Jan. 30, 1951 J. L. JONES 2,539,432

DISHWASHING MACHINE

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Fig. 2.

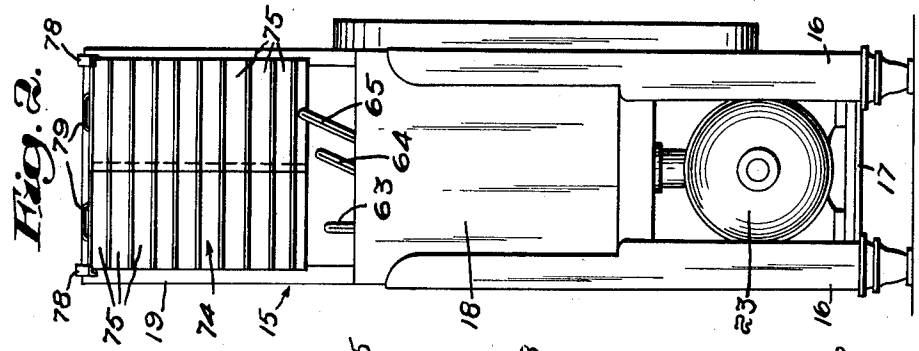
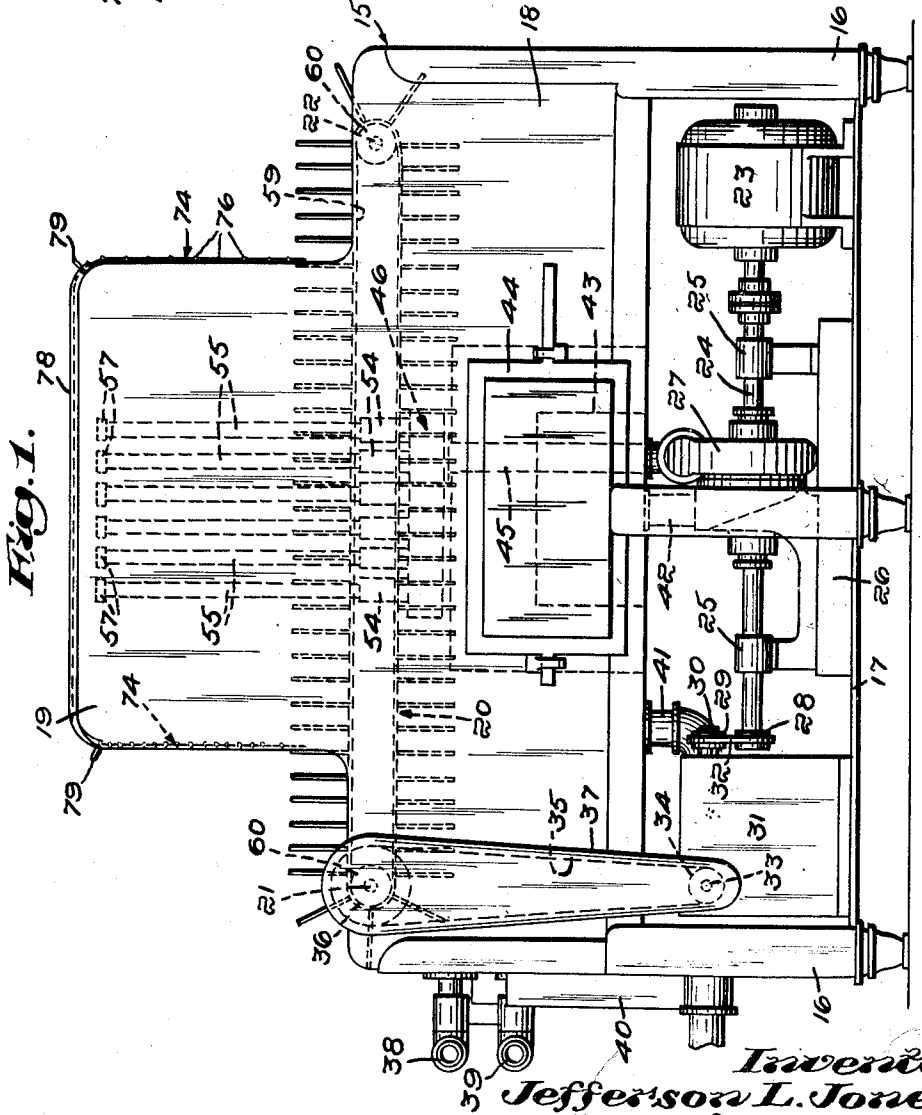


