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2,307,363

DISHWASHER

Filed Oct. 24, 1941

2 Sheets-Sheet 1

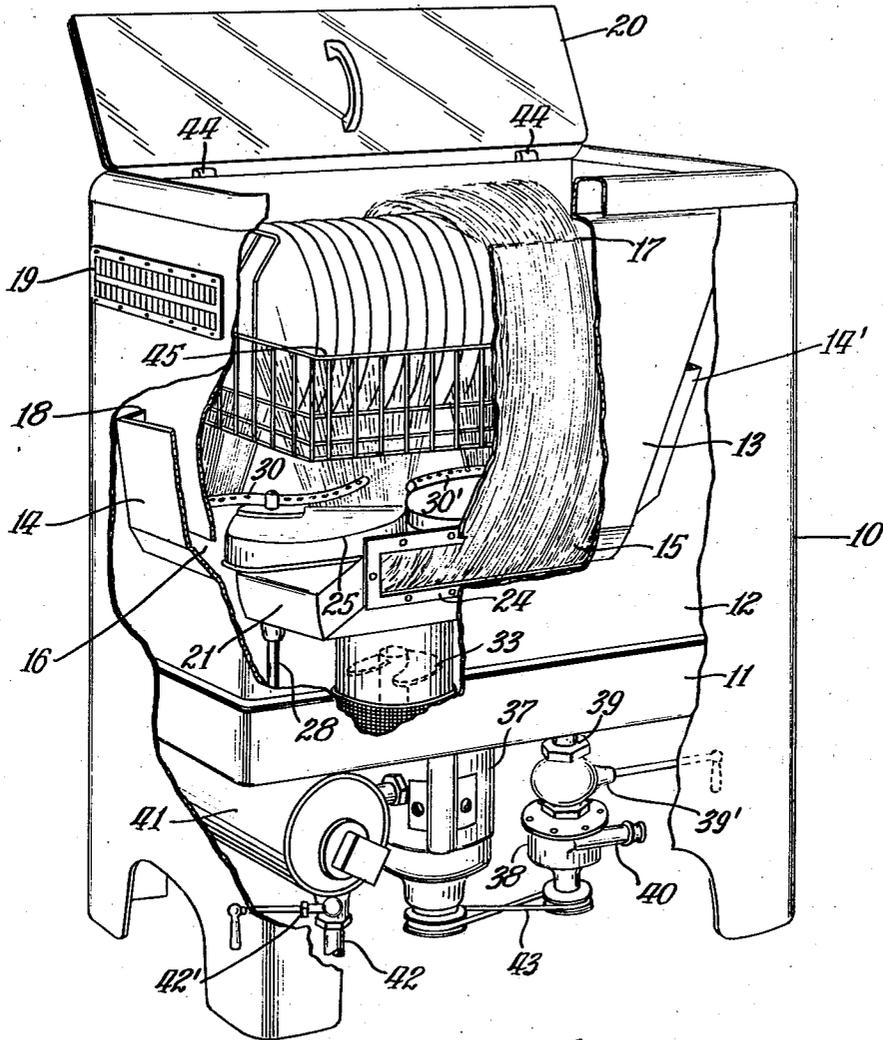


Fig. 1.

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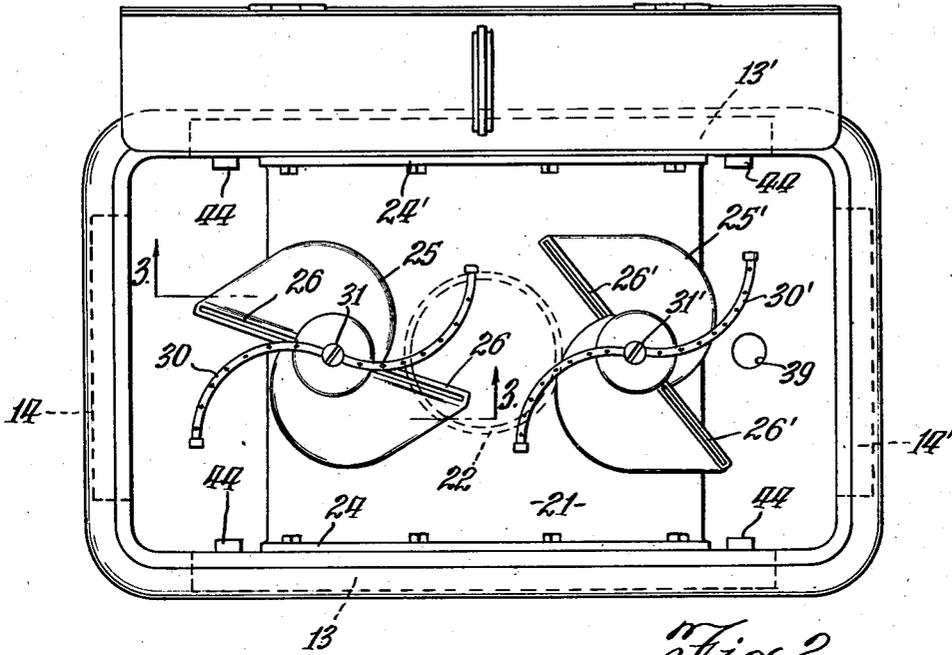


Fig. 2.

