May 12, 1931. T. TAFEL, JR 1,804,715

COMBINATION SINK AND CONVERTIBLE DISHWASHER

Filed March 31, 1928 2 Sheets-Sheet 1

Fig. 1.

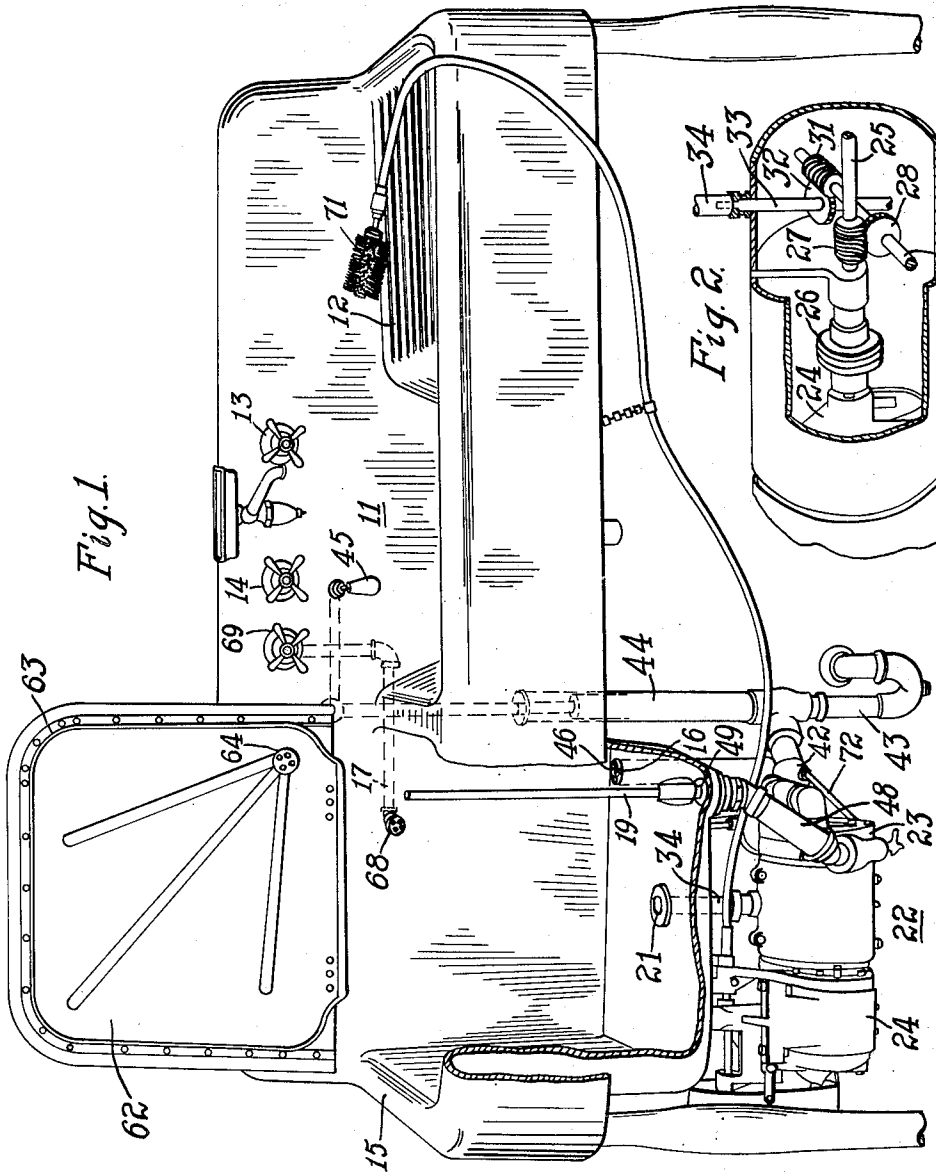


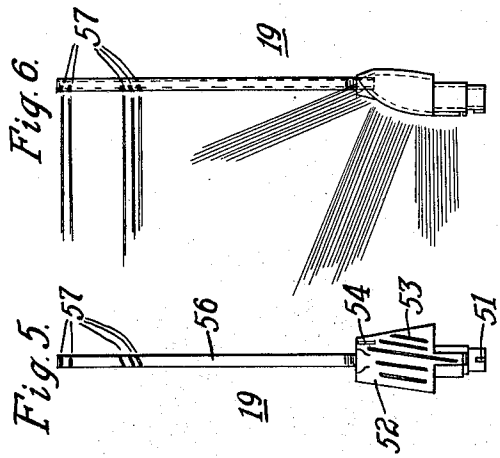
Fig. 2.

