G. S. BLAKESLEE.

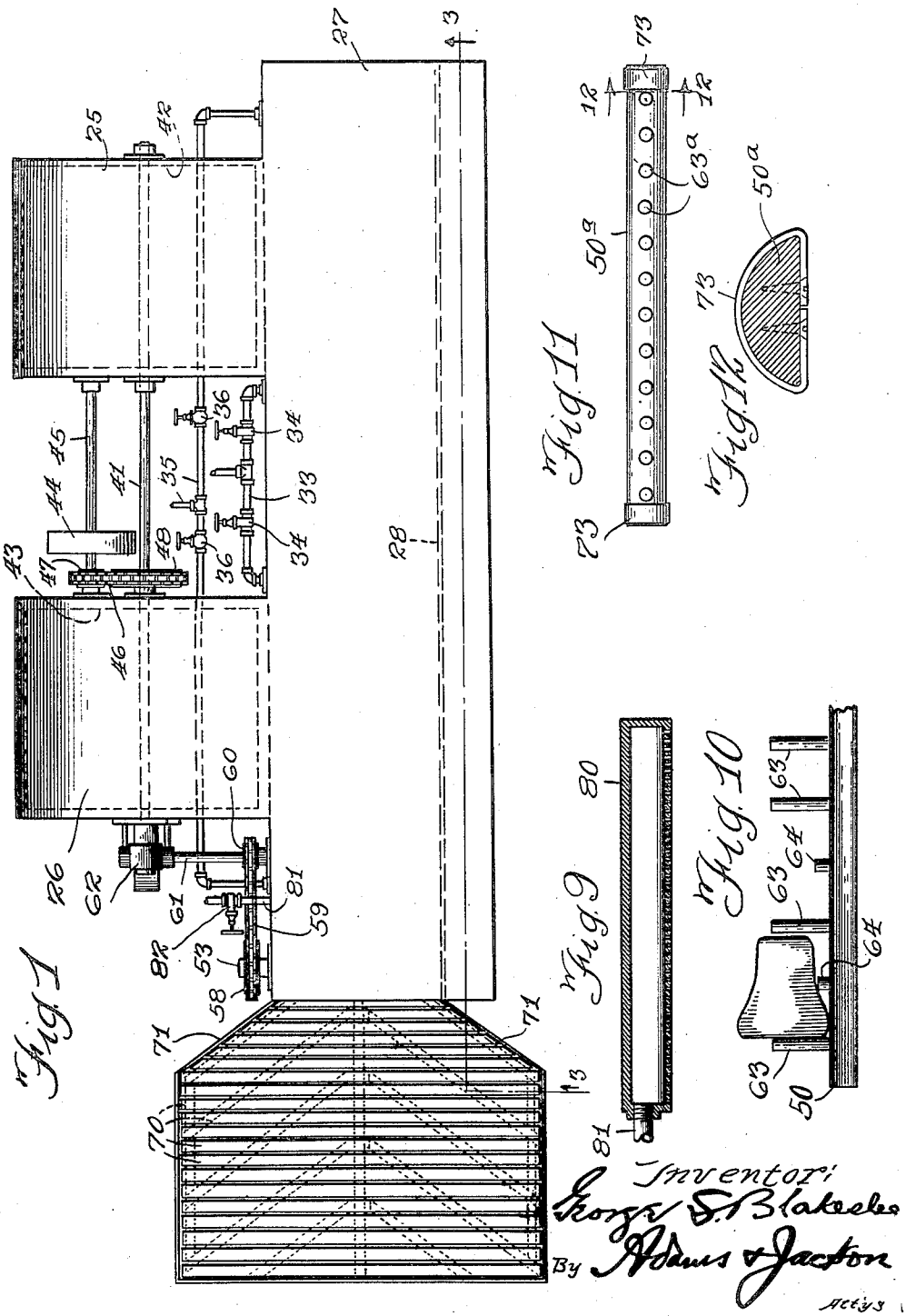
DISHWASHING MACHINE.

