

(No Model.)

3 Sheets—Sheet 1.

W. H. COX.
DISH CLEANER.

No 562,710.

Patented June 23, 1896.

Fig. 1.

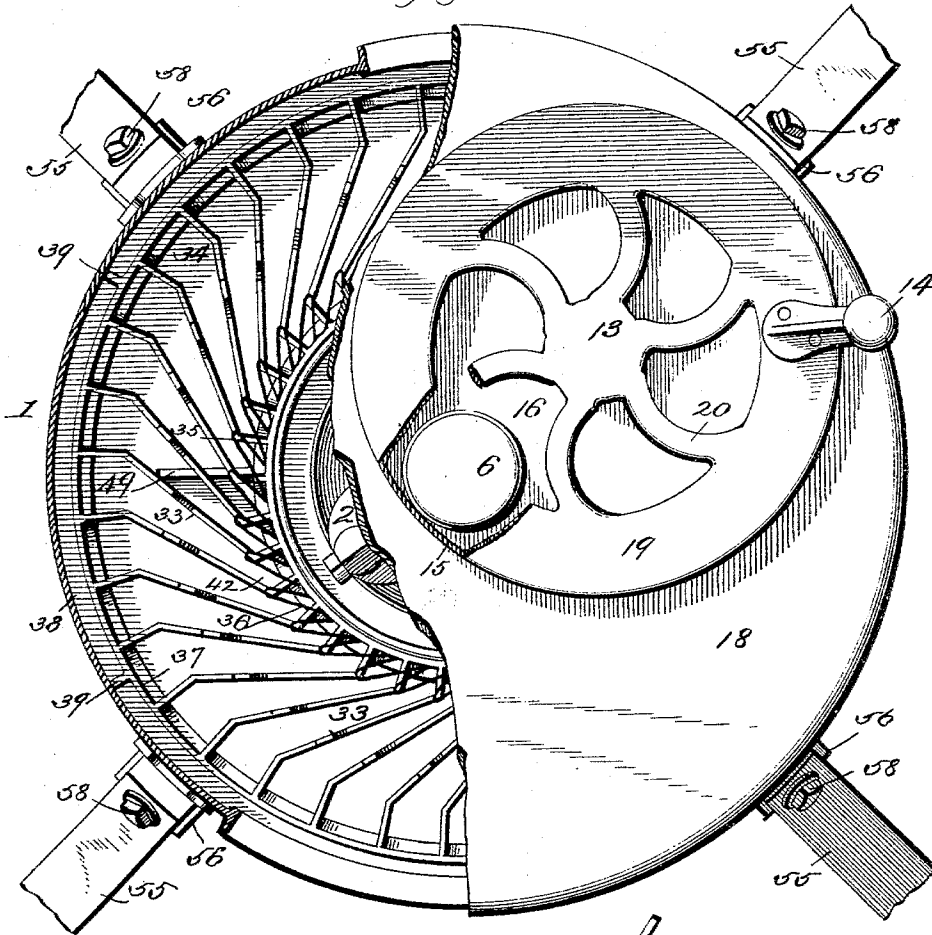
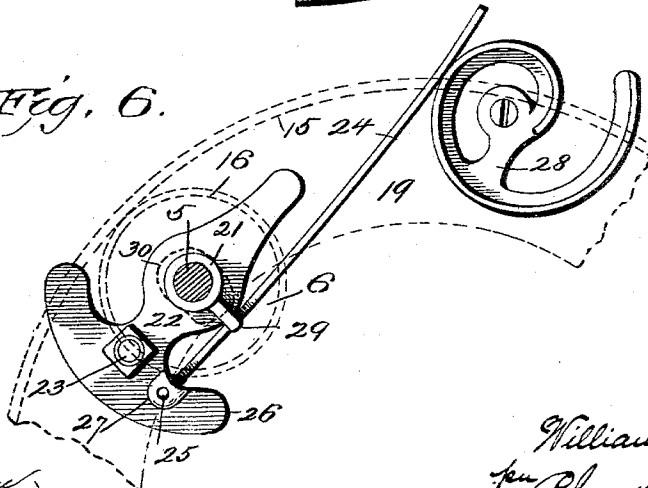


Fig. 6.



