

June 10, 1924.

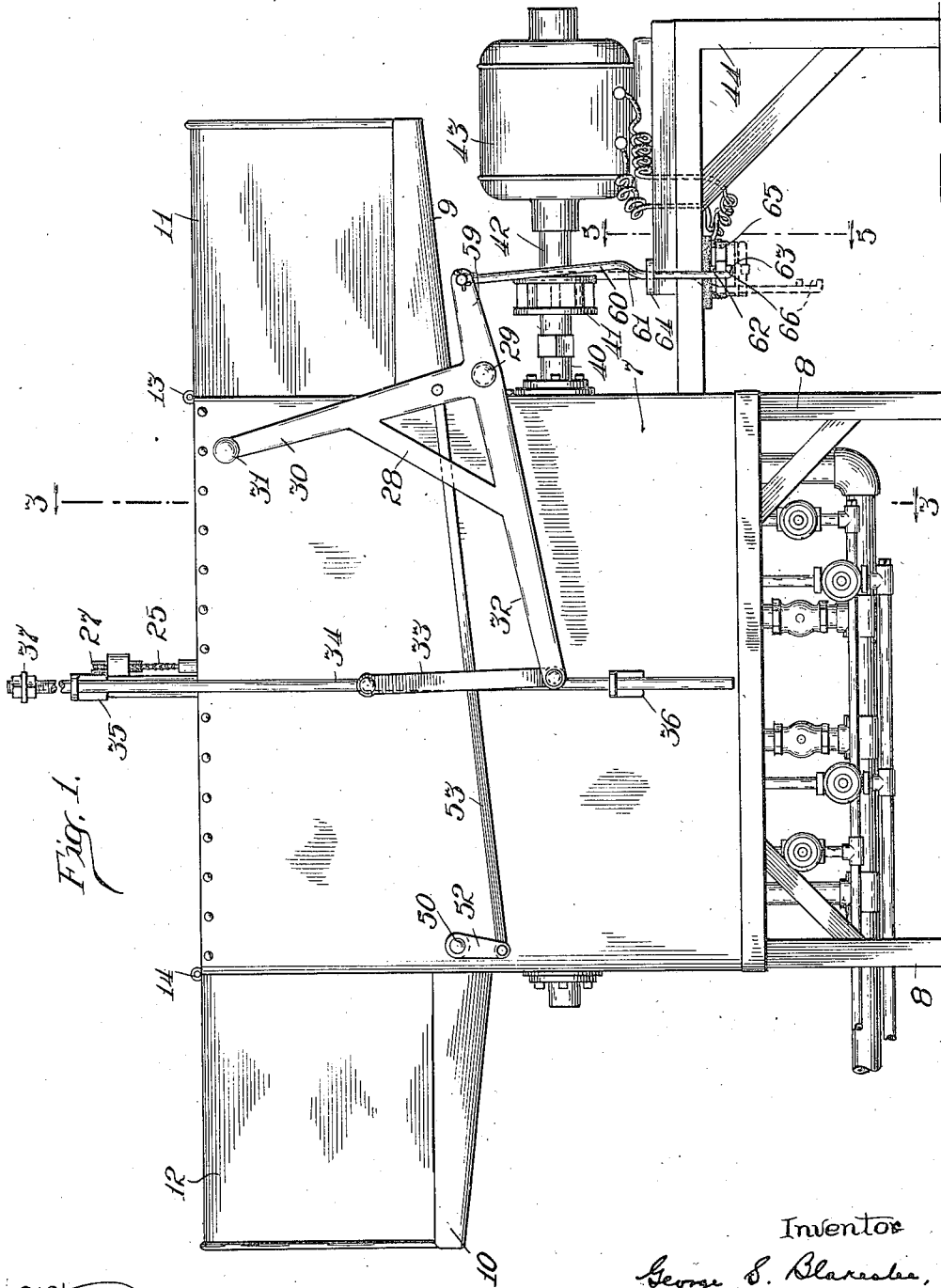
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G. S. BLAKESLEE

