

[54] **DISHWASHING MACHINE AND DISH-CONVEYING TABLE WITH RECIRCULATING FLUSHING TROUGH**

[72] Inventor: **Tore H. Noren**, San Francisco, Calif.

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[63] Continuation-in-part of Ser. No. 791,954, Jan. 17, 1969, abandoned.

[52] U.S. Cl. 134/60, 134/70, 134/104, 134/115 G

[51] Int. Cl. B08b 3/02

[58] Field of Search.....134/60, 62, 70, 80, 83, 104, 134/108, 110, 111, 115 G

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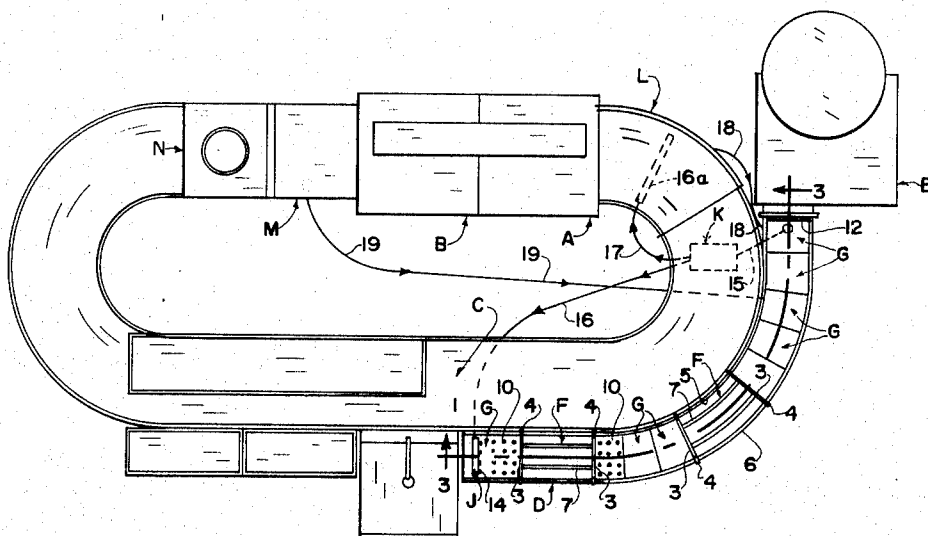
Primary Examiner—Daniel Blum

