Dec. 27, 1966 R. ETTLINGER 3,294,273

SILVERWARE WASHER CONSTRUCTION

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FIG. 1

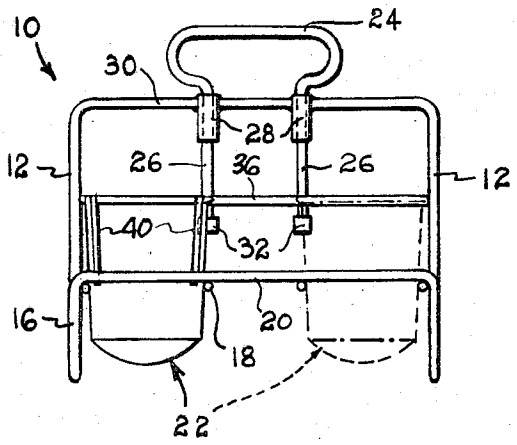


FIG. 2

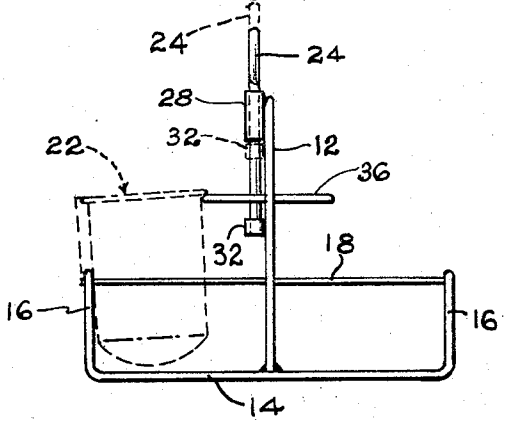
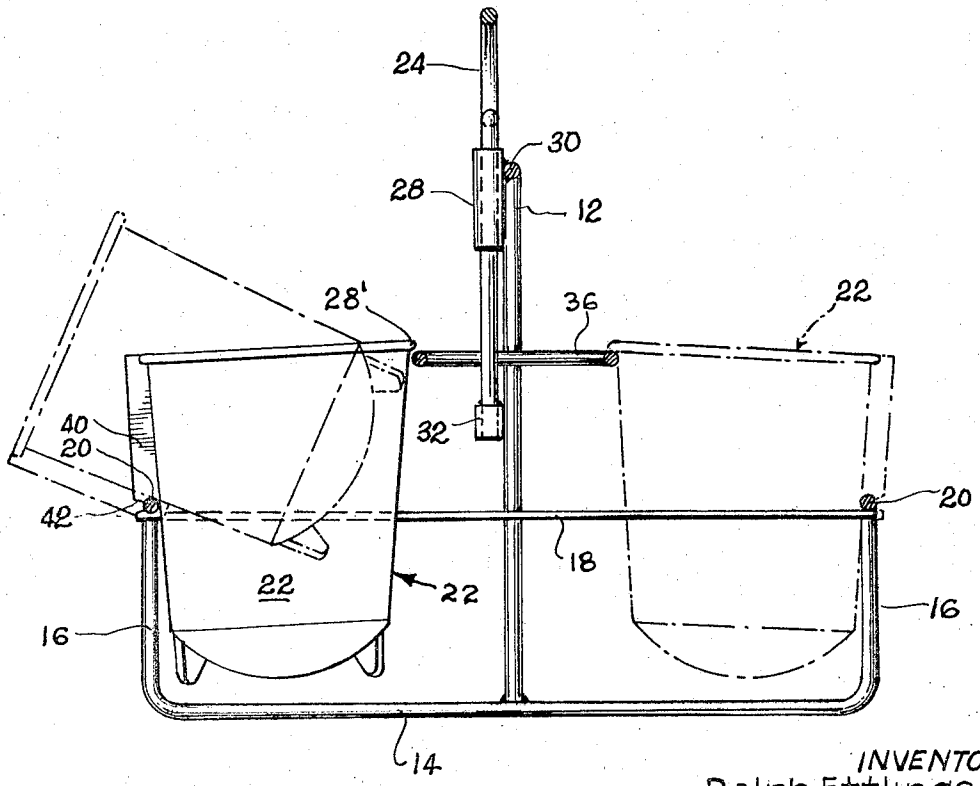