WASHING MACHINE

Filed Dec. 8, 1917

3 Sheets-Sheet 1



Witness
Milton Lenoir

Inventor
George S. Blakeslee,
Adams Janson,
Attorneys

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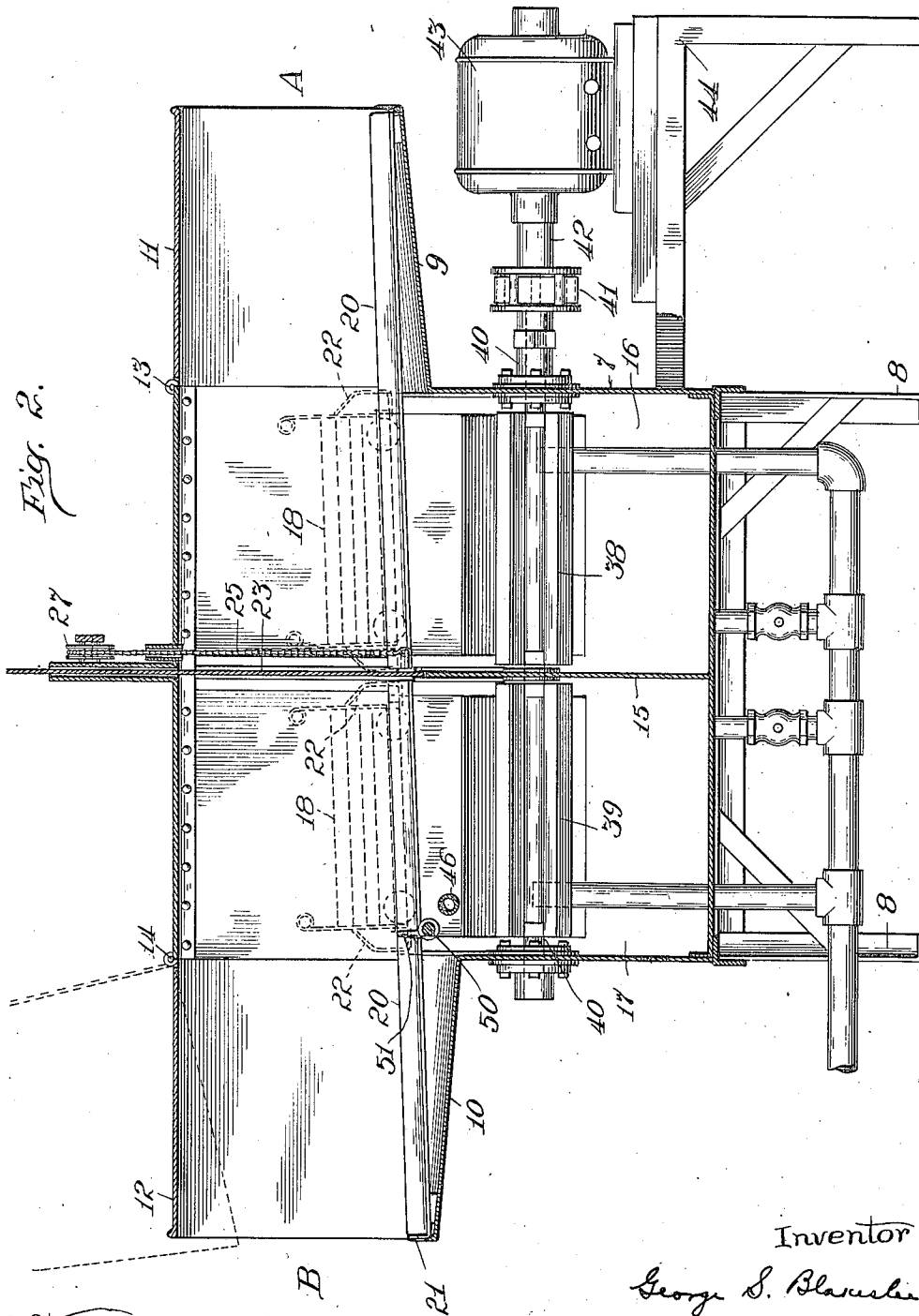
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Attorneys