APPLICATION FILED SEPT. 13, 1916.

1,404,706.

Patented Jan. 24, 1922.

4 SHEETS—SHEET 1.



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4 SHEETS—SHEET 2.

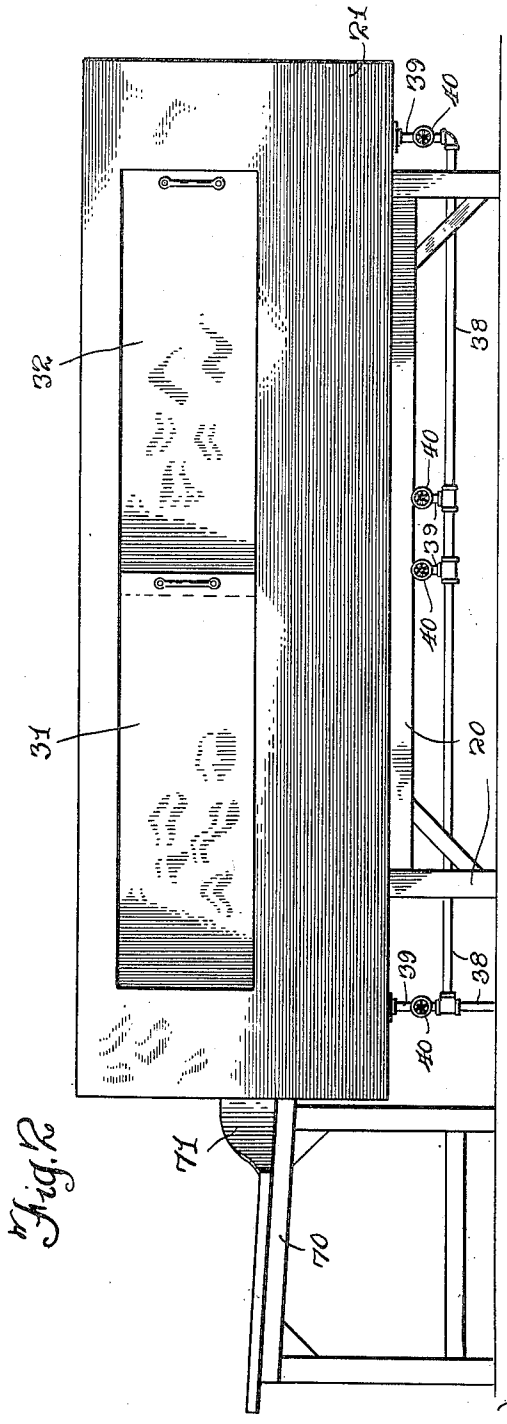


Fig. 4.

