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 [31] **146,670**

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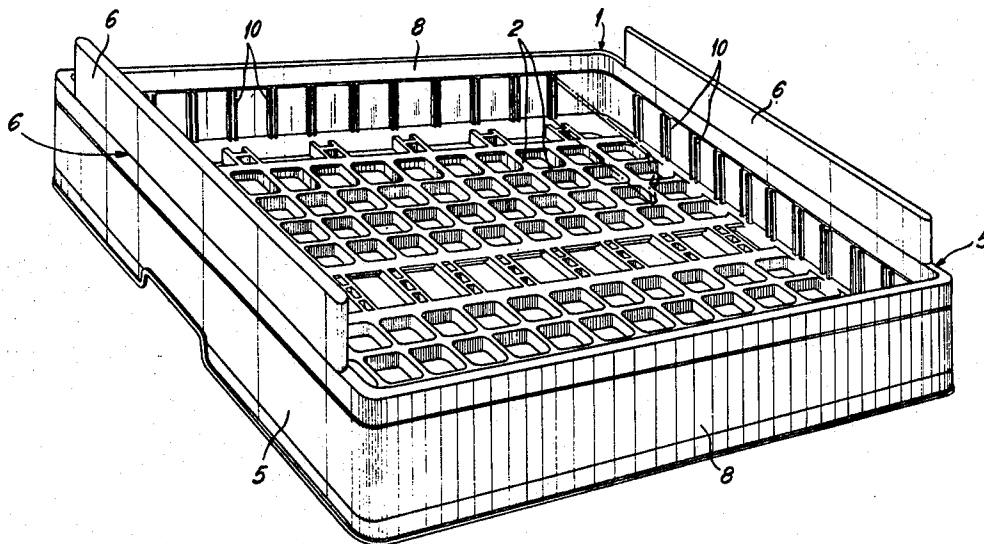
[54] **DISH TRAY**
3 Claims, 7 Drawing Figs.

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 [50] Field of Search..... **211/41,**
126; 108/24, 60, 91

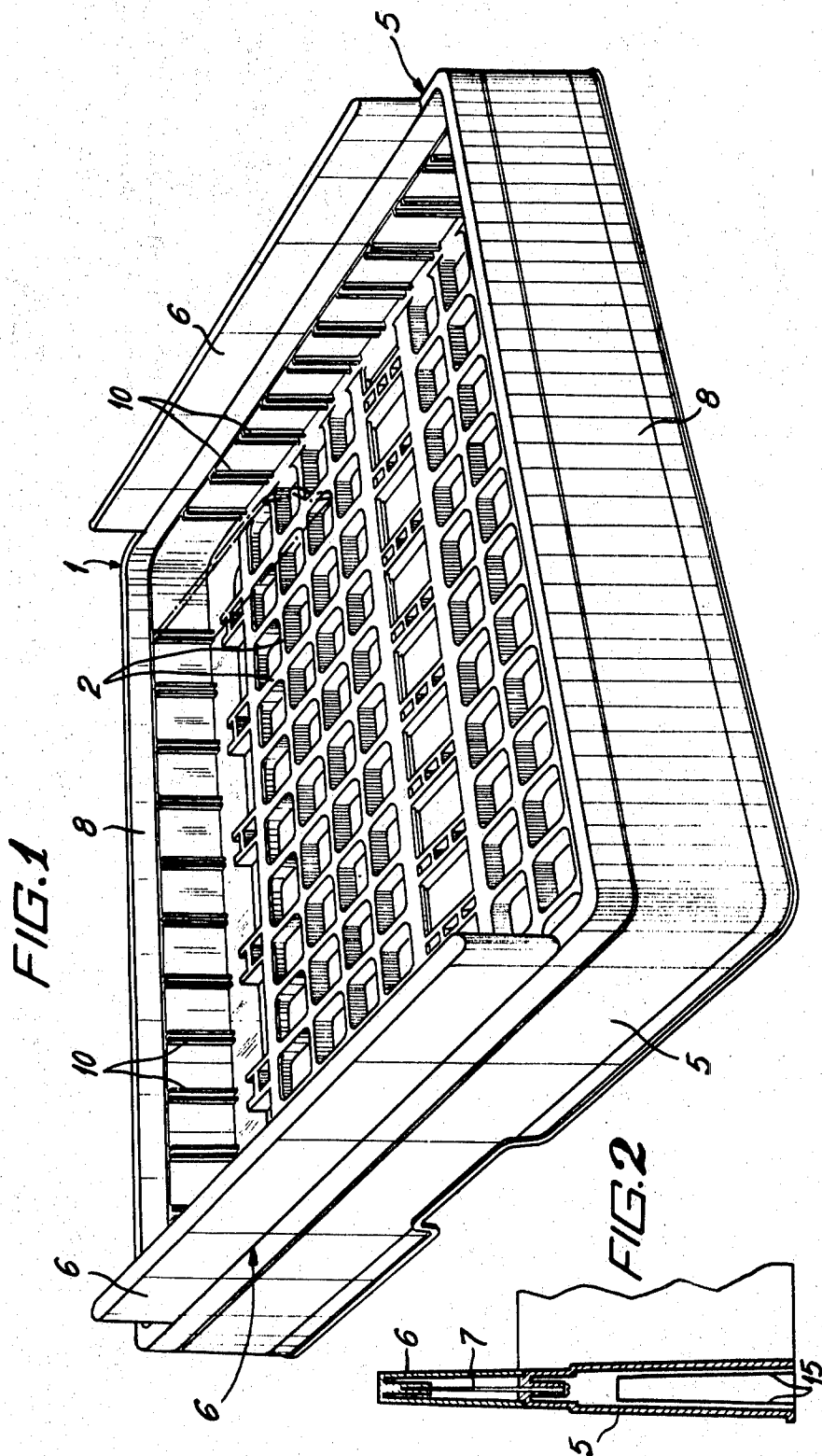
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ABSTRACT: A dish tray having a shape of a parallelepiped pan and an apertured bottom, two sidewalls carrying on their upper edges a pair of projecting upstanding flanges, plates adapted to act as screen means to prevent the splashing of wash water or rinsing water from another treatment station of the dishwasher, and adapted to be disposed normally to the axis along which the tray is driven in the corresponding dish-washing machine.