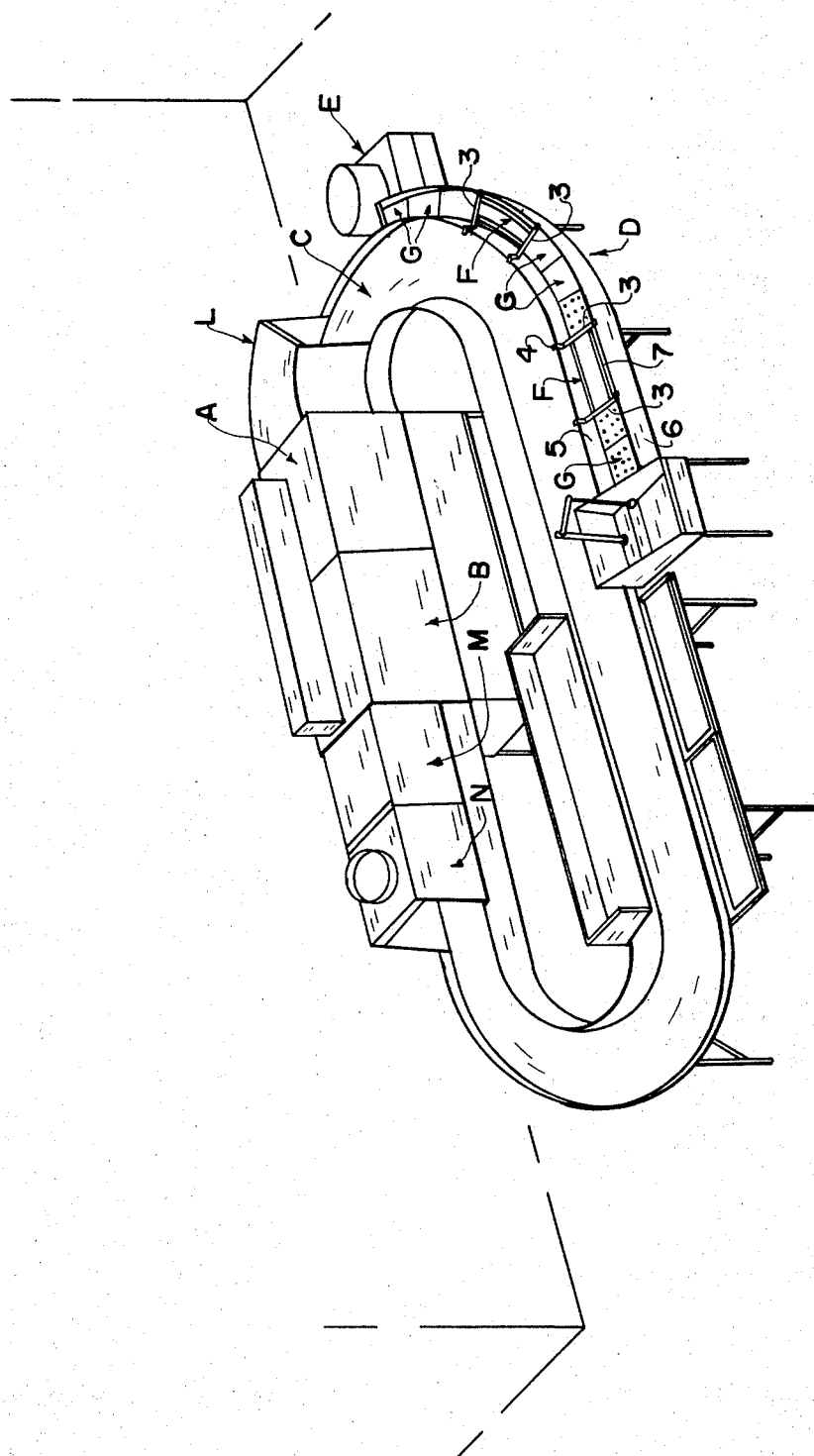
Attorney—William R. Piper

[57] ABSTRACT

A recirculating flushing trough for an oval-shaped dish-conveying means of the endless conveyor type for a dishwashing machine that reuses water to convey material removed from dishes to a waste receiving system, a part of the water also being used for a power scrapper to clean the dishes just prior to washing and rinsing them. This does away with the use of fresh water for the power scrapper and thus saves water. The use of a recirculating flushing trough does away with the necessity of having a power scrapper as one of the units in the dishwasher and this reduces the overall length of the dishwasher by one unit and results in a saving of space of about twenty square feet. The final hot water rinse after being sprayed onto the dishes is conveyed to the flushing trough for replenishing it and heating the water therein.

