

[54] **SMALL-SIZED DISHWASHING MACHINE**

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[22] Filed: **Mar. 4, 1974**

[21] Appl. No.: **447,995**

[30] **Foreign Application Priority Data**

Mar. 15, 1973 France ..... 73.09375  
Nov. 8, 1973 France ..... 73.39734

[52] **U.S. Cl.** ..... 239/228; 134/57 D; 134/176;  
239/240; 239/246; 239/264

[51] **Int. Cl.<sup>2</sup>** ..... A47L 15/06; A47L 15/23

[58] **Field of Search** ..... 239/120, 121, 225, 228,  
239/237, 240, 246, 251, 261, 264; 134/56 D,  
57 D, 58 D, 148, 176, 191, 198

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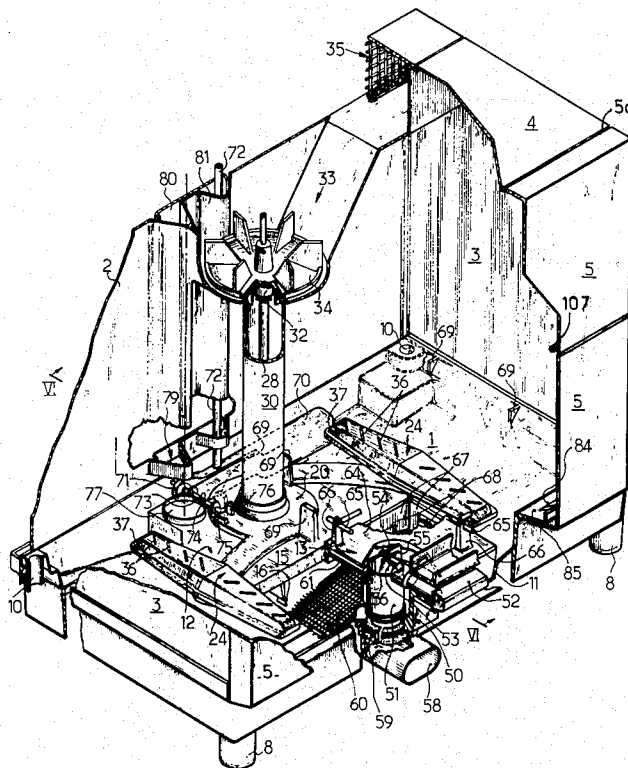
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Carr & Chapin

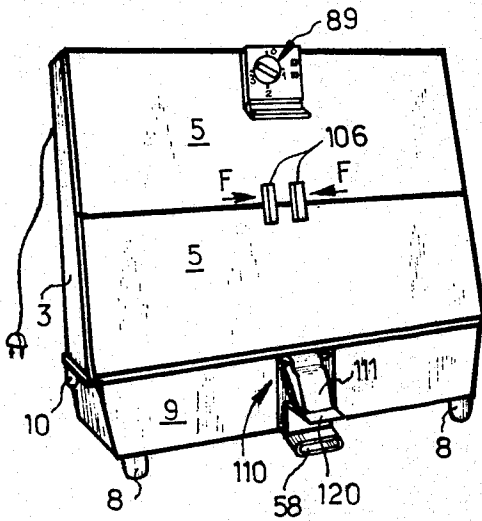
[57] **ABSTRACT**

The present invention relates to a small-sized dishwashing machine. This machine includes a small vane turbine-wheel enclosed in a pump body immersed in the water in the bottom portion of a tank, and driven in rotation by a shaft connected to a motor located at the upper portion of the tank. The shaft is surrounded by a sleeve retaining the pump body applied on the bottom of the tank. The pump body includes two channels at the end of which two revolving sprinklers are mounted. A uniform and balanced rotation of the shaft with minimum wear is obtained.