FIG. 3



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FIG. 4

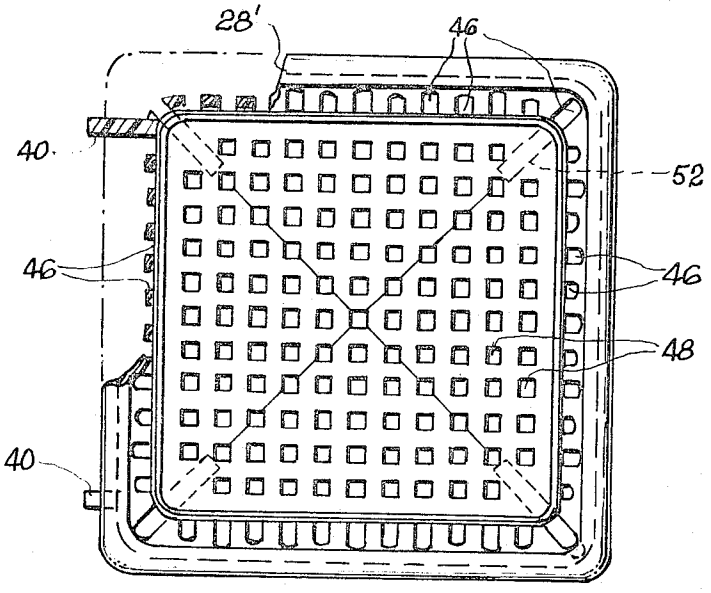


FIG. 5

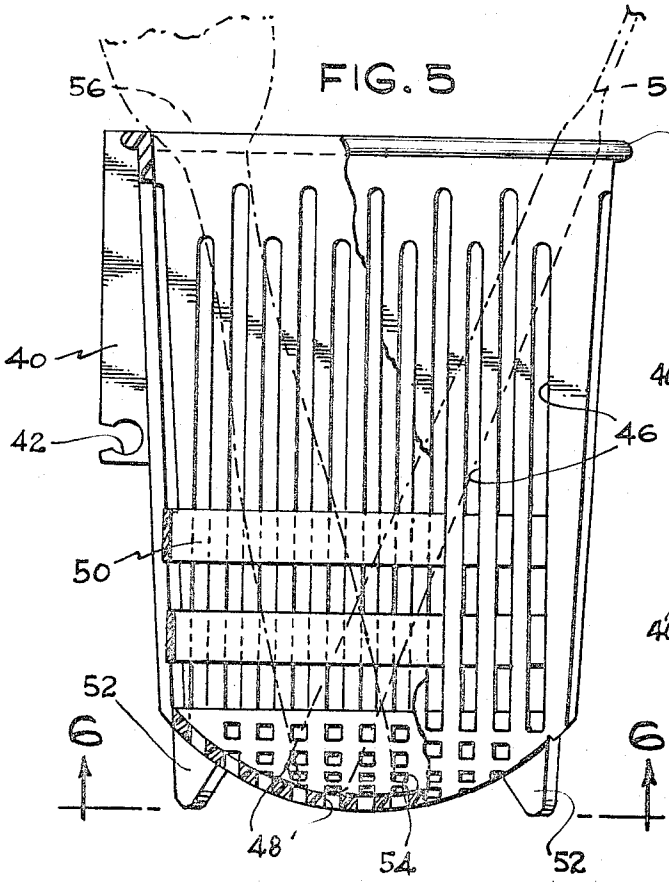
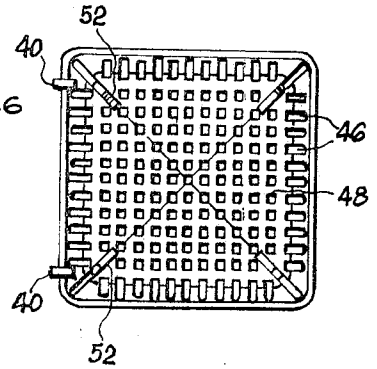


FIG. 6



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SILVERWARE WASHER CONSTRUCTION

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This invention relates to an apparatus for use in washing silverware. In particular, the application is concerned with a silverware washer construction which is adapted to be employed in dishwashing machines.

The use of dishwashing machines is becoming more and more popular, particularly in restaurants and in other facilities handling large numbers of dishes. Generally speaking, such machines operate by providing conveyors which transport dishes through the machines. Spray heads provide the necessary washing water and detergents are dispensed in the machine so that the dishes can all be washed without any handling by individuals. In the preferred construction of the machines, racks are provided for holding dishes and, in many cases, such racks can be removed from the machine and employed for stacking and carrying of the dishes after completion of the washing operation.

The instant invention is particularly concerned with the provision of improved rack means for carrying silverware through a dishwashing machine. In particular, the invention is concerned with an improved design for holders for the silverware whereby the knives, forks and spoons can be washed in an extremely efficient and effective manner.