22 Claims, 9 Drawing Figures





INVENTOR.
TORE H. NOREN
BY

BY

William R. Piper
ATTORNEY

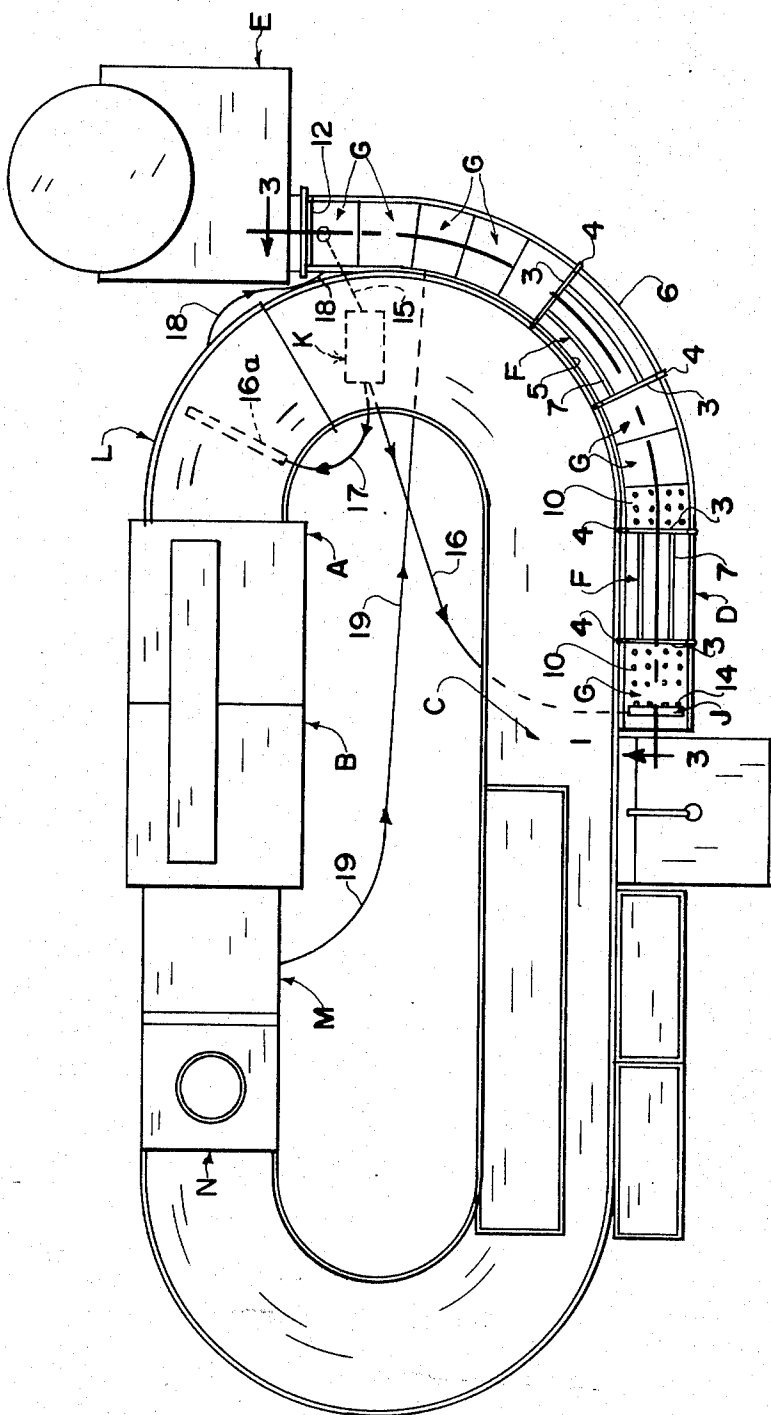


Fig. 2

INVENTOR
TORE H. NOREN
BY

William R. Piper
ATTORNEY

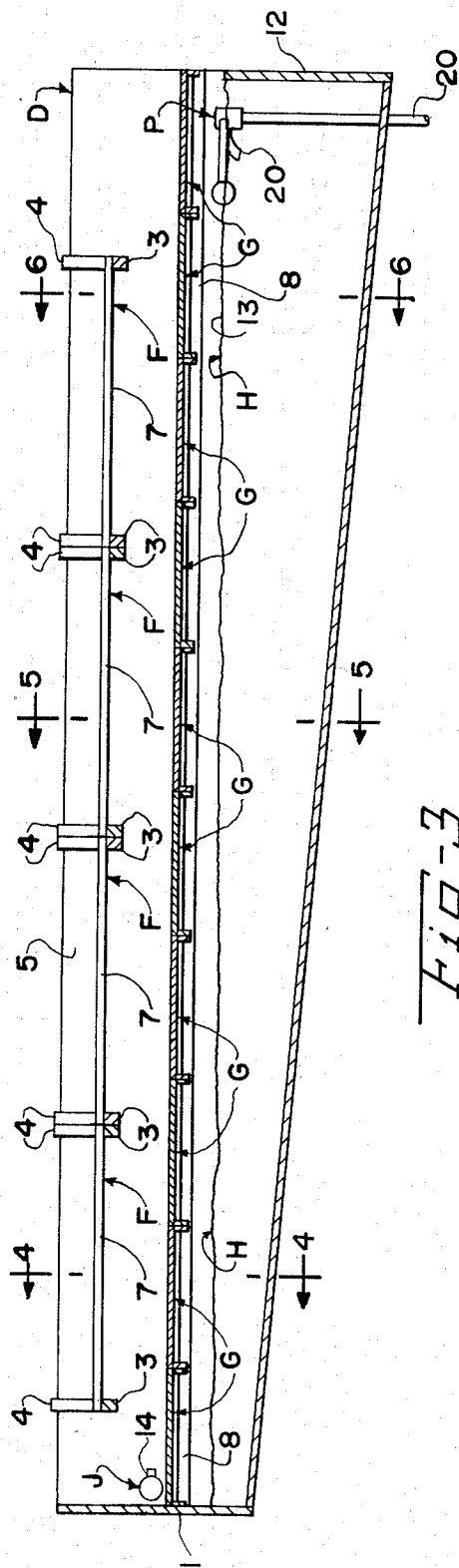


Fig-3

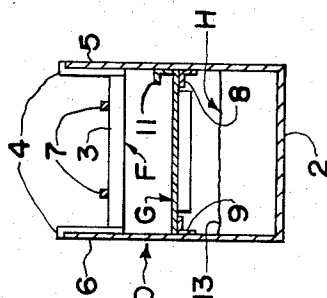


Fig-4

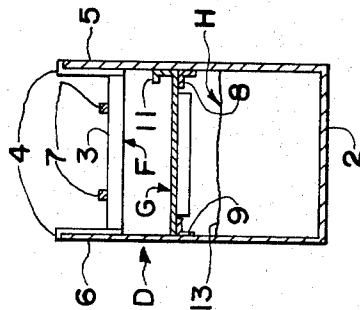


Fig-5

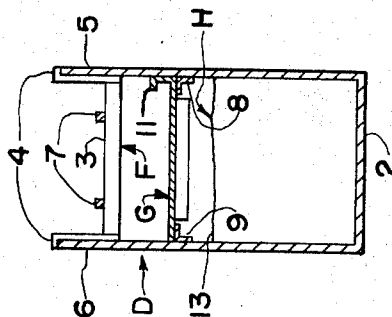
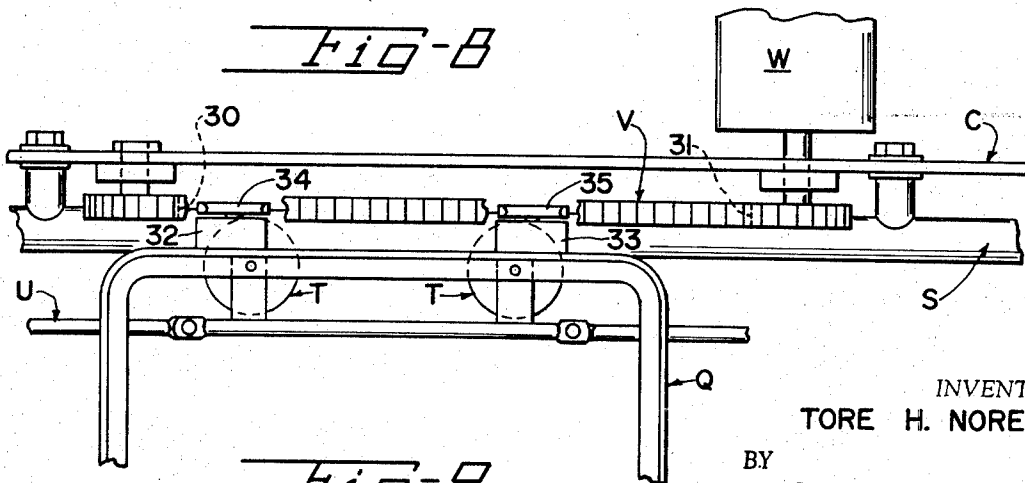
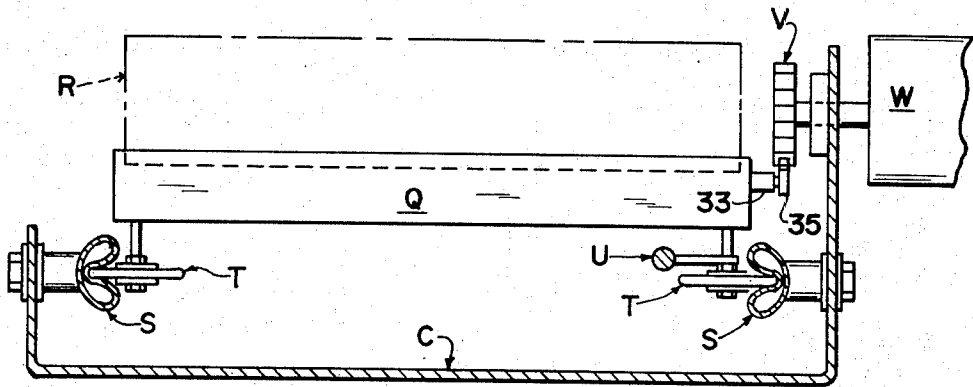
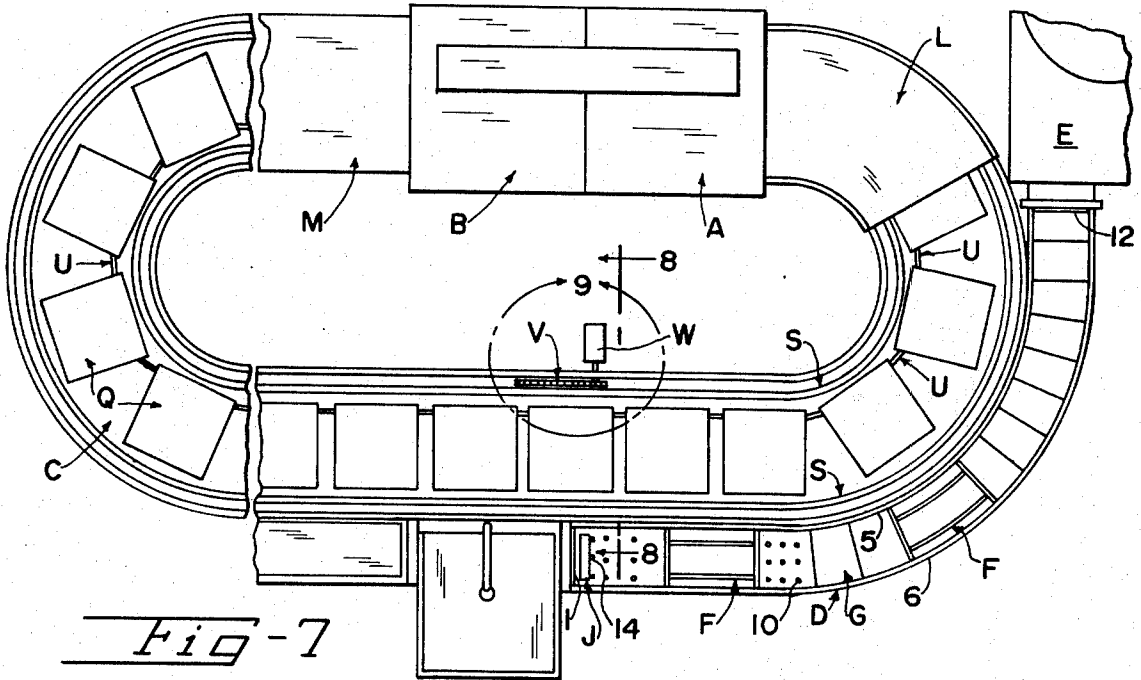


