

(No Model.)

3 Sheets—Sheet 1.

W. O. MERRILL.
DISH CLEANER.

No. 541,490.

Patented June 25, 1895.

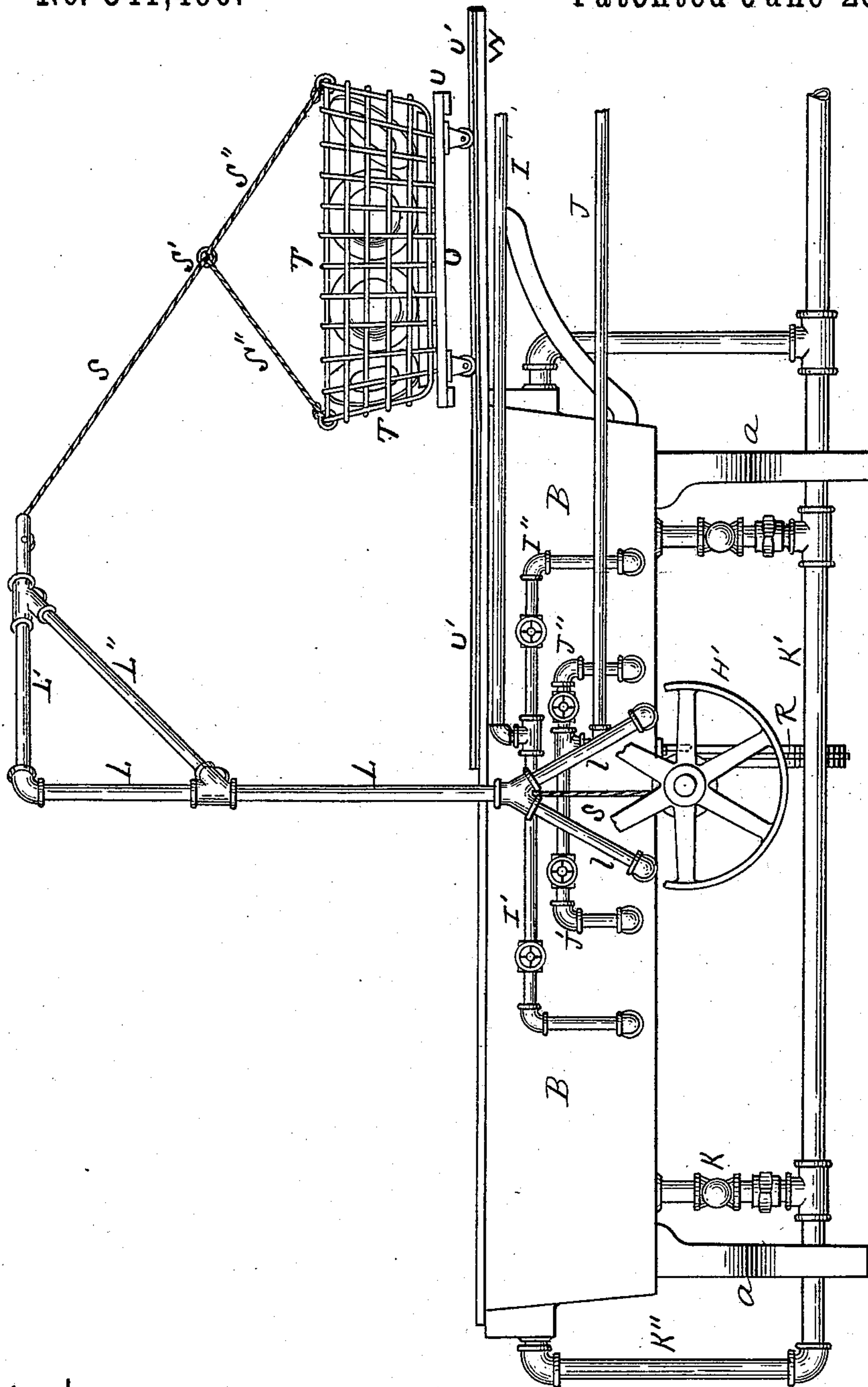


Fig. 1.

WITNESSES
E. A. Woodbury.
A. A. Bonney.