Witnesses,
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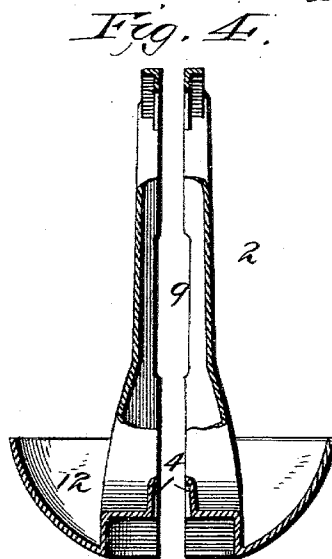
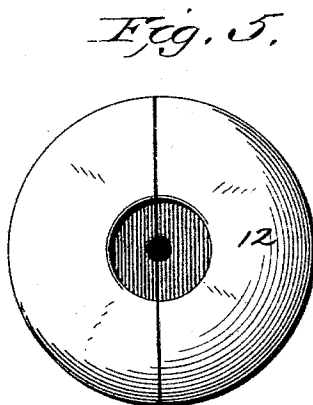
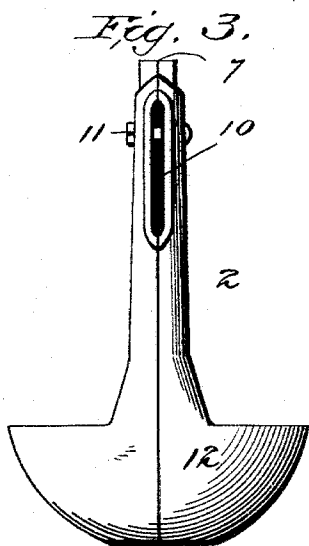
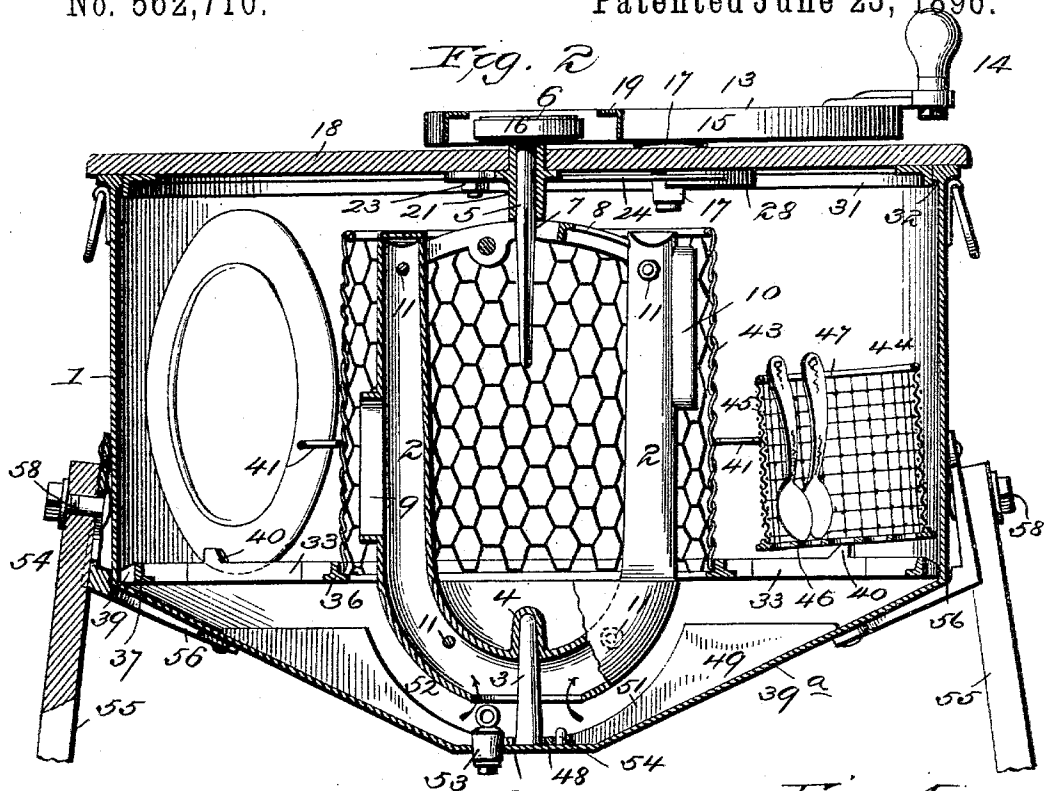
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3 Sheets—Sheet 2.

