May 31, 1927. 1,631,045

C. M. MACON

DISHWASHER

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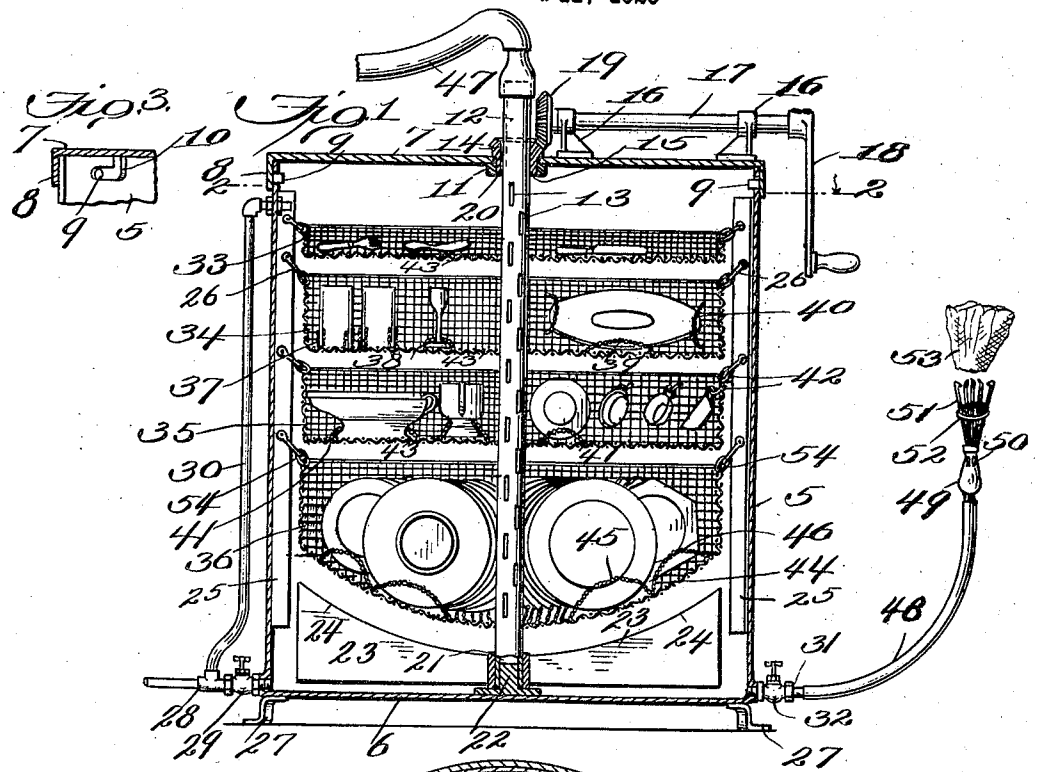

Fig. 3.

Fig. 1.

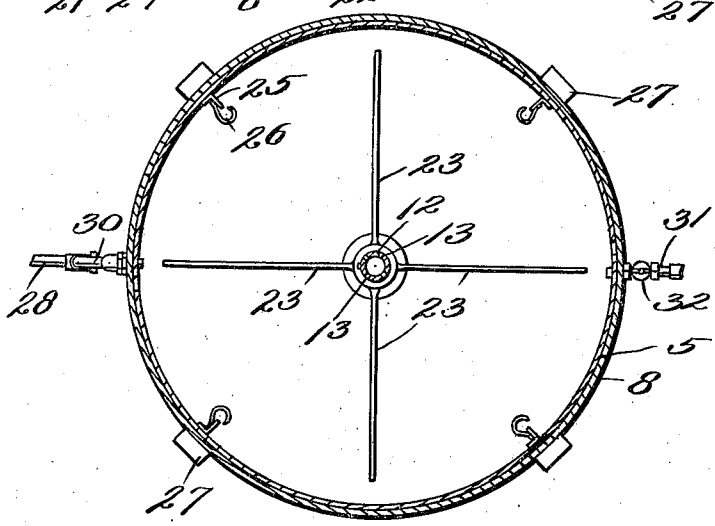

Fig. 2.

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DISHWASHER.

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This invention relates to dish washers, and the primary object of the same is to provide a device of this class having a comparatively simple construction for holding various kinds of dishes and spoons and table cutlery and other articles in groups in superposed relation by means of foraminous or reticulated holders or trays which are readily applicable to and separable from the body of the washer, and, furthermore, to provide for the introduction of hot water and maintain a thorough circulation or washing agitation of the water relatively to the dishes and other articles held within the device for cleansing purposes. A further object of the invention is to provide means in connection with a dish washer for washing pots, pans and cooking utensils generally that would not become thoroughly cleansed in the improved washer in view of adhering substances that would require extra scraping or loosening operations.

With these and other objects and advantages in view, the invention consists in the construction and arrangement of the several parts which will be more fully hereinafter described and claimed.