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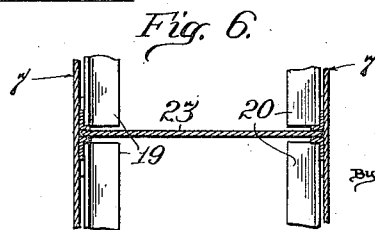
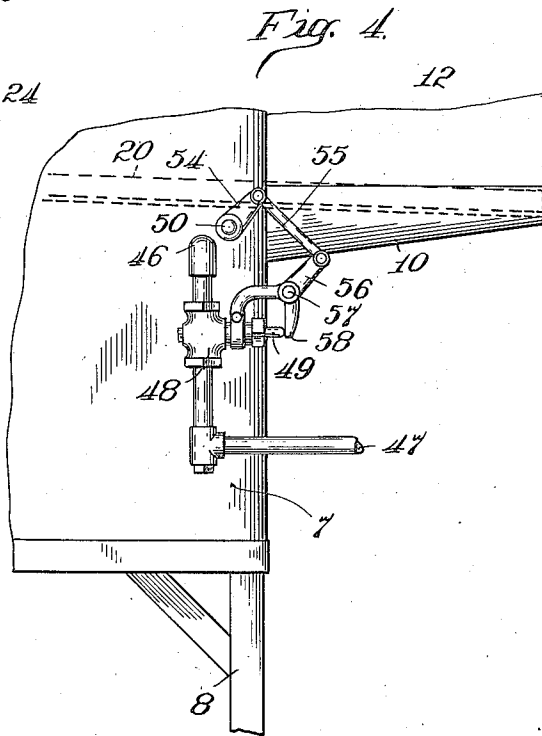
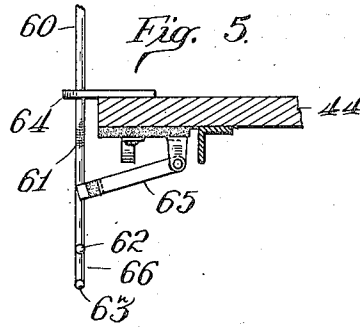
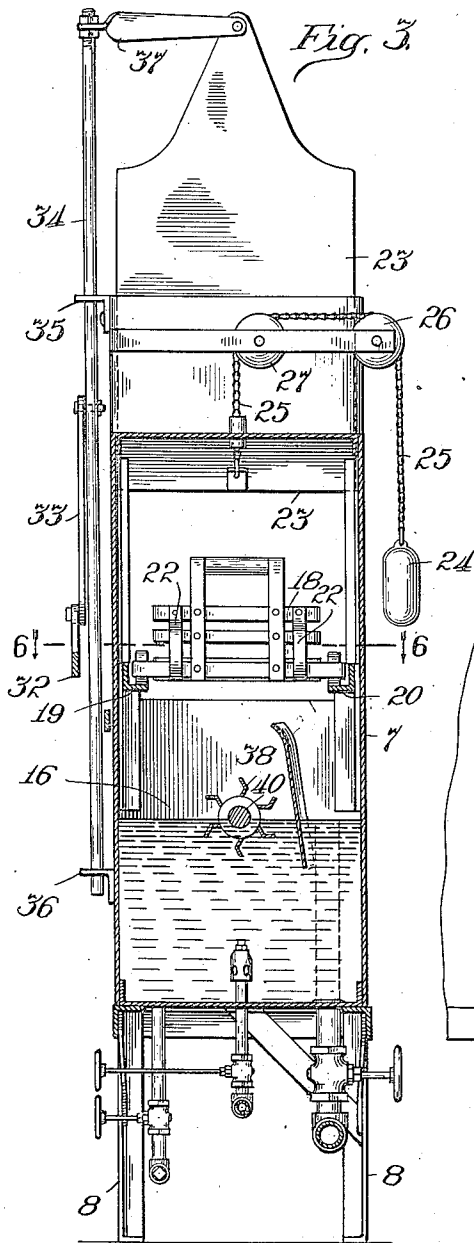
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3 Sheets-Sheet 3



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Milton Lenoir

Inventor
George S. Blakeslee,
Adams Jackson,
Attorneys.

UNITED STATES PATENT OFFICE.

GEORGE S. BLAKESLEE, OF CHICAGO, ILLINOIS.

WASHING MACHINE.

Application filed December 8, 1917. Serial No. 206,285.

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 and State of Illinois, have invented certain new and useful Improvements in Washing Machines, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates to machines for washing dishes, metal parts, and other articles capable of being handled in baskets or other receptacles while being washed during their progress through the machine, and it has to do particularly with washing machines in which the baskets containing the articles to be washed tend to move by gravity over tanks containing wash water and rinsing water, but are arrested and held in position over the washing and rinsing tanks during the washing and rinsing operations, although certain features of the invention may be applied to other types of machine. A machine of the gravity type is shown and described in Letters Patent No. 1,360,716, granted to me Nov. 30, 1920.

The object of my invention is to provide certain improvements in power operated washing machines, especially with respect to the mechanism for positioning the baskets in a machine of the gravity type; the mechanism for throwing the washing and rinsing water violently into contact with the articles to be washed and the devices for controlling the operation thereof; and the construction of the shell or casing of the machine; also to provide improved means for rinsing the articles to be washed. This I accomplish as hereinafter described and as illustrated in the accompanying drawings. What I regard as new will be set forth in the claims.