INVENTOR
William O. Merrill,
By his Atty
Henry Williams

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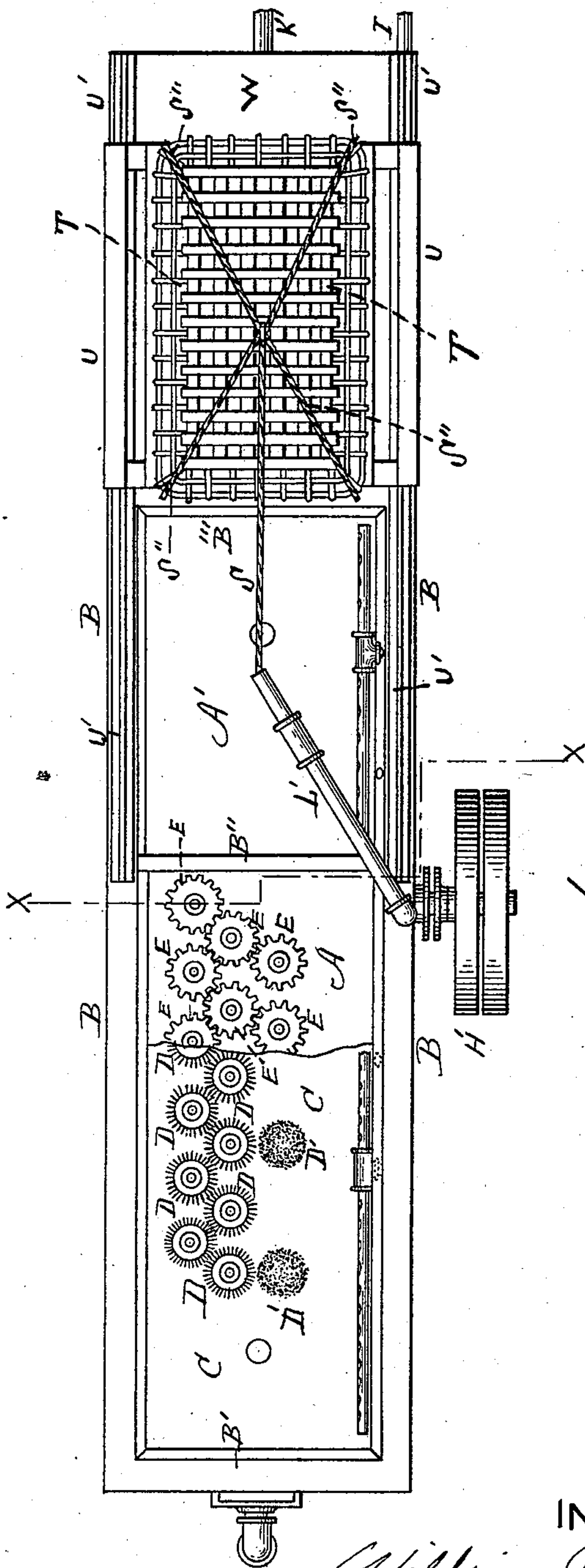


FIG. 2.

WITNESSES

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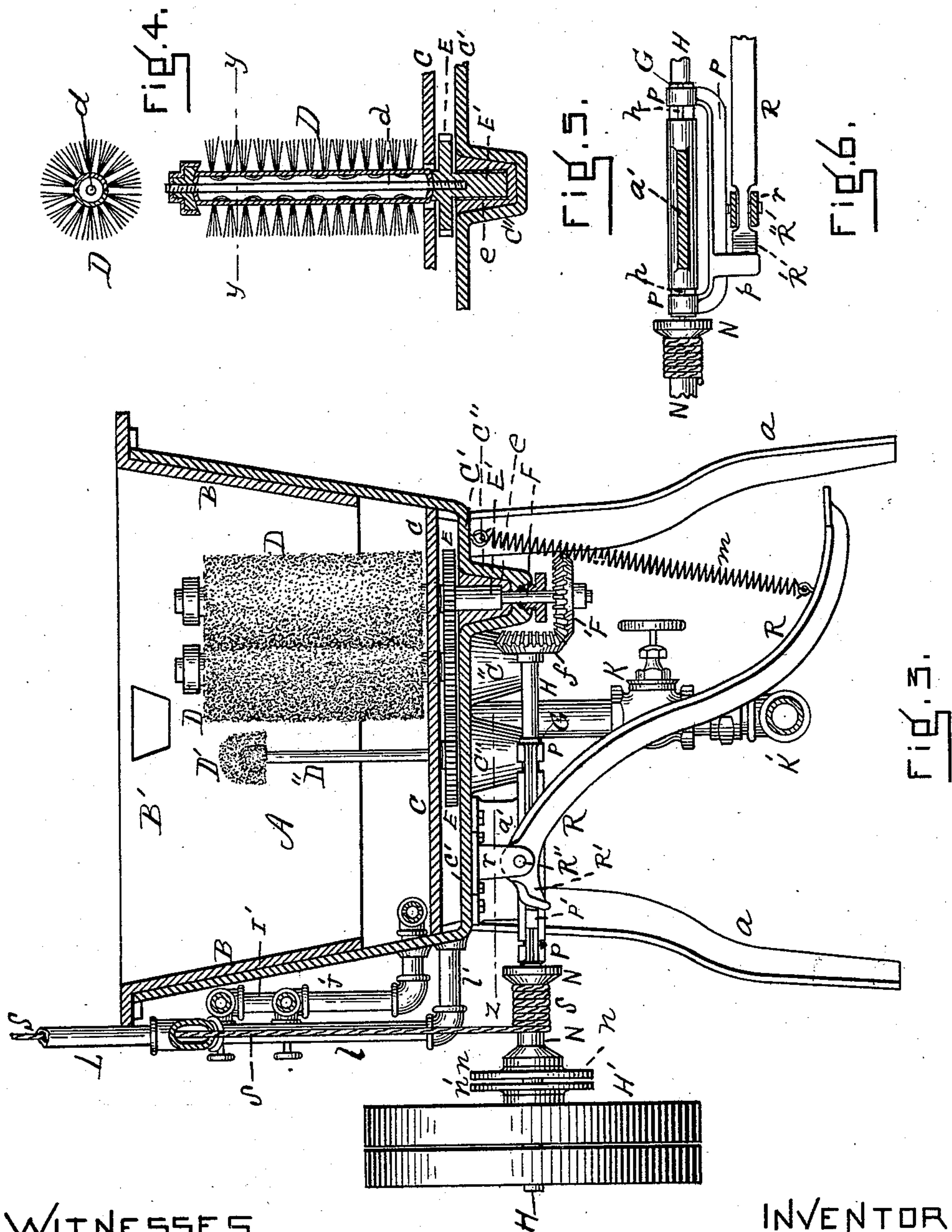
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UNITED STATES PATENT OFFICE.