Fig-6

INVENTOR
TORE H. NOREN
BY
William R. Piper
ATTORNEY



INVENTOR
TORE H. NOREN

BY

William R. Piper
ATTORNEY

DISHWASHING MACHINE AND DISH- CONVEYING TABLE WITH RECIRCULATING FLUSHING TROUGH

This is a continuation-in-part application of my copending case for the same device, Ser. No. 791,954, filed Jan. 17, 1969, now abandoned.

CROSS-REFERENCES TO RELATED APPLICATIONS

The sectional oval-shaped tables disclosed in my two copending applications, Ser. Nos. 632,093 and 753,417, are used in the present case. Ser. No. 632,093 was filed on Apr. 19, 1967 and is now U.S. Pat. No. 3,447,491, issued June 3, 1969, and is entitled "Sectional Oval-Shaped Table For Endless Conveyor For Dishwashers;" and Ser. No. 753,417 was filed Aug. 19, 1968 and is now U.S. Pat. No. 3,511,192, issued May 12, 1970, and is entitled "Sectional Oval-Shaped Table With Side Walls And U-Shaped Tongue Interconnecting Adjacent Sections." Both are directed to the making up of oval tables of a desired length from a plurality of sections that can be bolted together and form watertight joints between the sections. The sections can also be freed from each other by unbolting them.

Two of the endless dish-conveying means supported by the oval table are disclosed in two other of my copending applications. One is for a Dolly Conveyor for a Dishwasher patent application Ser. No. 707,565 and was filed on Feb. 23, 1968, now U.S. Pat. No. 3,538,999, issued Nov. 10, 1970, and pertains to an endless train of dollies on the table with adjacent dollies abutting each other and means for successively moving one dolly at a time for causing the entire dolly train to move the dishes through the dishwasher where they are washed and rinsed. The other is for a patent application on an Endless Conveyor for a Dishwasher with Links Interconnecting Adjacent Dollies, Ser. No. 730,019, filed on May 17, 1968, now U.S. Pat. No. 3,550,755, issued Dec. 29, 1970. In this case the adjacent dollies are positively connected together by links so that a movement of one dolly will move the entire endless train of dollies as a unit.

BACKGROUND OF THE INVENTION

Field of the Invention

Commercial dishwashers that make use of an oval table having an endless track on its top for conveying dish-carrying dollies of the endless conveyor type to and from the dishwasher require considerable floor space. A power scrapper section usually forms a part of the dishwasher. If this can be moved to occupy a part of the table adjacent to the dishwasher, then the overall length of the dishwasher can be reduced about 3 feet and a saving of about 20 square feet of floor space results.

Commercial dishwashers use about 10 gallons per minute of fresh water in the power scrapper. By taking water from a recirculating flushing trough and directing it through the power scrapper, no fresh water is needed for the power scrapper and this will save 10 gallons per minute or 600 gallons per hour. The water from the power scrapper is returned to the flushing trough. Moreover it is possible to pump 250 gallons of water per minute from the flushing trough through the power scrapper and back to the trough rather than use the 10 gallons of fresh water for this purpose. This results in

25 times the volume of water being used in the power scrapper each minute with a far greater dish-cleaning effect.