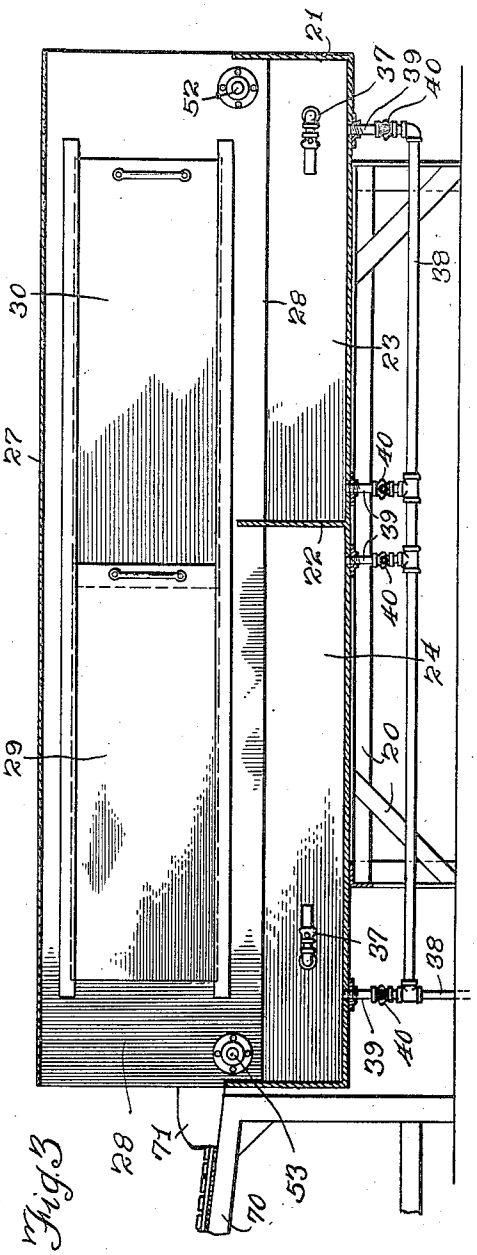


Fig. 3.

Inventor:
George S. Blakeslee
By Adams & Jackson
Attys

G. S. BLAKESLEE.

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4 SHEETS—SHEET 3.

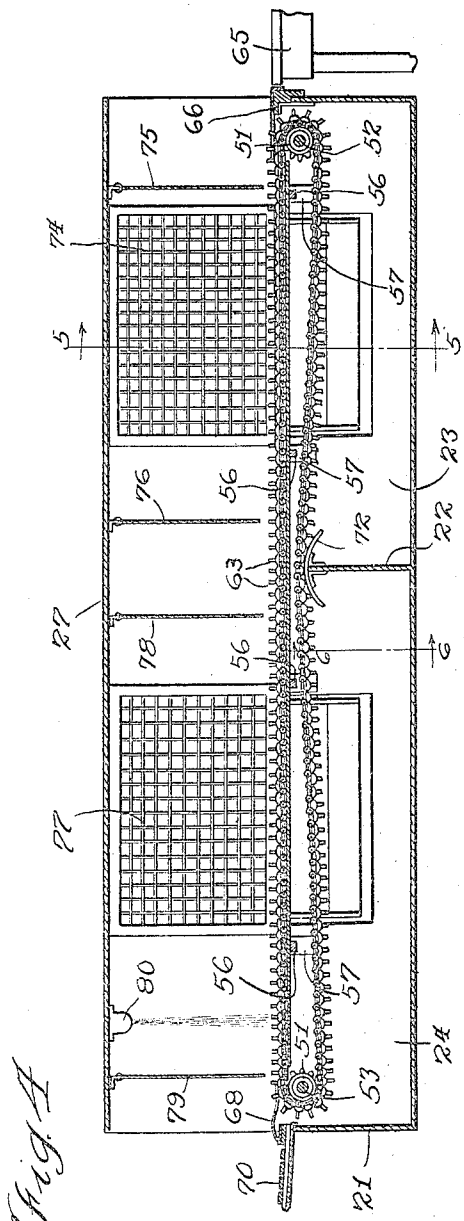


Fig. 4.

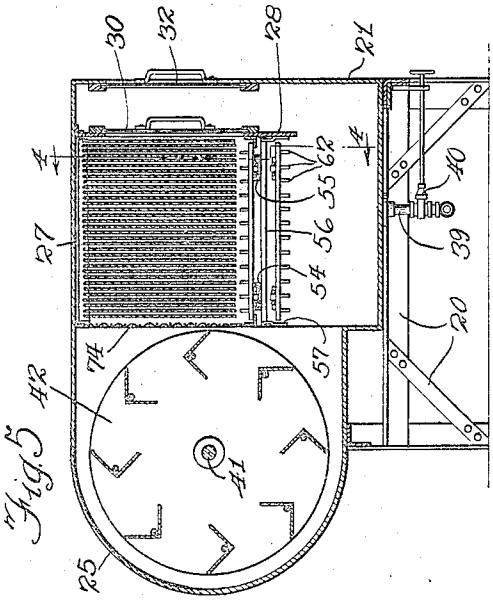


Fig. 5.