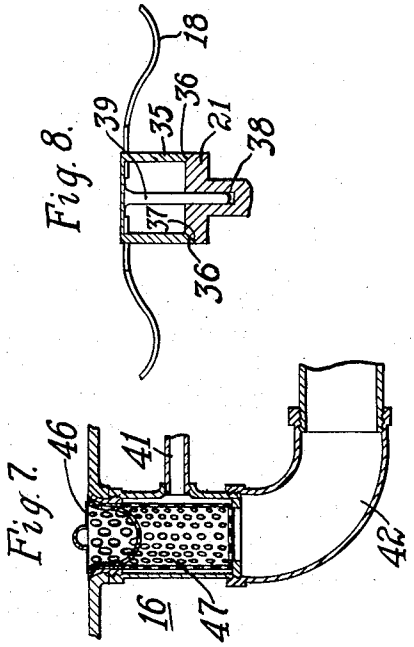
INVENTOR.
Theodore Tafel, Jr.
BY Green & McCallister
His ATTORNEYS.

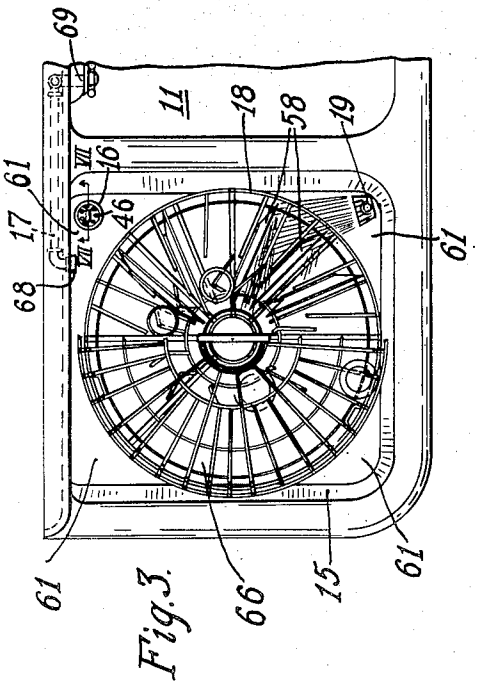
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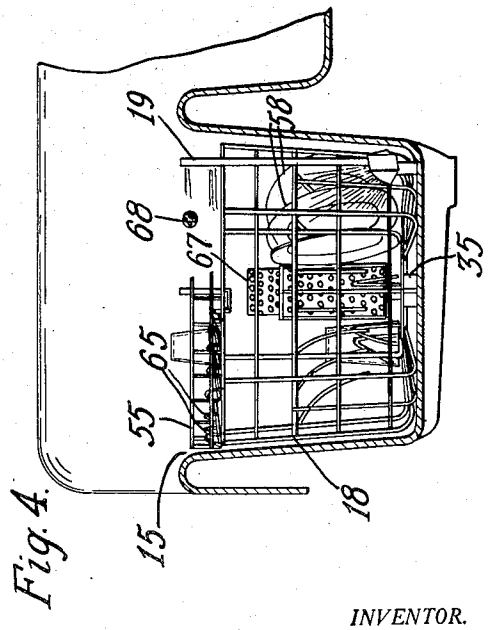
COMBINATION SINK AND CONVERTIBLE DISHWASHER

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UNITED STATES PATENT OFFICE

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COMBINATION SINK AND CONVERTIBLE DISHWASHER

Application filed March 31, 1928. Serial No. 266,190.

This invention relates to certain improvements in kitchen fixtures and more particularly to a novel form of sink having a combined dishwasher and wash tub formed as an integral part thereof.

Combined sinks and diswashers have heretofore been provided, but it is not thought that a combined sink and convertible dish washer has ever heretofore been suggested and there is a great demand for what is known as a combined sink and washing tub for small apartments and it is one object of this invention to provide a combined sink and dishwasher, wherein the basket and spray nozzle within the dishwasher are removable and the mechanism for operating the dishwasher is positioned on the outside, so that when the basket and spray nozzle are removed from the diswasher receptacle, the same may be employed as a laundry tub.

All of the diswashers heretofore provided, that are known to me, employ the action of a stream of water, either on the dishes or on especially arranged blades on the basket for rotating the basket, or a manual means for rotating the basket. Such means does not rotate the basket at a predetermined and constant speed. In the cases where the baskets are rotated by the action of the stream of water on the dishes or against especially arranged blades, much trouble has been experienced, due to over loading the basket which prevents it from rotating, or the basket spins entirely too rapidly for the safety of the dishes when lightly loaded and it is another object of this invention to provide a dishwasher having a mechanical means for positively rotating the basket at a predetermined and constant speed under ordinary conditions and means associated with the basket and the rotating means that shall permit the basket to remain stationary in case anything should interfere with the rotation of the basket.