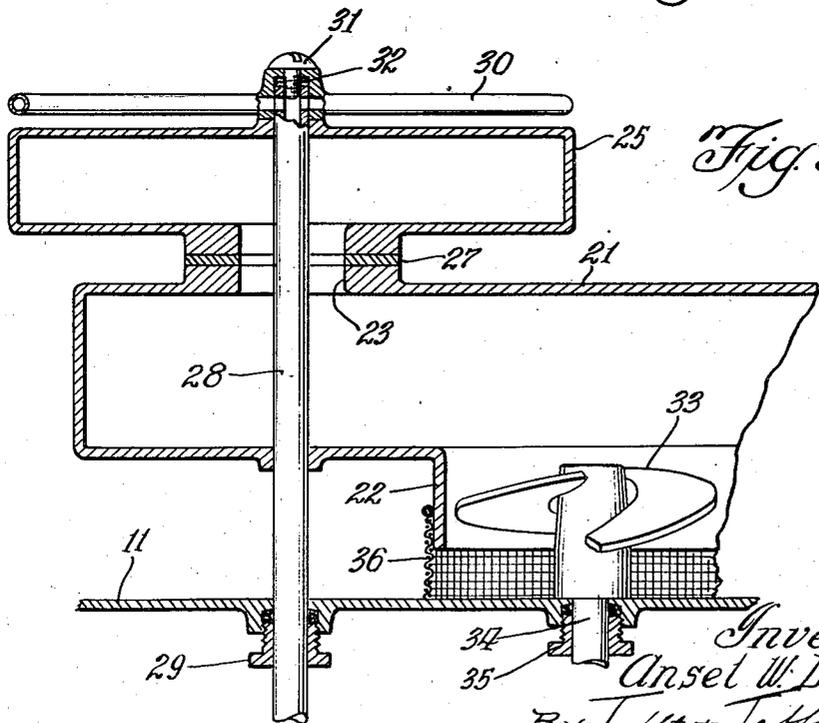


Fig. 3.

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UNITED STATES PATENT OFFICE

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DISHWASHER

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4 Claims. (Cl. 141-9)

This invention relates to dishwashers of the type usually employed in restaurants, or the like, where there is a demand for dish washing, in a large capacity, in a machine occupying a relatively small, compact space.

The ideal dishwasher for this purpose should be rectangular in shape to best fit into congested spaces and to utilize the cheaper conventional rectangular wire dish baskets. It should also be so constructed as to be relatively independent of plumbing conditions, such as hot water supply, and water and sewer connections. Although the washer should be capable of operating successfully with a minimum amount of water, it must be so constructed and arranged that the rinsing operations are performed with hot, clean water which is later utilized as wash water.

It is the particular object of this invention to provide a dishwasher embodying all of the above desirable characteristics in a construction that is small, sturdy, and inexpensive. Other objects and benefits will be disclosed in the following descriptions and drawings, in which:

Fig. 1 is a broken, front, perspective view showing the general arrangement of the parts under operating conditions;

Fig. 2 is a top plan view of the dishwasher shown in Fig. 1 with the lid open; and

Fig. 3 is an enlarged, broken, sectional elevational view as would appear on the section line 3-3 of Fig. 2.

Now referring to the drawings, and at the outset particularly to Fig. 1, my dishwasher has an outside casing 10 in which a tank 11 attached to an inside casing 12 is mounted. The inside casing 12 has two vertical water ducts 13 and 13' located on the outside of the casing, taking water from the lower ends of the ducts through the sections 15 and discharging it from the upper ends of the ducts through the sections 17 in dual cascading currents that practically cover the entire inner area of the casing. As a matter of fact, the cross-sectional area of the casing is so covered by these cascading streams of water that it is necessary to provide breather openings by the air ducts 14 and 14' located on the ends of the casing. These air ducts take air from the bottom of the casing through an opening 16 and discharge it through the top of the duct 18, where it leaves the outside casing through the air grills 19. The casing is covered by a hinged lid 20 to effectively seal the casing when the washer is in operation.