It is necessary that fresh hot water at 180° F be used for rinsing the dishes in a commercial dishwasher and this hot water is usually directed down the sewer after such use. In my invention such hot fresh water after being sprayed onto the dishes is conveyed into the recirculating flushing trough so as to aid in replenishing water to it and in raising the temperature of the water.

SUMMARY OF THE INVENTION

An object of my invention is to reduce the overall length of the dishwashing machine and also reduce the overall length of the table that has the endless dolly train thereon for conveying dishes through the dishwasher. The usual commercial dishwasher has a fresh water prescrapper, a power scrapper unit followed by a power wash unit, a power rinse unit, a final rinse unit and a drying hood. I obviate the need of the fresh water prescrapper by providing a recirculating cold water flushing trough and arranging this alongside of the table that supports the endless dolly train. I then connect the pump for the power scrapper unit to the trough so that it will draw water from the trough and deliver it to the upper and lower manifolds of the power scrapper at a rate of 250 gallons per minute. This water is returned to the trough. The fresh water prescrapper used 10 gallons of fresh water per minute and this is saved and results in saving 600 gallons per hour. In addition the pump delivers water from the trough to a water outlet manifold placed at one end of the trough and this manifold has nozzles for directing streams of water in the direction of the length of the trough for moving food to the other or exit end of the trough that has been manually removed from the dishes. By eliminating the fresh water prescrapper I reduce the overall length of the dishwasher and the table by about 3 feet which results in a saving of about 20 square feet of floor space.

A further object of my invention is to provide means for conveying the hot water after it has been used in the final rinse, to the recirculating cold water flushing trough rather than to the sewer. The hot water will aid in replenishing the water in the trough and will raise its temperature. In this way the hot rinse water is put to an additional use.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of the dishwashing machine and the oval table associated therewith. The joints between the table sections are not shown. The endless dolly train that carries dishes to and from the dishwasher is not shown in this Figure.

FIG. 2 is a top plan view of FIG. 1 and does not show the endless dolly train nor the joints in the oval table.

FIG. 3 is an enlarged longitudinal section through the recirculating cold water flushing trough and is taken along the line 3—3 of FIG. 2.

FIGS. 4, 5 and 6 are transverse sections taken through the recirculating cold water flushing trough at spaced intervals along the lines 4—4, 5—5 and 6—6 of FIG. 3.

FIG. 7 is a top plan view similar to FIG. 2, but it includes the endless train of dollies for carrying dishes

into an out from a dishwasher and travelling along a table having an endless track on its top.

FIG. 8 is an enlarged transverse section taken along the line 8—8 of FIG. 7, and it illustrates the means for continuously moving the endless train of dollies.

FIG. 9 is an enlargement of the circled dot-dash portion 9 in FIG. 7, portions of the endless drive chain being broken away to show how the dollies are moved by the chain.

DESCRIPTION OF THE PREFERRED EMBODIMENT

In carrying out my invention I provide a commercial dishwashing machine that has a power wash section indicated generally at A in FIGS. 1, 2 and 7, and a power rinse section indicated generally at B. In larger dishwashers it is possible to have a second power wash section, not shown, and immediately following the power rinse section and then it is possible to add a second power rinse section, not shown, and have this immediately follow the second power wash section. For the sake of simplicity, I have illustrated only one power wash section and one power rinse section.

The soiled dishes are conveyed to this type of commercial dishwasher by an endless train of dollies Q, see FIGS. 7, 8 and 9, each supporting a dish-carrying basket R, see FIG. 8, and in turn travelling along a table having an endless track S on its top, such as the oval-shaped table indicated generally at C in FIGS. 7, 8 and 9. The oval table C is preferably built up from assembled sections, not shown, that are removably bolted together to form liquid tight joints between adjacent sections, as disclosed in my two previously mentioned copending patent applications, Ser. Nos. 632,093 and 753,417. The endless train of dollies Q that are moved along the table top C are preferably of the type disclosed in my two other copending patent applications, Ser. Nos. 707,565 and 730,019, already mentioned, and move along the endless track S on the table.

A recirculating cold water flushing trough indicated generally at D, extends along a portion of the outer side of the oval table C, and along a part of the adjacent curved end of the table, see FIGS. 1, 2 and 7. This flushing trough is shown more in detail in the sectional views of FIGS. 3 to 6 inclusive. The trough has a wall 1 disposed at the left hand end thereof as shown in FIGS. 2 and 3, and it has a downwardly inclined bottom 2 that extends throughout the length of the trough. The right hand end of the trough communicates with a garbage disposal indicated generally at E in FIGS. 1 and 2, and may be of any desired type. The purpose of the trough is to provide a place where bulk food remaining on the dishes after the persons have finished eating may be removed before the dishes are placed in the dish-receiving dollies Q and conveyed through the dishwasher for washing, rinsing and sterilizing them.

The trough D is provided with a plurality of removable and slidable tray rests or grids F for supporting bus boxes, not shown, in which the soiled dishes are carried, see FIGS. 1 to 6 inclusive. Each tray rest F has a U-shaped end member 3, see FIGS. 4, 5 and 6, and these have outwardly extending hook-shaped ends 4 that removably rest on the upper edges of the two side walls 5 and 6 of the trough. The tray rests F carry spaced apart grid rods 7 whose ends are welded or

otherwise secured to the U-shaped ends 3. The tray rests F may be placed end to end as shown in FIG. 3 and extend substantially throughout the length of the trough D or they may be spaced apart as shown in FIGS. 1 and 2.