A further object of this invention is to provide a combined sink and convertible dishwasher having an improved spray nozzle, a novel arrangement of the dishwasher receptacle, basket and drain, that shall permit the egress of the water spray from the nozzle to all parts of the dishes in the basket, access to the drain for cleaning the same without removing the basket and strainers associated with the drain for removing the undesirable particles from the wash water as the same is circulated through the machine.

A further object of this invention is to provide a kitchen fixture having the above characteristics and an independent source of water for rinsing the dishes after they have been washed, the said source being employed for supplying the initial wash water to the receptacle for washing the dishes.

Other objects which will be made apparent througout the further description of the invention such as the novel and compact arrangement of the motor reduction gears, basket, drive shafts, pump and etc., I attain by means of the apparatus hereinafter described and illustrated in the accompanying drawings; wherein,

Fig. 1 is a perspective view of a kitchen fixture embodying the invention having a portion of the dishwasher receptacle broken away and the basket removed; Fig. 2 is an enlarged detail view of the operating mechanism having a portion of the housing broken away; Fig. 3 is a top plan view of the dishwasher with the combination cover and drain board and one-half of the top tray of the basket removed; Fig. 4 is a front elevational view of Fig. 3 having the front of the receptacle broken away; Figs. 5 and 6 are front and side elevational views, respectively, of the spray nozzle embodying the invention; Fig. 7 is an enlarged sectional view taken along the line VII—VII of Fig. 3 and Fig. 8 is an enlarged detail sectional view taken through the cone clutch connecting the basket drive shaft with the basket.

In the drawings, 11 is a sink having a drain board 12, the usual cold and hot water valves 13 and 14 and a washing compartment 15 having a drain 16, a source of water 17 and adapted to receive a removable basket 18 and a spray nozzle 19; means 21 for supporting and rotating the basket 18 and an operating mechanism 22 for rotating the means 21 and actuating the pump 23 for forcing water through the spray nozzle 19.

The operating mechanism 22 comprises, a

motor 24 connected to a shaft 25 by means of a suitable coupling 26; the shaft 25 is connected to the pump 23 for driving the same and is provided with a worm gear 27 positioned to engage a gear 28 disposed on a shaft 29. The shaft 29 is also provided with a worm gear 31 positioned to mesh with a gear 32 disposed on a vertical shaft 33 which in turn is connected to the means 21 by means of a shaft 34. The worm 27, gear 28, worm 31 and gear 32 comprise the reduction gears for rotating the means 21, which in turn rotates the basket 18 at any predetermined constant speed for which it is designed, the pump 23 being actuated by the shaft 25.

The bottom of the basket 18 is provided with an inverted cup shaped member 35 at the center thereof having an annular tapered portion 36 for engaging and cooperating with the annular tapered portion 37 on the means 21. The means 21 with its tapered portion 37 forms the frustrum of a cone, the top of which is substantially flush with the bottom of the compartment. The tapered portions 36 of the member 35 resting upon the tapered portion 37 of the means 21 constitute a cone clutch connection between the means 21 and the basket 18 and are designed to permit relative movement between the respective tapered portions 36 and 37 in case dishes or the like possitioned in the basket interfere in any way with the rotation of the basket and thereby prevents the breaking of the basket or dishes.

It can be seen that, under normal conditions, the basket 18 will turn with the means 21. The means 21 is provided with an opening 38 for receiving a pin 39 projected downwardly from the bottom of the basket 18 for centering the basket on the means 21 and within the dishwasher receptacle.

Fig. 7 shows an enlarged sectional view of the drain 16 which is provided with a passage 41 for connecting it to the pump 23 and a passage 42 for connecting it to the sewer lead 43. An overflow valve 44 is provided for closing the passage 42 to the sewer 43 and limiting the height of the water in the receptacle in the conventional manner. The by-pass valve 44 is provided with a suitable operating handle 45 conveniently positioned on the sink for actuating it.

The drain 16 is provided with a pickout cup shaped strainer 46 and a cylindrical strainer 47 therebelow. The cup shaped strainer 46 is designed to remove such particles as tomato skins, etc., from the wash water as it circulates therethrough and this strainer may be picked out and cleaned as often as necessary without removing either the basket or the dishes, as can be seen in Fig. 3. The cylindrical strainer 47 is designed to remove smaller particles from the wash water passing through the passage 41 through the pump 23, connection 48 and out the nozzle 19. This arrangement permits the washing of as many sets of dishes as may be desired without the necessity of removing the basket from the receptacle in order to remove tomato skins and the like from the drain strainers. The cylindrical strainer 47 is practically self-cleaning and strains from the water passing to the pump, undesirable particles and causes them to fall below the strainer 47 into the passage 42, so that when the valve 44 is open to flush the receptacle, such particles are carried direct to the sewer.