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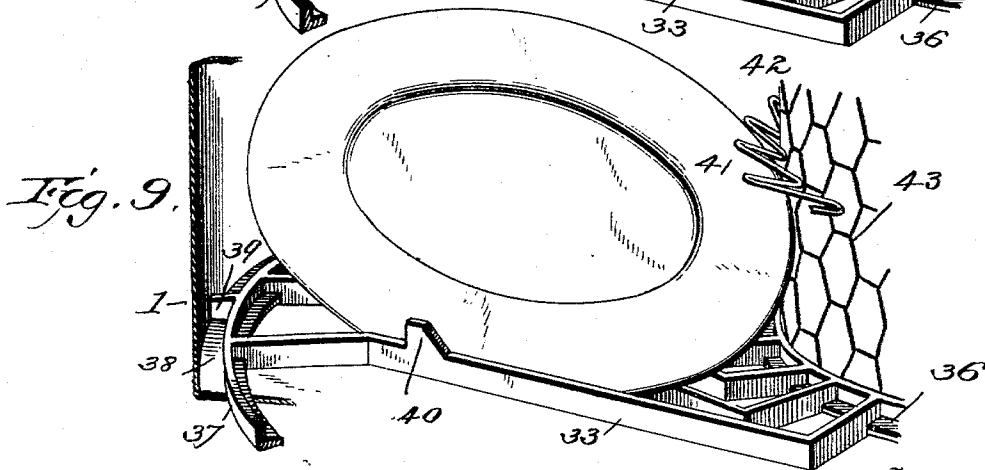
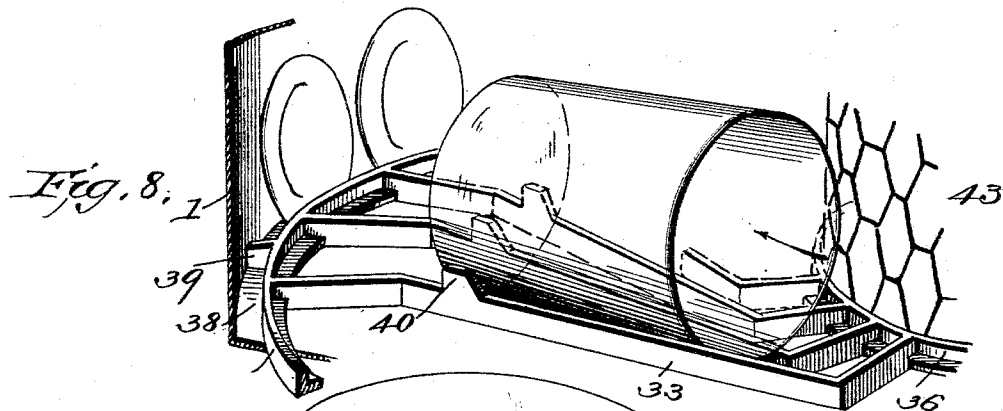
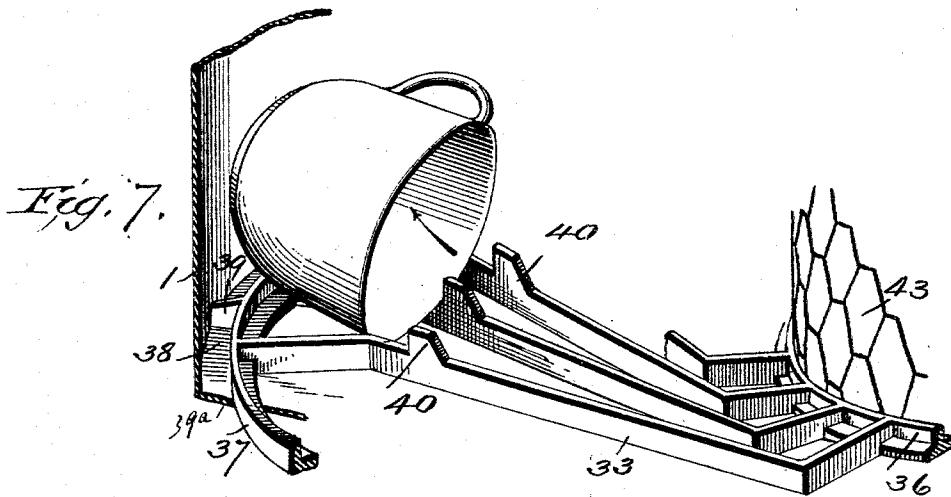
(No Model.)