In the drawings,

Fig. 1 is a side elevation of my improved machine;

Fig. 2 is a longitudinal vertical section thereof;

Fig. 3 is a vertical cross-section on line 3—3 of Fig. 1;

Fig. 4 is an enlarged detail, being a partial side elevation of the outlet end of the

machine, illustrating the valve mechanism for controlling the rinsing water spray;

Fig. 5 is an enlarged detail, being a vertical section on line 5—5 of Fig. 1, showing the devices for opening and closing the circuit through the electric motor which drives the paddle wheels, and

Fig. 6 is an enlarged detail, being a partial horizontal section on line 6—6 of Fig. 3.

Referring to the drawings,

7 indicates the shell or casing of the machine, which is of suitable shape and dimensions to enclose and support the various parts of the apparatus, and is preferably supported on legs 8. Said casing is best made of sheet metal, and the main body thereof is rectangular in form, as shown in Figs. 1 and 3. It is provided at its opposite ends with laterally extending aprons 9—10, and with hoods 11—12 which extend over the aprons 9—10, respectively, and are hinged at 13—14 to the upper part of the casing so that they may be swung up out of the way, as illustrated in dotted lines at the left in Fig. 2. The lower portion of the casing 7 serves as a water receptacle, and is provided with a transverse partition 15 which divides the interior thereof into washing and rinsing compartments 16—17, respectively. Suitable pipe connections, which need not be specifically described, are provided for supplying the tanks 16—17 with water and for regulating the level of the water therein. The ends of the casing above the aprons 9—10 are open to permit of the passage longitudinally through the tank of wheeled basket 18, shown in dotted lines in Fig. 2, and in full lines in Fig. 3. These baskets are adapted to hold the dishes or other articles to be washed, and are adapted to run on tracks 19—20 which extend longitudinally through the casing and over the aprons 9—10, as shown in Figs. 2 and 3. Said tracks, which are preferably made of angle iron, are inclined downward from the inlet end A to the outlet end B of the machine, so that the baskets are adapted to move by gravity through the machine from the inlet end to the outlet end thereof. At the latter end an up-turned stop 21 is pro-

vided to prevent the baskets from running off the track at that end, as shown in Fig. 2. The baskets 18 are provided at their ends with inclined guides 22, as best shown in Fig. 2, the guides of adjoining baskets being adapted to register, so that they serve to hold the baskets apart and also co-operate with the sliding gate hereinafter described, to properly position the baskets in the washing compartment.

23 indicates a vertically sliding gate which is mounted in the casing in line with the partition 15, with which it is adapted to co-operate to separate the washing compartment from the rinsing compartment above the level of the water in the tanks 16—17. Said gate is substantially counterbalanced by a counterbalance weight 24, which, in the construction shown, is connected to the gate above the casing by a flexible connection 25 which runs over pulleys 26—27, as best shown in Fig. 3. The gate 23 is raised and lowered by means of a controlling device which also controls the operation of various other parts of the machine, as will be hereinafter described. In the construction illustrated this controlling device is in the form of a lever 28 of the bell-crank type, the fulcrum 29 of which is adjacent to the inlet end of the machine, said lever having an upwardly extending arm 30 which is provided with a handle 31 placed in position for convenient operation by the attendant who introduces the baskets into the machine. The other principal arm 32 of said lever is connected by a link 33 with a longitudinally movable rod 34 which is mounted at one side of the casing in suitable brackets 35—36 and is connected by a horizontal arm 37 with the upper portion of the gate 23, as shown in Fig. 3. Thus, by rocking the lever 28, the gate 23 may be raised and lowered. To permit of the passage of the lower edge of said gate into contact with the partition 15, the tracks 19—20 are made in sections which are separated slightly at the center of the machine, as best shown in Fig. 2, so that when said gate is lowered it may pass between the adjoining ends of the track sections.

