

Nov. 10, 1936.

H. S. VINCENT

2,060,144

DISHWASHER

Filed March 15, 1930

6 Sheets-Sheet 1

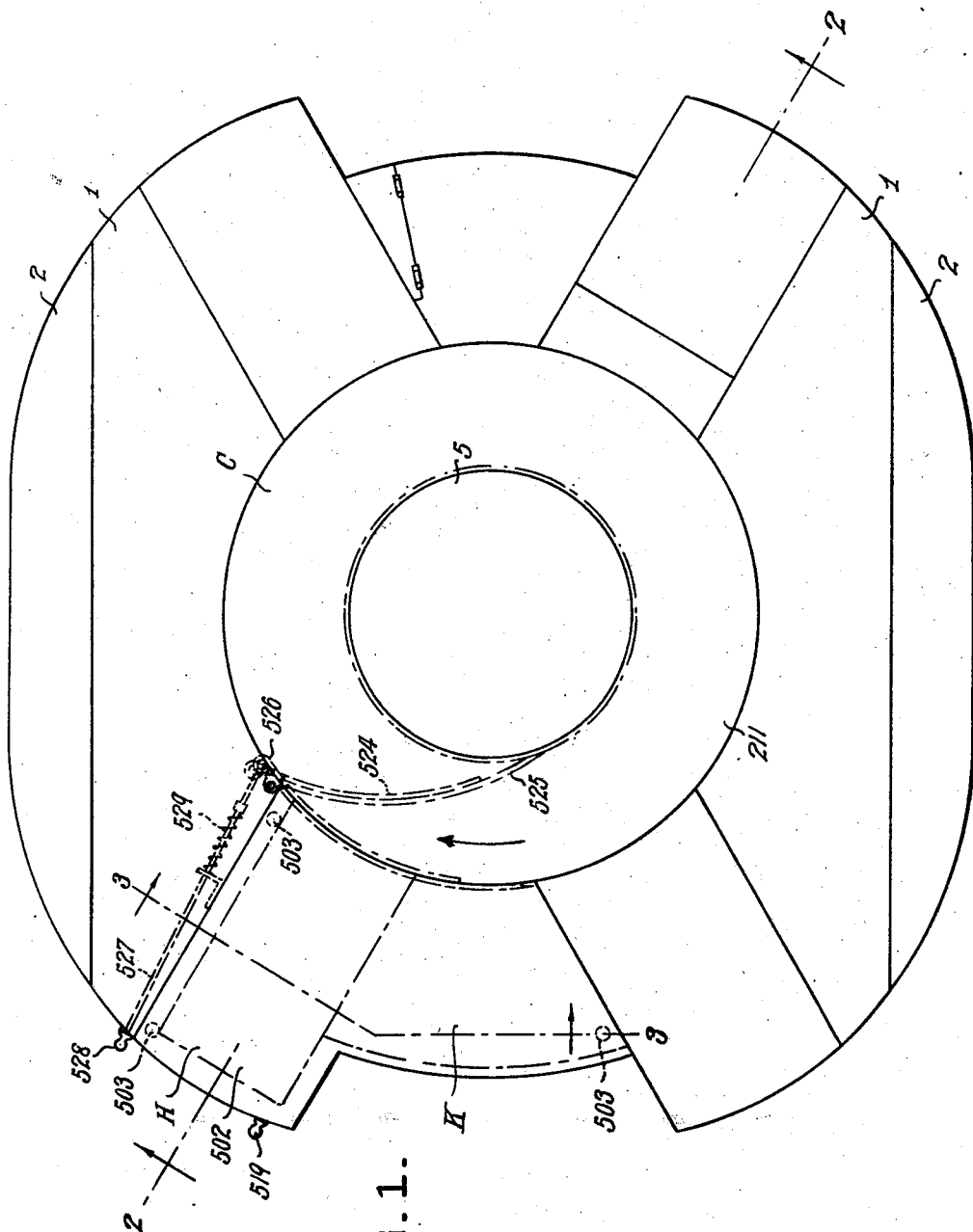


FIG. 1.

Howell S. Vincent ^{Inventor}

Ogle R. Singleton

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Attorney

Nov. 10, 1936.