The receptacle is provided with a water inlet opening 49, registering with the connection 48 for receiving the lower end of the nozzle 19. A slot is provided in the opening 49 for receiving the projection 51 disposed on the lower end of the nozzle 19 for maintaining the nozzle in a definite position.

The nozzle 19 comprises a lower portion 52 provided with a plurality of inclined slots 53 positioned to direct the egress of water in a predetermined direction. A perpendicular slot 54 is also provided at the top of the lower portion 52 for directing the water upward and into cups, glasses and the like placed in the tray 55, which is disposed on top of the basket 18 and an upper portion 56 having a plurality of horizontal and inclined slots 57 for directing water onto and over the top of the tray 55. The inclined slots 53 are so positioned as to direct water substantially on a tangent to the circumference of the basket 18 and inwardly to substantially the center of the basket. This assures all portions of the dishes 58 disposed in the basket, direct contact with the water spray regardless of in what position the dishes are placed in the basket and since the egress of water is directed from the tangent of the basket inwardly, the dishes are always subjected to the pressure of the water in one direction and this eliminates any movement of the dishes by the spraying of water thereon. The basket is rotated, as above stated, at a predetermined rate of speed and such rotation, which is considerably slower than the speed of the incoming water spray subjects all of the dishes to the same water spray force.

The receptacle of the dishwasher 15 is square in shape, that is, the bottom is square and any horizontal section therethrough is square. The corners however are rounded for the purpose of rendering them easy to clean and the inner side walls thereof are slightly tapered. The basket 18 is cylindrical in shape having its outer surfaces tapered substantially the same as the inner walls of the receptacle. Since the cylindrical basket is disposed in a square receptacle, spaces 61 are provided between the corners of the receptacle and the adjacent portions of the basket, (see Fig. 3). At the bottom of the receptacle, within spaces 61, are disposed the nozzle 19 and drain 16. This permits either

the nozzle or the strainers 46 and 47 in the drain 16 to be removed without removing the basket or dishes.

Another important feature of the present invention is the combination cover and drain board 62. The rim or top of the receptacle is free from depression and thereby permits the use of the simple combination cover and drain board 62. The cover 62 is provided with a downwardly projecting L shaped flange 63 which effectively retains the water within the receptacle. The cover or drain board 62 is also provided with a unique drain 64 positioned so as to be directly above the drain 16 when the cover is in closed position. This prevents drain water from the drain board 62 from coming in contact with the dishes being washed therebelow and the drain water from the drain 64 falls directly into the drain 16. Often it is desired to leave dishes within the receptacle until they are dry, during which time the drain board 62 may be employed without subjecting the dishes within the receptacle to any contaminated water from the drain board.

The tray 55 is provided with a plurality of upright projections 65 for receiving cups, glasses and the like and preventing them from moving about during the rotation of the tray. Within the center of the basket 18 is positioned a silver container 67 having sufficient openings therein for permitting the necessary entrance of water from the sides and of course is open at the top through which water has sufficient access to thoroughly wash the silver.

In practicing the invention, the basket 18 is positioned within the receptacle engaging the centering pin 39 with the opening 38 in the means 21 and causing the tapered portions 36 and 37 of the member 35 and the means 21, respectively, to cooperate, one with the other, in the manner above described. The dishes 58 are positioned within the basket 18 and the silver in the silver container 67, after which time the tray 55 is disposed on top of the basket 18 for receiving glasses, cups and other like implements to be washed, then a predetermined amount of water is let into the receptacle through the independent water source 17 by way of the rinsing nozzle 68 at which time the cover 62 is moved to its closed position and the motor 24 energized by a suitable switch, not shown.

The motor revolves the means 21, as above described, which in turn rotates the basket at a predetermined constant rate of speed and actuates the pump 23, simultaneously. Of course sufficient soap or the like is disposed in the water being employed for washing. This water passes through the drain 16, passage way 41, pump 23, connection 48 and is forced out the various slots in the nozzle 19.

The machine is left in operation a sufficient length of time to completely wash the dishes and then the valve 44 is opened by means of the handle 45 permitting the wash water to flow directly to the sewer carrying all foreign particles gathered in the passage 42 during the washing of the dishes. Then the independent water source 17 is opened by means of the valve 69 and fresh water egresses through the spray nozzle 68 and into contact with the dishes as they pass in the rotating tray and basket.