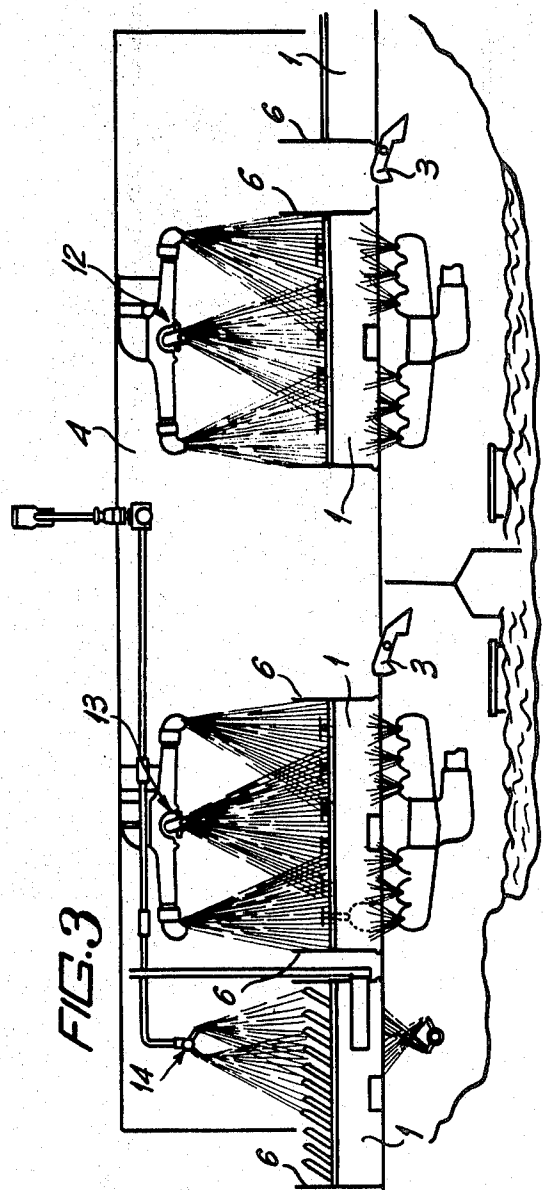
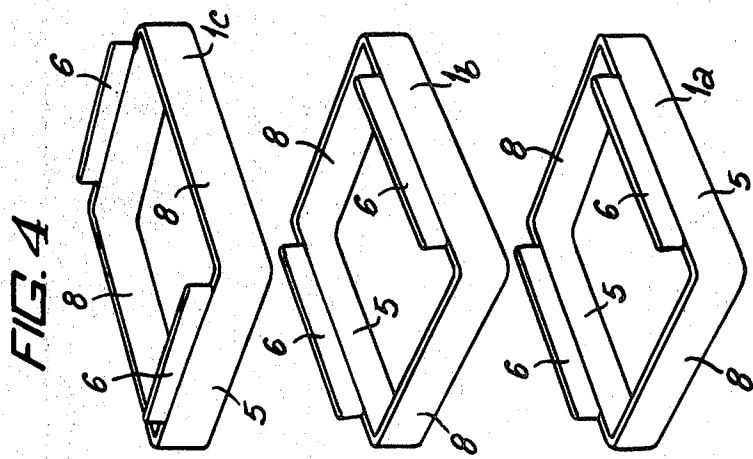
The sidewalls are hollow and open at the bottom to permit stacking of a plurality of superposed trays, for storing up the dishes, by causing flanges of an underlying tray to fit into the corresponding hollow walls of the tray above.