In the drawings:

Fig. 1 is a transverse vertical section through a washer embodying the features of the invention and showing the improved washing attachment connected thereto;

Fig. 2 is a horizontal section taken on the line 2—2, Fig. 1, and showing the dish and article holding trays removed; and

Fig. 3 is a detail sectional elevation of a part of the washer, showing the joint between the top supporting means or cover and the body of the washer.

The numeral 5 designates the body of the washer consisting of a receptacle of any suitable dimensions having a closed bottom 6 and a supporting means or cover 7 removably applied to the upper normally open portion thereof. The support or cover 7 is readily applicable to and separable from the top of the body 5 and preferably has a depending flange 8 carrying opposite inwardly projecting studs 9 to engage reversely formed bayonet slots 10 in the upper part of the body 5. In the center of the removable support or cover 7 is a bearing 11, and extending through this bearing is an upright tubular shaft 12 having elongated openings 13 therein over a greater portion of the length thereof. Fixed to the upright shaft 12 is a beveled pinion 14 having an integral collar or reduced member 15 rotatably fitting in the bearing 11. On the support or cover 7 are bearing brackets 16, and rotatably mounted therein is a drive shaft 17 having an operating crank handle 18 on the outer end thereof and a beveled pinion 19 on the inner end of the same adapted to mesh with the beveled pinion 14. The beveled pinion 14 is secured to the upright tubular shaft 12 by means of a feather and groove 20, shown in dotted lines by Fig. 1, and whereby the support or cover 7 with the driving shaft 17 and beveled pinion 19 may be withdrawn upwardly over the shaft 12 and also replaced on the latter. The lower open end 21 of the shaft 12 is fitted over an upwardly projecting foot bearing 22 secured to the center of the bottom 6, and extending outwardly from the said lower open end of the shaft are radial blades 23 preferably of the form shown, or increasing in width towards their outer ends, the upper edges 24 of the blades being regularly curved in concave contour, as clearly shown by Fig. 1.

Extending inwardly from the side of the body 5 are fixed upright supporting strips 25 having hooks 26 connected thereto at intervals and in spaced relation corresponding to the disposition of the holders adapted to be removably supported by the said hooks. The bottom 6 also has suitable supporting feet 27. The supporting strips 25 extend downwardly into the body 5 but terminate above the bottom 6, and the radial extent of the blades 23 is such as to permit the latter to freely rotate without contact with adjacent parts.

A drain pipe 28 has communication with the lower portion of the body or receptacle 5 in line with the upper surface of the bottom 6, so as to thoroughly drain the bottom of the receptacle, and this drain or outlet pipe 28 is controlled by a valve 29, which will be closed during the washing operation and opened subsequent to the latter operation when the dishes have been thoroughly cleansed. Connecting with the drain or outlet pipe 28 is an upright pipe 30, which communicates with the upper portion of the interior of the body or receptacle 5, to prevent overflow of the latter, this pipe 30 being continually open so as to always effectively operate in the performance of its function. At a point diametrically opposite the drain

or outlet pipe 28 the body 5 also has a supply connection 31 having a valve 32 for controlling the open and closed condition thereof, the supply connection 31 being for a purpose which will be presently explained.

The improved dish washer includes a plurality of trays 33, 34, 35, and 36, varying in dimensions and contour. The upper tray 33 is relatively shallow in depth and is adapted to receive forks, spoons and table cutlery and other small articles of a similar type. The next tray 34 is somewhat deeper and is intended to receive glasses and platters, this tray having upright holding devices 37 for cylindrical glasses, and grouped holding means 38 for glasses of that type having disk-shaped bases. This tray 34 also has bottom and side looped holding devices 39 and 40 for engaging the bottom portions and opposite extremities of platters and other elongated dishes. The next tray 35 has bottom holding devices in various positions, as at 41, to engage vegetable dishes, cup bases and saucers, and is also equipped with hooks 42 for holding cups in spaced relation therein. Each of the trays 33, 34 and 35 have flat bottoms 43, and the main or largest tray 36 is below the trays 33, 34 and 35 and has a lower curved bottom 44 which is provided with a series of looped holding devices 45 and 46 so disposed as to hold dishes of various sizes in radial positions around the upright tubular shaft 12, as clearly indicated by Fig. 1, and whereby the dishes are held in separated relation for thorough circulation of water therebetween. It is intended that the articles in all of the trays be held in separated relation so that they may become thoroughly cleansed by the water which is dashed to and fro by the operation of the shaft 12.

Hot water is supplied to the improved dish washer by a flexible pipe connection 47 removably attached to the upper end of the upright tubular shaft or pipe 12, the pipe 47 being connected to a hot water spigot or other hot water supply.