During the rinsing the valve 44 is left in open position so that the rinsing water is carried directly from the dishes to the sewer and does not come in contact with the dishes the second time. In this way the dishes are more thoroughly rinsed, as absolutely clean water is used and the rotating basket causes all of the dishes to receive the same thorough and complete rinsing. When the dishes are sufficiently rinsed, the motor is de-energized and the dishes may be permitted to remain within the dishwater or removed and dried as desired.

The present fixture is also provided with a rotatable brush 71 for the well known purpose. This brush 71 is actuated by the motor 24, through suitable gearing within the motor housing.

Another important feature of the present fixture is the provision of a drain pipe 72 connected to the bottom of the pump 23 and the passage 42 so that when the valve 44 is open, the pump is drained and thereby protecting the pump from freezing as well as removing from the mechanism, the objectionable noise caused by water remaining in the pump after draining the receptacle.

The present fixture illustrated is a preferred embodiment of the invention and comprises a combined sink, drain board, and a convertible dish washer having a combination cover and drain board, novel and compact means for operating the dish washer, an independent water source for rinsing, a novel spray nozzle for directing water in such directions as to come in contact with all of the dishes disposed within the machine, regardless of their position and all of the mechanisms being positioned without the dishwasher receptacle except the removable basket and nozzle and thereby rendering the dishwasher receptacle for use as a laundry tub.

While I have illustrated and described but one structure comprising the invention, it will be apparent to those skilled in the art that certain changes, modifications, substitutions, additions and omissions may be made in the invention without departing from the spirit and scope of the appended claims.

What I claim as new and desire to secure by Letters Patent is:—

1. A kitchen fixture having in combination a washing compartment, a drain located

in the bottom of said compartment, a water inlet located adjacent one wall of said compartment, a frusto conical shaped member on the bottom of said compartment and having an aperture in the top thereof, an article holding basket frictionally supported on said frusto conical shaped member, and a projection on said basket extending into the aperture in said frusto conical shaped member, the top of said frusto conical shaped member being substantially flush with the bottom of said compartment to permit the use of said compartment for washing clothes, a removable nozzle connected to said water inlet for directing water into said basket and means located outside of said compartment for rotating said frusto conical shaped member and said basket.

2. A dishwasher comprising a washing compartment having a frusto conical shaped member on the bottom thereof, a removable article holding basket having an inverted cup shaped member on the bottom cooperating with and receiving the said frusto conical shaped member for frictionally supporting said basket thereon, means outside said compartment for rotating said frusto conical shaped member and superimposed basket, and means in said compartment for spraying water on the articles in said rotating basket, the top of said frusto conical shaped member being substantially flush with the bottom of said compartment to permit the use thereof as a laundry tub when said basket is removed.

3. A dishwasher comprising a washing compartment having in the center a frusto conical shaped member substantially flush with the bottom thereof, said member having an aperture in the top thereof, a removable article holding basket for said compartment having an inverted cup shaped member on the bottom thereof superimposed over said frusto conical shaped member for supporting said basket on said member, means within said inverted cup shaped member engaging the aperture in the top of said frusto conical shaped member for centering said basket over said frusto conical shaped member, and means outside said compartment for rotating said frusto conical shaped member and basket, the inner edge of said cup shaped member being tapered to form, when superimposed over said frusto conical member, a frictional drive clutch.

4. A dishwasher comprising a washing compartment provided with a frusto conical shaped member having an apertured top substantially flush with the bottom of said compartment, a removable article holding basket in said compartment having an inverted cup shaped member superimposed over said frusto conical shaped member for supporting said basket on said member, a downwardly extending projection in said inverted cup shaped member received within said aperture for centering said basket over said frusto conical shaped member, and means outside the said compartment for rotating said frusto conical shaped member and said superimposed basket, the engaging faces of said frusto conical shaped member and said cup shaped member forming a frictional drive clutch which permits said basket to be stopped without stopping the rotating of said frusto conical shaped member.

5. A kitchen fixture having in combination a washing compartment, a frusto-conical shaped member on the bottom of said compartment and having an aperture in the top thereof, an article holding basket frictionally supported on said frusto-conical shaped member, a projection on said basket extending into said aperture of said frusto-conical shaped member the top of said frusto-conical shaped member being substantially flush with the bottom of said compartment to permit said compartment to be used for washing clothes, and means for rotating said frusto-conical shaped member and said basket.

In testimony whereof, I have hereunto subscribed my name this 5th day of March, 1928.

THEODORE TAFEL, JR.