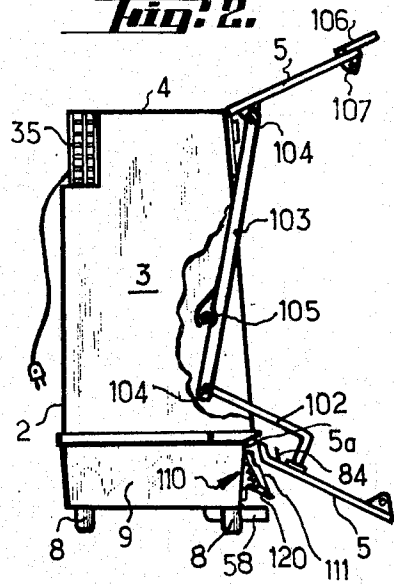
**19 Claims, 10 Drawing Figures**



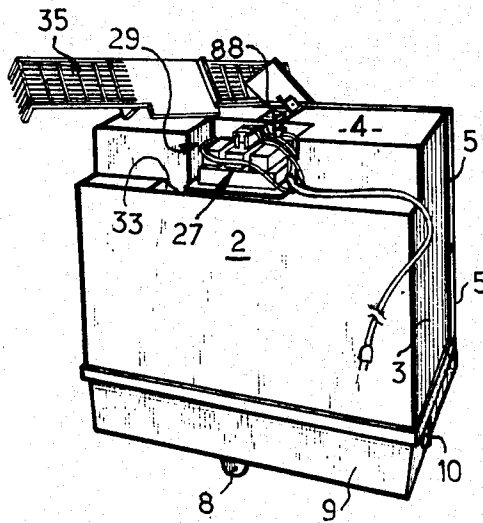
**Fig. 1.**



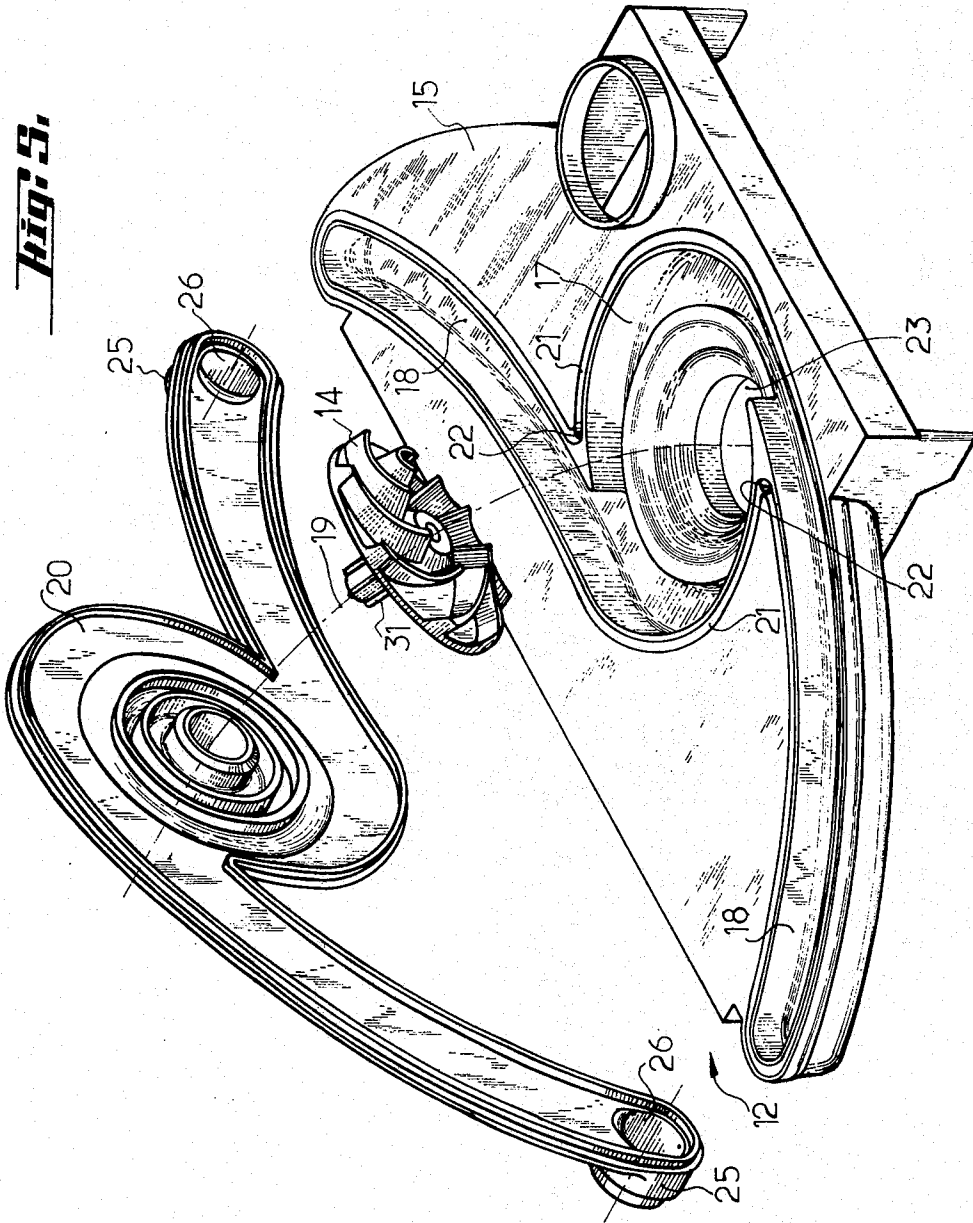
**Fig. 2.**



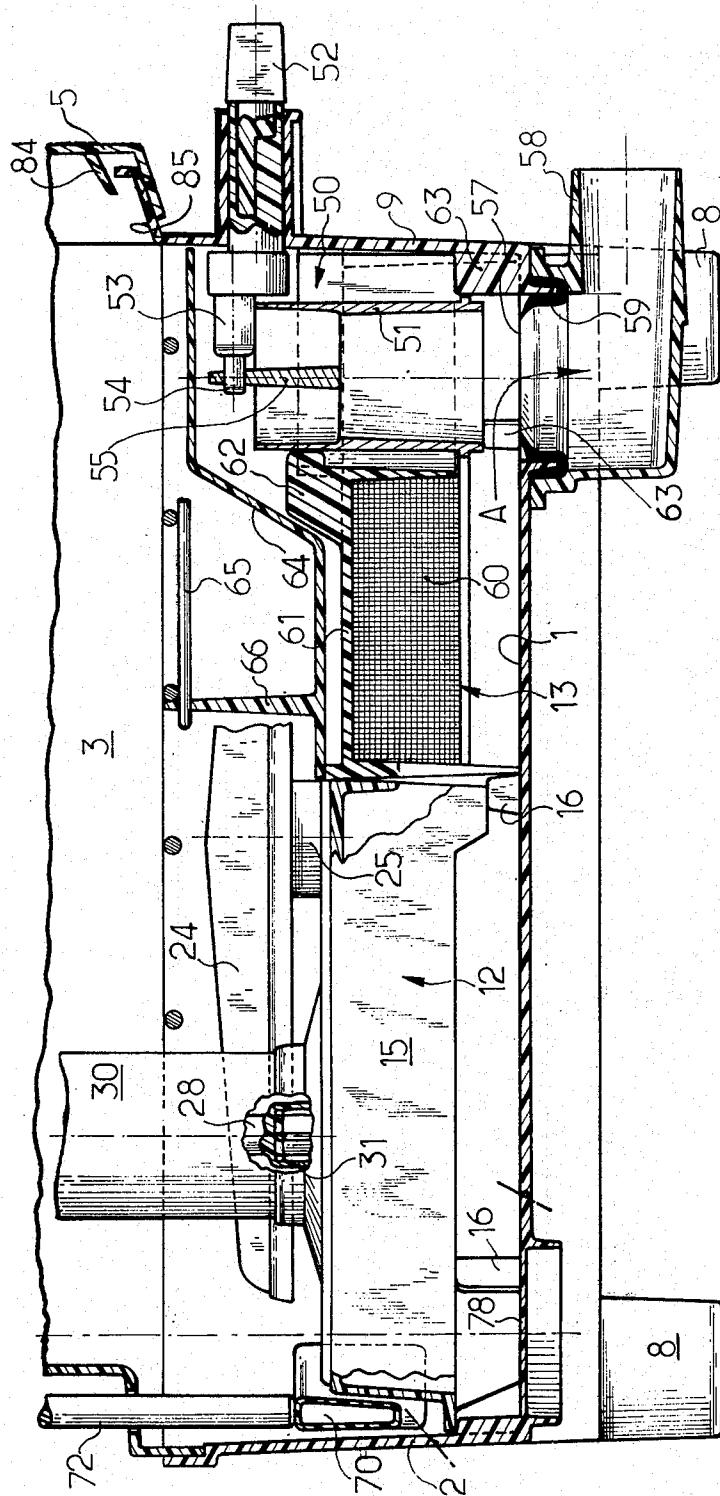
**Fig. 3.**



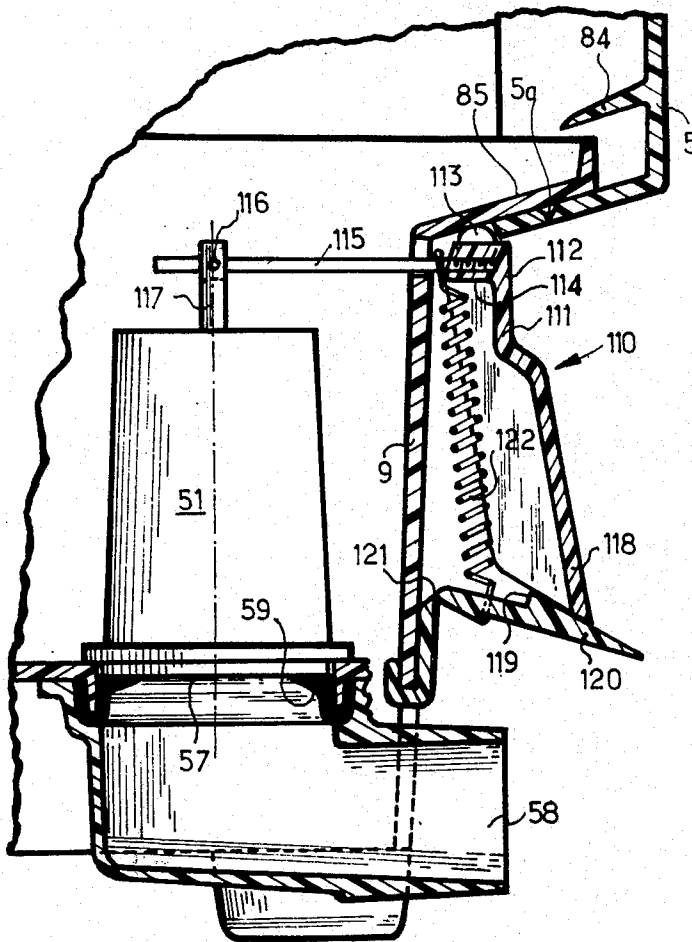




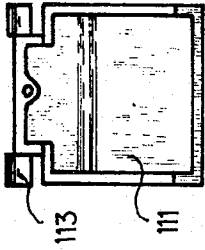
**Fig. 6.**



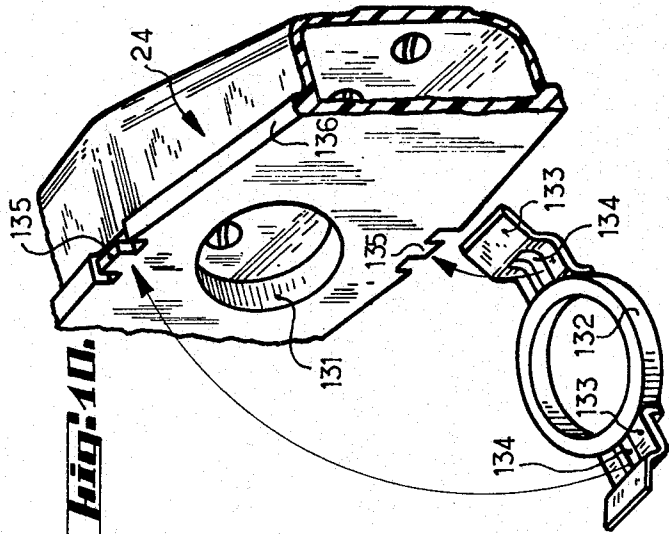
*Fig. 7.*



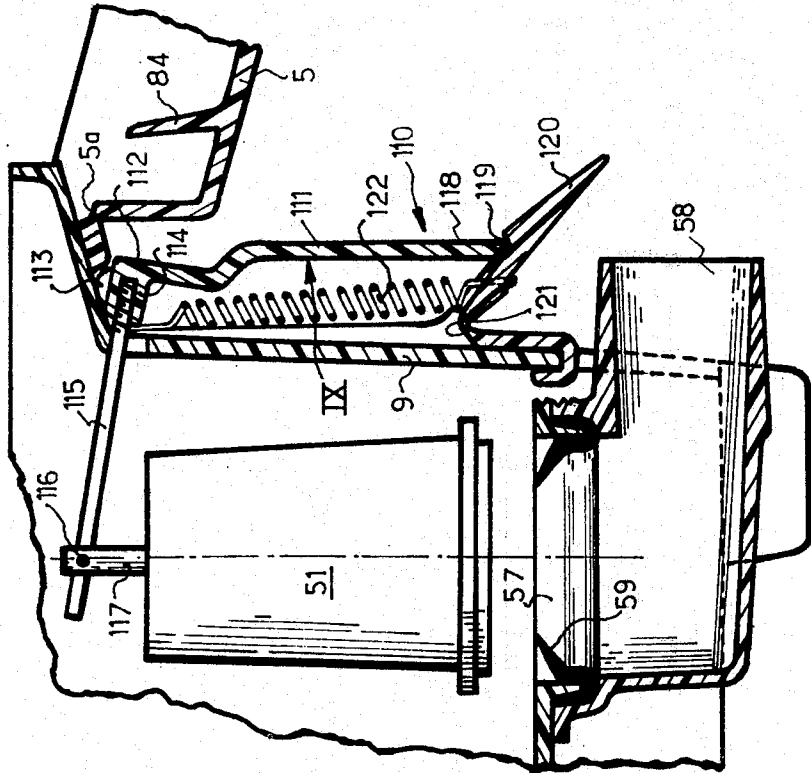
**Fig. 9.**



**Fig. 10.**



**Fig. 8.**



**SMALL-SIZED DISHWASHING MACHINE**

The present invention has essentially for its object a small-sized dishwashing machine, all the main elements of which are made from plastics, and which can, for example, be readily incorporated in suspended storage elements such as those used in kitchens.

For the last few years, dishwashing machines have been the object of constant attention on the part of designers, owing to the market for this kind of appliance having grown very rapidly. It can even be said that, nowadays, dishwashing machines are one of the basic appliances for a modern kitchen.

Besides, the dishwashing machines offered on the market operate quite satisfactorily and all of them use substantially the same principle which consists essentially in pumping water, heated water if necessary, to convey it into injecting arms or revolving sprinklers which project the water in a shower-like manner towards the top or towards the bottom of the machine onto the articles to be washed. The used or washing water is thereafter drained after passing through an appropriate filter.

However, the machines hitherto offered on the market were relatively bulky, heavy and cumbersome and therefore required some room for their installation, as well as special arrangements for water supply and drainage depending upon the type of machine concerned. In addition, the said machines could of course perform the washing of a certain quantity of articles, but their