Fig. 1.



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Fig. 3.

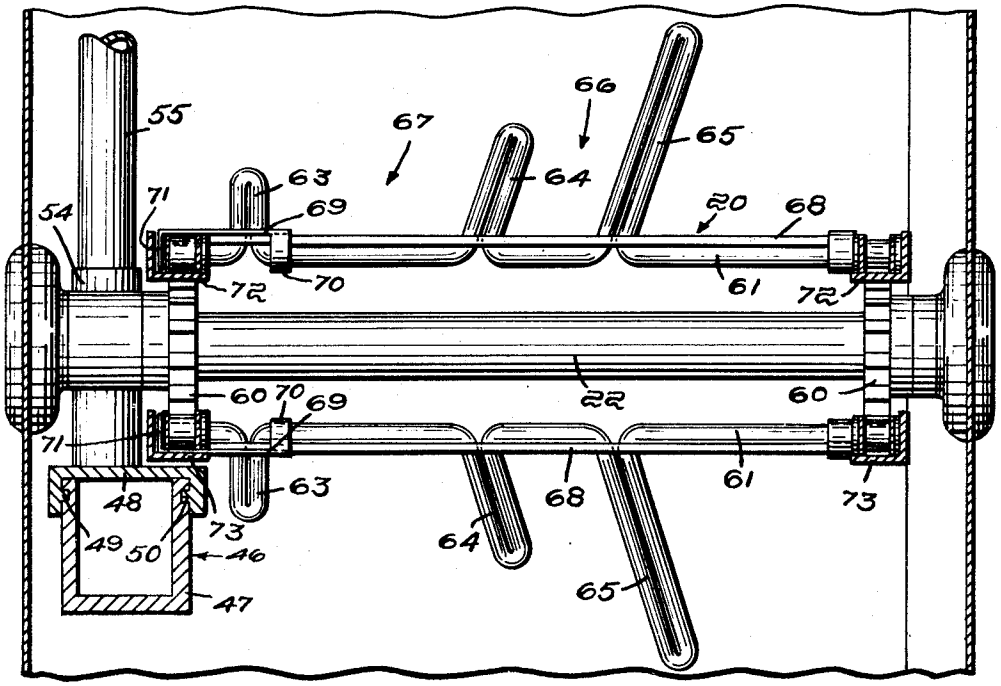


Fig. 4.

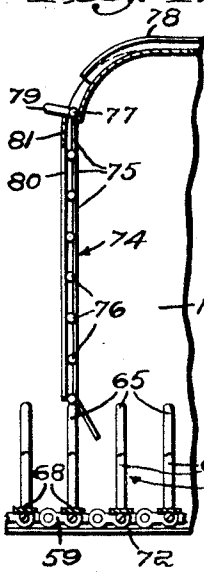


Fig. 5.

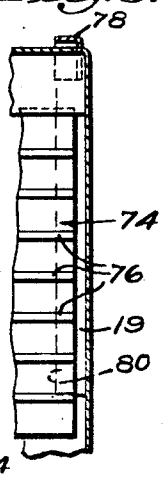


Fig. 6.