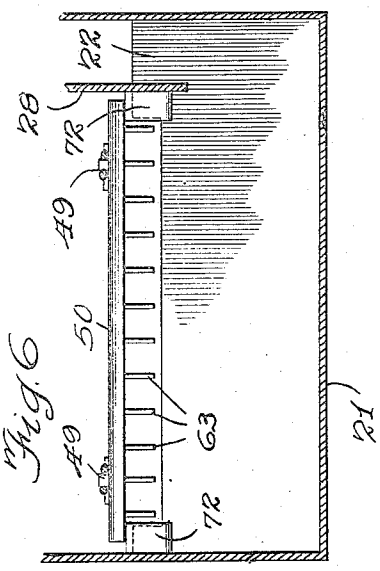


Fig. 6.

Inventor:
George S. Blakeslee
By Adams & Jackson
Att'ys.

G. S. BLAKESLEE.

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4 SHEETS—SHEET 4.

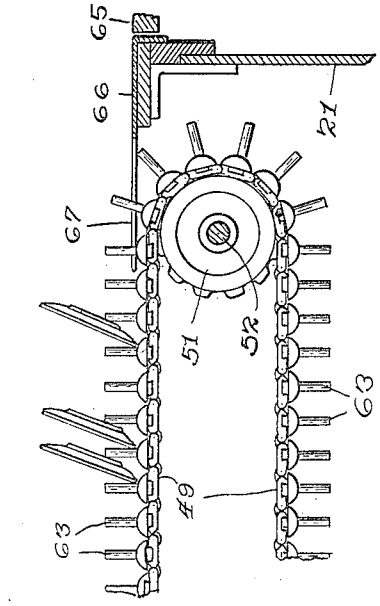
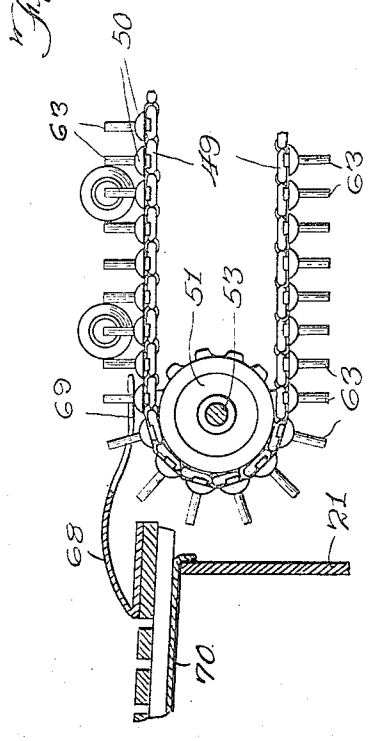


