

Sept. 20, 1960

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2,953,159

WASHING MACHINE

Filed Nov. 20, 1956

Fig. 1

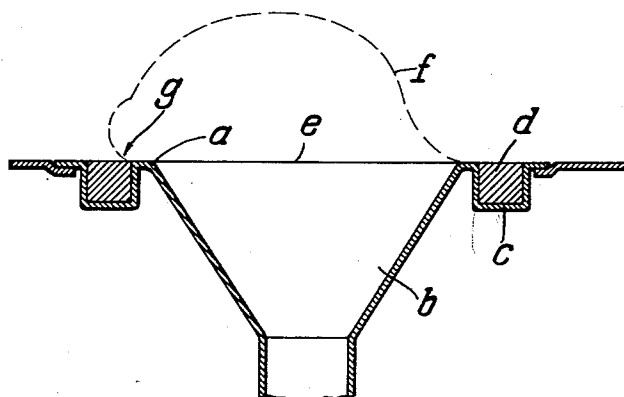


Fig. 2

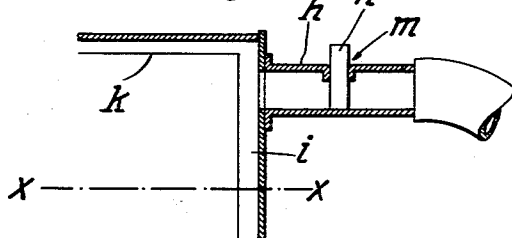
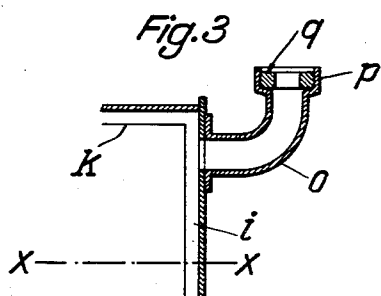


Fig. 3



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Filed Nov. 20, 1956, Ser. No. 623,447

Claims priority, application Germany Nov. 23, 1955

2 Claims. (Cl. 137—587)

In the employment of washing machines, particularly in home applications, it is difficult, as a rule to regulate the intake quantity of the washing agent for maintaining the foam development within proper limits. The use of usual washing agents with soap bases results in too large a quantity and excess of foam so that the washing process is impaired. Particularly difficult is the apportionment of dosage with respect to the recent employment of synthetic washing agents in the employment of which foam formation is indicated even at low temperatures ranging from approximately 30° C. to 40° C. In particular, the consumer cannot be expected to provide the accurate measurement of the required quantity when using such agents.

Not only does an excessive amount of foam lower the cleansing effect of the washing agent in the machine, but above all it can also lead to damage of the drive mechanism and of the rate and regulation parts of the semi- or fully-automatic machines. Aside from this, the foam is ejected through the fill opening for the washing agent in an excessive quantity and runs down over the enclosure of the machine, whereby the cleanliness of the machine suffers and the life span of the lacquer finish is shortened.

The invention seeks to so control the foam formation, that it may be, in a large measure, independent of the quantity of the applied washing agent, and thereby contain itself within the limit which is required in ordinary management of washing, even when the action is inaccurate at the time of charging with the washing agent. The invention achieves this aim through the employment of a foam-destroying substance. Materials, which possess the property of counteracting the formation of foam and making it even retrogressive, are familiar to a washing agent chemist. Such materials are known under the designation of silicon anti-foam substances, or simply anti-foam substances. Their effect is extraordinarily intense and a very small quantity of the anti-foam substance suffices to destroy a large quantity of foam, that is to say to instantly reconvert it to a continuous liquid. On the average, for the destruction of a given quantity of foam, there is required anti-foam substance in a quantity from 1/1,000 to 1/10,000 by weight, of the foam, frequently only as much as 1/100,000.

In the practical use of the anti-foam substance it is not possible to add the anti-foam substance to the washing agent at the start. Obviously, this would again bring up the dosage problem. According to the invention, this problem is solved through the employment of a foam-retarding substance or a body which is built into the machine at the place where during excessive foam formation, the foam overflows from the washing compartment, said point being free of foam during normal foam formation.

In machines with a fill opening for the washing agent this anti-foam substance is advantageously installed in the vicinity of the opening. Similarly advantageous is an installation in the overflow pipe. Should suitable com-

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partments for the installation of the bodies be unavailable, simply built modifications of such compartments may be easily made.

The bodies may be constructed in every suitable shape. Most advantageous in many instances is a body shaped like a ring, perhaps made of felt, impregnated with the anti-foam substance, or one made of a plastic foam destroying substance.

