Feb. 25, 1947. I. DEUTSCH 2,416,616

COMBINATION CLOTHES AND DISH WASHING MACHINE

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Fig. 1.

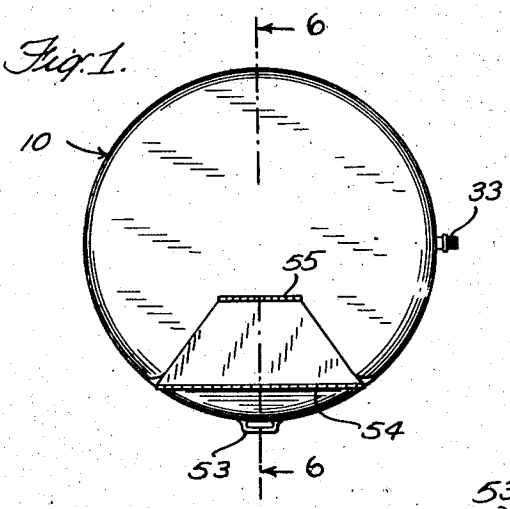


Fig. 2.

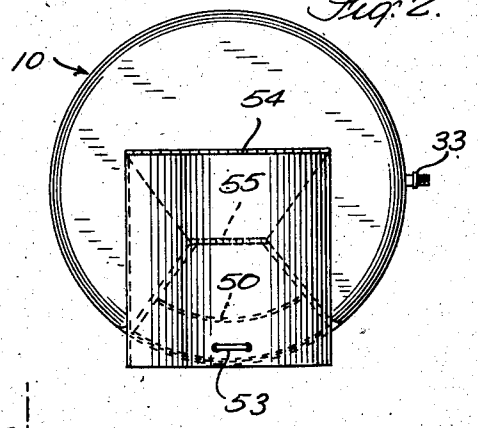
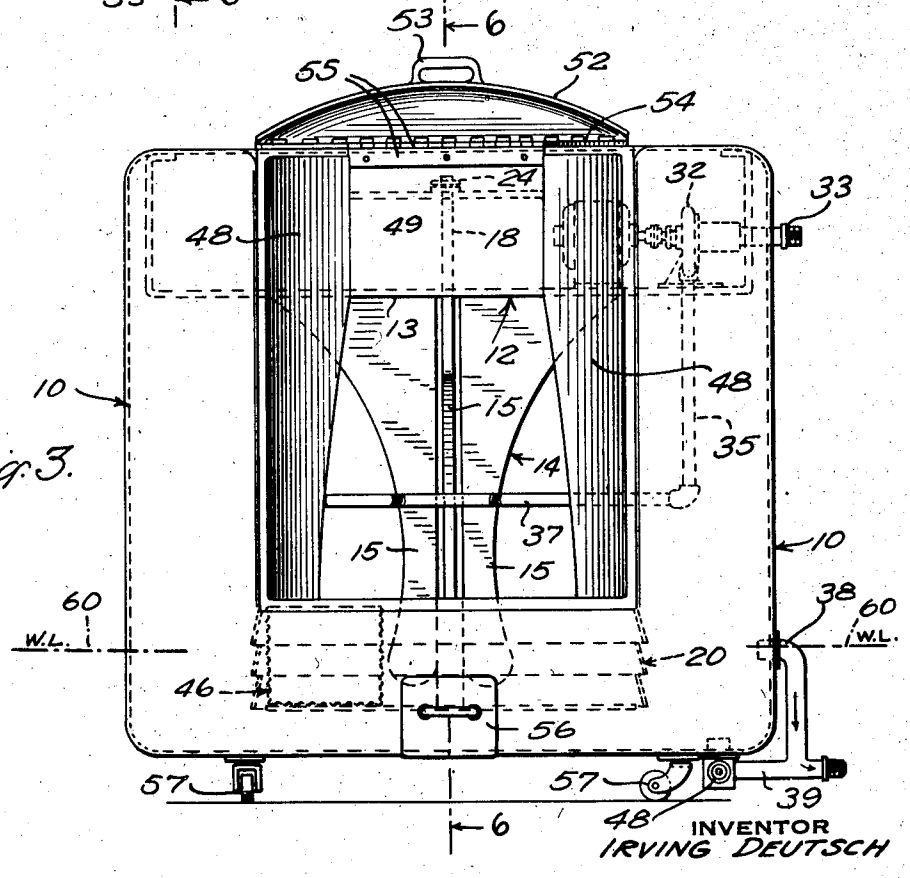


Fig. 3.