H. S. VINCENT

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6 Sheets-Sheet 2

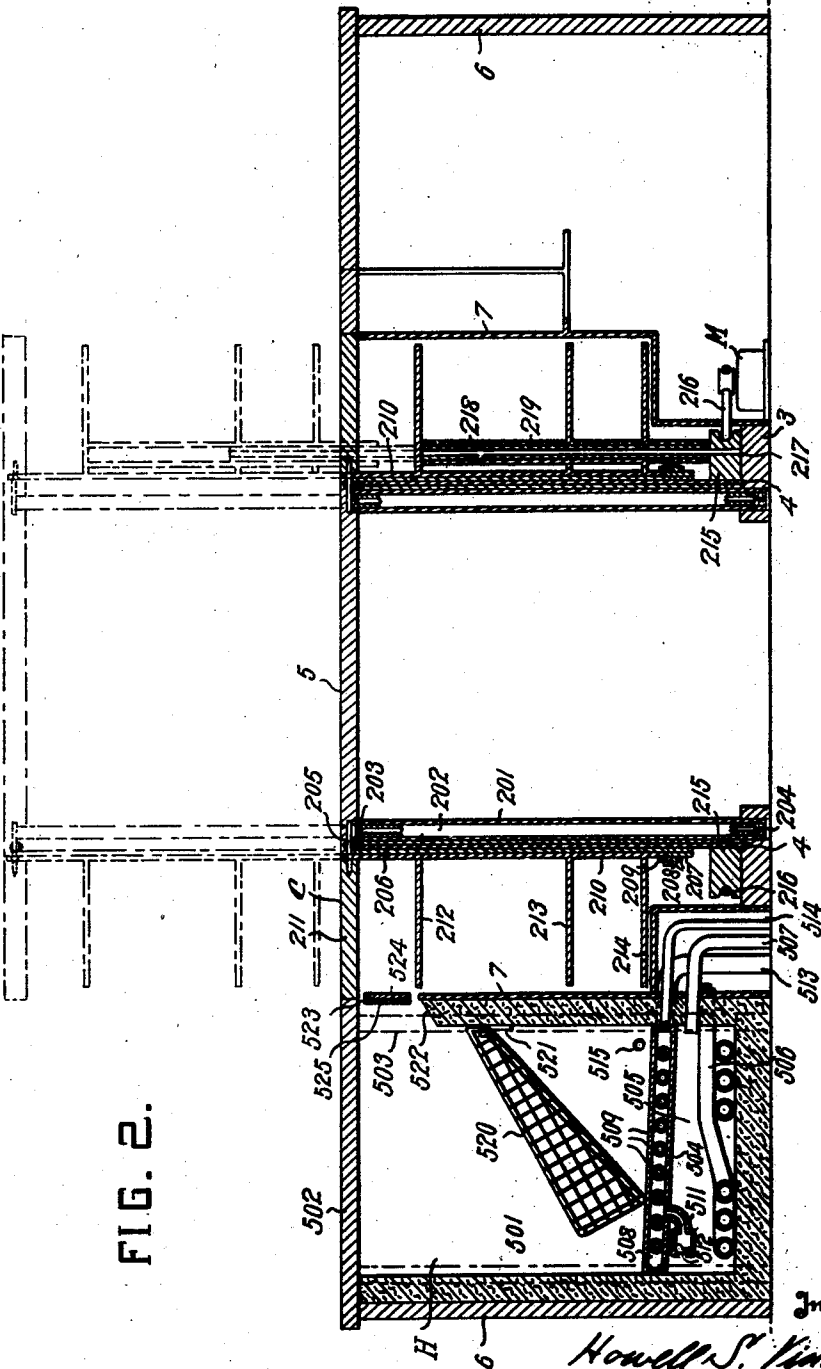


FIG. 2.

Inventor
Howell S. Vincent
By Ogden R. Singleton
Attorney

Nov. 10, 1936.

H. S. VINCENT

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FIG. 3.

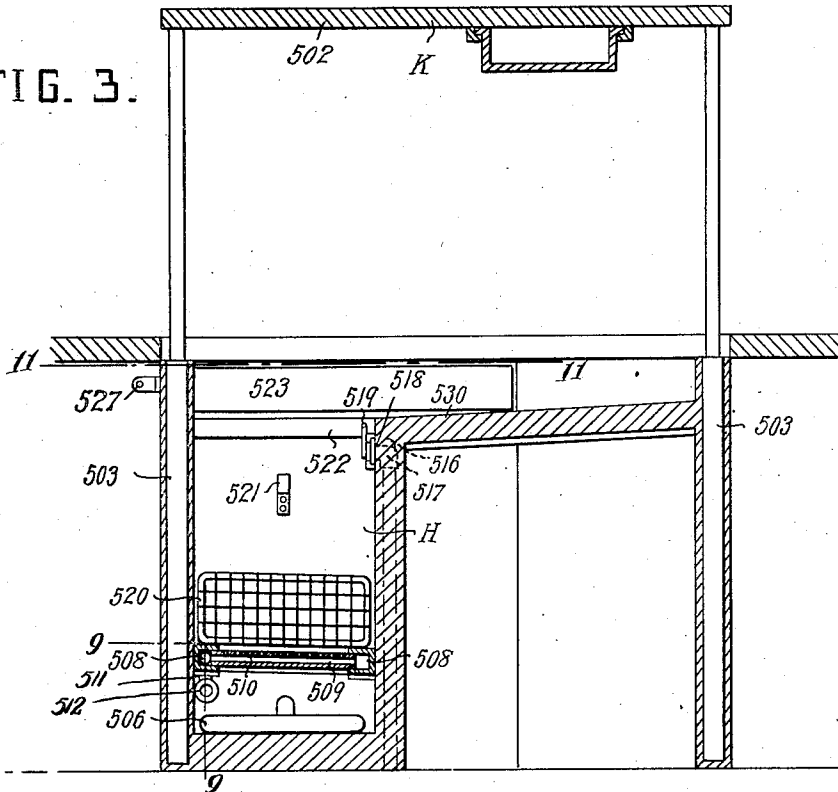
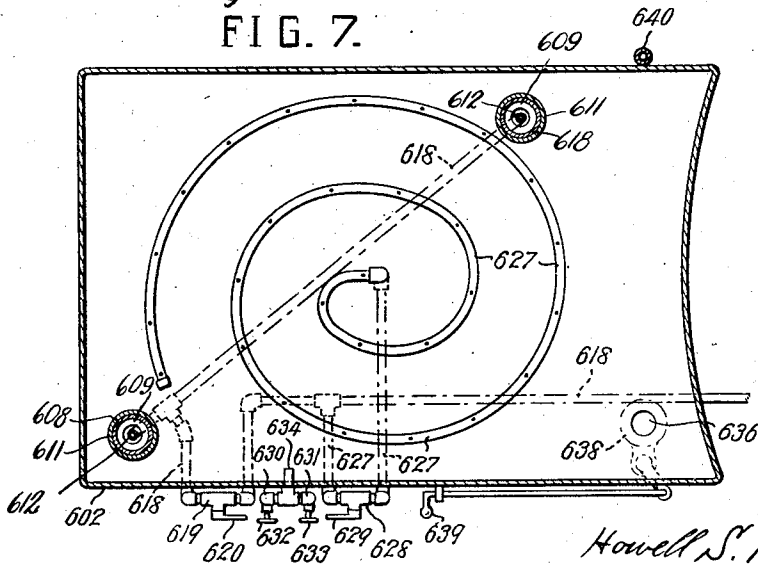