3 Sheets—Sheet 3.

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No. 562,710.

Patented June 23, 1896.



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UNITED STATES PATENT OFFICE.

WILLIAM H. COX, OF VIRDEN, ILLINOIS.

DISH-CLEANER.

SPECIFICATION forming part of Letters Patent No. 562,710, dated June 23, 1896.

Application filed December 27, 1895. Serial No. 573,548. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. COX, a citizen of the United States, residing at Virden, in the county of Macoupin and State of Illinois, have invented certain new and useful Improvements in Dish-Washing Machines; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

The object of my invention is to improve upon the structure shown and described in my Patent No. 544,211, granted August 6, 1895, wherein a centrifugal dasher is employed to project the water laterally against dishes placed in a surrounding rack. In that device the dasher was made hollow and provided with a vertical series of discharge-orifices through which the water was projected laterally against the dishes, whence it fell to the bottom of the tank to be again sucked in at the bottom of the dasher through which it passed, and thence again projected against the dishes, and in this way being made to travel in swift and strong cycles within the tank. The same principles and general features of this old machine are employed in my improved device, but instead of the vertical series of discharge-orifices I now provide an elongated discharge-orifice through the lower portion of the outer side of the shell of one arm of the dasher, and a similar orifice in the outside of the shell of the opposite arm commencing at a height where the other leaves off and forming a longitudinal continuation of the lower orifice, so that a solid vertical sheet of water is projected laterally against the dishes. This feature as well as the other peculiarities of my improvements will be more fully described hereinafter, and pointed out in the claims.

In the accompanying drawings, Figure 1 represents a top view of my improvements, the cover and part of the tank being cut away to disclose the mechanism beneath; Fig. 2, a sectional elevation thereof; Figs. 3, 4, and 5, detail views of the dasher; Fig. 6, a detail view of a friction-clutch device for regulat-

ing the degree of contact between the driving-wheel and dasher-pinion; and Figs. 7, 8, and 9, enlarged detail views of portions of the dish-rack, showing the manner of holding different articles undergoing treatment.

Within the middle of a closed water-tight tank 1 is placed a centrifugal dasher 2. This dasher is mounted upon a vertical pivot 3, secured to and rising from the center of the bottom of the tank, and fitting within a thimble-bearing 4, formed in the inner wall of the lower part of the dasher. In this position the dasher is held and rotated by means of the stem 5 of a friction-pinion 6, the stem being passed through a square hole 7 in a bridge 8, which connects the upper ends of the dasher-arms. The dasher is U-shaped and hollow, with a receiving-orifice at the bottom around the pivot, and two elongated discharge-orifices 9 and 10 in its outer sides. One of these orifices, 10, is located higher than the other, its lower end commencing where the top of the other leaves off, in order to cover the upper halves of the dishes before it. By this arrangement a vertical sheet of water is projected against the dishes instead of numerous jets, as in my patent before alluded to.