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Fig. 4.

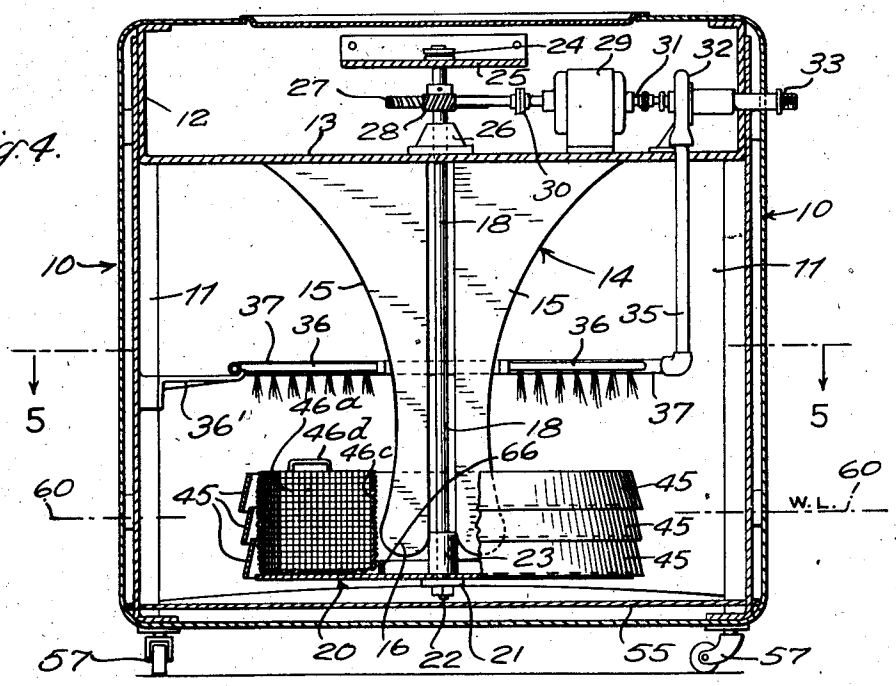
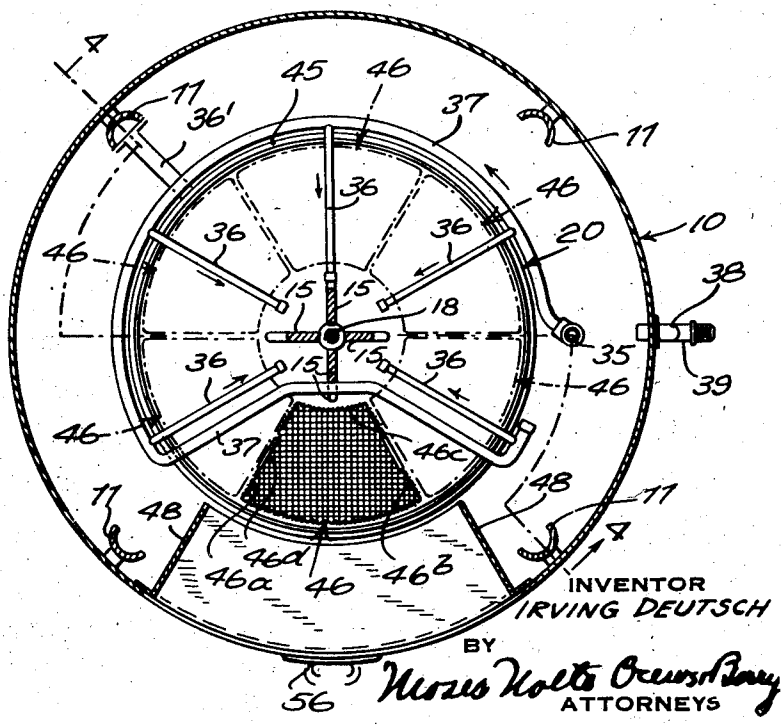


Fig. 5.



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Fig. 6.