FIG. 7.



Inventor

Howell S. Vincent

By

Cyle R. Singleton

Attorney

Nov. 10, 1936.

H. S. VINCENT

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FIG. 4.

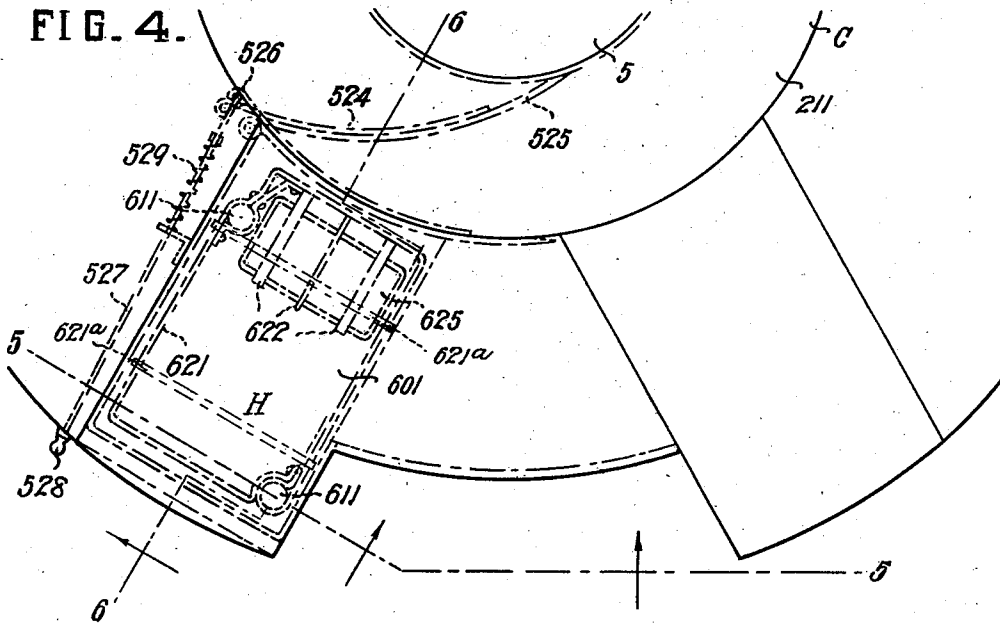
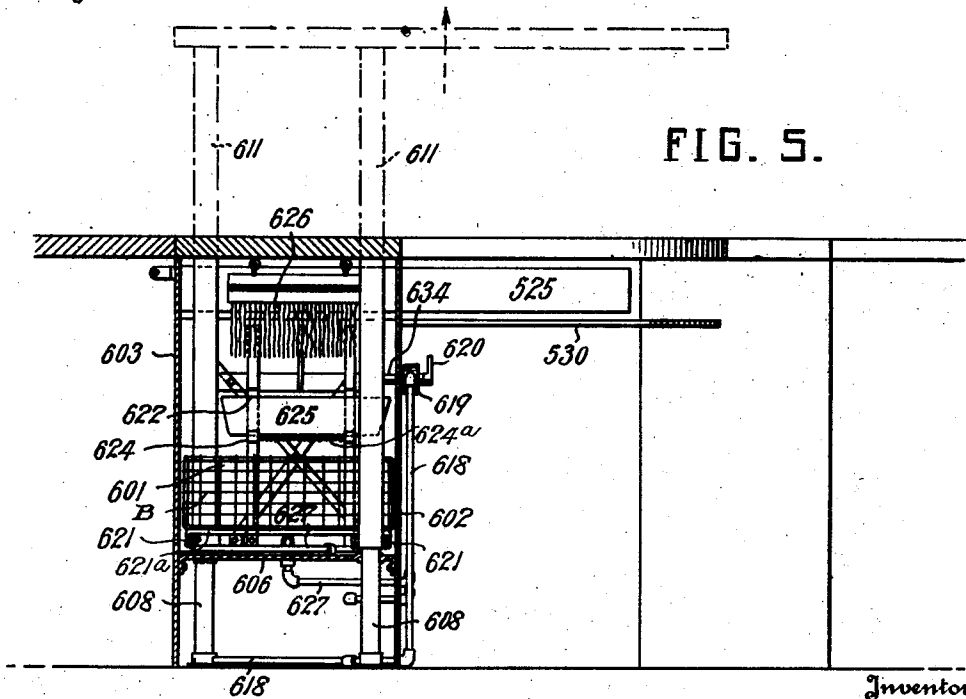


FIG. 5.