Fig. 8



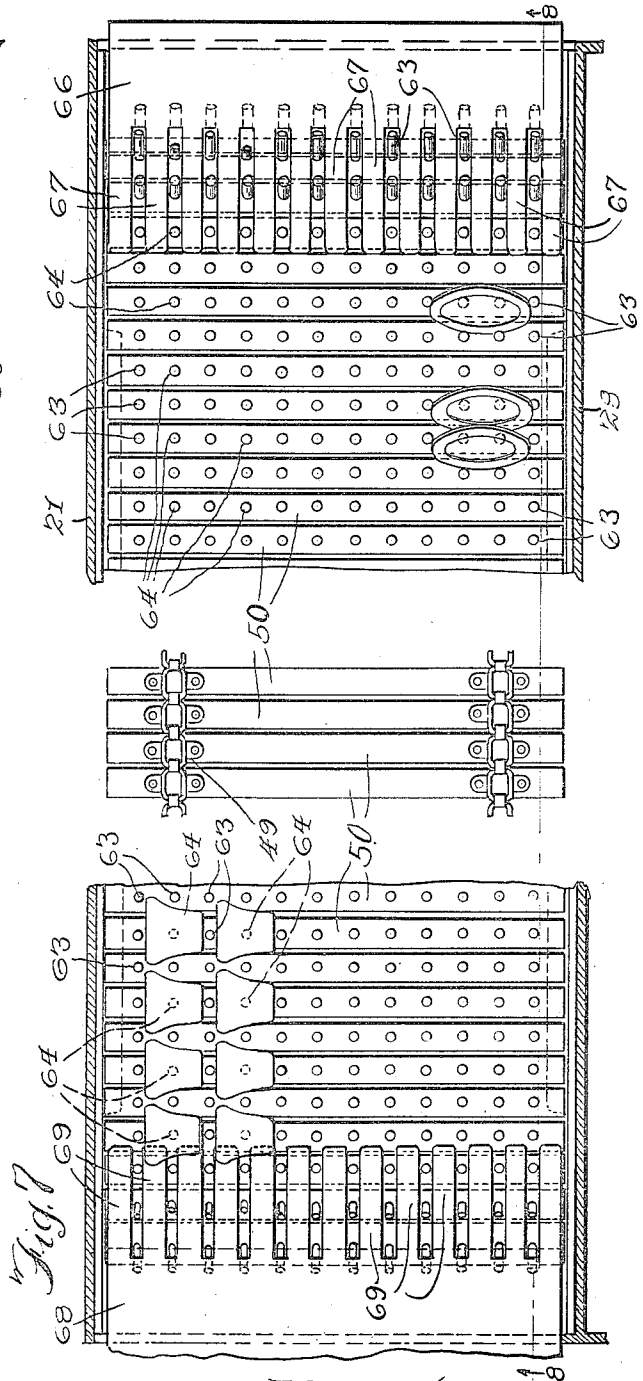


Fig. 7

Inventor:
Geo. S. Blakeslee
By Adams & Jackson
Attys.

UNITED STATES PATENT OFFICE.

GEORGE S. BLAKESLEE, OF CHICAGO, ILLINOIS.

DISHWASHING MACHINE.

1,404,706. Specification of Letters Patent. Patented Jan. 24, 1922.

Application filed September 13, 1916. Serial No. 119,942.

To all whom it may concern:

Be it known that I, GEORGE S. BLAKESLEE, a citizen of the United States, and a resident of Chicago, in the county of Cook, State of Illinois, have invented certain new and useful Improvements in Dishwashing Machines, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates to dish washing machines of the type in which the dishes are to be placed directly upon a conveyor upon which they are to rest while being carried through and past a shower or showers of water. It is one of the objects of my invention to provide a new and improved form of conveyor belt adapted to hold the dishes in proper position for being readily cleansed by the streams of water forced upon them. It is another object of my invention to provide a new and improved form and arrangement of means for taking the dishes from the conveyor belt at the delivery end of the machine. It is another object of my invention to provide a new and improved form and arrangement of tank and enclosing means within which the cleansing and rinsing water is forced upon the dishes. It is another object of my invention to improve dish washing machines in sundry details hereinafter pointed out. The preferred means by which I have accomplished my several objects are illustrated in the drawings and are hereinafter specifically described. That which I believe to be new and desire to cover by this application is set forth in the claims.

In the drawings:—

Fig. 1 is a top or plan view of the preferred form of embodiment of my invention;

Fig. 2 is a side view of the machine shown in Fig. 1;

Fig. 3 is a longitudinal vertical section through my machine, taken substantially on line 3—3 of Fig. 1;

Fig. 4 is another longitudinal vertical section through my machine, being taken substantially at the line 4—4 of Fig. 5;

Fig. 5 is a transverse vertical section taken substantially at line 5—5 of Fig. 4;

Fig. 6 is a fragmentary vertical sectional view, being taken substantially at line 6—6 of Fig. 4;

Fig. 7 is an enlarged detail, partly broken away, illustrating my improved conveyor belt;

Fig. 8 is a longitudinal vertical section through the belt of Fig. 6, being taken substantially on line 8—8 of Fig. 7;

Fig. 9 is a central vertical section through one of the devices employed for distributing water upon the articles to be washed as they are carried forward by the conveyor belt;

Fig. 10 is an enlarged detail of a part of one of the cross-bars comprising a part of my improved conveyor belt;

Fig. 11 is an outer face view of a modified form of cross-bar; and

Fig. 12 is an enlarged detail, being a cross-section taken on line 12—12 of Fig. 11, but with the bar turned through 90° from the position shown in said Fig. 11.