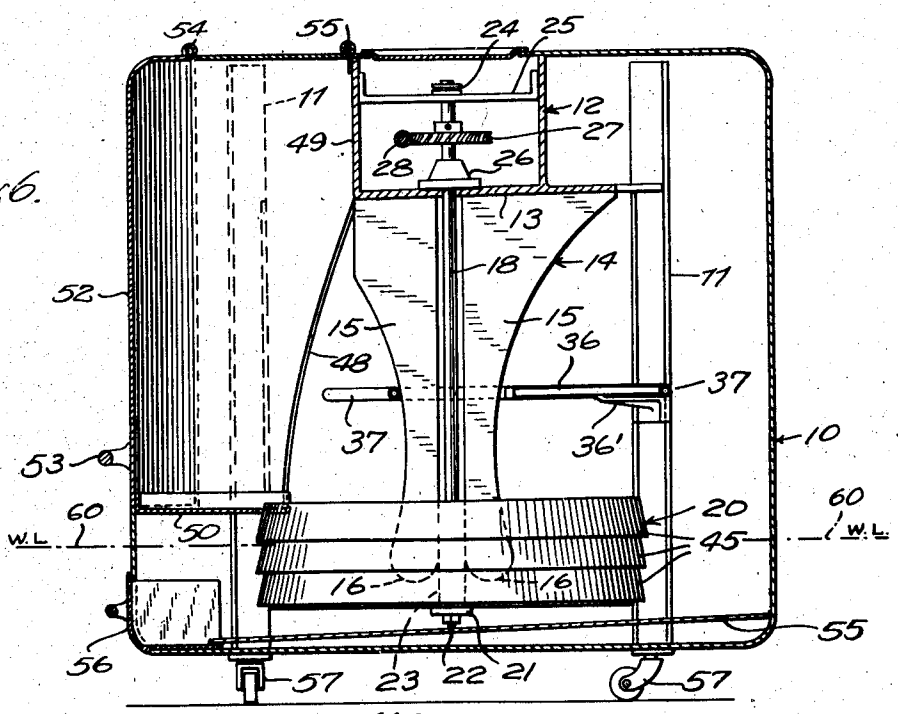
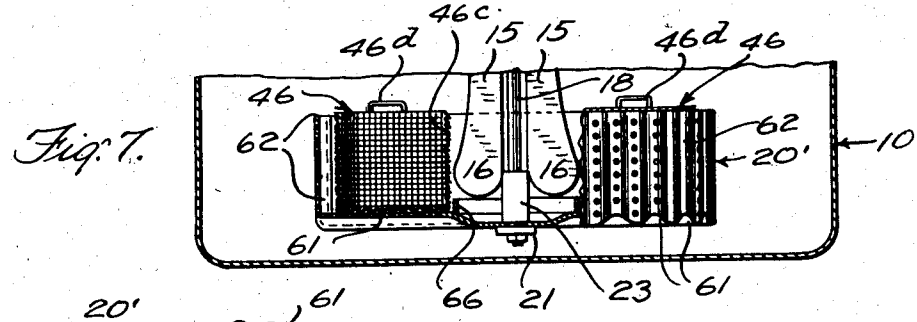


Fig. 7.



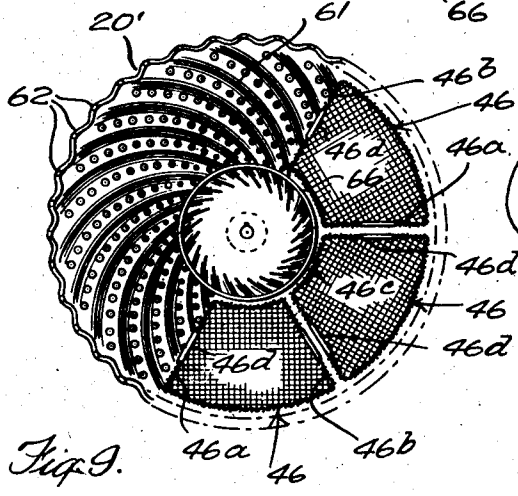
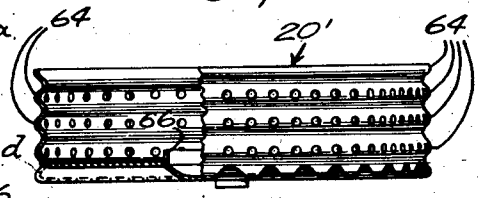


Fig. 9.

Fig. 8.



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UNITED STATES PATENT OFFICE

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COMBINATION CLOTHES AND DISH WASHING MACHINE

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Application October 16, 1944, Serial No. 558,820

1 Claim. (Cl. 68—4)

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My present invention relates to improvements in machines for washing either clothes or dishes or articles similar thereto. In general it is the object of my invention to simplify existing devices and to render them more efficient.