selling price remained relatively high. Otherwise stated, no small-sized dishwashing machines were available hitherto to enable the washing of a small quantity of objects to be performed very quickly and efficiently, and capable of being installed immediately and without particular arrangements at any place in a room such as even a very small kitchen.

The present invention enables this situation to be remedied by providing a small-sized dishwashing machine which meets all the above-mentioned conditions and can be acquired at a very low price, owing more particularly to the fact that all the essential members constituting the machine of the invention are made from plastics, which is possible in view of the small size of the machine. Moreover, such a machine allows a small quantity of articles to be washed in a very short time on the order of nine minutes, which was not possible with the large-sized machines of the prior art which required a much longer washing time. Owing to the extremely short washing time required with the machine according to the invention, it is henceforth quite possible to perform at the desired moment the washing of the articles desired to be washed, or even to perform successively a series of washings. In addition to the above-mentioned advantages, the various parts constituting the machine are arranged in an extremely simple manner, so that its dismantling and maintenance are within anyone's capability while at the same time ensuring that a very efficient washing will take place once the machine is reassembled.

The present invention therefore enables all the aforesaid and also other advantages to be obtained by providing a small-sized dishwashing machine comprising a casing forming a tank adapted to be supplied with water and in the bottom of which are provided means for pumping the said water to project the same towards the upper tank-portion containing the articles to be washed, this small-sized machine being characterized