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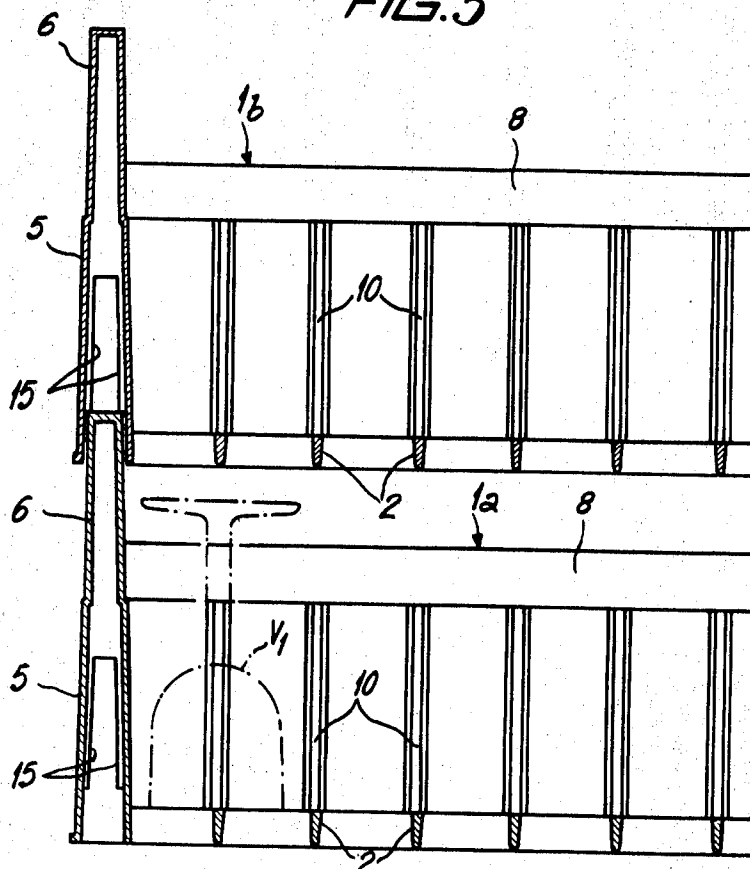