The instant invention is intended as an improvement over prior constructions which suffer from certain defects. In one form of such prior constructions, the silverware was placed on a flat rack and thus transported in a horizontal position through the washing machine. In such instances, there is a substantial tendency for some pieces of the silverware to rest on top of lower pieces whereby the lower pieces are masked out and thus not exposed to the washing fluids.

In some instances, cylinders are employed for holding the silverware with the silverware standing upright in the cylinders. These provide a more effective cleaning operation; however, in many instances the silverware is removed from the cylinders by grasping the silverware with the hand, thus, providing unsanitary conditions. In other upright type holders for the silverware, removal was accomplished by dumping the silverware; however, this was objectionable from the standpoint of wear and tear.

It is a general object of this invention to provide an improved construction for the handling of silverware in a dishwashing machine.

It is a further object of this invention to provide a silverware holder of the type described which can be economically manufactured.

It is an additional object of this invention to provide a silverware holder construction which carries the silverware in an upright position and which permits removal of the silverware in a sanitary fashion and without wear and tear, and which provides for spacing of the silverware to promote maximum washing efficiency.

These and other objects of this invention will appear hereinafter and for purposes of illustration but not of limitation, specific embodiments of this invention are shown in the accompanying drawings in which:

FIGURE 1 is a side elevational view of the silverware rack means and associated holders;

FIGURE 2 is an end elevational view of the rack means shown in FIGURE 1;

FIGURE 3 is an enlarged end elevational view, partly in section, illustrating the pivotal mounting of the holders;

FIGURE 4 is a plan view, partly in section, illustrating the details of the holder portion of the inventive structure;

FIGURE 5 is an elevational view, partly in section, of the holder of FIGURE 4; and,

FIGURE 6 is a reduced bottom view of the holder taken about the line 6—6 of FIGURE 5.

As previously indicated, the construction of this invention is adapted to be associated with a dishwashing apparatus. The construction combines a rack portion which includes frame members defining an open framework. Holders are associated with the framework, and the silverware is adapted to be carried by the holders during the operation of the dishwashing apparatus. In the usual case, conveyor means are provided in the apparatus for transporting the racks through the various stages of the operation. It will be understood that the racks may be directly provided with elements which engage the conveyor mechanisms. On the other hand, means such as flat bed members in the conveyor may be provided for carrying the racks.

Each of the holders carried by the racks is provided with elements for attaching the holders to the racks. These elements provide a pivotal connection with the rack whereby the silverware can be discharged from the holders by pivoting the holders with respect to the racks. It will also be apparent that the holders are designed whereby the silverware can be carried in a manner permitting the most efficient washing operation. Specifically, the holders provide for carrying the silverware with the "business end" up. The end sof the silverware are flared outwardly at the top of the holders for maximum contact with the water and washing detergents.

The accompanying drawings provide an illustration of the rack and holder members which make up the construction of this invention. The rack member **10** shown in FIGURE 1 includes vertical frame members **12** which are disposed at an intermediate point in the rack. The members **12** are connected to bottom frame members **14** and these frame members include integrally formed U-shaped end portion **16**. Horizontal struts **18** extend between the horizontal portions **20** of the U-shaped ends **16**. These struts **18** define a plurality of openings for receiving holders **22**.

The rack **10** also includes a handle member **24** which is provided with downwardly extending legs **26**. These legs pass through cylindrical sleeves **28** which are fixed to the upper horizontal frame member **30**. It will be apparent that the legs **26** are slideable in the sleeves **28** so that the handle **24** can be raised and lowered. Enlarged ends **32** are provided on the legs **26** to limit the upward movement of the handle **24**. An additional frame member **36** is attached to the frame members **12** to provide a horizontal support for the rims **28'** of the holders **22**. One side of each of the holders **22** is provided with an attaching means for attachment to the horizontal member **20** of the U-shaped ends **16**. These attachment means comprise ribs **40** integrally formed on the holders **22**. The ribs define keyhole-shaped openings **42** which can be pressed onto the frame member **20**. The holders are preferably formed of a heat resistant plastic material so that sufficient resiliency is provided for achieving attachment of the holders to the member **20**.

The construction of the holders is best illustrated in FIGURES 4 through 6. Each of these holders is generally rectangular in cross section so that maximum utilization of space in the openings defined by the struts **18** can be provided. As indicated, the holders are preferably formed of molded plastic and in the molding operation, a plurality of vertical slots **46** are formed in the holders. In addition, a plurality of openings **48** are formed in the bottom of the holder so that water and

detergent will readily flow into and out of the holders. Reinforcing cross members **50** can also be provided as an integrally molded member.

Finally, legs **52** are formed on the holders so that they can be positioned in an upright fashion in the event that they are removed from the rack **10**.