in that the pumping means are constituted by a small vane-wheel forming a turbine enclosed in a pump body resting upon the bottom of the tank, immersed in water at the bottom of the tank, and driven in rotation by a shaft connected to a motor located at the upper portion of said tank, the said pump body being provided with two channels which are symmetrical with respect to the axis of the turbine to ensure a symmetrical flow of the water sucked by the turbine towards two revolving sprinklers mounted respectively at the end of each channel and to thus obtain a uniform and balanced rotation of the turbine drive shaft with minimum wear.

It will be noted that the symmetry of the channels in the pump body with respect to the axis of the turbine is mainly due to the use of an electric drive motor located at the upper portion of the tank and driving the said turbine through the medium of a shaft having a certain length and which must, of course, be subjected to minimum wear during its rotation. This aim is therefore attained owing to the present invention, since the drive shaft cannot be subjected to torsional or other stresses, owing to the symmetry of the paths followed by the water in the pump body.

It should also be noted that the machine of the invention is provided with a pair of revolving sprinklers which project water only upwardly, and that the pump body is, in a way, sunk in the bottom of the tank of the machine while at the same time being applied against the said bottom as will be seen later.

According to another feature of the invention, the pump body is formed of two moulded plastics plates, namely a first plate resting upon the bottom of the tank through the medium of bosses or the like, and provided with an imprint forming a housing for the turbine, from which the two aforesaid channels start and extend in the form of arcs, and a second plate forming a cover for the imprint.