For the purpose of throwing the washing and rinsing water in the tanks 16—17 violently into contact with the articles to be washed, I provide paddle wheels 38—39 which are mounted in the tanks 16—17, respectively, and extend longitudinally thereof in such position that their blades dip into the water in said tanks. Said paddle wheels are mounted on a longitudinally extending shaft 40 suitably journaled in the ends of the casing and connected by a flexible clutch or coupling 41 with the armature shaft 42 of an electric motor 43, which, in the construction shown, is mounted on a

suitable support 44 at one end of the machine. When the motor is in operation the shaft 40 will be rotated, thereby rotating the paddle wheels and throwing the water in the washing and rinsing tanks upward, and since the paddle wheel shaft is connected directly to the armature shaft of the motor, said paddle wheels will be rotated at a high rate of speed, thereby causing a very pronounced and forcible distribution of the water throughout the washing and rinsing compartments. This construction makes it practicable to employ much smaller paddle wheels than it has heretofore been expedient to use. As best shown in Fig. 3, the paddle wheels are located substantially centrally under the path of the baskets 18 instead of at one side thereof, as has heretofore been the practice, and consequently the machine may be made much narrower, and occupies considerably less space. In order to properly direct the water thrown by the paddle wheels up against the contents of the baskets, vertically extending deflectors 45 are provided, in the form of plates which may be either fixedly or adjustably secured in position, and extend longitudinally of the tanks 16—17 adjacent to the paddle wheels. These deflectors co-operate with the paddle wheels to direct the water thrown thereby up against the baskets and their contents and prevent it from being thrown against the side of the machine.

In addition to a first rinsing of the washed articles by the operation of the rinsing paddle wheel 39, I also provide for rinsing them a second time by spraying them with fresh hot water while they are passing out of the rinsing compartment. For this purpose I provide a spraying pipe 46, which, in the construction shown, extends transversely of the machine below the path of the baskets and adjacent to the outlet end of the rinsing compartment. This spraying pipe may, however, be placed above the baskets if desired. Said pipe is supplied with hot water under pressure and it is perforated in such manner that the water will be discharged upon the contents of the basket in the rinsing compartment as it moves over said pipe. Said pipe is connected with a suitable source of supply of hot water, indicated by a pipe 47 in Fig. 4, the supply of water admitted to the pipe 46 being controlled by a valve 48 having a projecting plunger stem 49. This valve, in the form illustrated, is so constructed that by pressing in the stem 49, the valve will be opened and water admitted to the pipe 46. The details of the construction of said valve are not illustrated, as my invention is not limited to the use of any particular valve, and any valve suitable for the purpose may be employed. The manner in which the

valve shown is automatically opened to discharge rinsing water upon the contents of each basket as it moves out of the rinsing compartment will presently be described.

5 50 indicates a rock-shaft which extends transversely of the machine below the tracks 19-20 and adjacent to the outlet end of the rinsing compartment, as shown in Fig. 2. Said shaft carries one or more stops 51
10 which are adapted to project up into the path of the baskets, to position them in the rinsing compartment, or to be folded down by the rocking of the shaft 50, out of the way of the baskets to permit them
15 to pass out of said compartment. Said rock-shaft is provided at one end with an arm 52 which is connected by a link 53 with the arm 30 of the lever 28, the arrangement being such that when said lever is operated
20 to raise the gate 23, it also rocks the shaft 50 in such direction as to move the stop 51 out of operative position. When said lever is moved in the reverse direction, the gate 23 is moved down into operative position, and the stop 51 is restored to the position shown in Fig. 2. At its other end the
25 rock-shaft 50 carries another arm 54 which is connected by a link 55 with a lever 56, as best shown in Fig. 4. Said lever is mounted upon a pivot 57, and is provided with an arm 58 which is adapted to bear upon the plunger stem 49. It will be evident from a comparison of Figs. 1, 2 and
30 4 that when the lever 28 is moved in a clockwise direction, the shaft 50 will be rocked to move the stop 51 in a counter-clockwise direction out of operative position. This movement of the rock-shaft 50 will rock the lever 54 in a clockwise direction
35 as seen in the illustration of Fig. 4, and consequently the lever 56 will be actuated to press the plunger stem 49 in, or to the left, thereby opening the valve 48 and discharging a spray of water from the pipe
40 46 upon the contents of the basket in the rinsing compartment. As soon as the stop 51 is moved out of operative position as described, the basket in the rinsing compartment will move by gravity out over the
45 apron 10, passing over the pipe 46, so that its contents will be thoroughly sprayed by the water discharged from said pipe. This water is maintained at a high temperature so that it evaporates quickly, and consequently the rinsed articles dry almost instantly.