Under the tray rests F, I removably mount a plurality of strainer pans, indicated generally at G in FIGS. 2 to 6 inclusive. These pans are supported by angle irons 8 and 9 that extend along the inner surfaces of the side walls 5 and 6, respectively of the trough D. It will be noted from FIG. 3 that the pan-supporting angle iron 8 lies in a plane that underlies the plane of the tray rests or grids F. The same is true of the angle iron 9. The pans may be provided with hand grips 11, see FIGS. 4, 5 and 6, by means of which the pans can be lifted from the angle iron supports 8 and 9 in the trough D.

In FIG. 3, it will be noted that the trough or tank D has water H therein and the height of a transverse partition 12 determines the water level in the trough. Note that the tray rests F are supported above the water level 13 and the strainer pans G, while positioned below the tray rests F, are still placed above the water level. At the start of the dishwashing operation the trough D is filled with fresh cold water through a water inlet pipe 20 and a float controlled valve P shuts off the fresh water supply when the trough is filled with water to the proper depth. The right hand end of the trough in FIG. 3 communicates directly with the inlet to the garbage disposal E as clearly shown in FIG. 2, and any excess water H would flow over the top of the partition 12 and into the garbage disposal and then be drained to the sewer.

FIGS. 2 and 3 show a water outlet manifold indicated generally at J and it has nozzles 14 for directing streams of water in a plane substantially paralleling the plane of the strainer pans G. A pump K in FIG. 2 draws water from the recirculating cold water trough D through a pipe 15 and delivers some of this water under pressure to the outlet manifold or water nozzle J by means of a pipe 16. The water will issue from the nozzles 14 with sufficient force to move food that has been removed from the soiled dishes along the length of the trough and over the upper surfaces of the strainer pans G to the exit end of the trough which is at the partition 12. The strainer pans that are disposed nearest to the water outlet manifold J are perforated as at 10 to permit some of the water to drain therethrough to replenish the water in the trough and maintain it at the proper level. The force and volume of the water issuing from the jets or nozzles 14 is sufficient to carry the food along the entire length of the trough and into the garbage disposal E.

The recirculating cold water trough D functions as a power scrapper and takes the place of the usual fresh water power scrapper that uses about 10 gallons of fresh water per minute. This not only results in a saving of 600 gallons of fresh water each hour but in addition reduces the overall length of the dishwasher. The standard commercial dishwasher has a preflush unit requiring about 3 feet in length. The oval table has an overall width of about 6½ feet and, therefore, the 3 foot length for the preflush unit requires about 20 square feet of floor space. The use of the trough D not only saves 600 gallons of fresh water each hour (because it reuses the water in the trough), but in addition floor space is

saved because the length of the dishwasher and oval table can be reduced in length by about 3 feet.

FIG. 2 shows a power scrapper indicated generally at L that takes the place of the preflush unit that used ten gallons of fresh water per minute to preflush the dishes before they passed through the power scrapper which was the second unit in the standard commercial dishwasher. In the present invention the power scrapper L is the first unit in the dishwasher because the preflush is at present accomplished in the recirculating cold water trough D. The power scrapper L has upper and lower water manifolds and since both are usually positioned one above the other, the dotted line showing 16a in FIG. 2 illustrates both manifolds. The pump K also delivers water from the trough D to the manifolds 16a by means of a pipe 17. About 250 gallons of water per minute are forced through the upper and lower manifolds 16a to remove food particles from the dishes before they enter the power wash section or unit A. The water from the power scrapper L is returned to the recirculating cold water trough D by means of a return pipe 18 indicated in FIG. 2. The power scrapper L uses 25 times the volume of water than used by the eliminated preflush water (250 gallons to 10 gallons) and in addition uses old water from the trough D rather than fresh water.

The endless train of dish-carrying dollies Q, shown in FIG. 7, moves the dishes from the power scrapper L into the power wash section A. The water in the power wash is preferably maintained at a temperature of about 140° F. Then the dishes are conveyed through the power rinse unit B where the water temperature is preferably maintained at about 160° F. From the power rinse unit or section the dishes are moves through a final rinse section M.

It is necessary in the final rinse section M, see FIGS. 1 and 2, to use only fresh water and this water must be heated to about 180° F. Usually the rinse water after it has been used is conveyed to an outlet drain or sewer and is lost. It requires about 417 gallons of fresh rinse water each hour and all of this water must be heated to the 180° F. In my present invention this heated final rinse water, instead of being dumped into the sewer, is delivered by means of a pipe 19 to the recirculating cold water trough D, see the diagrammatic showing of the pipe in FIG. 2. The hot rinse water upon entering the trough D will raise the temperature of the water in the trough as well as add water to the trough. Any excess water in the trough D will flow over the partition 12 and on into the garbage disposal E.

The dishwashing machine can be provided with a drying hood indicated generally at N in FIGS. 1 and 2. The dishes after passing through the final rinse section M will be moved through the drying hood N where they will be dried. Then the endless train of dish-conveying dollies Q, shown in FIG. 7, will move the washed, rinsed and dried dishes along the oval table C to a point where they can be removed.

Before setting forth the operation of the device, it is best to describe more in detail how the endless train of dish-carrying dollies Q are continuously moved so as to carry dishes into and out from the dishwashing machine. In FIGS. 7, 8 and 9, I show the oval table top C provided with the endless track S. This track is preferably of the same type as disclosed in my U.S. Pat.

No. 3,550,755. The dollies Q are also of the type shown in the patent. Each dolly is supported by four wheels T that ride in the endless tracks, see FIGS. 8 and 9. Links U interconnect adjacent dollies Q.