According to still another feature of the invention, the turbine drive shaft is surrounded by a protecting sleeve retaining the pump body applied on the bottom of the tank.

According to still another feature of the invention, the aforesaid pump body and a casing forming a filter are embedded in a cavity provided in the bottom wall of the tank.

This casing is advantageously removable, therefore rests upon the bottom of the tank, is interposed between the pump body and the front wall of the tank, and comprises a space in which are placed means for draining the used waters.

According to another feature of the invention, the said draining means are constituted by an axially movable pipe section which in its lower position serves as an overflow pipe and in its upper position frees a draining orifice.

It is to be noted that, according to one embodiment of the invention, the axial displacement of the pipe section is performed from outside the machine by a driving gear including an eccentric cam passing through and movable in a lug secured to the said pipe section. According to a preferred embodiment, the pipe section is driven by a small rod hingedly connected to the latter and actuated from outside the machine by means of a lockable push-system.

According to still another feature of the invention, the casing forming the aforesaid filter is provided with a boss co-operating with other bosses provided on the



tank to guide the said pipe section during its displacements.

It should be noted that the casing forming the said filter contains a small sieve or the like in the shape of a dihedron retained by a portion of the casing forming the said boss for guiding the pipe section, and is surmounted by a cap. This filter casing is also provided on its lateral walls with openings for the passage of the water.

According to still another feature of the invention, a hollow element forming a float is hingedly connected to the pump body and drives a rod located outside the tank and connected to a contact-maker for starting the motor to ensure the required water level in the bottom portion of the tank.

According to still another feature of the invention, there is provided in the upper portion of the tank a recess for a motor cooling impeller, which recess communicates with an air discharge trough.

According to the invention the aforesaid draining means, i.e. the pipe section, is controlled automatically by an electromagnet which actuates a rod located outside the tank and connected to the said pipe section.

It is therefore seen that, owing to the aforementioned arrangement, the machine of the invention can be readily operated automatically, which means that the washing and rinsing cycle will take place without any special intervention.

It should also be noted that the front wall of the machine is constituted by two lockable doors which can be opened upwardly and downwardly and are hingedly connected to the tank by a thinner portion of the tank material. The two doors can be opened simultaneously owing to a system of hinged arms.

It should also be observed that the machine of the invention requires no sealing means since the lower portion of the lower door is advantageously provided with a flange allowing the water projected onto the internal side of the said doors to flow into the tank.

The machine according to the invention is also provided with water supply nozzles on either side of the tank, so that the water can fall into the tank in the form of raindrops to thus achieve a pre-rinsing of the articles to be washed.

Other purposes and advantages of the invention will appear more clearly from the following detailed description made with reference to the appended drawings given solely by way of example and wherein:

FIGS. 1 and 2 are front and side perspective views showing respectively the machine according to the invention, with the doors closed and the doors opened;

FIG. 3 is a perspective view showing the rear of the machine (aeration grid removed);

FIG. 4 is a perspective view, with parts broken away, showing the various members of the machine according to the invention;

FIG. 5 is an exploded perspective view of the pumping means provided in the machine;

FIG. 6 is a sectional view substantially upon the line VI-VI of FIG. 4;

FIG. 7 is an enlarged, partially sectional view of a preferred embodiment of the driving gear of the draining means, i.e. a lockable push-system actuating the overflow pipe section, the said pipe section being in its lower, i.e. closed position;

FIG. 8 is a view similar to FIG. 7, but showing the overflow pipe section in its opened position, i.e. cleared from the draining orifice;

FIG. 9 is a rear view of the lockable push-system in the direction of the arrow IX of FIG. 8, and

FIG. 10 is a partial, exploded and perspective view of a revolving sprinkler on which is clipped a ring according to the present invention.

According to an example of embodiment and referring more particularly to FIGS. 1 to 4 in the appended drawings, it is seen that a small-sized dishwashing machine according to the invention is constituted by a substantially parallelepipedic casing forming a tank, comprising a bottom wall 1, a rear wall 2, two side walls 3, an upper wall 4, and closed by two lockable doors 5 hingedly connected to the casing of the machine by a thinner material as seen at 5a in FIGS. 4, 7 and 8. The doors 5 open simultaneously and respectively upwardly and downwardly owing to arms 102 and 103 hinged at 104 as seen in FIG. 2.

One of the hinged arms 103 swings preferably about a pivot pin 105 provided on the internal side of the side walls 3 of the casing of the machine.

According to the present invention, the locking of the doors 5 is ensured by two buttons 106 (FIG. 1) the pinching (materialized by the arrows F in FIG. 1) or release of which actuates links 107 (FIG. 2) acted upon by a spring (not shown).

In the locked position, i.e. when the buttons 106 are released, the ends of the links 107 penetrate into corresponding orifices (not shown) provided in the side walls 3 of the casing of the machine.

The casing just described is entirely made from a plastics material such as polypropylene and rests upon three legs such as 8, it being understood that such a casing may be provided with any appropriate arrangements to enable it to be hooked to a panel or a wall, for example by means of an L-shaped attachment. It will be noted that the lower portion of the casing just described is prolonged by a plastics enclosure 9.

Nozzles 10 (FIGS. 1 and 4) allowing the introduction of water into the machine, for example by means of a flexible tube, are provided on each side of the casing. Of course, one of the said nozzles is stopped according to whether the supply takes place from the right side or the left side of the machine. It should be noted in this connection that there can also be provided, without departing from the scope of the invention, a water supply at the upper portion of the machine in order that the articles may thus be sprinkled and pre-washed. Furthermore, known means such as automatic water supply and shut-off valves may be interposed between the machine and the source of water under pressure, without departing from the scope of the invention.