Inventor

Howell S. Vincent

By *Opie R. Singleton*

Attorney

Nov. 10, 1936.

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6 Sheets-Sheet 5

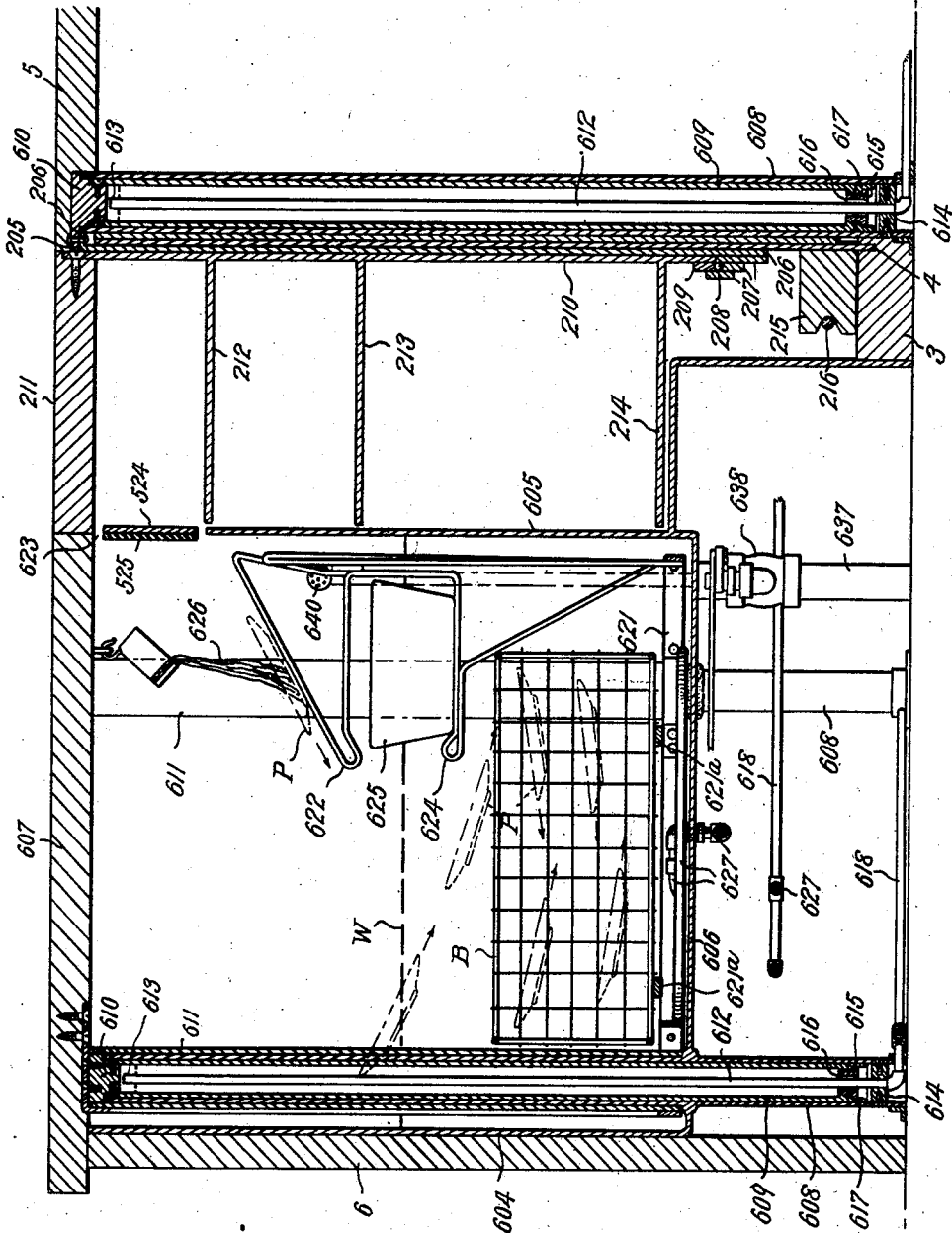


FIG. 6.

Howell S. Vincent Inventor
Cpl. R. Singleton Attorney

Nov. 10, 1936.