WILLIAM O. MERRILL, OF BOSTON, MASSACHUSETTS.

DISH-CLEANER.

SPECIFICATION forming part of Letters Patent No. 541,490, dated June 25, 1895.

Application filed January 17, 1895. Serial No. 535,197. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM O. MERRILL, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented new and useful Improvements in Dish-Washing Machines, of which the following is a specification.

This is a machine, adapted especially for use in hotels and large establishments, or in connection with large families, for washing dishes of different kinds, such as plates, cups, saucers, bowls, &c., and rinsing the same; and it consists in the novel construction and arrangement of parts hereinafter described, whereby sets or rows of revolving brushes are provided, between which plates or saucers may be introduced, and single revolving brushes, over and upon which cups or bowls or similar dishes may be held, said brushes revolving in a tank into which hot and cold water is introduced, another tank for rinsing purposes being employed, and the basket containing the washed dishes being immersed by foot power therein, and a draining platform making a part of the machine being added, such draining platform being reached by a suitable track upon which the rinsing basket is adapted to travel.

The nature of the invention in detail is fully described below, and illustrated in the accompanying drawings, in which—

Figure 1 is a rear elevation of my machine or apparatus, a portion of the driving-pulley being represented as broken out and the rinsing or draining basket being in the position assumed after it has emerged from the rinsing-tank and been pushed along the track in order that the water may drain off from the dishes. Fig. 2 is a plan view of the apparatus, a portion of the floor of the washing-tank being represented as broken out in order to show the arrangement of gears for actuating the rotary brushes. Fig. 3 is a sectional view taken on line *x*, Fig. 2, looking toward the left. Fig. 4 is a horizontal section of one of the brushes, taken on line *y*, Fig. 5. Fig. 5 is a vertical section of one of the brushes and of its actuating-gear and adjacent parts. Fig. 6 is a horizontal section taken on line *z*, Fig. 3.

Similar letters of reference indicate corresponding parts.

Suitable legs *a* support a long tank which is divided into two compartments A and A'. The sides B extend along both compartments or tanks, the tank A being inclosed by said sides B, and B' and partition B'', and the tank A' being inclosed by the said sides B, partition B'', and end B'''.

C is a water-tight raised bottom for the tank A, and beneath this bottom is another bottom C' at a suitable distance to allow space for the gears which actuate the brushes. This tank A, which is the washing tank, is provided with rows of brushes D set preferably, but not necessarily, vertically, and with the bristles extending radially at right angles with the axes of the brushes, so that a plate or substantially flat dish cannot be passed between the rows of brushes D without being affected by the bristles. These brushes are fixed upon shafts *d* (Fig. 4), whose lower ends extend through the upper floor C and are rigidly secured in gears E whose hubs E' are set in bushings *e* which are within the boxes C'' formed on and extending down from the under side of the floor C'. These gears, of which there is one for each brush D, intermesh as shown in Fig. 2, so that when the first gear wheel E, that is, the one to which the power is directly applied, is rotated toward the left, the effect is to rotate all the gear wheels in the outer row toward the left and in the inner row toward the right, so that a dish placed between said rows from the left (see Fig. 2) would be carried by the bristles quickly between said rows and emerge at the right thereof. Motion is imparted to the right hand outer brush, through the medium of its gear wheel E, by means of a vertical shaft F (see Fig. 3) which extends down from the hub E' from said gear wheel through the lower end of the box C'', said shaft having fast upon it near its lower end the beveled gear wheel F' which is engaged by the beveled gear wheel *f* fast on the driving shaft H which has its bearings in a sleeve G which is provided with a spline *h* extending into the web *a'* extending from the bottom C', and is actuated by the driving pulley H'. Another set of brushes D' 100