As appears more clearly in FIG. 4, the bottom wall 1 of the casing forming the tank has a slight declivity to allow the water to reach the middle of the tank. The bottom wall 1 is also provided at its middle with a cavity 11 in which are embedded, side by side, water pumping means 12 and a filter casing 13.

As seen more clearly in FIG. 5, the pumping means are constituted by a small vane-wheel 14 forming a turbine enclosed in a pump body formed by two moulded plastics plates, i.e. a first plate 15 resting upon the bottom of the tank through the medium of bosses or the like 16 and provided with an imprint or impression forming a housing 17 for the turbine 14, and with two

arc-shaped channels 18 extending symmetrically with respect to the axis 19 of the turbine 14, and a second plate 20 forming a cover for the housing 17 and the channels 18. Both plates 15 and 20 are advantageously made from a plastics material and can be welded together by means of a heating wire placed in a groove 21 of the plate 15 and both ends of which are passed out through orifices 22 to enable the wire to be supplied with electric current. Once the welding is performed, both ends of the wire (not shown) are severed under the plate 15, which means that the welding is performed by sinking the wire in the pump body 15.

The housing 17 for the turbine 14 is provided with an orifice 23 through which the water is sucked and then conveyed through the channels 18 to the injecting arms or revolving sprinklers 24 (see FIG. 4) fitted on tubular portions 25 extending in prolongation of the orifices 26 provided at the end of the plate 20 forming the cover of the pump body.

As appears clearly from FIG. 10, there is provided on each revolving sprinkler 24 a ring 132 which may be clipped on the end of each channel 18 and is provided with two lugs 133 which themselves are clipped on the body of the revolving sprinkler.

More precisely, the lugs 133 are respectively provided with an orifice 134 engaged by a corresponding projection 135 provided at the periphery 136 of the revolving sprinkler.

It has been observed that this arrangement allows the free rotation of the sprinklers 24 to be considerably improved and the removal of the sprinklers for cleaning purposes to be greatly facilitated. The turbine 14 is driven in rotation by a shaft 28 (FIG. 4) connected to an electric motor 27 (FIG. 3) placed in a recess 29 provided in the upper wall 4 of the machine.

As appears clearly in FIGS. 4 and 6, the drive shaft 28 of the turbine 14 is surrounded by a protecting sleeve 30 which serves as a spacer between the upper wall 4 of the machine and the pump body to maintain the latter applied in the cavity 11 of the bottom wall 1 of the machine. As seen in FIG. 6, the lower end of the shaft 28 carries a splined sleeve 31 fitted on a small arbor with grooves 31 provided on the top of the turbine. As shown at 32 in FIG. 4, the coupling of the shaft 28 to the output shaft of the motor 27 is performed in the same manner. A trough or the like 33 is provided in the upper wall 4 of the machine for the discharge of the motor cooling air, the said cooling being ensured by a finned wheel 34 arranged at the upper portion of the machine as seen in FIGS. 3 and 4. At 35 in these two Figures is shown a protective cover provided with a grid and closing the recess 29 and the trough 33.

The description of the pumping means just made shows that the symmetrical arrangement of the channels 18 in the pump body allows a symmetrical flow of the water and the ejection thereof through orifices 36 provided in the revolving sprinklers 24, thus advantageously ensuring a uniform and balanced rotation of the drive shaft and the turbine with minimum wear. At 37 are shown orifices provided on the side of the injecting arms 24, so that the water ejected through the said orifices causes the said arms to rotate.

As appears clearly in FIGS. 4 and 6, the casing including the filter 13 rests in the cavity 11 at the bottom of the tank, is interposed between the pump body 12 and the front of the machine and leaves a space serving as a housing for used-water draining means 50.

According to a first embodiment and as appears from FIGS. 4 and 6, the means 50 are essentially constituted by a pipe section 51 which is axially displaceable from outside the machine by means of a handle 52 actuating an eccentric cam 53 passing at 54 through a lug 55 secured to the pipe section 51, and movable in an opening 56 (FIG. 4) provided in the said lug. It is thus understood that the rotation of the handle 52 will lift or lower the pipe section 51. In the upper position shown in FIGS. 4 and 6, the pipe section 51 frees a draining orifice 57 to allow the discharge of the used water through a nozzle 58 as materialized by the arrow A in FIG. 6. In the lower position, the pipe section 51 closes the draining orifice 57 by sealingly resting upon a U-section seal 59, and serves as an overflow. Otherwise stated, the level of the water contained in the tank of the machine cannot exceed the height of the pipe section 51.

According to a preferred embodiment of the invention and as appears clearly from FIGS. 1, 2, 7, 8 and 9, the pipe section 51 is driven by a lockable push-system 110 mounted on the enclosure 9 of the casing.

This push-system comprises a first finger 111, one end 112 of which is hinged mounted on the casing of the machine by means of a hinge such as 113 seen in FIG. 9. The end 112 of the hinged finger 111 receives at 114 a small rod 115 hingedly connected, for example by means of a pin 116, to a lug or the like 117 secured to the pipe section 51 which forms an overflow pipe capable of being applied on the draining orifice 57 to close the latter. The draining orifice 57 is closed in FIG. 7. In order to free this orifice, it is sufficient to press the finger 111 which causes the lug 115 to swing and, therefore, the overflow pipe 51 to rise. When the finger 111 is pressed, its end 118 reaches a locking position in a slot 119 provided on a second finger 120 hingedly connected at 121 to the casing of the machine and constantly urged upwards by a spring 122. The upper unlocked position of the pipe section 51 appears clearly in FIG. 8. In order to unlock the finger 111, i.e. to close the orifice 57, it is sufficient to slightly press the finger 120 and the end 118 of the finger 111 is automatically freed from the slot 119 under the action of the own weight of the pipe section 51, thus restoring the position illustrated in FIG. 7. It will be observed that the hinged connection 121 of the finger 120 to the casing of the machine is simply obtained by means of a thinner portion of the said finger which is made from an appropriate plastics material such as polypropylene.