In order to stop the paddle wheels while this last rinsing is being effected, and also while a fresh basket is being introduced at the inlet end of the machine and the basket
50 then in the washing compartment is moving into the rinsing compartment, the lever 28 is also arranged to automatically start and stop the motor 43. For this purpose said lever

is provided with an arm 59 from which
65 depends a swinging rod 60 having an offset portion 61 and laterally projecting lugs 62-63, as shown in Fig. 1. Said rod extends through a guide bracket 64 and adjacent to a switch member 65 which controls
70 the operation of the motor. It will be evident that when the rod 60 moves longitudinally, the passage of the offset portion 61 through the guide-bracket 64 swings said rod laterally. The lugs 62-63 together
75 form a recess 66 which is adapted to receive a portion, such as the handle, of the switch member 65 when the rod 60 is moved laterally at the proper time. The arrangement is such that when the gate 23 is
80 closed and the stop 51 is in operative position, the switch member 65 will be closed and the motor 43 in operation. At this time the lugs 62-63 will be in operative engagement with the switch member 65, and consequently when the lever 28 is operated to
85 open the switch 23, the same operation will move the rod 60 downward, thereby opening the switch and stopping the motor, which also stops the paddle wheels 38-39. This occurs during the first part of the
90 movement of the rod 60. As such downward movement continues the offset portion will swing the rod 60 laterally so as to disengage it from the switch member 65, and thereby permit said rod to continue its
95 downward movement without further movement of said switch member. When the lever 28 is moved in the reverse direction, the rod 60 will not operatively engage and
100 actuate the switch until its movement has been almost completed, and consequently the motor will not start until the gate 23 has been substantially closed and the stop 51 restored to operative position, thereby
105 avoiding the danger of splashing water from either of the tanks 16-17 into the other.

In operating the machine, a basket containing the articles to be washed is placed
110 on the track over the apron 9, and then moves by gravity into the washing compartment. At this time the gate 23 is up out of operative position, and the paddle wheels are idle; the stop 51 is also in its
115 inoperative or turned-down position, and the valve 48 is open so that hot water is being sprayed from the pipe 46 into the rinsing compartment. As soon as the first
120 basket has moved down into the washing compartment, the lever 28 is operated to lower the gate 23, and the operation of said lever starts the motor, and rocks the shaft 50 to turn the stop 51 into operative position and shut the valve 48 to cut off
125 the rinsing spray. The starting of the motor rotates the paddle wheels, and consequently throws washing and rinsing water

up into the washing and rinsing compartments. When the contents of the first basket have been washed, the gate 23 is raised, which allows the first basket to pass
5 down into the rinsing compartment while a fresh basket is introduced into the washing compartment. The gate 23 serves to position the basket in the washing compartment, as when it is lowered, it engages
10 the inclined guides 22 at the forward end of the basket in that compartment and moves it back far enough to permit the gate to pass down into engagement with the partition 15. The rinsing of the dishes by
15 means of the paddle wheel, and the subsequent rinsing by the spray mechanism, have already been described. The hinging of the hoods which extend over the aprons 9-10 facilitates access to the interior of the casing.
20 ing.

So far as I am aware I am the first in the art to provide a washing machine in which the several operations hereinbefore described are controlled automatically. In
25 other respects also, as defined by the generic claims hereinafter made, my invention is not restricted to the specific construction shown and described, but includes such changes or modifications as would be apparent to those skilled in the art.
30

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

1. A washing machine comprising a casing, a tank therein, an inclined support extending over said tank for supporting a carrier containing the articles to be washed and
35 permitting it to move through said casing by gravity, power operated means in said tank for throwing water against such articles, means below the path of the articles and discharging in an upward direction for
40 spraying water thereupon while they are moving out of said casing, and means for controlling the passage of the articles through the casing.
45

2. A washing machine comprising a casing, means for supporting the articles to be washed in their passage through said casing, power operated means in said casing for
50 throwing water against such articles, means for spraying water upon such articles, a controlling member, and means controlled alternately by the actuation of said controlling member for actuating said spraying means
55 and said power operated means.

3. A washing machine comprising a casing, means for supporting the articles to be washed in their passage through said casing, power operated means in said casing for
60 throwing water against such articles, means for starting and stopping said power-operated means, means for spraying water upon such articles, a controlling device, and means controlled by the actuation of said controlling device for starting said spraying
65

means when said power operated means is stopped, and for stopping said spraying means when said power operated means is started.

4. A washing machine comprising a casing, means for supporting the articles to be washed in their passage through said casing, power operated means in said casing for throwing water against such articles, means for spraying water upon such articles while
70 they are moving out of said casing, a lever and means actuated by said lever for controlling the operation of said power operated means and said spraying means and operating to start said spraying means when said
75 power operated means is stopped, and to stop said spraying means when said power operated means is started.