The supplemental washing attachment for pans and cooking utensils to which substances may adhere with such tenacity as to resist removal by ordinary washing operations consists of a flexible pipe 48, which is separably attached to the supply connection 31 and has a tubular head 49 secured thereto and provided with a plurality of openings 50, the head having a series of spring prongs 51 projecting therefrom and engaged by a clamping ring 52 which is shiftable thereover. A metal or mineral wool washing device 53 is provided and inserted between the prongs 51 and clamped by the latter through the ring 52, and when the valve 32 of the supply connection 31 is opened, the water will pass through the pipe 48 into the head 49 and out through the openings 50 of the latter and onto the dish washing device 53 and also into the pan or cooking utensil or receptacle that is being cleansed. In the use of this supplemental washing attachment the washing device is rubbed over the interior of the pan or cooking utensil to loosen up adhering material, this operation being permitted in view of the fact that the pipe 48 is flexible or preferably formed of rubber. This supplemental cleaning attachment will add materially to the completeness of the improved washer and render the latter effective in meeting all contingencies pertaining to the cleansing of dishes and cooking utensils.

After the trays 33, 34, 35 and 36 have had the dishes and other devices placed therein, they are lowered over the tubular shaft or pipe 12 and held suspended by means of the hooks 26, which engage rings 54 secured to the upper edge portions of the trays. When all of the trays have been disposed in the body of the receptacle 5, the support or cover 7 is applied and secured and the pipe 47 attached to the top of the upright tubular shaft or pipe 12 and the hot water turned on from the source of supply, the water entering the body 5 through the elongated openings 13 in the tubular shaft or pipe 12. The water radiates from the tubular shaft or pipe 12 at varying elevations over and between the dishes and various articles held by the trays, and the said shaft is set in motion through the medium of the drive shaft 17, which is rotated by the crank handle 18 and the pinions 19 and 14, and as a consequence, the water will be thrown in various directions over the dishes and at the same time the blades 24 secured to the bottom of the said shaft or pipe 12 will set up a countercirculation or agitation of the water and throw the same upwardly through the dishes, or produce a very pronounced turbulency or forced agitation of the water, and thereby effectively cleanse the dishes or articles disposed in the receptacle 5. During this cleansing operation, or while the water is in the washer, the supplemental attachment may be used by opening the valve 32 and drawing off a small portion of the water from the body or receptacle. As hereinbefore explained, the body or receptacle will be prevented from overflowing through the medium of the pipe 30, and when the washing operation has been completed, the valve 29 will be opened and the water may be fully drained from the interior of the body or receptacle 5. The pipe 47 is then detached from the upper end of the tubular shaft or pipe 12 and the support or cover 7 with the operating mechanism may then be readily lifted or withdrawn over the upper end of the said shaft or pipe and disengaged from the body or receptacle

5. The several trays will then be readily accessible and may be easily detached from their hooks 26 and withdrawn in sequence through the upper open end of the said body or receptacle 5.

During the time that the dishes and other articles are disposed in the washer, the hot water supplied through the pipe 47 will be permitted to continue to flow into the body of the washer in excess of the overflow through the pipe 30 and the outlet pipe 28 when the latter pipe is opened through the medium of the valve 29, and by setting up an ingress and egress of the water in this manner, the wash-water within the body or receptacle 5 may be maintained in a more cleanly condition and the dishes and other articles thereby relieved of all accumulations including grease. After the washing operation has been completed and the supply of water shut off, the water may be completely drained from the body 5 and a partial drying of the dishes or articles may be obtained by a rotation of the shaft or pipe 12 to effect a throwing off of the moisture from the dishes or articles, and it is obvious that if this rotation is continued long enough, the dishes will be substantially dry when removed from the washer or receptacle, and thereby avoid the necessity of wiping the dishes or articles that have been subjected to the cleansing operation of the improved washer. The convex shape of the bottom of the lower tray and the concave formation of the upper portions or edges of the blades below the lower tray permit a depression of the lower tray and the dishes that may be contained therein to the lowest possible point for more effective engagement with the water, which is agitated and forcefully thrown through the lower tray. Moreover, this cooperating structure provides for a greater tray capacity within a given area of the receptacle, and as a consequence a greater number of dishes may be washed at one operation. This structural feature, in addition to the operation of permitting hot water to continually flow into the receptacle and be drained through the overflow at the top and also at the bottom if desired, adds materially to the advantages of dish-washing devices and renders the operation of dish washing more thorough and effective.

What is claimed as new is:

In a dish washer, the combination of a body having a rotary tubular shaft extending upwardly through the center thereof and provided with an inlet and a plurality of discharge openings throughout the length of the same, a plurality of foraminous trays disposed one above the other for holding dishes and other articles and arranged in concentric relation relatively to the shaft, the lower tray being materially larger in dimensions than the trays above and having a depending convex bottom to increase the capacity thereof, and radial blades on the lower extremity of the shaft below the convex bottom of the lowermost larger tray for agitating and circulating the water within the body and through the trays, the upper edges of the said radial blades being concave and closely and rotatably movable with relation to the convex bottom of said lower tray and permitting a greater dependence and capacity of the lower tray by the extent of the convex bottom of the latter.

In testimony whereof I have hereunto set my hand.

CYRENE M. MACON.