is provided, each being fast on a spindle D'' which is rotated by similar gear wheels E in exactly the same manner as the brushes D, the gear wheels which rotate the brushes D' being engaged by the gear wheels which rotate the brushes D as shown in Fig. 2. These brushes D' are of substantially the rounded or convex shape shown in Fig. 3, and are for washing out the insides of hollow dishes, such as cups or bowls. They may accordingly be made of different diameters to suit the size of the dishes which they are intended to cleanse.

Hot water is supplied to the two tanks through the pipe I to the two branches I' and I'', the former leading into the washing tank A, and the latter into the rinsing tank A'. Cold water is supplied to the two tanks through the pipe J to the two branches J' and J'', the former of which leads to the wash-tank A and the latter to the rinsing tank A'. Sufficient water having been supplied to the washing-tank A, power is applied to the driving shaft H which, by means of the beveled gears f and F', rotates all the gear wheels E and hence all the brushes D and D'. As above stated, plates and other substantially flat dishes are inserted between the rows of brushes D, which, rotating inwardly and toward the right end of the tank, carry said dishes between the rows of brushes and thoroughly cleanse them. The bowls, cups and other hollow dishes are cleansed by holding them down, over and upon the brushes D'.

K is the pipe leading to the outlet pipe K', and K'' is the overflow.

L (Figs. 1 and 3) is a hollow vertical post or stem, open at its lower end, and supported by divergent arms l extending up from horizontal arms l' secured to the machine and extending preferably from the side B thereof. The upper end of the tubular post L opens into and has secured to it a horizontal tubular arm L', which, with the brace rod L'', post L and supports l l', constitutes a crane.

Loose on the shaft H (Figs. 3 and 6) is a drum N which has integral with it one disk n of a clutch whose other disk n' is fast on the driving shaft H. A sliding yoke P is held on the sleeve G by the spline h, and a horizontal projection P' on said yoke is adapted to be engaged by the short arm R' of the foot-lever R which is hinged at R'' to brackets or hangers r secured to the machine, and is held normally raised by the spring m connecting said foot-lever with the machine. A rope or chain S extends from said drum up through the parts L L' of the tubular crane, and thence to a ring S', from which cords S'' suspend the rinsing and draining basket T, made of any open material so that the water can pass freely through it. This basket T rests on a draining platform-car U which runs on rails U' constituting a track, said rails extending from the upper edge of the

sides B on opposite sides of the rinsing tank A' to and on a platform W extending out from the machine, as shown.

After the dishes have been washed in the tank A, they are placed in the basket T, and when it is sufficiently filled, the basket is immersed, with its contents, in the rinsing tank A'. By placing the foot on the lever R, the projection P' is engaged and the sliding yoke P pushed along the sleeve G against the drum N with the effect that the two parts of the clutch n n' are brought into engagement, and the revolving shaft H quickly winds the rope S upon the drum N and lifts the basket T out of the rinsing tank, when by releasing the lever R, the clutch is disengaged and the basket may be placed on the car U' and run off onto the platform W, and the dishes left there to drain.

I prefer to arrange the brushes D in the two rows alternately instead of coincidently or exactly opposite, in order that a better effect may be had by the bristles on the dishes.

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

1. In a dish-washing machine, a plurality of rows or series of revolving brushes D set in a tank adapted to receive and hold water, said brushes in one series being so close to the brushes in the next series that a plate cannot be placed between them without being acted on thereby, substantially as described.

2. In a dish-washing machine, a plurality of rows or series of revolving brushes D set in a tank for holding water, the brushes in one row being set alternately with the brushes in the next row, that is, each brush in one row being opposite the space between two brushes in the next row, substantially as set forth.

3. In a dish-washing machine, a pair of rows of rotating brushes set in a tank for holding water, said brushes in the two rows being rotated toward each other or inwardly, so that a plate placed between the rows, will be impelled by the co-acting rotation of the brushes in the two rows in one direction, substantially as set forth.

4. In a dish-washing machine, the tubular crane consisting of the upright tube L, horizontal tube L' suitably braced, the supports l l' secured to the machine, the cord S extending through said crane, and the drum N on the driving shaft adapted to be placed in engagement with said shaft by a lever and clutch, whereby the rinsing basket may be operated in the rinsing tank, substantially as described.

WILLIAM O. MERRILL.

Witnesses:

J. SCHIFF,

J. WRIGHT NASH.