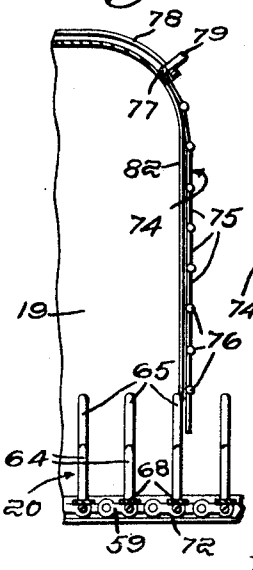
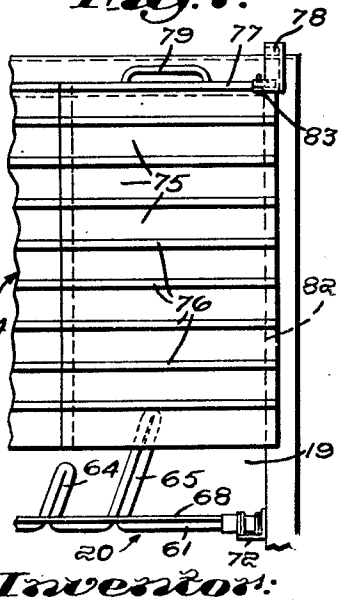


Fig. 7.



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Fig. 8.

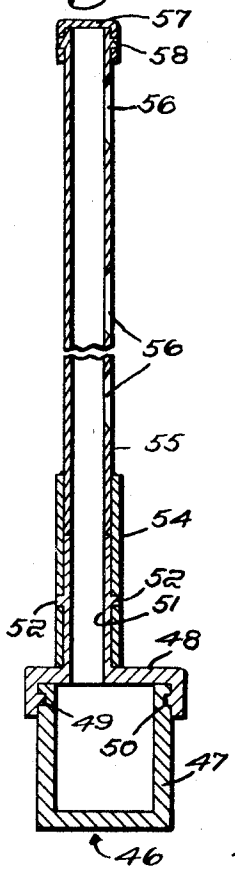


Fig. 9.

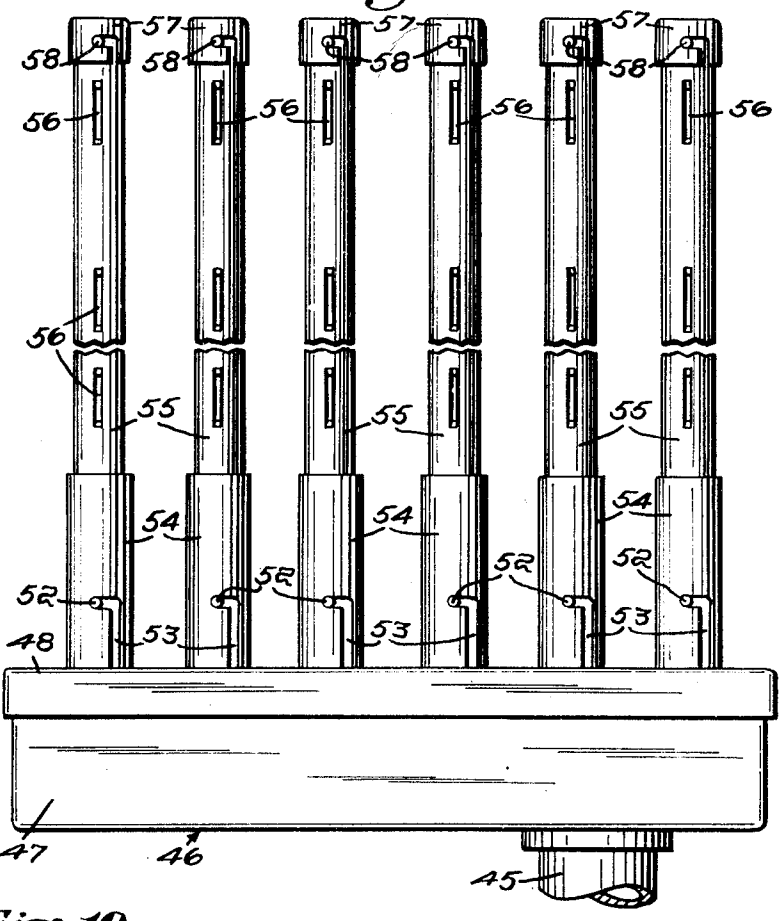


Fig. 10.