Referring to Figs. 1 to 10, in which corresponding parts are indicated by the same reference characters,—

20 indicates a framework upon which is mounted a tank 21 divided by a partition 22 into compartments 23—24. The tank 21 comprises circular housings 25—26 at one side, the tops of which are in alinement with the top 27 of the tank. A partition 28 is provided at one side of the tank 21 extending from the top 27 to about the level at which the water stands in the tank, being provided with sliding doors 29—30 at one side. The side of the tank 21 adjacent to the partition 28 is provided with sliding doors 31—32 whereby access may be had from the side to the interior of the tank at either side of the partition 28 as may be desired.

Water is adapted to be delivered to the sections 23—24 of the tank by means of a line of piping 33 provided with suitable valves 34 for controlling the admission of water. A steam-pipe 35 equipped with suitable valves 36 is provided for admitting steam to the water in the tank, the steam being admitted to the water through suitable nozzles 37. A drain pipe 38 is provided having a plurality of connections 39 with the floor of the tank, each of such connections being provided with a valve 40.

A shaft 41 extends longitudinally of the machine through the housings 25—26, being provided with paddle wheels 42—43 of any suitable type adapted upon the rotation of the shaft 41 in clockwise direction in Fig.

5 to throw water with considerable force laterally across the upper portion of the tank 21, as is well understood in the art. The shaft 41 is driven through the medium of a drive wheel 44 preferably in the form of a pulley fixed upon a shaft 45 which is connected with the shaft 41 by means of a sprocket chain 46 running over sprocket wheels 47—48 mounted upon said shafts respectively. The drive wheel 44 is adapted to be driven from any suitable source of power.

My improved conveyor is in the form of a belt comprising a plurality of chains 49 connected together by a series of cross-bars 50. The belt is supported at its ends by sprocket wheels 51 mounted upon transversely-extending shafts 52—53. The belt is further supported by means of channels 54—55 extending longitudinally of the tank mounted upon transversely-extending bars 56, the ends of which are mounted in brackets 57 of any suitable type. The conveyor belt is driven, so as to carry its upper portion toward the left in Fig. 1, by means of a sprocket wheel 58 mounted upon the outer end of the shaft 53, the gear 58 being driven in turn by a sprocket chain 59 working upon a sprocket wheel 60 mounted upon a short shaft 61 which is connected by any suitable gearing with the shaft 41 within a housing 62.

The cross-bars 50 of my improved conveyor are provided with a plurality of closely associated pegs 63—64 at intervals therealong, the pegs 64 being shorter than the pegs 63. Only a limited number of pegs 64 are employed in the construction shown, each peg 64 being so located as to be surrounded by a series of longer pegs 63, thus providing pockets in the face of the conveyor adapted for holding cups in suitable position for the cleansing process. Other dishes such as plates, saucers, etc., are stood on edge between adjacent pegs, as shown in Fig. 8.

Preferably a table 65 is employed at the end of the machine at which the dishes are fed thereto, such table having its top even with a fore-plate 66 provided with a plurality of fingers 67 extending between the rows of pegs 63 of the conveyor belt. At the opposite end of the machine a delivery-plate 68 is employed having fingers 69 extending between the rows of pegs for receiving the dishes from the conveyor and sliding them gently into position upon a table 70 at the delivery end of the machine. The table 70 is preferably arranged on a slight incline so as to provide for draining the water from the dishes as they are slid into position thereon, being adapted to return the water to the tank 21. Guards 71 are provided upon the table 70 for preventing the dishes from being pushed from the edge thereof.