In practice water projected in this manner is found more effective than when projected in single jets.

For greater convenience in the manufacture, and for cleaning purposes, the dasher is made in two duplicate halves, as will be more fully seen in Figs. 3, 4, and 5. These halves are held together and made separable by transverse bolts 11 at the top and bottom. A dish-shaped fender 12 is attached to and surrounds the lower portion of the dasher, and projects upward a sufficient distance above the surface of the amount of water usually introduced into the tank. This prevents the revolving sides of the dasher from striking the water and being retarded.

The dishes to be washed are held in a circular rack which surrounds the lower portion of the dasher at a height slightly below the level of the lower discharge-orifice in order to expose the faces of the dishes for the best effect of the water.

The means for rotating the dasher consist of a driving-wheel 13, provided with a suit-

able handle 14 and having a downwardly-extending peripheral flange 15, which engages a rubber tire 16 on the friction-pinion 6. The driving-wheel is centered upon a stud 17, which passes through the cover 18 of the water-receptacle. The driving-wheel in the present instance is made of a light casting having an integral circular web 19, which overlaps the top of the pinion and connects with the radial spokes 20. The spindle or stem 5 of the pinion 6 passes through a sleeve 21. This sleeve forms a bearing for the stem which fits snugly and revolves within it. In order to move the sleeve and hence the pinion in frictional contact with the peripheral flange 15, the sleeve is provided with a laterally-extending arm 22, located under the bottom of the cover, to which it is pivoted by means of a bolt 23, as will be more clearly seen in Fig. 6. The pinion is held in yielding and adjustable contact with the driving-wheel flange by means of a straight spring 24, having one end 25 turned up and passed through a corresponding hole in an arc-shaped wing 26 of the arm 22.

In order to admit the end of the spring beneath the arm, the latter is hollowed out to form a socket 27. From this socket the spring passes to an eccentric 28. A laterally-extending lug 29, projecting from the sleeve, is arranged to overlap the spring and hold it up snugly in place against the under side of the cover. In the drawings the eccentric is shown pressed against one end of the spring a sufficient distance to create the normal pressure required of the pinion 6, the stem of the pinion and the sleeve which embraces it being permitted to move laterally within an oblong slot 30. An annular flange 31 on the under side of the cover is provided to come in contact with a corresponding inwardly-projecting bead 32 on the upper edge of the tank in order to make a practically water-tight joint.

Again referring to the dish-rack, it will be seen that it is composed of tangential bars 33, which hold the dishes placed between them so that their faces will be exposed substantially at right angles to the axis of the dasher in order to receive the full force and effect of the water issuing from the latter. Short elbows 34 and 35 are made at the opposite extremities of the rods or bars 33 at their point of connection with inner and outer rings 36 and 37, respectively. The outer ring 37 has a diameter slightly smaller than the interior of the tank for the purpose of leaving a narrow annular space 38 for the reception of small dishes which are placed on their edges therein, as will be seen in Fig. 8. Radial lugs 39 project between the ring and side of the tank to hold the rack steadily in position and to serve as supports which engage the upper edge of the sloping bottom 39^a of the tank. An upwardly-projecting lug 40 is placed on each one of the tangential bars 33 and acts as a stop against which the lower edges of cups will come when they are placed with their

bottoms leaned against the side of the tank, so that the interior of them will face the dasher and receive the water, which will afterward drain off on account of their slanting position. These lugs further serve as seats on which glasses rest and between which they are held when their rims are placed close to the dasher, as will be seen in Fig. 8.