5. A washing machine comprising a casing, means for supporting the articles to be washed in their passage through said casing by gravity, means for spraying water upon
80 such articles, a controlling device, and devices actuated by the operation thereof for controlling the passage of such articles through said casing, and for starting and stopping the operation of said spraying means.
85

6. A washing machine comprising a casing, means for supporting the articles to be washed in their passage through said casing, power operated means for throwing water against such articles, means for spraying water upon such articles, a controlling device, and devices actuated by the operation thereof for controlling the passage of such
90 articles through said casing, and for starting and stopping the operation of said spraying and said power operated means alternately.
95

7. A washing machine comprising a casing, means for supporting the articles to be washed in their passage through said casing, power operated means for throwing water against such articles, means for spraying water upon such articles, a lever, means
100 actuated by said lever for controlling the passage of such articles through said casing, and means actuated by said lever for controlling the operation of said spraying and said power operated means.
105

8. A washing machine comprising a casing, inclined means for supporting therein a wheeled carrier for the articles to be washed and adapted to permit said carrier to move through the casing by gravity, means
110 for spraying water upon such articles, means for arresting the progress of the carrier, and means for controlling the operation of said arresting means.
115

9. A washing machine comprising a casing, inclined means for supporting therein a wheeled carrier for the articles to be washed and adapted to permit said carrier to move through the casing by gravity, means for
120 spraying water upon such articles, means for
125

arresting the progress of the articles, and devices adapted to be operated to start said spraying means and simultaneously to move said arresting means out of operative position.

10. A washing machine comprising a casing, means for supporting therein the articles to be washed arranged to permit them to move therethrough by gravity, power operated means in said casing for throwing water against such articles, means for spraying water upon such articles, a controlling member, and devices actuated by the operation thereof for starting and stopping said power operated means and said spraying means alternately.

11. A washing machine comprising a casing, inclined means for supporting therein a wheeled carrier for the articles to be washed and adapted to permit said carrier to move through the casing by gravity, means for spraying water upon such articles, means for arresting the progress of the articles, and coacting devices for controlling the operation of said arresting means and said spraying means.

12. A washing machine comprising a casing, inclined means for supporting therein a wheeled carrier for the articles to be washed and adapted to permit said carrier to move through the casing by gravity, power operated means for throwing water against such articles, means for spraying water upon such articles, and coacting devices for controlling the passage of the articles through said casing, and the operation of said spraying means and said power operated means.

13. A washing machine comprising a casing, inclined means for supporting therein a wheeled carrier for the articles to be washed, power operated means in said casing for throwing water against such articles, means for spraying water upon such articles, and coacting devices for stopping said power operated means and starting said spraying means.

14. A washing machine comprising a casing, means for supporting therein the articles to be washed arranged to permit them to move therethrough by gravity, power operated means in said casing for throwing water against such articles, means for spraying water upon such articles, means for arresting the progress of such articles through said casing, a controlling member, and devices actuated by the operation thereof for starting and stopping said power operated means and said spraying means alternately.

15. A washing machine comprising a casing adapted to receive articles to be washed and having an opening for the passage of such articles, a gate movable into and out of operative position with respect to said opening, means for spraying water upon

such articles, a lever, and means operated by said lever for moving said gate into or out of operative position and for stopping and starting said spraying means.

16. A washing machine comprising a casing adapted to receive articles to be washed, and having an opening for the passage of such articles, a gate movable into and out of operative position with respect to said opening, power operated means for directing water against the articles to be washed, means for spraying water upon such articles, a lever, and devices operated by said lever for moving said gate into or out of operative position, and for starting and stopping said power operated means and said spraying means alternately.

17. A washing machine comprising a casing adapted to receive articles to be washed and having an opening for the passage of such articles, a gate movable into and out of operative position with respect to said opening, power operated means for directing water against the articles to be washed, means for spraying water upon such articles, a lever and devices operated by said lever for moving said gate into or out of operative position and for starting or stopping said power operated means and simultaneously stopping or starting said spraying means.

18. A washing machine comprising a casing adapted to receive articles to be washed and having an opening for the passage of such articles, a gate movable into and out of operative position with respect to said opening, an inclined track for supporting a wheeled carrier for the articles to be washed and permitting them to move through said casing by gravity, means for spraying water upon such articles, a lever, and devices operated by said lever for moving said gate into or out of operative position and for starting and stopping the operation of said spraying means.

19. A washing machine comprising a casing adapted to receive articles to be washed and having an opening for the passage of such articles, a gate movable into and out of operative position with respect to said opening, power operated means for directing water against the articles to be washed, means for spraying water upon such articles, means adapted to be operated to move said gate into or out of operative position and to start said power operated means and stop said spraying means when said gate is closed, and to stop said power operated means and start said spraying means when said gate is opened.