The foam-retarding body made of the anti-foam substance, controls the foam formation as follows: let it be assumed that the machine is filled with an excessive quantity of washing agent. After a short operating period, foam will rise at the spot where the body is located and form a foam "mushroom." Instantly, however, when only a small part of the outer surface of this "mushroom" will come in contact with the body, the anti-foam substance will go into action and through molecular force will instantaneously disperse the accumulated foam, thus breaking up the "mushroom." As a result a very small amount of the anti-foam substance which came in contact with the foam will flow back into the machine and will there counteract foam formation. When after a certain time some of the anti-foam substance in the machine, which has flowed back, is expended and as a result a strong foam formation commences anew, the foam "mushroom" will come out again and the same process will be repeated.

The amount of the anti-foam substance is, as investigations have shown, very small. It generally suffices in average use to impregnate the body anew once or twice a year, or when the body consists of the anti-foam substance entirely, to replace it.

The invention will now be more fully described with reference to the accompanying drawing, but it should be understood that this is given by way of illustration and not of limitation, and that many changes in the details can be made without departing from the spirit of the invention.

In the drawing:

The drawing shows three examples of the invention and these are indicated in:

Fig. 1 the arrangement of the anti-foam body at the fill opening of the washing machine;

Fig. 2 the arrangement of the body in an overflow pipe;

Fig. 3 the arrangement of the body in a separately built-in attachment.

In Fig. 1, located around the edge *a* of the hopper *b* is a stamped-out annular groove *c* in which is inserted a ring *d*. This ring *d* may be made of felt or any other liquid-absorbing material and impregnated with any of the familiar liquid anti-foam agents. Instead of these, however, a ring made of a plastic anti-foam material may likewise be employed. Should a foam "mushroom" *f* form while the machine is operated, over the opening *e* in the manner previously described, the foam and the outer surface of the ring *d* will come in contact at *g*, after a short time. The anti-foam agent will then instantly cause the collapse of the foam.

The ring-like shape of the body has the advantage of providing a positive action of the anti-foam substance, even when the emerging foam has a tendency to repel the foam to one side as it spreads upon its emergence, instead of forming a symmetrical "mushroom." Other shapes, however, may be equally well employed. For example, after filling, a cover, provided with a layer of fine mesh wire, may be placed over the opening, whereby the mesh forms a support for the anti-foam substance. Should the foam-destroying action diminish after lengthy use, the ring may be renewed by impregnation with anti-foam substance, or if it is made of a solid or plastic material, it may be simply replaced.

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In the embodiment according to Fig. 2, the washing machine is provided with an overflow pipe *h*, which is attached to the upper compartment *i*, in which the washing drum *k* rotates on its axis *x—x*. A simple, bar-shaped body *n* is inserted in the pipe *h* through a side opening *m*. This body is either impregnated with anti-foam substance or made completely out of the latter. The body may be easily replaced or impregnated while still in the opening *m*. In case of excessive foam formation, the foam escapes from the drum in the compartment *i* and the overflow pipe and the advancing foam "mushroom" immediately contacts the body of the anti-foam body *n*, whereupon the action described in connection with Fig. 1, takes place.

In Fig. 3, in accordance with the aim of the invention, a curved pipe *o* is attached to the main chamber *i* in the outlet *p*, in which is placed a ring *q* similar to ring *d* (Fig. 1). This ring acts in a manner similar to the body *n* in Fig. 2, when foam enters the pipe.

What we claim is:

1. In a washing machine, in combination, a washing compartment for receiving water and foam-forming cleansing agent; overflow means associated with said washing compartment to permit the overflow of excess foam formed by the said water, said means comprising a hopper associated with and extending into said compartment and having a generally horizontal wall extending therearound, said wall and said hopper forming an annular groove, an annular ring of anti-foam substance

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in said groove, the depth of the groove being so related to the thickness of said annular ring that the entire peripheral wall of said ring is supported by the side wall of said groove.

2. In a washing machine, in combination, a washing compartment for receiving water and a foam-forming cleansing substance; foam passage means associated with said compartment to permit the passage of excess foam formed by the said water and foam-forming cleansing agent, said foam passage means comprising a curved pipe having one end connected with said compartment and another end provided with an enlargement formed by an annular flange of greater diameter than said pipe and joined to said pipe by a transverse shoulder, an annular ring of foam-retarding substance supported on said transverse shoulder and having its entire outer periphery supported by said annular flange.

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