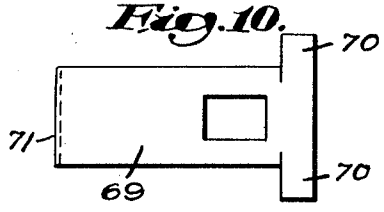


Fig. 11.

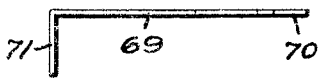
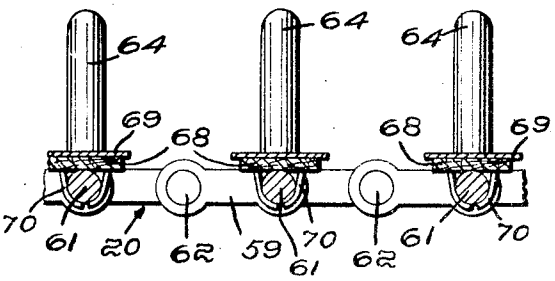


Fig. 12.



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UNITED STATES PATENT OFFICE

2,539,432

DISHWASHING MACHINE

Jefferson L. Jones, Cambridge, Mass.

Application October 10, 1945, Serial No. 621,524

4 Claims. (Cl. 134—131)

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My present invention relates to machines for washing such objects as dishes and the like and particularly to a machine in which the objects are carried through the washing chamber on an endless conveyor.

In accordance with my invention, I provide an endless conveyor mounted in the machine to carry tableware through the washing chamber. The conveyor consists of a pair of endless elements interconnected by cross members each of which is formed with a plurality of portions, preferably of different lengths, which establish with corresponding portions of other members supporting partitions extending lengthwise of the conveyor to define compartments for different types of tableware.

With washing machines utilizing an endless conveyor, it is necessary to employ at the infeed and outfeed ends of the washing chamber curtains that will both minimize the amount of spray that escapes from the chamber and that will yield when engaged by the tableware on the moving conveyor. For such use, it has been customary to use a canvas which was objectionable as the canvas soon became dirty and worn.

I provide closures which consist of sections of metal or other suitable stock interconnected by transversely disposed hinge means and slidably mounted on the top of the washing chamber for movement between a depending position in which the ports are substantially closed and a position in which the ports are open. Preferably each closure consists of a pair of vertically divided overlapping sections.

In the accompanying drawings, I have shown an illustrative embodiment of my invention from which these and other novel features and advantages will be readily apparent.

In the drawings:

Fig. 1 is a side elevation of a machine in accordance with my invention.

Fig. 2 is an end view of the machine of Fig. 1.

Fig. 3 shows in a fragmentary view a cross section of the conveyor.

Fig. 4 is a fragmentary vertical section of the flexible closure on the infeed side of the washing chamber.

Fig. 5 is a fragmentary vertical cross section of the washing chamber.

Fig. 6 is a view corresponding to Fig. 4, but showing the closure on the outfeed side of the washing chamber.

Fig. 7 is a fragmentary face view of the closure of Fig. 6.

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Fig. 8 shows a sectional view of a manifold and spray device assembly.

Fig. 9 is a side view of the same.

Fig. 10 is a plan view of a clip for holding the cross members of the conveyor against turning.

Fig. 11 is a side view of the clip of Fig. 10, and

Fig. 12 is a transverse section through a portion of the conveyor showing the clips assembled thereon.

A dish washing or like machine in accordance with my invention consists of a cabinet generally indicated at 15 supported by legs 16 interconnected adjacent their lower ends to establish a support 17.

The cabinet consists of a tank 18 and a washing chamber 19 through which such tableware as dishes and the like are carried by a conveyor, generally indicated at 20. Conveyor shafts 21 and 22 are conventionally supported adjacent the top of the tank 18 adjacent each of its ends.