20. A washing machine comprising a casing having a cleansing compartment, means extending through said compartment adapted to support the articles to be washed in their passage therethrough, power operated

means in said compartment for throwing water against the articles to be washed, means in said compartment for spraying water upon such articles and devices for alternately operating said water throwing means and said spraying means.

21. A washing machine comprising a casing having washing and rinsing compartments, means extending through said compartments adapted to support the articles to be washed in their passage therethrough, power operated means in said compartments for throwing water against the articles to be washed, means associated with said rinsing compartment for spraying water upon such articles, and means for controlling the operation of said power operated means and said spraying means and operating to start said spraying means when said power operated means is stopped, and to stop said spraying means when said power operated means is started.

22. A washing machine comprising a casing having washing and rinsing compartments, means extending through said compartments adapted to support the articles to be washed and to permit them to move therethrough by gravity, a transverse gate movable into and out of position to separate said compartments, power operated means in said compartments for throwing water against the articles to be washed, means for spraying water upon such articles, means for moving said gate into or out of operative position and devices for controlling the operation of said power operated means and said spraying means.

23. A washing machine comprising a casing having washing and rinsing compartments, means extending through said compartments and adapted to support the articles to be washed in their passage therethrough, paddle wheels in said compartments for throwing water against the articles to be washed, means in said rinsing compartment for spraying water upon the articles in said compartment after they have been rinsed by the operation of the paddle wheel therein and devices for alternately operating said rinsing paddle wheel and said spraying means.

24. A washing machine comprising an elongated casing having a washing compartment, a tank extending longitudinally of said casing and adapted to contain wash water, means extending longitudinally through said casing above said tank for supporting articles to be washed in their passage through said compartment, a paddle wheel in said tank under said supporting means having its axis disposed longitudinally of the path of said articles, and means for rotating said paddle wheel.

25. A washing machine comprising an elongated casing having a washing com-

partment, a tank extending longitudinally of said casing and adapted to contain wash water, means extending longitudinally through said casing above said tank for supporting articles to be washed in their passage through said compartment, a paddle wheel in said tank under said supporting means having its axis disposed longitudinally of the path of said articles, means for rotating said paddle wheel, and a longitudinally-extending deflector in said tank beside said paddle wheel for directing upward the water thrown thereby.

26. A washing machine comprising a tank adapted to contain water, a paddle wheel operating to throw water from said tank against the articles to be washed, means extending over said tank and beyond the ends thereof for supporting such articles, a casing extending over said tank and having openings at its ends, and a hood hinged to an upper end portion of said casing and extending longitudinally outward over said supporting means.

27. A washing machine comprising a tank adapted to contain water, a paddle wheel operating to throw water from said tank against the articles to be washed, means extending over said tank and beyond the ends thereof for supporting such articles, an apron projecting beyond one end of said tank under said supporting means, a casing enclosing said tank and having openings at its ends, and a hood hinged to an upper end portion of said casing and extending longitudinally outward over said apron.

28. A washing machine comprising a casing, means for supporting the articles to be washed in their passage through said casing, means in said casing for throwing water against such articles, a motor for operating said water throwing means, a switch controlling the operation of said motor, a lever, a swinging rod connected with said lever and movable into and out of engagement with said switch, means operated by the actuation of said lever in one direction or the other for moving said rod into or out of operative engagement with said switch, and means operated by said lever for controlling the movement of the articles to be washed.

29. A washing machine comprising an elongated casing, means extending longitudinally of the casing for supporting the articles to be washed in their passage therethrough, a rotary shaft mounted in said casing under and extending along the path of said articles, a paddle wheel carried by said shaft and adapted to throw water upward upon the articles to be washed, a motor having its shaft aligned with and connected directly to said first-mentioned shaft, whereby said shafts will rotate at the same speed, and means for starting and stopping said motor.

30. A washing machine comprising an

elongated casing, means extending longitudinally of said casing for supporting the articles to be washed in their passage there-
through, a rotary shaft mounted in said casing under and extending along the path of
5 said articles, a paddle wheel carried by said shaft and adapted to throw water upward upon the articles to be washed, a longitudi-
nally extending deflector mounted at one side of said paddle wheel and extending upward above the same, a motor having its
10 shaft connected directly to said first-mentioned shaft, whereby said shafts will rotate at the same speed, and means for starting and stopping said motor.

GEORGE S. BLAKESLEE.