H. S. VINCENT

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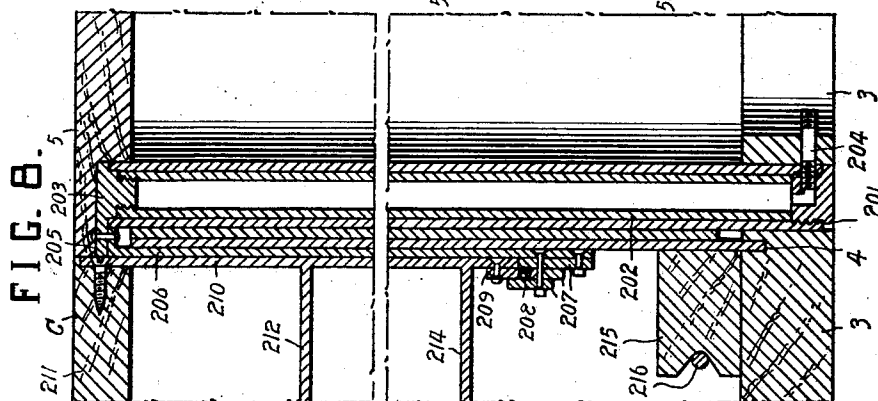
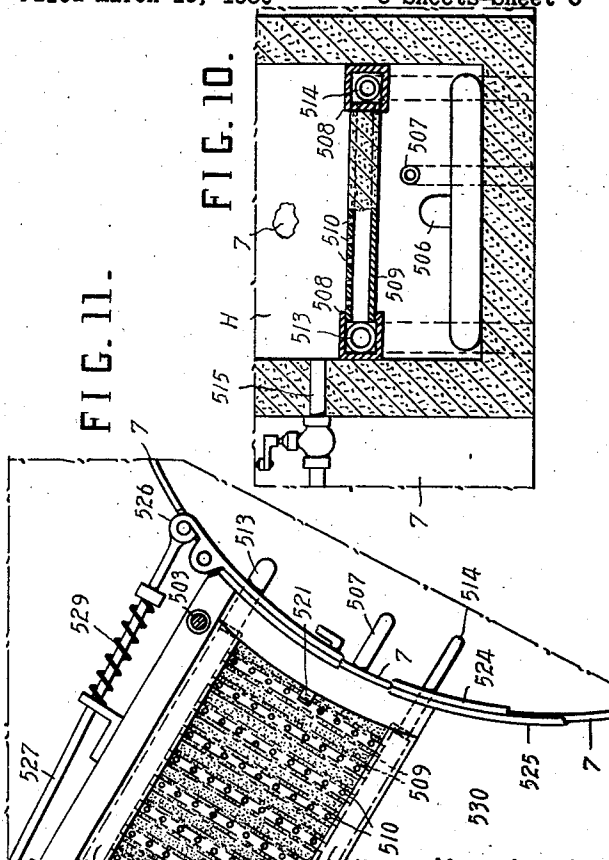
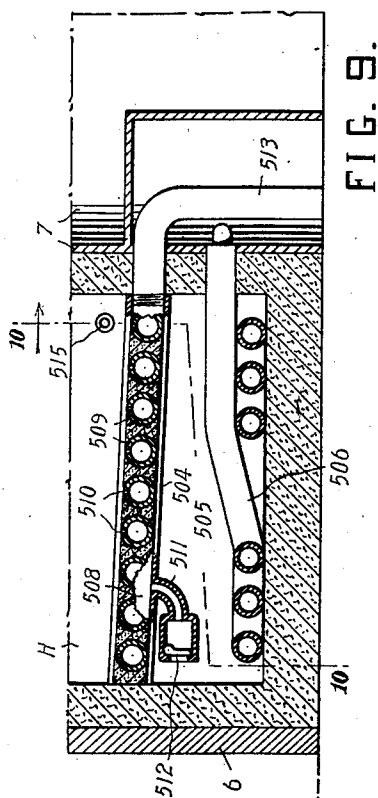
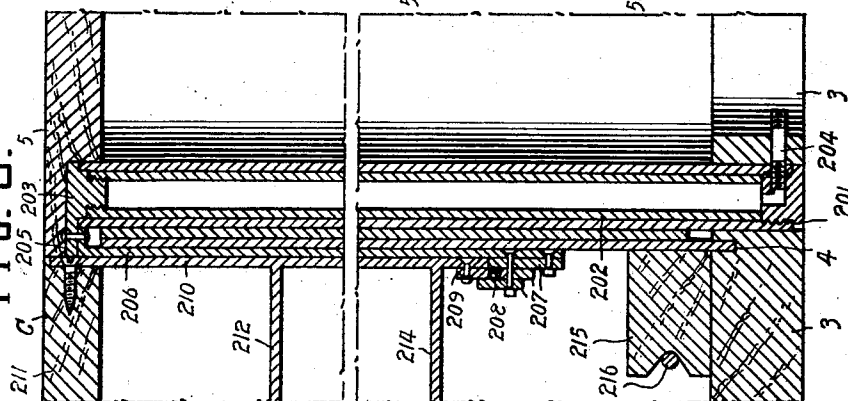


FIG. 8.



Inventor

Howell S. Vincent

By

John P. Singleton

Attorney

UNITED STATES PATENT OFFICE

2,060,144

DISHWASHER

Howell S. Vincent, Brookline, Mass.

Application March 15, 1930, Serial No. 436,128

8 Claims. (Cl. 141-9)

My invention consists in a new and useful improvement in dish washers, and is designed to provide a device for washing dishes which provides the washing apparatus as a part of the table upon which the dishes are used. The particularly novel and useful feature of my device is the combination with the washing apparatus of means for removing the dishes from the table to the washing chamber. My invention has also many novel and useful features in the mechanisms which I provide for treating the dishes in the washing chamber, among which are the means for introducing the dishes into the cleansing bath, the application of hot and cold water, and compressed air, for cleaning and drying the dishes, and also the means which I provide for removing refuse from the dishes prior to cleansing them, and for disposing of such refuse.