A more specific object is to devise a machine having a work container movable for clothes agitation and a stator so disposed in reference thereto as to effect the required agitation of the clothes or other fabric, but leaving a free annular space for rigid objects such as dishes, thus making possible the washing of clothes and dishes in the same container.

A still further object is to provide improved preferably nested holders for dishes and the like any one of which may be removed from the machine, stacked with dishes, and returned to the machine for the washing operation and then, after the washing is completed, removed therefrom.

A still further object is to provide an improved casing for the machine which will facilitate access to the work container.

A still further object is to provide a container for clothes and the like which will permit of easy circulation of the cleansing fluid but without damage to the clothes, especially buttons and the like attached thereto.

Other objects and the advantages thereof will be apparent as the description proceeds and the novel features will be pointed out in the appended claim.

In the drawings:

Fig. 1 is a plan view of an illustrative embodiment of my invention showing the same with the cover in place;

Fig. 2 is a view similar to Fig. 1 but showing the cover in open position;

Fig. 3 is a view in front elevation on a somewhat larger scale with the cover in open position;

Fig. 4 is a sectional view taken on line 4—4 of Fig. 5;

Fig. 5 is a sectional view taken on line 5—5 of Fig. 4;

Fig. 6 is a sectional view taken on line 6—6 of Fig. 3 (6—6 of Fig. 1);

Fig. 7 is a view partly in section of a modified container or cage for the work;

Fig. 8 is a still further modification thereof;

Fig. 9 is a view showing the spiral grooving of the floor of the container shown in Fig. 7.

Referring now to the figures in detail, more especially to Fig. 4, 10 denotes the external casing enclosing a frame-work consisting of uprights 11—11, etc., an interior casing 12 supported by said uprights, casing 12 constituting a housing for the motor, drive, and other mechanism to be described. Depending from the bottom 13 of the casing 12 is a stator denoted generally by 14 and consisting in the embodiment shown

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of four vanes 15—15, etc., such vanes being relatively wide at the top and narrower toward the bottom but having thereat flared portions 16—16, etc., whose action will be further described hereinafter.

The stator 14, which may consist of a single casting of suitable material, has a hollow core which accommodates a shaft 18 to whose lower end is fastened a container or cage 20, also termed a rotor, as by a key, not shown, and by means of washer 21, nut 22 and bushing 23. The upper end of shaft 18 is provided with a thrust bearing 24 in contact with a bearing plate 25 secured in casing 12. Shaft 18 also has a cylindrical bearing 26 attached to the member 13 constituting the bottom of the casing 12. Also attached to shaft 18 is worm wheel 27 co-operating with which is worm 28 driven by motor 29 through a flexible coupling 30. At its opposite end motor 29 has a shaft 31 which drives a pump 32 of the centrifugal type, the inlet to which, 33, extends through the outer casing 10. The outlet of pump 32 is joined to pipe 35 for conveying the washing fluid to a system of spraying devices 36—36, etc. (Fig. 5), through a feeder pipe or header 37 communicating with said devices 36. Bracket 36' furnishes one support for sprayers 36. It will be noted from Fig. 5 that the sprayer devices 36 and the header 37 at the front of the machine are disposed so as to permit access to the interior of the casing 10, and that the pump 32 is used to boost the pressure of the washing fluid entering at 33, such fluid being withdrawn through a discharge pipe 38, Fig. 3, which determines the liquid level in the wash container 20 and the casing 10. Pipe 39, which is a branch of 38, drains the entire casing 10 through valve 40 when open. The wash container 20, which is of a radius somewhat less than that of the outer casing 10, may, as shown in Fig. 4, consist of a plurality of superimposed downwardly flared and slightly overlapping louvers 45, the same being secured to one another by means not shown. By means of this construction the washing fluid has easy circulation in and out of the container 20, but without causing the clothing to become caught in the space between the louvers. When the machine is to be used for washing dishes or the like, there are placed in the container 20 nested foraminous holders 46, 46, etc., containing the dishes, pots, pans and the like to be washed, those holders in the embodiment shown numbering six and having sides 46a, 46b which are inclined to one another at an angle of substantially sixty degrees. The inner vertical wall 46c is disposed close to the flared portion 16 of the vanes 15 of the stator but prevented from coming in contact with same by a circular wall 66. Each basket or container 46 may be provided with a handle 46d.