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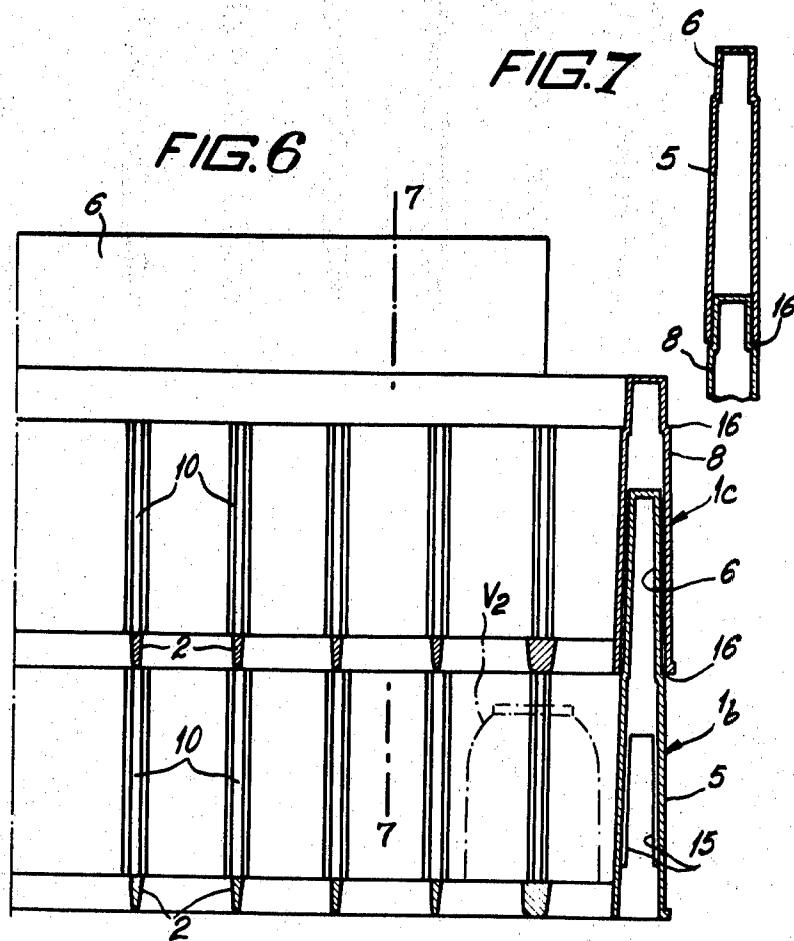


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FIG. 5



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DISH TRAY

The present invention relates to dish trays or racks of the type used for transporting and storing up dishes, flatware and utensils, and also for washing these items in dishwashers.

The present invention more particularly relates to trays or racks adapted for use in automatic dishwashers comprising a series of separate treatment stations corresponding to the various operations contemplated for washing, rinsing and drying the dishes. In this case these stations are disposed serially and mechanical driving means are provided for automatically transferring a plurality of these trays or racks from one treatment station to another.

Machines of this type are advantageous in that they permit of automatically washing a great number of dishes, flatware or other kitchen utensils. However, they are objectionable in that washing solution and/or water is detrimentally splashed from one treatment station to another.

Thus, for example, when the dishes are directed through the prewashing station, the very dirty water present at this station is most likely splashed into the adjacent washing station. For the same reasons, the passage of the dishes through the washing station may cause washing solution therein to be splashed into the next prerinsing station. These projections can even reach the dishes being treated in the final rinsing station.

To avoid this serious inconvenience, it has already been proposed to provide baffle means or curtains on certain known machines which are arranged so as to reduce the water or washing solution from splashing from one treatment station to another. However, these means are not capable of completely eliminating this inconvenience.

Accordingly, it is an object of the present invention to provide a dish tray or rack which eliminates completely the inconvenience set forth hereinabove. Such a tray is also arranged with a view to facilitate the dish handling and storing operations, while reducing the risks of breaking and/or damaging the dishes during these various operations.

It is another object of the present invention to provide a dish tray having substantially the shape of a parallelepiped pan and an apertured bottom. Two of its sidewalls carry on their upper edges a pair of projecting or upstanding flanges, plates or cheeks adapted to act as screen means to prevent the splashing of wash water or rinsing water from another treatment station of the dishwasher, provided of course, that these two projecting flanges are disposed normally to the axis along which the tray is driven in the corresponding dishwashing machine.

Additionally, the various sidewalls of the tray according to the present invention are hollow and open at the bottom to permit the space-saving stacking of a plurality of superposed trays for storing up the dishes, by causing the flanges of the underlying tray to fit into corresponding hollow walls of the next tray above.

According to another feature of the dish tray of the present invention, the cavities formed in two of its sidewalls comprise inner ribs in order to limit the fitting of these walls on the flanges of a similar underlying tray, if the angular arrangement of the two superposed trays is such that these sidewalls overlie the flanges. With this arrangement, the upper tray is kept in a somewhat raised position with respect to the position it could occupy above the same tray underneath, provided that it is placed in a different angular position, i.e. shifted by 90°, with respect thereto.