The means for continuously moving the endless train of dollies Q is the same as that disclosed in my U.S. Pat. No. 3,550,755. An endless chain V is mounted on a pair of sprockets 30 and 31, and the latter sprocket is rotated by an electric motor W, see FIGS. 7, 8 and 9. Each dolly Q has a pair of offsets 32 and 33, see FIG. 9, and these pivotally carry pawls 34 and 35, respectively, that are designed to be operatively connected to the lower reach of the endless chain V and to be moved by the chain as described in detail in my U.S. Pat. No. 3,550,755. When the dishwashing machine is operating, the motor W will cause the lower reach of the endless chain V to move from left to right in FIG. 9. The pivoted pawls 34 and 35 will operatively engage with the lower reach and will be moved by it so as to move the dolly Q from left to right in FIG. 9. All of the dollies in the endless train are interconnected by the links U, and therefore the entire train of dollies will be continuously moved while the device is operating. Each dolly Q supports its dish-carrying basket R, see FIG. 8, and this will provide an endless train of baskets R that will carry dishes into and out from a dishwashing machine. This is true regardless of whether there are any bus boxes of soiled dishes, not shown, being placed on the racks F, or not.

OPERATION

From the foregoing description of the various parts of my device the operation thereof may be readily understood. Under the old system of washing dishes by a commercial dishwasher, fresh cold water was delivered at about 10 gallons per minute to a preflush unit having upper and lower manifolds. The food removed from the dishes flowed out into a garbage disposer.

I have already pointed out how my recirculating cold water trough D takes the place of this preflush unit because the water issuing from the manifold J and flowing along over the tops of the pans G has sufficient force and volume to convey food, removed from the dishes, and carry it along the trough and into a garbage disposal E, see FIGS. 1 and 2. The water in the trough is reused and this results in a saving of 600 gallons of fresh water an hour which would otherwise be used in the preflush unit. It was further pointed out that the preflush unit was about 3 feet long and doing away with it would save 3 feet in the overall length of the commercial dishwasher as well as reduce the length of the oval table by 3 feet. Since the overall width of the table is about 6½ feet, there would be a saving of floor space of approximately 20 square feet.

The bus boxes with their soiled dishes are placed on the tray rests or grids F that in turn are supported by the side walls 5 and 6 of the trough D, see FIGS. 3 to 6 inclusive. Any number of grids F may be used to support the bus boxes or dish-carrying trays, not shown, and certain of the grids F may be curved to conform to the curved portion of the trough D, see FIG. 2. The bus boys remove the dishes from the trays or bus boxes and remove food from the dishes and this food drops into the trough and is carried by the flow of water along the trough to the garbage disposer.

The dishes are then placed in baskets R which are supported by the dish-carrying dollies Q, see FIGS. 7, 8 and 9. The latter are formed into an endless train that continuously moves along the oval table C while the device is operating, see FIGS. 1 and 2. The dollies move the dishes to the power scrapper L where water from the trough D is delivered to the upper and lower manifolds by the pump K at about 250 gallons per minute. The power scrapper removes additional food from the dishes. Another novel feature of the invention is the use of the pump K to take water from the trough D and deliver it to both the manifold J in the trough and to the upper and lower manifolds 16a in the power scrapper L. The removable strainer pans G prevent food from dropping to the bottom of the trough and act as means for screening the water before it is reused by the pump K. The third novel feature is the delivery of the used fresh water rinse water from the final rinse section M to the trough D. The trough can be curved as shown or can be in a straight line.

I claim:

1. In combination:

- a. a dishwashing machine having a power wash section and a power rinse section;
- b. a table having an endless dish-supporting top for guiding dishes to and from said dishwashing machine;
- c. a trough arranged along the side of a portion of said table top for receiving food removed from dishes and having side walls and a bottom;
- d. a water nozzle arranged at one end of said trough, the other end of the trough communicating with a garbage disposal;
- e. pans supported between the sides of said trough and extending from end to end of said trough and below the level of said water nozzle; and
- f. means for delivering water to said water nozzle;
- g. whereby the food removed from the dishes will drop upon said pans and the water from said nozzle will carry this food to said other end of the trough and deliver it to the garbage disposal.

2. The combination as set forth in claim 1: and in which:

- a. grids are removably mounted in said trough and are disposed above said pans, said grids supporting bus boxes of soiled dishes while permitting the dishes to be manually removed and have food removed therefrom and dropped into the trough and upon said pans where the water from said water nozzle will convey the food to said other trough end and to the garbage disposal.

3. The combination as set forth in claim 1: and in which:

- a. certain of said pans are perforated to permit some of the water from said water nozzle to pass through the perforations and into the lower portion of said trough.

4. The combination as set forth in claim 3: and in which:

- a. the bottom of said trough is inclined downwardly at an angle from the end that has said water nozzle to said opposite end.

5. The combination as set forth in claim 3: and in which:

a. said water delivering means removes water from said trough and forces it out through said water nozzle;

b. whereby said trough operates as a recirculating water trough for constantly reusing the water in the trough.

6. The combination as set forth in claim 5: and in which:

a. said water delivering means also includes means for adding new water to said trough as needed to maintain a predetermined water level therein.

7. The combination as set forth in claim 5: and in which:

a. a power scrapper forms a part of the dishwashing machine and is positioned just in advance of the power wash section, said power scrapper having water outlet manifolds in communication with said water delivering means;

b. whereby some of the water removed from said trough will be delivered to the power scrapper for removing additional food still clinging to the dishes; and

c. a water return pipe leading from the power scrapper back to said trough.

8. The combination as set forth in claim 5: and in which:

a. a final rinse section using heated fresh water, forms a part of the dishwashing machine and is positioned just after the power rinse section; and

b. a water return pipe leading from said final rinse section to said trough for adding heated water thereto.

9. The combination as set forth in claim 8: and in which:

a. a power scrapper forms a part of the dishwashing machine and is positioned just in advance of the power wash section, said power scrapper having water outlet manifolds in communication with said water delivering means;

b. whereby some of the water removed from said trough will be delivered to the power scrapper for removing additional food still clinging to the dishes; and

c. a water return pipe leading from the power scrapper back to said trough.

