

April 13, 1943.

T. E. D. BILDE
DISH WASHING MACHINE

2,316,748

Filed Oct. 9, 1939

Fig. 2

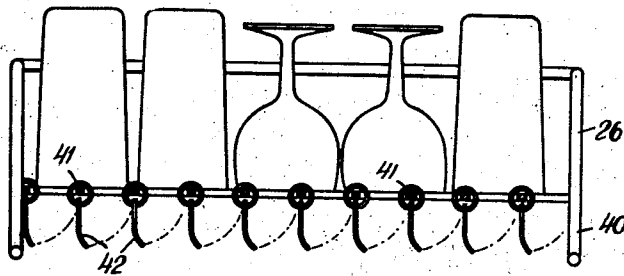


Fig. 3

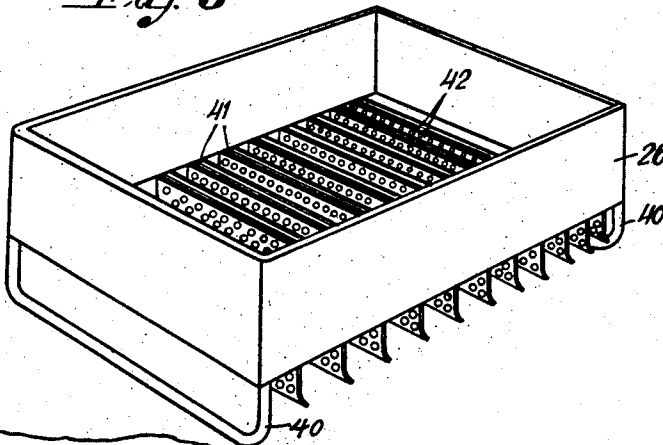
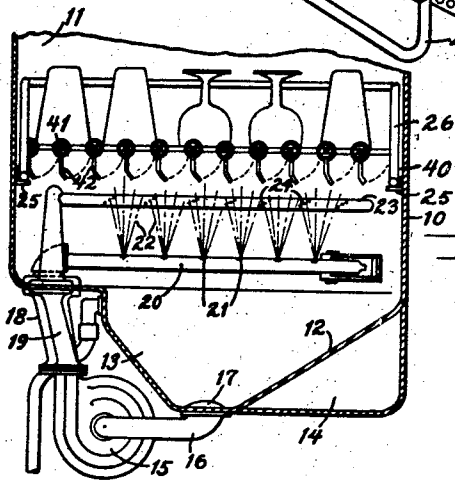


Fig. 1

Inventor:

Tord E. D. Bilde,

By *Carleton W. Derby & Associates*
Attys.

UNITED STATES PATENT OFFICE

2,316,748

DISHWASHING MACHINE

Tord Erik Daniel Bilde, Ulvsunda, Sweden, assignor to Bolinder's Fabriks Aktiebolag, Stockholm, Sweden, a corporation of Sweden

Application October 9, 1939, Serial No. 298,681
In Germany September 26, 1938

3 Claims. (Cl. 141—9)

Dish washing machines of the type in which the dishes are cleansed by being exposed to the action of a water jet or jets are previously known in various designs. From various points of view those machines of said type are preferred which are provided with spray pipes directing strong water jets against the dishes.

It is generally desirable to provide spray pipes below the dishes to be cleansed, for instance below a basket supporting the dishes. Thus, the articles are sprayed from below ensuring a good cleansing action also of deep articles such as glasses and cups which are placed above said spray pipes with their opening directed downwardly.

In dish washing machines and particularly in relatively small machines for domestic purposes in which due to utilization of space spray pipes for the washing operation are disposed exclusively below the dishes it may easily happen that light articles such as thin glasses are lifted and overthrown by the water jets with the risk of such articles being damaged. In order to eliminate this risk it is, of course, possible to reduce the pressure prevailing in the spray pipe, e. g. by throttling a valve or by reducing the speed of a pump forwarding the washing water. However, such a control is unsuitable in practice, it being preferred, on the contrary, in washing such light and frangible articles to operate at the same water pressure as for other articles, that is by water jets of a strength sufficient to exert a real striking action.

It is also possible to provide the basket intended for glasses and similar articles with a bottom of network of sufficiently fine meshes to cause such an effective sub-division of the water jets as to reduce the striking action thereof, thereby eliminating the risk of the dishes being damaged. It is true that in such manner an effective and reliable cleansing will be attained, but thereby another difficulty arises. The dish washing machines not only operate with strong water jets for the washing operation but are, as a rule, also provided with separate spray nozzles for rinsing the dishes by pure water. These rinsing nozzles are often so designed as to cause a very far-reaching sub-division of the water in order to form a close fog in the spray space wholly filling up said space in contact with all articles therein. This finely divided water cannot, however, penetrate the fine network of the bottom of such a basket to a degree sufficient to ensure an effective rinsing action.