While I have illustrated in the drawings filed herewith, and have hereinafter fully described the details of construction and use and operation of certain specific embodiments of my invention, it is to be distinctly understood that I do not consider my invention limited to said specific embodiments, but refer for its scope to the claims appended hereto.

In the drawings:

Fig. 1 is a top plan view of my device.

Fig. 2 is a vertical section on the line 2-2 of

Fig. 1.

Fig. 3 is a vertical section on the line 3-3 of Fig. 1.

Fig. 4 is a fragmentary top plan view of a modified form of my device.

Fig. 5 is a side elevation, partly in section, on the line 5-5 of Fig. 4.

Fig. 6 is an enlarged vertical section on the line 6-6 of Fig. 4.

Fig. 7 is a bottom plan view of the washing chamber in the modified form of my device.

Fig. 8 is an enlarged sectional detail of the elevating means for the dish remover.

Fig. 9 is an enlarged sectional detail on the line 9-9 of Fig. 3.

Fig. 10 is a section on the line 10-10 of Fig. 9.

Fig. 11 is a section on the line 11-11 of Fig. 3.

As illustrated in the drawings, my device consists of a substantially circular table having the fixed top portion 1, 1 to which are attached the extensions 2, 2, a centrally disposed annular base 3 on which is mounted the annular wall 4 upon which is received the circular top 5. The portions 1, 1 are mounted upon the outer wall 6 and the inner wall 7.

A storage cabinet C which serves as a conveyor

is disposed between the inner wall 7 and the annular wall 4, and the dish washer H is disposed between the outer wall 6 and the inner wall 7, at the point indicated in Fig. 1.

I will now describe the construction of the cabinet C (illustrated in Figs. 1, 2 and 8). Suitably mounted in the base 3 there are a plurality of tubes 201, one being shown enlarged in Fig. 8, in each of which there is slidably mounted a tube 202 having a piston head 203 thereon. A conduit 204, to conduct compressed air to each of the tubes 202 to operate its piston head 203, is suitably provided. Integral with each head 203 there is a finger 205, and depending from these fingers 205, there is a cylindrical hanger 206 carrying at its bottom three annuli 207 so disposed as to form a trackway 208 in which is slidably mounted a shoe 209 carrying thereon the cylindrical frame 210 of the conveyor and storage cabinet C, to which is attached the annular top 211 and annular shelves 212, 213 and 214.

Suitably mounted for rotation upon the base 3 there is the pulley 215 which is connected by the belt 216 with any suitable prime mover, as for example, the motor M. Suitably mounted upon the pulley 215 there is the post 217 received in the telescoping sleeves 218 and 219 carried by the frame 210, constituting means for rotating the storage cabinet C.

I will now describe the construction of the dish washer H (illustrated in Figs. 1, 2 and 3). At the point indicated by the reference character H in Fig. 1, I provide an insulated chamber 501 having the vertically movable cover 502 which is made integral with the shelf K which it operates. This cover 502 is mounted on three elevators 503 which are similar in construction to the elevating means provided for the cabinet C heretofore described. The chamber 501 has the partition 504 formed as will be present explained near its bottom forming the heating chamber 505 in which are positioned the electric heating coils 506 and into which discharges the water supply pipe 507. Directly above the partition 504 there are the manifolds 508 connected by the series of pipes 509, the spaces between which are filled with any suitable material to form the partition 504. Each pipe 509 has in its upper surface openings 510. Passing through the partition 504 and connecting the heating chamber 505 with one of the manifolds 508 is the pipe 511 with the check valve 512. To one of the manifolds 508 there is connected the water supply pipe 513, and to the other manifold 508 there is connected the compressed air supply pipe 514. The chamber

501 is supplied near its bottom with the controlled vent 515 and near its top with the overflow vent 516 adjacent which is the discharge opening 517 controlled by the slide valve 518 operated by the handle 519 passing through the wall 6. I provide a wire dish rack 520 which when inverted and attached to the hook 521 serves as an incline for receiving dishes into the washer H, over the inclined lip 522 below the opening 523 of the washer H, which registers with the shelf 212 of the conveyor C.

Pivotally mounted on the fixed top portion 1 adjacent the opening 523, there is the arcuate baffle plate 524 with facing plate 525 of rubber or any suitable material, corresponding with the circumference of the conveyor C and normally beneath the top 502 closing the opening 523. This plate 524 has the crank arm 526 to which is attached the operating rod 527 having the handle 528 suitably positioned in the wall 6 and the spring 529 to hold the plate 524 in normal position.

Below the shelf K and adjacent the open top of the chamber 501 of the dish washer H, I provide a dish assembly drain board 530 inclined toward the chamber 501.