10. In combination:

a. a table having an endless dish-supporting top for guiding and conveying in a continuous and uninterrupted path baskets containing dishes and supported by an endless train of dollies designed to move over said table top and into and out of a dishwashing machine;

b. means for continuously moving said dolly train over said table top;

c. a trough arranged along the side of and paralleling a portion of said table top for receiving food removed from the dishes and having side walls and a bottom;

d. means for supporting dish-carrying trays directly above said trough so that food may be removed from the dishes and will drop directly into the trough without interfering with the continuous travel of the dish-carrying baskets on the table top;

e. a water nozzle arranged at one end of said trough, the other end of the trough communicating with a garbage disposal; and

- f. means for delivering water to said water nozzle;
 g. whereby the food removed from the dishes will drop into the trough and the water from said nozzle will convey this food to the other end of said trough and deliver it to the garbage disposal. 5
11. In combination:
 a. a table having an endless dish-supporting top for guiding dishes to and from a dishwashing machine;
 b. a trough arranged along the side of a portion of said table top for receiving food removed from dishes and having side walls and a bottom; 10
 c. a water nozzle arranged at one end of said trough, the other end of the trough communicating with a garbage disposal;
 d. means for delivering water to said nozzle; and 15
 e. pans supported between the sides of said trough and extending from end to end of said trough and below the level of said water nozzle;
 f. whereby the food removed from the dishes will drop upon said pans and the water from said nozzle will move the food along the pans to said other trough end and deliver it to the garbage disposal. 20
12. The combination as set forth in claim 11: and in which: 25
 a. grids are removably mounted in said trough and are disposed above said pans, said grids supporting bus boxes of soiled dishes while permitting the dishes to be manually removed and have food removed therefrom and dropped into the trough and upon said pans where the water from said nozzle will convey the food to said other trough end and to the garbage disposal. 30
13. The combination as set forth in claim 11: and in which 35
 a. certain of said pans are perforated to permit some of the water from said water nozzle to pass through the perforations and into the lower portion of said trough;
 b. said water delivering means removing water from said trough and forcing it out through said water nozzle; 40
 c. whereby said trough operates as a recirculating water trough for constantly reusing the water in the trough. 45
14. The combination as set forth in claim 13: and in which:
 a. a power scrapper is placed just in advance of the dishwashing machine, said power scrapper having water outlet manifolds that are in communication with said water delivering means; 50
 b. whereby some of the water removed from said trough will be delivered to the power scrapper for removing additional food still clinging to the dishes; and 55
 c. a water return pipe leading from the power scrapper back to said trough.
15. The combination as set forth in claim 14: and in which: 60
 a. a final rinse section using heated fresh water forms a part of the dishwashing machine and is positioned at the exit end of the machine; and
 b. a water return pipe leading from said final rinse section to said trough for adding heated water thereto. 65
16. In combination:

- a. a table having an endless dish-supporting top for guiding and conveying in a continuous and uninterrupted path baskets containing dishes and supported by an endless train of dollies designed to move over said table top and into and out of a dishwashing machine;
 b. means for continuously moving said dolly train over said table top;
 c. a trough arranged along the side of a portion of said table and paralleling the table for receiving food removed from the dishes, the trough increasing the lateral space required by the dishwashing machine and table to only a slight degree;
 d. means mounted in said trough for supporting dish-carrying trays directly above said trough so that food may be removed from the dishes and will drop directly into said trough without interfering with the continuous travel of the dish-carrying baskets on the table top;
 e. a water nozzle arranged at one end of said trough, the other end of the trough communicating with a garbage disposal;
 f. means disposed in said trough for supporting any food removed from the dishes at a level where it will be contacted by the water issuing from the water nozzle; and
 g. means for delivering water under pressure to said water nozzle;
 h. whereby any food supported by said means will be moved by the water issuing from said nozzle to the end of said trough that communicates with the garbage disposal for delivering the food thereto.
17. The combination as set forth in claim 16: and in which: 35
 a. said food supporting means includes pans removably supported in said trough and extending from end to end thereof and below the level of said water nozzle;
 b. whereby said pans will cooperate with the water issuing from said nozzle for guiding the food to the garbage disposal.
18. The combination as set forth in claim 17: and in which:
 a. said tray supporting means comprises grids which are removably mounted in said trough and are disposed above said pans, said grids supporting bus boxes of soiled dishes while permitting the dishes to be manually removed and have food removed therefrom and dropped into the trough and upon said pans where the water from said water nozzle will convey the food to said other trough end and to the garbage disposal.
19. The combination as set forth in claim 18: and in which: 55
 a. certain of said pans are perforated to permit some of the water from said water nozzle to pass through the perforations and into the lower portion of said trough;
 b. said water delivering means removes water from said trough and forces it out through said water nozzle;
 c. whereby said trough operates a recirculating water trough for constantly reusing the water in the trough.
20. The combination as set forth in claim 19: and in which:

11

- a. said water delivering means also includes means for adding new water to said trough as needed to maintain a predetermined water level therein.

21. The combination as set forth in claim 20: and in which:

- a. a power scrapper forms a part of the dishwashing machine, said power scrapper having water outlet manifolds in communication with said water delivering means;
- b. whereby some of the water removed from said trough will be delivered to the power scrapper for removing additional food still clinging to the

12

dishes; and

- c. a water return pipe leading from the power scrapper back to said trough.

22. The combination as set forth in claim 21: and in which:

- a. a final rinse section using heated fresh water, forms a part of the dishwashing machine; and
- b. a water return pipe leading from said final rinse section to said trough for adding heated water thereto.

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