In order to hold the dishes in a vertical position, I provide a wire rack 41, having tangential notches 42, which coincide with the spaces between the bars 33 in the rack below. This rack encircles and is attached to a cylindrical guard 43, composed of wire-netting and entirely inclosing the dasher above the lower rack for the purpose of preventing the dishes from coming in contact with the dasher. For the purpose of washing spoons and knives I provide a supplemental rack 44 for their reception, and this rack is composed of a removable cylindrical basket or receptacle constructed of wire-netting 45, made in the form of a cylinder, which is attached to a galvanized perforated bottom 46 at its lower end, and its upper end is provided with a binding-wire 47. The bottom 39^a of the tank slopes downwardly to a central point directly beneath the dasher, where a flat portion 48 is formed and serves as a seat for the dasher-pivot 3, and the curved lower end of the dasher sets down into this bottom portion a sufficient distance to permit it to be immersed by the water therein. A radial breakwater-plate 49, composed of an integral piece of thin metal with a central aperture 50, through which the pivot 3 passes, is employed to break up any whirling motion that may be imparted to the water in the bottom of the tank. The middle portion 51 of this breakwater-plate is cut away in the form of a semicircle to make room for the semicircular end of the dasher, but to leave a space 52 between these two parts to permit a portion of the water to flow between them.

The central portion of the breakwater-plate is provided with flanges arranged in the shape of a Greek cross, which bear upon the bottom to give it a firmer seat, and an upwardly-projecting pin 54, attached to the bottom of the receptacle, lies between these flanges for the purpose of preventing the breakwater-plate from whirling around on the pivot 3. This whole breakwater-plate is seated loosely on the bottom of the tank and can be easily and quickly removed when desired. A removable plug 53 passes through a discharge-opening in the flat part 48 of the bottom.

The whole device is supported upon removable legs 55, each of which is attached to the sides of the tank through the medium of a bracket 56, having a T-slot, and a bolt 58, adapted to pass through the slot.

The preferred construction of my device having been set forth I will now proceed to describe in a general way the manner in which it operates.

Upon revolving the driving-wheel 13 rotary

motion will be imparted to the hollow dasher through the medium of the pinion 6, and this motion acting on the water filling the lower portion of the dasher will create a strong centrifugal force, which draws the water up from the bottom of the tank and projects it out laterally through the escape-orifices 9 and 10 upon the faces of the dishes within the rack. The force of the water will be commensurate with the rapidity of the driving-wheel. The lower orifice 9 projects a vertical sheet of water which covers the lower half of the dishes in the rack, and the upper orifice 10 projects a sheet which covers the other half. The projected water gravitates to the bottom of the tank, where it is again drawn up through the orifice in the bottom of the dasher and again projected against the dishes, thereby being made to travel in strong cyclonic currents and being used over and over again until the dishes are thoroughly cleaned.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a dish-washer of the character described, a hollow centrifugal dasher provided with upwardly-extending divergent water-channels communicating with a common receiving-orifice at the bottom of the dasher and discharge-orifices at its sides, said dasher being composed of a pair of duplicate and separable halves whereby it can be separated and

the interior made accessible for the purpose substantially as described.

2. In a washing-machine of the character described, the combination with a suitable tank, of a centrifugal dasher, a friction-pinion attached to actuate the dasher, a driving-wheel provided with an annular flange adapted to engage the pinion, said pinion being provided with a movable axis whereby its contact with the driving-wheel flange is varied, a spring for urging or holding the pinion in engagement with said flange, and a device for adjusting the tension of the spring, substantially as described.

3. In a dish-washing machine, in combination with a suitable receptacle and a dasher, a dish-holder provided with slots tangential to the axis of the dasher, and lugs, and an upright perforated guard for the dasher and provided with a wire rack having notches, said slots and notches in the wire rack being adapted for holding flat dishes, and said lugs cooperating with the sides of the receptacle and also with the upright guard to hold cups, glasses, and like articles, substantially as described.

In witness whereof I affix my signature in presence of two witnesses.

WILLIAM H. COX.

Witnesses:

GEO. H. HILL,
G. J. PATTISON, Jr.