Each of the holders defines an internal concave bottom surface **54**. When silverware is introduced into the holders with the handle ends **56** down, there is a tendency for the silverware to seek the center of the holder. Accordingly, the "business end" of the silverware will flare outwardly providing maximum exposure.

In the use of the construction described, a plurality of holders **22** are first positioned on a rack **10**. Thereafter, the silverware is inserted in the manner described after which the rack is placed in position in the dishwashing apparatus. It will be noted that the handle **24** is extremely convenient in this connection since the handle, when grasped, will move upwardly to provide for carrying free of any possible contact with the silverware. However, when the handle is released, it will drop down so that the rack will not require undue space in the machine.

After completion of the washing operation, the silverware can be removed by simply tilting each holder as suggested by FIGURE 3. Clearance is provided for tilting beyond the frame member **36** so that a tray or other means for carrying the silverware can be placed immediately adjacent the end of a holder **22** for receiving the silverware. The silverware can then slide into the tray without difficulty and without any need for touching of the silverware by the operator. Since the silverware does not drop a significant distance, wear and tear is virtually eliminated. In addition, this arrangement eliminates to a substantial extent the noise which often accompanies the handling of silverware.

The described construction has further advantages since the silverware holders are held in spaced apart relationship in the frame. This promotes more effective movement of water and better washing. Uniformity in washing effectiveness is also achieved and this presents distinct advantages over prior art structures wherein the silverware is randomly distributed on a bed or held in holders which are randomly distributed.

It will also be appreciated that the rack construction could be used for holding the silverware after removal from the dishwashing machine. In this connection, the slideable handle is a distinct advantage since the construction can be carried without the danger of contact with the silverware.

It will be appreciated that the elements which make up the construction of this invention are relatively simple in construction and can therefore be produced without undue expense. Furthermore, the construction described is versatile and its use does not require complicated systems. Accordingly, substantial efficiency can be achieved through the use of the described arrangement.

It will be understood that various changes and modifications may be made in the construction described which provide the characteristics without departing from the spirit thereof, particularly as defined in the following claims.

That which is claimed is:

1. In a dishwashing apparatus, the improvement comprising a silverware rack including frame members defining an open framework, holders associated with said framework adapted to carry said silverware during operation of said apparatus, each of said holders including means for attachment to said frame members, and wherein said holders are pivotally connected to said frame members to facilitate discharge of said silverware therefrom, means formed in said rack adapted to normally engage said holders whereby said holders are normally tilted toward the side of said apparatus whereby

said pivotal movement is facilitated, and including side bars formed in said rack, said attachment means comprising resilient fingers integrally formed with said holders to removably secure said holders in place, said fingers providing the pivotal attachment of said holders, and wherein said holders define concave interior bottom walls whereby the bottom ends of silverware standing in said holders will tend to assume positions toward the center of said holders while the upper ends will flare outwardly to provide greater contact of washing fluids with said upper ends.

2. An apparatus in accordance with claim **1** including handle means attached to said frame, said handle means being slideably mounted with respect to said frame members whereby the handle means are extended during gripping of said rack and whereby said handle means can be moved to a retractable position to provide a compact construction during operation of said apparatus.

3. An apparatus in accordance with claim **2** wherein said handle means comprise a generally U-shaped member having a transverse bar defining a gripping portion, and legs extending from said bar, sleeve means carried by said frame, said legs extending downwardly into said sleeve means and being slideably movable therein, and means attached to said legs for limiting the movement of said handle means between extended and retracted positions.

4. An apparatus in accordance with claim **3** wherein said rack includes a transversely disposed frame member located at the center of the rack in spaced-apart relationship with respect to the bottom of the rack, said holders including a bead portion extending around their upper rims, said bead portions being adapted to rest on said transversely disposed frame member whereby said holders are supported on one side by said transversely disposed frame member and on the opposite side by said side bars.

5. In a dishwashing apparatus, the improvement comprising a silverware rack including frame members defining an open framework, holder means associated with said framework adapted to carry said silverware during operation of said apparatus, each of said holder means including means for attachment to said frame members, said attachment means comprising resilient fingers formed integrally in the side wall of said holders, said fingers being adapted to be spread apart whereby the holders can be releasibly secured to a frame member of said rack, said holders defining concave inner bottom walls whereby the bottom ends of said silverware standing in said holder means will tend to move toward the center of said holders while the upper ends will flare outwardly to improve contact of washing fluids with upper ends, and including vertical openings defined by the side walls of said holders to permit free passage of water through the side walls, and a plurality of bores formed in the bottom wall of said holders to permit free passage of water through the bottom wall.

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