It is a further feature of my invention to provide for easy access to the washing chamber occupied by the rotor or cage 20, and to this end the casing 10 is formed so as to exclude from the interior thereof a truncated sector defined by vertical radial walls 48, 48, Figs. 5 and 3, which at their upper ends are integrally joined by a front wall 49 in the upper casing 12 while their lower ends are joined to a flat horizontal segmental member 50 disposed approximately at the upper level of the cage or rotor 20. Such casing opening is, as shown in Fig. 5, somewhat larger than the baskets 46 thus enabling their ready insertion and removal. Furthermore, as already pointed out, the spray devices 36 and header 37 are disposed so as not to extend into this opening of the casing, whereby when washing the dishes, for example, the cover 52 of the opening may be raised during the washing operation and inspection had without danger of the operator becoming sprayed. As seen in Figs. 1 and 3, the cover 52 has handle 53 and is doubly hinged (hinges 54 and 55) at the top thereof. As shown in Fig. 6, the casing 10 preferably has a false bottom 55 which slopes downwardly toward the front of the machine so that when cleanout drawer 53 is opened, any solid matter may be readily removed. The casing 10 is also provided with the usual casters 57, 57, etc.

It is further to be remarked that the motor 29 will be provided with speed controls of known construction by which the rotor 20 may be driven at a comparatively slow speed for washing dishes, and at somewhat higher speeds for washing clothes, and with a much higher speed for centrifugally drying clothes.

In the operation for washing clothes, for example, cover 52 is raised, the clothes placed in the rotor or cage 20 (the holders 46 having been removed), and the casing filled to the level determined by the pipe 38, i. e., at 60, with water, through the inlet 33 (the motor being driven at slow speed so as to permit flow of water through the pump 32). After the clothes to be washed and soap or other detergent have been added, the cover 52 is brought down into closed position and the motor is run at the speed indicated for this operation. If desired, the cycle of operations of washing, draining, rinsing and centrifugally drying may be accomplished automatically by a motor control means not forming a part of the present invention. It will be noted that the clothes in the rotor 20 will be carried against the flared vanes 15 of the stator—more especially the portions 16 thereof—and thereby will be given a proper degree of agitation and rubbing. In order to further increase this movement of the clothes toward and away from the vanes 15, the bottom of the rotor 20', Fig. 9, may be provided with spiral grooves 61 extending from the center in the general direction of rotation. If desired, instead of the louver construction shown in Fig. 4, the rotor 20' may be perforated as shown in Fig. 7 and have vertically running ribs 62 further to agitate the clothes. In Fig. 8 the ribs are shown running circumferentially as at 64. In Figs. 7 and 9 it will be noted that the periphery of the drum is thus made lobate with the perforations in the outwardly extending lobes or ribs. Thereby free access of washing fluids is provided for the contents of the container with, however, the

danger of having buttons and the like caught in the perforations minimized.

For washing dishes the baskets 46 are inserted, after having been first filled with such dishes as are to be washed. After the filled holders are nested as shown in Fig. 5 the cover 52 may be lowered and the motor set at "slow" and started, and hot water fed to the spraying devices 36. When the machine is used for washing dishes the valve 40 will be opened so that no substantial depth of water accumulates in the casing 10. By selection of the proper type of pump 32 and sprayers 36 the water may be sprayed onto the work with considerable force; and for this reason my device is particularly suitable for cleaning pots and pans.

If desired, the rotor 20 may be given an oscillating movement rather than a movement of continuous rotation by use of known mechanism in the casing 12.

While I have illustrated and described in detail preferred forms of my invention, it is to be understod that changes may be made therein and the invention embodied in other structures. I do not, therefore, desire to limit myself to the specific constructions illustrated, but intend to cover my invention broadly in whatever form its principle may be embodied.

I claim:

In a combination clothes and dish washing machine, a work container movable for clothes agitation about a substantially vertical axis, vertical stationary fins disposed within said container but so as to leave a free annular space for rigid objects such as dishes but adapted to make contact with clothes and the like in said container, spray devices above said container, a casing enclosing the work container and vertical stationary fins, said casing having a cutout portion comprised of substantially radial, substantially vertical sides defining in horizontal section a truncated sector and extending above the work in said container, said cutout portion permitting the insertion of work therethrough into the work container, and a removable cover for said cutout portion whereby upon removal of the cover, work in said annular space may be inserted and removed through said cutout portion, said spray devices being disposed so as to substantially exclude from the sprayed area the area of said truncated sector.

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