Thus, the projecting flanges formed on the dish tray of the present invention have a twofold function: firstly, they act as screen or baffle means preventing the splashing of water or lye or soda solution from one treatment station to another, and secondly they afford two different methods of stacking up the dishes contained in these trays, thus reserving the possibility of taking due account of the height of the particular articles contained in the trays.

With the above and other objects in view, which will become apparent in the following detailed description, the present invention will be clearly understood in connection with the accompanying drawings, in which:

FIG. 1 is a perspective view showing a dish tray according to the present invention;

FIG. 2 is a fragmentary sectional view of one of the sidewalls of this tray;

FIG. 3 is a diagrammatic elevational view showing the use of a tray according to the present invention in an automatic dishwasher comprising a plurality of successive treatment stations;

FIG. 4 is a diagrammatic perspective view showing the superposition of a plurality of dish trays according to the present invention, before stacking same;

FIGS. 5 and 6 are fragmentary sectional views illustrating two trays superimposed according to two different stacking methods, and

FIG. 7 is a fragmentary section taken along the lines 7-7 of FIG. 6.

Referring now to the drawings, the dish tray designed in accordance with the present invention comprises a pan 1 of substantially parallelepiped configuration, and having a square horizontal section.

The bottom of the tray comprises a gridlike structure 2 including crossed bars. This bottom is also formed with notches or apertures engageable by drivers 3 equipping an automatic dishwasher 4, for example, of the type shown diagrammatically in FIG. 4.

This tray may advantageously comprise an integral plastic moulding element.

In accordance with the present invention, two opposite sidewalls, for example, walls 5, are each provided along their upper edge with a projecting flange 6. Each flange 6 may be formed integrally with the corresponding sidewall 5, for example, by being moulded integrally with the tray structure. However, these lateral upstanding flanges are preferably detachably secured thereto as shown in FIG. 2. Each flange 6 can be secured in this case by means of screws 7 or any other suitable assembling members.

Besides, the various walls 5 and 8 of the tray are hollow and the resulting inner cavity is open at the bottom. On the other hand, the projecting upstanding flanges 6 are so shaped and dimensioned that they can fit into the two opposite walls of a similar tray. However, as will be explained presently, these projecting flanges afford two different methods of stacking up the dish trays of the present invention.

The flanges also act as screen or baffle means when the dish trays of the present invention are utilized in an automatic dishwasher in order to prevent water or lye solution from splashing from one treatment station to another.

To this end, the trays according to the present invention should be disposed on the transport path of the dishwasher such that their sidewalls 5, which are formed or provided with the projecting flanges 6, extend normally to the direction of travel of the trays.

Thus, these projecting flanges, due to their height, act as screen members extending on either side of each tray and very efficiently prevent the splashing of water or lye solution from one treatment station to another. Besides, the function of these projecting flanges 6 is clearly illustrated in FIG. 4 of the attached drawings.

In fact, in these figures it will be seen that the screen or baffle means thus formed positively prevents any splashing of water from the first washing station 12 towards the second washing station 13. They also prevent similar splashings from this station 13 towards the rinsing station 14.

Under these conditions the dishes, flatware and/or utensils are safely protected against detrimental deposits of lye solution or fat-containing waters after the rinsing operation. The efficiency of the various operations, namely the washing, rinsing and drying ones, is greatly enhanced.

On the other hand the provision of the flanges 6 is attended by a substantial reduction in the consumption of washing products such as soda lye etc., due to the absence of splashing of these products into zones where their presence is not only useless but also detrimental.

Finally, the articles washed in the machine are dried at a higher rate, due to the elimination of water splashing towards the drying zone.

However, as already indicated, the projecting flanges 6 have another very important function. They permit a choice between two different methods of stacking up the trays of the present invention for storing the dishes and like articles. In this respect, it may be emphasized that for reasons of efficiency and economy it is desirable to have the possibility of keeping the dishes and like articles in the trays used for washing them. This storage method is particularly advantageous in the case of glasses, cups, saucers, bowls and substantially all hollow articles, outside soup-tureens, vegetable dishes and soup plates.