I will now describe the construction of the form of the dish washer H illustrated in Figs. 4, 5, 6, and 7. I provide the chamber 601 formed by the side walls 602 and 603, the front wall 604 adjacent the main outer wall 6, the rear wall 605, and the bottom 606 spaced from the floor upon which my device is placed, and the movable top 607 which is carried upon two elevating means, the construction of which I shall now describe. Suitably mounted upon the floor beneath the chamber 601, there are two tubes 608 rising through the bottom 606 to the top 607 of the chamber 601. In each tube 608 there is slidably mounted a tube 609 closed at its upper end by a head 610, on which the top 607 is mounted and from which depends a sleeve 611 surrounding the tube 608 and so proportioned as to extend from the top 607 to the bottom 606, when the parts are in normal position. Disposed in each tube 608 and passing upwardly inside of the tube 608 is the compressed air supply pipe 612 having its upper end 613 closely adjacent the head 610 when the parts are in normal position (illustrated in Fig. 6). The pipe 612 passes through a plug 614 closing the lower end of each tube 608 which is filled with oil to a point closely adjacent the upper end 613 of the pipe 612. Each tube 609 is provided at its lower end with an interior collar 615 forming a reduced passage 616 about the pipe 612, and having a leather washer 617 to form a leak-proof joint between the tube 608 and the tube 609. The two pipes 612 are connected with the pipe 618 having the control valve 619 with operating handle 620 suitably mounted on the outside of the wall 602.

It is to be noted that in Fig. 6 I have illustrated the application of one of the above described elevating means to the cabinet C, in which the heads 610 have the fingers 205.

Attached to the lower ends of the sleeves 611, there is the frame 621 having the cross bars 621—A, on which is carried the basket B. Suitably mounted on the frame 621 there is the dish slide 622. The upper end of this slide 622 is positioned closely adjacent the upper edge of the rear wall 605 of the chamber 601, when the parts are in normal position, this wall 605 being spaced from the top 607 of the chamber 601, to register with the shelf 212 of the cabinet C and form the opening 623 in the dish washer H, so that dishes may be delivered from the cabinet C into the dish-

washer H. Below the dish slide 622 there is the rack 624 for the refuse receptacle 625, and suitably attached to the underside of the top 607 there is the wiper 626. The rack 624 has a wire mesh bottom 624—A upon which glasses or other articles may be placed by hand for washing, when the refuse receptacle 625 is removed.

Upon the bottom 606 of the chamber 601, I provide a perforated coil 627 connected with the air supply pipe 618 and having the control valve 628 with operating handle 629 suitably mounted on the outside of the wall 602.

Suitably disposed, between the valves 619 and 628, I provide the hot and cold water pipes 630 and 631 with valves 632 and 633 respectively connected with the common discharge pipe 634 passing through the wall 602 to the interior of the chamber 601.

I provide a waste vent 636 with discharge pipe 637, and any suitable form of control valve 638 with operating handle 639. Suitably mounted on the wall 602, I provide an overflow 640.

I will now describe the use and operation of the conveyor and storage cabinet C. It is to be understood that any suitable form of manually-operated control mechanism for the elevating means 201 and 202 of the storage cabinet C and any suitable form of manually-operated control mechanism for the motor M are provided. By the proper operation of the elevating means 201 and 202 the degree of lift of the frame 210 may be so controlled as to cause any one of the shelves 212, 213 and 214 to register with the horizontal plane of the top portions 1—1. When the parts are in the position indicated in dotted lines in Fig. 2, or in lower adjusted similar positions, the operator by supplying energy from the motor M may cause the conveyor C to rotate clockwise, as indicated by the arrow in Fig. 1. Attention is called to the fact that the shelf 212 provides a continuous annular space between it and the cover 211. When the shelf 212 is caused to register with the top portions 1—1, this space is accessible to any user of the table seated at any point about its periphery. The shelf 212 may be used as a conveyor to move articles about my device. This continuous shelf 212 is used to receive utensils when same are to be removed from the table for washing. When these used dishes, etc., have been placed upon the shelf 212, the frame 210 is returned to normal position and by the proper manipulation of the rod 527 by its handle 528, the baffle plate 524 is caused to move from its normal position, across the shelf 212 until the outer end of the facing plate 525 contacts the surface of the frame 210. It is obvious that when the baffle plate 524 is in this position and the conveyor C is caused to rotate, the baffle plate 524 will remove any article upon the shelf 212 causing it to pass through the opening 523 into the chamber 501 of the washer H. Attention is called to the fact that when the baffle plate 524 is in the above described position, the conveyor C cannot be moved vertically. After one complete rotation of the conveyor C all of the articles having been removed by the baffle plate 524, by reason of such rotation, the baffle plate 524 is returned to normal position by the action of the spring 529, when the rod 527 is released by the operator.

I will now describe the use and operation of the dish-washer H, as illustrated in Figs. 1, 2 and 3. It is to be understood that any suitable form of manually operated control means for the water supply pipe 513 is suitably positioned. By this means water may be supplied through the pipe