The casing 13 contains a filter or sleeve 60 in the shape of a dihedron retained by a portion 61 of the casing 13, which portion forms also a boss 62 for axial guiding of the overflow pipe section 51, the said boss co-operating with other bosses such as 63 for axial guiding of the pipe section 51. The casing 13 with the filter 60 also comprises a portion forming a cap 64 covering the eccentric drive gear 53. Of course, the casing with the filter must be prevented from floating or rising when the tank is filled with water. To avoid this, the casing is ballasted by a metal armature forming a grid or the like 65 retained in bosses 66 cast integrally with the cap 64, the said grid also serving to remove the casing with the filter for cleaning purposes. The sides 67 of the casing 13 are provided with openings such as 68 for the passage of the water.

At 69 are also shown bosses cast integrally with the pump body and the tank bottom generally, the said

bosses being intended to receive removable grids (not shown) flush with the grid 65 connected to the filter casing, ballasting the said casing and allowing it to be extracted from the bottom of the tank.

At 70 is shown an elongated and hollow body forming a float hingedly mounted at 71 on the pump body 12 and driving a rod 72 located outside the machine and connected to a contact-maker (not shown) for starting the motor 27 in accordance with a certain water level in the bottom portion of the tank. Otherwise stated, the motor will be started at a certain water level in the machine, causing the float 70 to swing. More precisely, the float 70 is hingedly connected to the pump body 12 by means of a small pin 73 passing through two lugs 74, the said small pin being bent at 75 to allow its locking against a boss 76.

At 77 in FIG. 4 is shown an orifice provided in the pump body 12 and at 78 in FIG. 6 is shown a rough opening in the bottom of the tank 1, the orifice 77 and the rough opening 78 being axially aligned. Owing to this arrangement, the overflow pipe section 51 can be placed at the rear of the machine, in which case the opening and closing of the said overflow pipe will be controlled automatically by an electro-magnet (not shown) actuating a rod (not shown) located outside the tank and connected to the overflow pipe 51. Besides, at 79 is shown the enclosure which would contain the said rods should the overflow pipe section be provided at the rear of the machine. In this case the machine would operate automatically and the various washing and rinsing cycles would take place without external interventions, this not being the case in the embodiment shown in FIG. 4. It should be noted that a plate or the like 80 closes both enclosures 81 and 79 containing respectively the rod 72 and the rod (not shown) which would automatically drive an overflow pipe section such as 51.

It should be noted, at this point, that in the case where the overflow pipe section 51 is provided at the front of the machine (FIGS. 4 and 6), the said overflow pipe may also perfectly, without departing from the scope of the invention, be controlled automatically by a link or the like (not shown) arranged under the bottom wall of the machine and actuated by an electro-magnet.

The machine of the invention does not need to be provided with special sealing means. As seen in FIGS. 2, 4, 7 and 8, the bottom of the lower door 5 is provided with a flange forming a deflector 84 allowing the water projected onto the internal side of the doors to flow on the inclined portion 85 of the casing and fall into the tank.

At the upper portion of the machine are also provided timing means 88 (FIG. 3) of a type known per se, as well as a multi-position control button 89 for the various cycles which will be briefly explained hereafter.

The successive stages of operation of the machine will be set forth in the following by referring to FIG. 1 as regards the control knob 89, it being well understood that in such a manually operated machine, the system of control of the drain members would be, for example, the one illustrated in FIG. 4, or the one illustrated in FIGS. 7 and 8.

After having loaded the machine, a deterative product is placed therein; the drain pipe section 51 is lowered or closed by acting upon the handle 52; hot water is supplied, for example, by opening a cock to which is

connected a flexible tube leading to one of the nozzles 10; the control knob 89 is placed in position 1; when the required water level is reached, the motor is started automatically owing to the float 70 and the washing of the articles is performed during about 6 minutes (when the motor is heard to be rotating, the water supply must be stopped, although this does not interfere with the operation of the machine, since, as already pointed out in the foregoing the drain pipe section 51 also fulfils the function of an overflow pipe); when the 6 minute washing is completed, the motor starts automatically; the drain pipe section 51 is lifted or opened by acting once more upon the handle 52, thus causing the used water to flow out through the nozzle 58; the pipe section 51 is closed again, and the hot or cold water cock, depending upon the type of articles to be washed is opened again; the control knob 89 is placed in position 2 and a rinsing of the article takes place during about three minutes (of course, care should have been taken to close the water supply, although this is not prejudicial to the machine, as already mentioned above); when the 3 minute rinsing is completed, the machine stops automatically and the drain pipe section 51 is opened again to allow the draining of the rinsing water; a second rinsing can be carried out as previously after having introduced a rinsing product if desired; this second rinsing will preferably be made with hot water, so that when the doors 5 are opened at the end of the cycle, the washed articles may dry relatively quickly; lastly, if so desired, the filter casing 13 may be withdrawn to remove the refuse if any.

Such is the manual operation of the small washing machine of the invention, which, it is worth while mentioning it again, can operate in an entirely automatic manner by using a drain pipe section such as 51 which is provided either at the rear or the front of the machine, and is, in the latter case, actuated automatically by a linkage controlled by an electro-magnet. Furthermore, automatic washer supply and shut-off means may be provided without departing from the scope of the invention.