At one end of the support 17, I mount a motor 23 coupled to one end of a shaft 24 journalled in bearings 25 on a base 26 which also serves as a support for the pump 27. The other end of the shaft 24 has a pulley 28 over which and the pulley 29 on the shaft 30 of the gear box 31 mounted on the other end of the support 17 is trained a belt 32.

The driven shaft 33 of the gear box 31 has a sprocket indicated at 34 connected by a chain 35 to the sprocket 36 fast on the conveyor shaft 21. Preferably the conveyor drive is enclosed by a housing 37.

At 38 and 39 I have indicated cold and hot wash water conduits, respectively, by which the tank 18 is supplied with water. The tank 18 has an overflow pipe 40 and a drain 41. At 42 I have indicated the intake of the pump 27 protected by a screen indicated at 43 which may be removed for cleaning, through the door 44 which is of sufficient size and centrally located to make the interior of the tank 18 accessible for cleaning.

The outlet of the pump 27 has a riser 45 connected to and supporting a manifold indicated generally at 46 adjacent one side of the washing chamber 19 and below the conveyor 20, as shown in Fig. 3.

The manifold 46 consists of a bottom part 47 fast on the upper end of the riser 45 (see Figs. 3, 8 and 9) and a cover 48 having ribs 49 entrant of grooves 50 in the manifold part 47 to slidingly interlock the bottom and cover of the manifold 46 together while permitting the cover 48 to be removed endwise from the machine.

The manifold cover 48 (Figs. 8 and 9) has upwardly projecting outlet ports 51 having oppositely located pins 52 entrant of the L-shaped slots 53 in the sleeves 54 on the lower ends of the tubular spray devices 55. The spray devices have slots 56 disposed to deliver jets of water against dishes or the like supported on the conveyor 20. Preferably the caps 57 closing the upper ends of the spray devices 54 are also connected thereto by a bayonet joint indicated generally at 58.

By this construction, the spray devices, which need frequent servicing, may be removed from the machine as a unit by sliding the manifold cover 48 out of one end of the chamber 19 and the individual spray devices may be quickly detached therefrom and disassembled for thorough cleaning. In practice, a like manifold and spray device may be located adjacent each side of the washing chamber 19 but, for convenience, only one manifold is shown. As the faces of the dishes are disposed towards the manifolded spray devices, any desired means may be employed to wash the bottom surfaces of the dishes. The rinse water system may be of any desired type and is not shown to simplify the drawings.

In accordance with my invention the conveyor 20 consists of a pair of chains 59 trained over sprockets 60 on the conveyor shafts 21 and 22. The chains 59 are interconnected by cross members 61. Preferably these constitute some of the pivots interconnecting the links of the chains 59. As shown in Fig. 12, each of the links may be interconnected to one adjacent link by a pivot 62 and to the other adjacent link by a cross member 61.

The cross member 61 may conveniently be formed from metal stock bent to establish loops 63, 64 and 65. The loops 64 and 65 are shown as inclined transversely of the conveyor away from the discharge devices and are shown as of different length with the loops 64 being longer than the loops 63 but shorter than the loops 65.

The loops 63, 64 and 65 of the cross member 61 define a pair of compartments 66 and 67 extending lengthwise of the conveyor (Fig. 3). Plates, platters, saucers, trays, etc. are placed in the compartment 66 while the compartment 67 is for bowls, cups and the like. The compartment 67 is also for silverware, which, for convenience, is placed in small, easily handled trays (not shown). Dishes and the like are placed with their faces directed towards the manifold spray devices.

When the cross members 61 are of metal, I mount on each of them a slat 68 of wood or other suitable stock slotted to receive the loops 63, 64 and 65. The slats are held in place on the cross members 61 by clips 69 which also serve to prevent rotation of the cross members relative to the chains.