The partition 22 is provided at its ends with shields 72 which are adapted to support the ends of the cross-bars 50 for carrying the conveyor belt past the partition 22, such partition being cut down between its ends as is shown in Fig. 6. In Figs. 11 and 12 which show a modified form of cross-bar, the cross-bar 50^a is provided with metal bands or clips 73 at its ends adapted to be brought into engagement with the shields 72 in the movement of the conveyor past the partition 22, such expedient serving to increase the durability of the parts.

With the shaft 41 being driven in clockwise direction in Fig. 5 and with the upper part of the conveyor being moved toward the left in Fig. 4, dishes are placed upon the conveyor between the pegs 63—64, being carried by the conveyor along the tank 21. As the dishes are carried past the paddle wheel 42, a quantity of water containing soap or other cleaning agent is thrown by the paddle wheel upon the dishes, the water from the paddle wheel 42 being broken up by means of a screen 74. Curtains 75—76 of any suitable type are employed for preventing the water from splashing out of the section 23 of the tank. As the dishes advance along the tank a quantity of rinse water is thrown upon the dishes by the paddle wheel 43, a screen 77 being provided for breaking up the water, and curtains 78—79 being provided for preventing splashing of the water out of the section 24. Before the dishes leave the delivery end of the conveyor, water is forced downward upon the dishes for a final cleansing from a perforated pipe 80 which extends across the tank along the top thereof, the water for this final cleansing being supplied through a pipe 81 from any suitable source, a valve 82 being provided for controlling the passage of water through the pipe. When the dishes arrive at the delivery plate 68 they are either removed by hand as they arrive or are permitted to pile up more or less upon the delivery plate and upon the table 70.

While I have shown the cross-bars 50 having smooth outer faces provided with pins or pegs 63—64 for furnishing the proper irregularities for supporting the dishes independently of each other in the desired position for suitable cleaning by the water thrown across the tank, it will be understood that I do not wish to be restricted to this particular construction and arrangement, except as hereinafter specifically claimed.

What I claim as my invention and desire to secure by Letters Patent, is—

1. In a dish washing machine, the combination of a tank, an endless conveyor ex-

tending longitudinally of the tank and including means for supporting plates on edge thereon and providing pockets to receive cups and the like, and means for throwing water upon articles carried by the conveyor.

2. In a dish washing machine, the combination of a tank, an endless conveyor extending longitudinally of the tank and adapted to support the articles to be washed, said conveyor being provided with a series of projecting pins adapted to retain plates, supported by the conveyor, on edge, said pins being of different lengths and arranged so that each relatively short pin is surrounded by a plurality of relatively long pins, thus forming a pocket to receive a cup or the like, and means for throwing water upon articles carried by the conveyor.

3. In a dish washing machine, the combination of a tank, an endless conveyor extending throughout the length of the tank and comprising transverse bars linked together and each provided with a series of closely adjacent projecting pins, some of said pins being shorter than the others, and each of said shorter pins being surrounded by longer pins, whereby pockets to receive cups are formed among the pins and plates may be retained, on edge, on the conveyor, means for throwing water on articles carried by the conveyor, and means for automatically removing articles from the conveyor at one end of the tank.

4. In a washing machine, the combination of a tank, a partition disposed longitudinally of said tank and extending above the water therein, means for supporting the articles to be washed as they are moved over said tank, means at one side of said tank for throwing water therefrom toward said partition upon the articles to be washed, and doors in said partition and in the adjacent outer wall of said tank, whereby access may be had to the interior of said tank from the side.

5. In a washing machine, the combination of a tank, conveyor means for carrying articles to be washed along said tank, a partition extending along said tank beside said conveyor means, means for dashing water upon and across said conveyor means toward said partition from the opposite side of the tank, and doors in said partition and in the adjacent outer wall of said tank whereby access may be had to said conveyor from the side.

GEORGE S. BLAKESLEE.