The present invention therefore enables to obtain a dishwashing machine of very small dimensions (about 55 × 58 × 33 cm) adapted to be operated either manually or automatically, the design of which is particularly simple and all the main members of which are made from moulded plastics and can be readily fitted together; moreover, the said machine can be installed instantaneously, and its dismantling and maintenance are within anyone's capability.

Of course, the invention is by no means limited to the forms of embodiment described and illustrated, which have been given by way of example only. In particular, it comprises all the means constituting technical equivalents to the means described as well as their combinations, should the latter be carried out according to the spirit of the invention and used within the scope of the following claims.

What is claimed is:

1. A small-sized dishwashing machine comprising in combination: a tank forming a casing containing articles to be washed and adapted to be supplied with water, said tank having a top wall and a recess on the outside of said top wall, a bottom wall and bosses inwardly projecting therefrom, two lateral walls, a front wall and a rear wall; a pump body resting upon said bottom wall of the tank and immersed in the water; a motor located

in said recess of the top wall, a small vane turbine-wheel enclosed in said pump body, a shaft connected to said motor located in said recess of the top wall and to said turbine wheel for driving said turbine wheel in rotation; two channels on said pump body extending symmetrically with respect to the axis of the turbine wheel to ensure a symmetrical flow of the water sucked by the turbine-wheel, said pump body comprising two moulded plastic plates, namely a first plate resting upon said bottom wall through the medium of said bosses of the bottom wall and provided with an impression forming a housing for said turbine, the said two channels communicating with and starting from said impression and extending therefrom in the shape of arcs of circles, and a second plate forming a cover for said impression and said channels; a protective sleeve surrounding said shaft and serving as a spacer between said top wall of the machine and said pump body in order to maintain the latter applied on said bosses of said bottom wall of the tank; and two revolving sprinklers mounted on said second plate at the end of each channel respectively, for thus allowing a uniform and balanced rotation of said turbine-wheel drive shaft with minimum wear.

2. A small-sized dishwashing machine according to claim 1, wherein said bottom wall of the tank includes a cavity which forms a space permitting the storage and flow of a certain amount of water, said machine further including a casing forming a filter removably fitted in said cavity together with said pump body.

3. A small-sized machine according to claim 2, wherein it further includes used-water draining means and said casing forming the said filter leaves, on the side of the said front wall of the tank, a space for receiving said draining means.

4. A small-sized machine according to claim 1, wherein the said bottom wall of the tank includes a draining orifice and draining means, said draining means comprising an axially movable pipe section which, in its lower position, fulfills the function of an overflow pipe and in its upper position frees said draining orifice.

5. A small-sized machine according to claim 4, wherein said pipe section includes lug means and the axial displacement of the said pipe section is performed from the outside of the machine by means of eccentric drive means passing through and movable in said lug means.

6. A small-sized machine according to claim 4, which further includes a small rod hingedly connected to said pipe section and a lockable push-system allowing pivotal motion of said rod for axially displacing said pipe section.

7. A small-sized machine according to claim 6, wherein the said push-system comprises a first element having two ends, and a second element, one end of the first element being hingedly connected to the front wall of the machine and receiving the said small rod, and the other end of said first element being lockable in a notch provided on said second element which is also hingedly connected to the front wall of the machine and acted upon by a spring.

8. A small-sized machine according to claim 2, including used-water draining means comprising a movable pipe portion and wherein the said filter casing contains a filter in the shape of a dihedron retained by a portion of the said filter casing forming also a boss for guiding the said pipe section, the said filter casing being surmounted by a cap.

9. A small-sized machine according to claim 8, wherein said boss of the filter casing co-operates with other bosses provided on the tank to guide the pipe section during its displacement.

10. A small-sized machine according to claim 2, wherein said casing forming a filter has lateral walls and is provided with openings in said lateral walls to allow the passage of water and with an opening opposite the said pump body.

11. A small-sized machine according to claim 1, wherein there is provided in said tank a hollow element forming a float hingedly connected to the pump body and a rod located outside the tank driven by said float and connected to a contact-maker which starts the motor when a predetermined water level is reached in the bottom portion of the tank.

12. A small-sized machine according to claim 1, wherein there is provided in said top wall of the tank a recess for a motor cooling impeller, which recess communicates with an air discharge trough.

13. A small-sized machine according to claim 1, wherein said front wall includes upper and lower lockable doors each hingedly connected to the casing of the machine by a thinner portion of its material and said machine further including a system of hinged arms for opening simultaneously and respectively upwardly and downwardly said doors.

14. A small-sized machine according to claim 13, wherein a lateral wall of the said tank has an internal face including a pivot pin, and at least one of the said hinged arms swings about said pivot pin.

15. A small-sized machine according to claim 13, wherein one of the said doors includes two buttons, and sprung links actuated by the pinching or release of said buttons, the ends of said sprung links being adapted to penetrate into corresponding orifices provided in the lateral walls of the casing of the machine.

16. A small-sized machine according to claim 13, wherein the lower door has a bottom provided with a flange allowing the water projected onto the internal side thereof to flow into the tank.

17. A small-sized machine according to claim 1, wherein said tank further includes water supply nozzles provided on the lateral walls of said tank.

18. A small-sized machine according to claim 1, wherein said revolving sprinklers are removably mounted at the end of each channel and means including a ring assembled respectively with each of the said revolving sprinklers and resiliently locked on the latter.

19. A small-sized machine according to claim 18, wherein said revolving sprinklers include projections and said ring is provided with two holed lugs which are resiliently locked on said projections.

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