513, the manifold 508 and pipes 509 to fill the chamber 501 to the level of the overflow 516. The dish washer H is brought to this condition before the used dishes, etc., are introduced into the washer by the process heretofore described. The dishes passing through the opening 523 slide downwardly over the lip 522 into the water and onto the inclined bottom of the wire rack 520 and are thus directed toward the bottom of the chamber 501. When it is desired to complete the washing operation, the operator by means of any suitable manually operated control means for the vent 515 can evacuate the water from the chamber 501. The cover 502 is then raised by the operation of the elevating means 503, through the manipulation of any suitable form of manually operated control means. The dishes in the chamber 501 are then removed by hand to the dish-assembly drain board 530. The rack 520, disengaged from the hook 521, may also be removed to the board 530. The dishes are placed properly in said rack 520, which is then placed on the bottom of the chamber 501. The top 502 is then returned to normal position. The vent 515 having been closed, hot water is supplied to the chamber 501 through the pipes 509, by the operation of the heating chamber 505. At the same time compressed air from the pipe 514 may be caused to pass through the pipes 509 into the chamber 501, aerating the water therein to assist the washing operation. Shortly after applying the bath to the dishes the slide valve 518 may be opened by pulling the handle 519, thus opening the discharge opening 517 to cause removal from the dish washer H of any refuse matter. After the washing operation has been completed the wash water may be evacuated through the vent 515 and compressed air supplied through the pipe 514 and the pipes 509 to cause a draft through the chamber 501 escaping through the openings 516 and 517, to dry the dishes. The top 502 may then be raised and the rack 520 carrying the clean dishes may be removed to the shelf 530, and the dishes removed from the rack 520 may be placed upon the top 211 of the conveyor C and thereby conveyed to any desired point.

I will now describe the use and operation of the form of dish washer H, illustrated in Figs. 4, 5, 6, 7 and 8. By the proper manipulation of the valves 632 and 633 the chamber 601 may be filled with water to the water line W (Fig. 6) through the discharge pipe 634, which water may be at the desired temperature. The dishes P are caused to move from the shelf 212 of the conveyor C, as above described, entering the dish washer through the opening 623 and being received upon the slide 622. As each dish passes over this slide 622, the wiper 626 removes from the dish any refuse that may be thereupon, which refuse, falling, is received in the receptacle 625. Attention is directed to the fact that each dish P being directed into the water in the chamber 601 by the slide 622, takes the course indicated by the illustrations of the dishes P in dotted lines, and arrows, in Fig. 6, until each dish P settles into the basket B upon the bottom 606 of the chamber 601. Compressed air supplied from the coil 627, passing upwardly through the bath in the chamber 601 assists the washing operation.

It is obvious that the soiled bath may be evacuated from the chamber 601 through the vent 636 and pipe 637. The top 607 by means of its associated elevating means may be raised from the chamber 601 lifting the basket B to the level

of the shelf 530, for the removal of the washed dishes.

Having described my invention, what I claim is:

1. In a dish washer, the combination of a table; a vertically movable, rotatable shelf mounted in said table; a chamber located in said table adjacent said shelf and provided with a dish receiving passageway; elevating means adapted to cause said shelf to register with the top of said table, and to cause the floor of said shelf to register with said passageway; means adapted to cause rotation of said shelf when it is in either position of adjustment; and means adapted to remove dishes from said shelf through said passageway into said chamber when said shelf is in the second mentioned position of adjustment and is rotated.
2. In a dish washer, the combination of two chambers; a partition separating said chambers, composed of a series of pipes with a filler between, the pipes being provided with jet openings into one of said chambers; two manifolds connected with said pipes, at the ends of the partition, respectively; a water supply pipe connected with one manifold; a check-valved pipe leading from the other chamber connected with the other manifold; and a water supply pipe to the other chamber.
3. In a dish washer, the combination of a chamber; two inlet manifolds in said chamber; a water supply pipe connected with one of said manifolds; a series of pipes connected with said manifolds and having upwardly disposed jet openings; a partition in said chamber formed by a filler between the pipes of said series; a water supply pipe leading into the portion of said chamber below said partition; and a check-valved pipe from said portion to one of said manifolds.
4. In a dish washer, the combination of a chamber; two inlet manifolds in said chamber; a water supply pipe connected with one of said manifolds; a series of pipes connected with said manifolds and having upwardly disposed jet openings; a partition in said chamber formed by a filler between the pipes of said series; heating means in the portion of said chamber below said partition; a check-valved pipe leading from said portion to one of said manifolds; and a water supply pipe leading into said portion of the chamber.
5. In a dish washer, the combination of a table; a vertically adjustable, rotatable shelf beneath the table top and spaced therefrom; mounting means for said shelf disposed in said table; a chamber located in said table adjacent said shelf and provided with a dish receiving passageway; and means adapted to remove dishes from said shelf through said passageway into said chamber, when said shelf is adjusted to register with said passageway and is rotated.
6. In a dish washer, the combination of two chambers; a partition therebetween; a series of pipes in said partition provided with jet openings into one of said chambers; a water supply pipe connected with said pipes from without said chambers; a check valved supply pipe from the other chamber connected with said pipes; and a second water supply pipe leading into said other chamber.
7. In a dish washer, the combination of two chambers; a partition separating said chambers, composed of a series of pipes with a filler between, the pipes being provided with jet open-

ings into one of said chambers; two manifolds connected with said pipes, at the ends of the partition, respectively; a water supply pipe connected with one manifold; a check-valved pipe 5 leading from the other chamber connected with the other manifold; a compressed-air pipe connected with the other manifold; and a water supply pipe to the other chamber.

8. In a dish washer, the combination of a 10 chamber; two manifolds in said chamber; a water supply pipe connected with one of said

manifolds; a compressed-air pipe connected with the other manifold; a series of pipes connected with said manifolds and having upwardly disposed jet openings; a partition in said chamber formed by a filler between the pipes of said series; 5 a water supply pipe leading into the portion of said chamber below said partition; and a check-valved pipe from said portion to one of said manifolds.

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