The principal object of the present invention

is to eliminate the above said drawbacks and to provide means for the operation of dish washing machines of the type described ensuring an effective washing and rinsing of relatively heavier articles such as plates and the like as well as of relatively lighter articles such as glasses and the like without any risk of the articles of the latter kind being damaged although the conditions of supply of the washing water as to pressure and/or quantity are maintained the same for both kinds of articles.

A still further object of the invention is to provide in a dish washing machine means to reduce the striking action of washing water jets when relatively light and frangible dishes are to be cleansed. These means may comprise resistance members or screens capable in different positions of exerting varying resistance for the washing water jets, said screens being built-in within the spray space of the machine or being adapted to be introduced therinto at will. Preferably, however, the screens are mounted on the dish supporting basket proper and adapted to be brought into their position of greatest resistance by the action of the water jet or jets.

The invention will be more fully described with reference to an embodiment of same shown by way of example in the accompanying drawing.

In the drawing:

Fig. 1 is a somewhat diagrammatic view, partly in section, of the lower part of a dish washing machine having means for changing the striking action of the washing water according to the invention.

Figure 2 is a lateral view on an enlarged scale of the basket which appears in Figure 1, the front wall of the basket being omitted for the sake of clearness, and

Figure 3 is a perspective view of the basket of the preceding figures.

In Fig. 1 reference numeral 10 designates a receptacle the upper part of which forms the spray space 11 of the dish washing machine, whereas its lower part is formed to provide a water space which by means of an inclined wall 12 (in reality two walls, the other wall being not shown in the drawing) is divided into two tanks, the one 13 for washing water and the other 14 for rinsing water. Provided behind the tanks 13, 14 is a motor pump unit comprising an electric motor and a pump on each side thereof, each of said pumps being by means of a suction pipe connected with a valve-controlled opening at the bottom of the respective tank. In Fig. 1 only the washing pump 15, its suction pipe 16 and valve

17 are shown. Pipes 18 and 19, respectively, connect each pump with a spraying device, the spraying device for washing water comprising a spray pipe 20 swingable to and fro in a horizontal plane and having a relatively small number of nozzles or openings 21 from which the water issues in the form of relatively strong jets 22, whereas the spraying device for the rinsing water comprises a rigid spray pipe 23 having a relatively great number of holes 24 from which the water issues in finely divided condition. 25, 25 designate guides secured to the wall of the receptacle 10 above the spray pipes 20, 23 and serving to support a basket 26 in which the dishes to be cleansed are placed.

The basket 26 rests on feet 40 and its bottom comprises rods 41 extending transversely of the basket and supporting resistance members in the form of perforated screens 42 loosely hinged on said rods. Under the action of the jets of washing water the screens 42 are swung upwardly into the position shown in dotted lines in Fig. 2. In this position of the greatest resistance the screens 42 offer a resistance to the water jets of such a magnitude that the risk of the dishes being overthrown is eliminated while simultaneously an effective washing of the glasses is ensured.

Screens 42 are at their free ends somewhat bent so as to facilitate the swinging of the screens from suspended into operative position under the action of the water jets.

Instead of the screens consisting of perforated sheet metal they may evidently also each consist of small rods, pieces of network and the like. It is also possible to use rubber sheets for this purpose.

When, as here shown the resistance members 42 are provided on the dish supporting basket proper they should, on the one hand, be sufficiently light as to ensure that they are rotated or swung upwardly under the action of the water jets and, on the other hand, sufficiently heavy as to remain uninfluenced by the more finely divided rinsing water so as to maintain their suspended

or rest position, when subjected to the action thereof.

What I claim is:

1. In a washing machine of the class described having a spraying chamber, means for supporting articles in said chamber, a spraying device below the supporting means and arranged to throw liquid jets against said articles, resistance members above the spraying device for controlling the pressure of the liquid jets against said articles, and means movably connecting the resistance members, to the machine, said members having depending curved portions in the path of the liquid jets and movable to different positions by the pressure of said jets to control the pressure of the liquid against the articles in said chamber.

2. In a washing machine having a spraying chamber, a basket for supporting articles adapted to be placed in said chamber, a first spraying device arranged to throw relatively coarse liquid jets against said articles, a second spraying device arranged to throw relatively fine liquid jets against said articles, perforated resistance screens in said chamber, and means movably connecting said screens to the basket, said screens being movable by the pressure of the coarse liquid jets to reduce the pressure of the latter against the articles in said basket.

3. In a washing machine having a spraying chamber, a basket for supporting articles adapted to be placed in said chamber, a first spraying device arranged to throw relatively coarse liquid jets against said articles, a second spraying device arranged to throw relatively fine liquid jets against said articles, perforated resistance screens suspended in said chamber, and means movably connecting the upper ends of said screens to said basket, said screens being movable by the pressure of the coarse liquid jets to reduce the pressure of the latter against the articles in said basket.

TORD ERIK DANIEL BILDE.