Each clip 69, as may be seen in Figs. 10, 11 and 12, consists of a blank of bendable stock apertured to fit over the loops 63 and having adjacent one of its ends a pair of arms 70 adapted to be bent around the slat 68 and the cross member 61. At its other end, the clip 69 is bent as at 71 against the outer edge of the chain. The chains 59 are preferably supported at each side by tracks 72 and 73.

As dishes and the like are carried by the conveyor 20 into and out of the washing chamber 19, it is desirable to provide means for minimizing the amount of spray that may escape therefrom.

In accordance with my invention, as may be seen in Figs. 2, 4–7, I provide screens 74 at the infeed and outfeed ends of the chamber 19, closing the chamber a slight distance above the partition establishing loop 64 (see Figs. 2 and 7). Each of the screens 74 is preferably in two sections which overlap to permit the section engaged by the partition establishing loop 65 to open independent of the other section. Each section consists of a plurality of panels 75 hinged together as at 76. The top panel of each section of both screens 74 is hinged to a rod 77 the ends of which travel in tracks 78 extending along the top of the chamber 19 towards the rear thereof. Each rod 77 has a handle 79.

As the screen 74 at the infeed end of the chamber 19 swings inwardly, I have shown the infeed end of the chamber 19 as having a flange 80 against which the screen 74 normally rests. The upper ends of the flanges 80 are interconnected as at 81 to establish a stop engageable by the handle 79 to support the screen in its normal position. The screen 74 at the outfeed end of the chamber 19 swings outwardly and normally rests against internal flanges 82 at that end of the chamber 19. The ends of the tracks 78 are closed as at 83 to provide a stop to hold the screen 74 in its normal position.

By this construction, the screens 74 are opened by the tableware sufficiently to permit the passage of an article of that size. When it is desired to clean the interior of the washing chamber 19, either or both of the screens 74 may be slid into an inoperative position on top of the chamber 19.

From the foregoing it will be apparent that dish washing machines in accordance with my invention are well adapted for efficient operation and convenience in their servicing.

What I therefore claim and desire to secure by Letters Patent is:

1. A conveyor for carrying tableware or the like through the washing chamber of a washing machine, said conveyor comprising a pair of chains and a plurality of cross members interconnecting said elements and constituting pivots interconnecting certain of the links of said chains, each of said members including a plurality of integral portions establishing with corresponding portions in other members, supporting partitions extending lengthwise of said conveyor to define compartments for different types of tableware, a cushioning element on each of said cross members of greater width than said cross members and having apertures to receive said portions, and clip means locking said element to said cross member.

2. A machine for washing tableware or the like comprising a base, a washing chamber on said base including spray devices located at one side thereof, and an endless conveyor mounted in said base and extending through said chamber, said conveyor comprising a pair of endless elements and a plurality of cross members interconnecting said elements, each of said members including first, second and third portions establishing with corresponding portions of other members supporting partitions extending lengthwise of said conveyor to define compartments, said second and third portions of each member being inclined towards one of its ends and being progressively longer than said first portion which is adjacent said spray devices thereby to establish compartments for tableware of progressively larger size.

3. A conveyor for carrying tableware or the like through the washing chamber of a washing machine, said conveyor comprising a pair of

chains and a plurality of cross members interconnecting said chains, each of said members including a plurality of portions establishing with corresponding portions of other members partitions extending lengthwise of said conveyor, each of said cross members constituting a pivot interconnecting certain of the links of said chains, and a clip apertured to fit over one of said portions of each member, said clip including a pair of arms adjacent one of its ends in engagement with the cross member of that portion to lock said clip thereto, and the other end of said clip being disposed against the outer edge of the chain links interconnected by that member.

4. A conveyor for conveying tableware or the like through the washing chamber of a washing machine, said conveyor comprising a pair of chains and a plurality of cross members interconnecting said chains, each of said members including first, second and third portions establishing with corresponding portions of other members supporting partitions extending lengthwise of said conveyor, said second and third portions of each member being inclined towards one of its ends and being successively longer than said first portion thereby to establish compartments for tableware of different sizes.

JEFFERSON L. JONES.

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