Now referring to Figs. 2 and 3, I mount a pump manifold 21 in the bottom of the inner casing 12

by cap screws through the manifold flanges 24 and 24', as clearly shown in Fig. 2. The manifold 21 has a central pump collar 22 extending downward towards the bottom of the tank, and on the top of the manifold are two under-spray outlets 23. Mounted on the spray outlets 23 are two spray heads 25 and 25' having angular spray jets 26 and 26' arranged to whirl the heads 25 and 25' by the reaction of the water through the jets, as is well understood in the art. The spray heads are mounted on thrust washers 27 and revolve on rinse pipes 28, as clearly shown in Fig. 3. The rinse pipes are sealed by packing glands 29 in the bottom of the tank, which serve not only to seal the pipe against leaks but also to hold the pipe firmly in set position. On top of the spray jets 25 and 25' are two rinse spray heads 30 and 30'. These heads also revolve on the pipes 28, being mounted by cap screws 31 and 31' and thrust washers 32. It will be readily appreciated that the rinse spray heads are also designed to effect a swirling action, as is well understood in the art. Mounted in the pump collar 22 is a pump impeller 33 mounted on a shaft 34 connected to the motor. This shaft is also sealed by a packing gland 35 which also effectively acts as a bearing for the pump impeller. The space between the pump collar 22 and the bottom of the tank 11 is covered by a ring screen 36 in order to screen off heavy material out of the pump manifold.

Again referring to Fig. 1, the impeller 33 is driven in a conventional manner by a motor 37 which also drives a discharge pump 38 by the belt transmission 43. This discharge pump 38 takes wash water from the bottom of the tank 11 by the intake pipe 39 controlled by the valve 39' and discharges it through the outlet connection 40, having facilities for attaching a hose 40'. This power discharge of wash water permits the water to be delivered to any convenient place by means of a hose attached to the connection 40'.

Also mounted on the bottom of the tank 11 is a conventional electric water heater 41. This water heater is equipped with a thermostat to maintain water at any desired temperature and provides a ready supply of hot water regardless of the hot water facilities available outside of the washer. The water is taken into the heater 41 through a pipe 42, controlled by a conventional valve 42', and is discharged from the heater through the tubes 28 and the whirling rinse heads 30 and 30'. It will be noted that this is the sole inlet for wash water in the tank 11 and in nor-

mal operation this water is used for rinsing the dishes first; thus the rinsing operation is always accomplished with clean, hot water. The dishes are stacked in conventional wire baskets 45 supported on inner brackets 44. It will be understood that the dishes are usually stacked in the baskets awaiting the washer and when one basket of clean dishes is removed a basket of dirty dishes is inserted.

In order to appreciate the novel features of my washer, I desire to explain that the dishes are continuously subjected to a very large volume of water cascaded upon them from both sides by the pump 33. At the same time they are subjected to powerful intermittent sprays from below by the spray heads 25 as they are rotated by the reactive force of the water. This arrangement provides a very effective means for thoroughly and quickly washing the dishes. When the washing operation is completed the dirty dish water is discharged by opening the valve 39', whereupon the dirty water is forcibly and quickly delivered to any convenient opening to the sewer. The dishes are now rinsed by opening the valve 42' which permits hot, clean water to be sprayed over the dishes from the revolving heads 30 and 30'. This clean rinse water is collected in the tank 11 and used for subsequent washing operations. The basket of clean dishes is then removed and a basket of dirty dishes inserted in the washer and the operation repeated.

Having thus explained my invention, I now claim as new:

1. In a dishwasher, an outer cabinet, a casing within the cabinet including a wash water tank in the bottom of the casing, a pump manifold mounted in the bottom of the casing, having dual side discharge outlets, dual top discharge outlets, and a central open impeller pump collar extending into the tank, wash water ducts on the sides of the casings connected to the side discharge outlets of the manifold arranged to cascade water from the tops of both sides of the casing over the entire cross-sectional area of the casing, air ducts

on the ends of the casing arranged to permit air to be discharged from the bottom of the inner casing and to prevent the escape of wash water therewith, an impeller pump mounted within the collar of the manifold in the wash water tank, and revolving spray heads mounted on the dual manifold discharge outlets, the arrangement providing means to continuously cascade wash water from the top sides of the inner casing and spray wash water from the bottom of the casing.

2. In a dishwasher, as described in claim 1, having dual rinse water spray heads mounted over the wash water heads and clean rinse water supply means connected to the rinse heads.

3. In a dishwasher, as described in claim 1, having dual rinsing spray heads mounted over the washing heads, rinse water pipes through the centers of both pairs of heads providing pivot means for rotating the heads, and a clean water supply for the rinsing heads.

4. In a dishwasher, a tank having relatively high walls, a pump manifold mounted in the bottom of the tank having dual side discharge outlets, dual top discharge outlets, and a central open impeller pump collar extending to a point adjacent the bottom of the tank, wash water ducts on the sides of the tank connected to the side discharge outlets of the manifold and extending to the tops of both sides of the tank, arranged to cascade wash water over the inner cross-sectional area of the tank, air ducts on the ends of the tank arranged to permit air to be discharged from a point above the bottom of the tank and extending upwardly to prevent the escape of wash water therewith, an impeller pump mounted within the collar of the manifold in the wash water tank, and revolving spray heads mounted on the dual manifold discharge outlets, the arrangement providing means to continuously cascade wash water from the top sides of the tank and spray wash water from the bottom of the tank.

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