It is for this reason that heretofore washed dishes were stored up by superimposing racks or trays. However, it was a frequent occurrence that certain washed articles, such as stemmed glasses, had a height greater than that of the lateral walls of the tray or rack, so that a given tray or rack, instead of bearing directly on the next underlying tray or rack, pressed against the top of washed articles disposed therein. It is obvious that this constituted a serious inconvenience involving notably the risk of breaking or at least of damaging washed articles.

This inconvenience is definitely eliminated by using the tray according to the present invention since the lateral upstanding flanges 6 carried by two opposite sidewalls thereof permit two different stacking methods, namely a first stacking method for washed articles having a normal height, and another stacking method for higher-than-normal washed articles.

To this end, the cavities formed in the two opposite sidewalls 5 of each tray are formed with integral ribs 15 adapted to limit the fitting engagement between the inner surfaces of these walls and the projecting flanges 6 of a similar underlying tray when a plurality of these trays are stacked upon one another.

On the other hand, these ribs are not provided in the cavities formed in the other walls 8 of each tray.

Therefore, if two trays 1a and 1b are superimposed with the same angular orientation, i.e. by superimposing their corresponding sidewalls 5 provided with said projecting flanges 6 (note FIG. 5), the interfitting or mutual engagement of the sidewalls 5 of the upper tray 1b with the projecting flanges 6 of the lower tray 1a is positively limited.

In fact, the inner ribs 15 will bear on the top of these flanges. Thus, the bottom 2 of the upper tray 1b is kept at a certain relative spacing above the upper plane of tray 1a, i.e., the plane containing the upper edge of its walls 8. With this stacking method, articles having a certain height above the normal height such as stemmed glasses V_1 , can be disposed without inconvenience in the lower tray 1a.

On the other hand, if only articles of relatively reduced or normal height, such as standard glasses V_2 , are placed in the trays these can be superimposed without any relative spacing. To this end, a 90° angular shift must be provided between the

two superposed trays as in the case of the pair of trays 1b and 1c shown in FIG. 5 and also in FIG. 7.

The projecting upstanding flanges 6 of sidewalls 5 of the lower tray 1b will then fit completely into the normal walls 8 of the upper tray 1c. However, the interfitting engagement between this tray 1c and the underlying tray is limited by a shoulder 16 disposed shortly beneath the upper edge of the walls of each tray.

Thus, in addition to their function of screen or baffle means when washing the dishes, the projecting upstanding flanges 6 permit two different tray stacking methods, according to the height of the articles disposed therein. On the other hand, in case the flanges were detachably mounted, as illustrated in FIG. 2, it is possible to provide a plurality of sets of the flanges, these sets differing by their vertical dimensions.

Due to these various advantageous features, a similar type of tray or rack can be adapted to different service conditions. In fact, for this purpose, the end flanges can be either modified or eliminated at will.

While I have disclosed several embodiments of the present invention, it is to be understood that these embodiments are given by example only and not in a limiting sense.

I claim:

1. A dish tray for transporting and storing up any dishes, flatware and utensils, and for washing same in a dishwasher, comprising:

a pan substantially parallelepiped in configuration, formed with sidewalls and an apertured bottom;

a pair of projecting flanges on the upper edges of two opposite sidewalls of said pan, said projecting flanges being adapted to act as baffle means to prevent the splashing of wash water from another treatment station of a dishwasher; and

said sidewalls being hollow and open at the bottom and complementary to the top of said projecting flanges in order to permit the fitting of said sidewalls on the pair of projecting flanges of a similar tray when a plurality of said trays are stacked up in superposed relationship.

2. A dish tray, as set forth in claim 1, wherein:

said bottom is square;

inner ribs disposed in the hollows of two sidewalls to limit the fitting thereof on the flanges of a similar underlying tray in the event of an angular disposition of said two superimposed trays with respect to each other such that said ribbed sidewalls overlie said projecting flanges, so as to keep the upper tray at a higher level relative to the level relative to the level it would have above said lower tray if it were superimposed thereon but in a relative angular position shifted by 90°.

3. The dish tray, as set forth in claim 1 wherein:

said projecting flanges disposed above two sidewalls of said tray are detachably secured thereto; and

a plurality of sets of such flanges having different heights are provided.