level again reaches the level *b*, the dispenser will again discharge its entire contents through the siphon tube and out the bottom opening thereof.

It will be understood, of course, that instead of liquid detergent a solution of solid detergent may be used in the device. While the device is illustrated as cylindrical in shape, it will be understood that other shapes may be used. It will be further understood that the location of the dispenser in the washing machine is immaterial so long as it remains substantially vertical and is located outside the path of the rinse water.

I claim:

1. A liquid detergent dispensing attachment for a washing machine, which machine comprises a vertical tub adapted to be partly filled with wash water and agitation means which splash said wash water substantially throughout the rest of the tub space, rinse means for providing rinse water throughout all said tub space except a minor portion thereof in the upper part thereof, said attachment being positioned in said minor portion of said tub space which is provided with splashed wash water only and comprising a vertical receptacle open at its upper end and closed at its bottom end and containing below said upper end a curved siphon tube having its inlet end opening within and near the bottom of said receptacle and its outlet end opening outside of said receptacle and lower than said inlet end opening, all whereby the receptacle and siphon tube may be partly filled with liquid detergent when the machine is loaded with a wash batch, and, after the initial rinse, when the wash water charge is agitated, water is splashed into the receptacle and fills the siphon tube so as to initiate the siphon action whereby the detergent is drained from the attachment into the wash water.

2. An attachment of claim 1 wherein the major part of the siphon tube is within the receptacle.

3. A combination of a liquid detergent dispensing attachment with a washing machine, which machine comprises a vertical tub adapted to be partly filled with wash water and agitation means which splash said wash water substantially throughout the rest of the tub space, rinse means for providing rinse water throughout all said tub space except a minor portion thereof in the upper part thereof, said attachment being positioned in said minor portion of said tub space which is provided with splashed wash water only and comprising a vertical receptacle open at its upper end and closed at its bottom end and containing below said upper end a curved siphon tube having its inlet end opening within and near the bottom of said receptacle and its outlet end opening outside of said receptacle and lower than said inlet end opening, all whereby the receptacle and siphon tube may be partly filled with liquid detergent when the machine is loaded with a wash batch, and, after the initial rinse, when the wash water charge is agitated, water is splashed into the receptacle and fills the siphon tube so as to initiate the siphon action whereby the detergent is drained from the attachment into the wash water.

4. A combination of claim 3 wherein the machine is for dish washing and the major part of the siphon tube is within the receptacle.

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