

Nov. 16, 1965

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3,217,890

DISH RACK

Filed May 29, 1963

3 Sheets-Sheet 1

FIG. 1

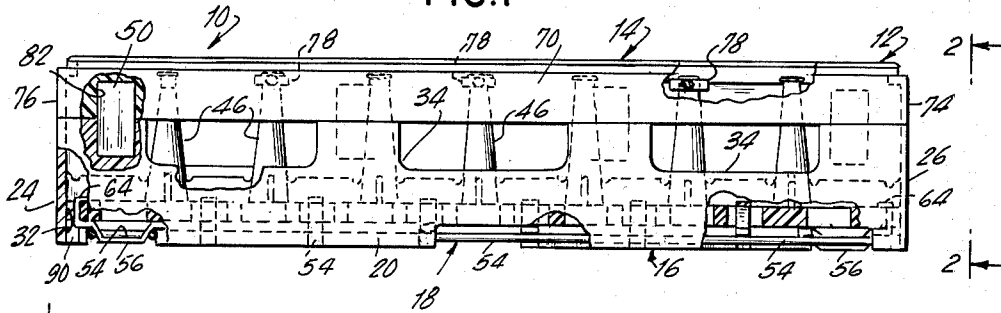


FIG. 2

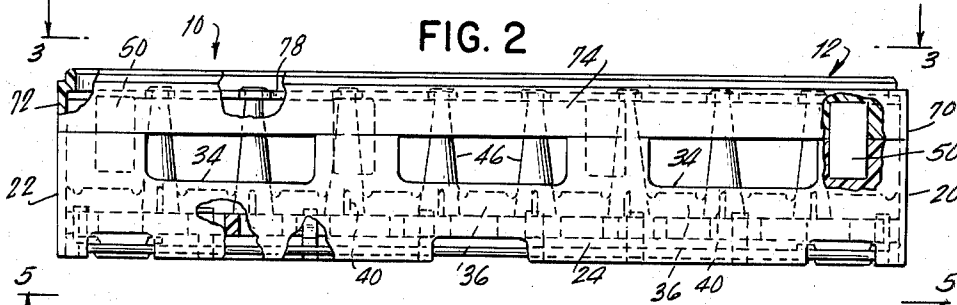
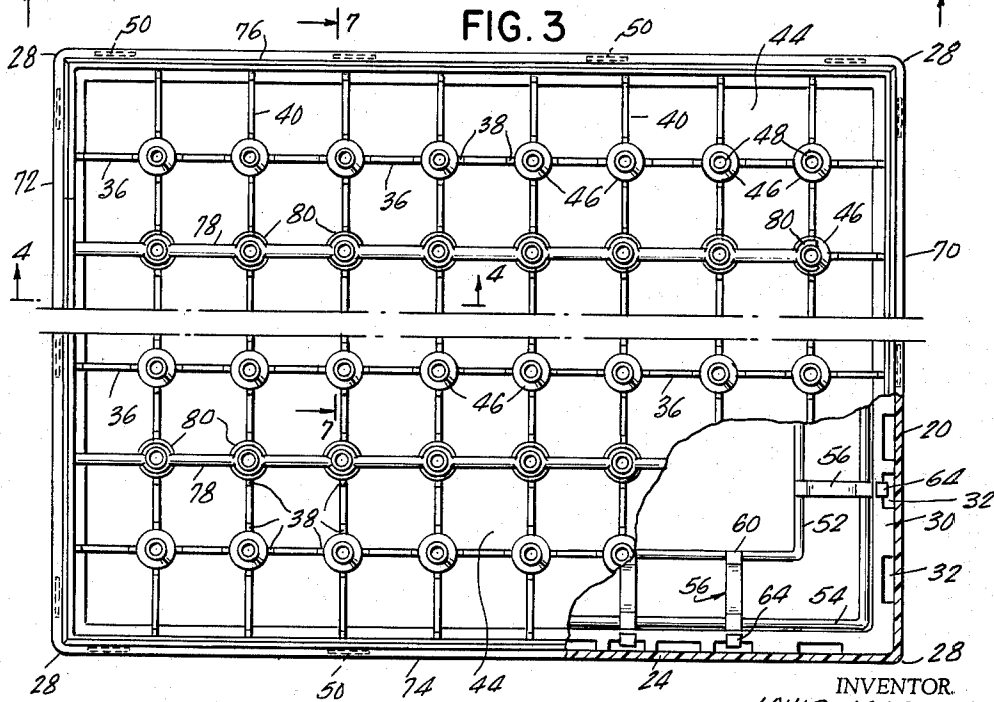


FIG. 3



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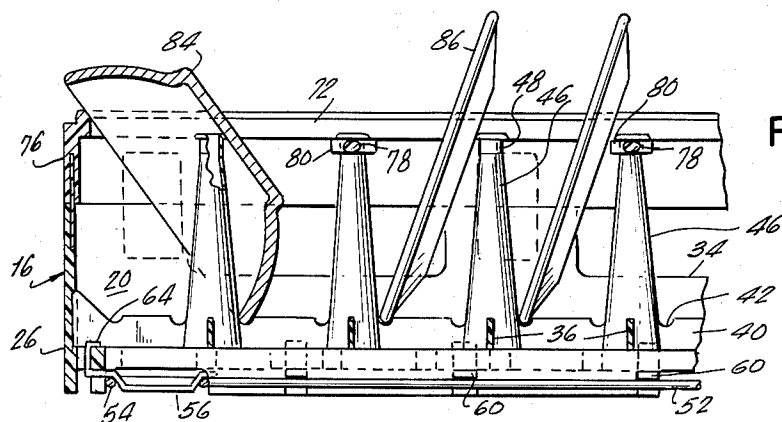


FIG. 7

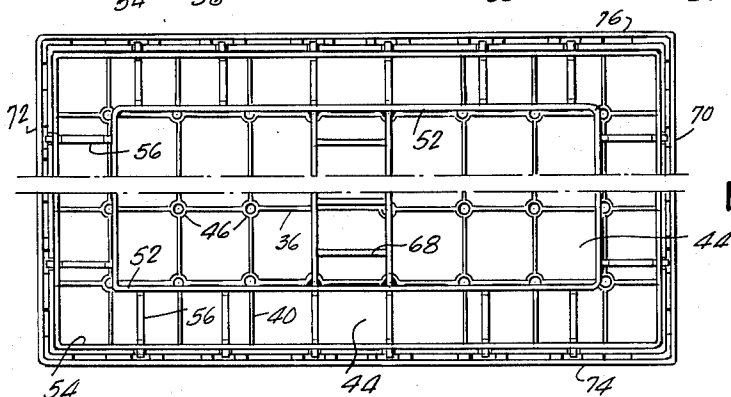


FIG. 8

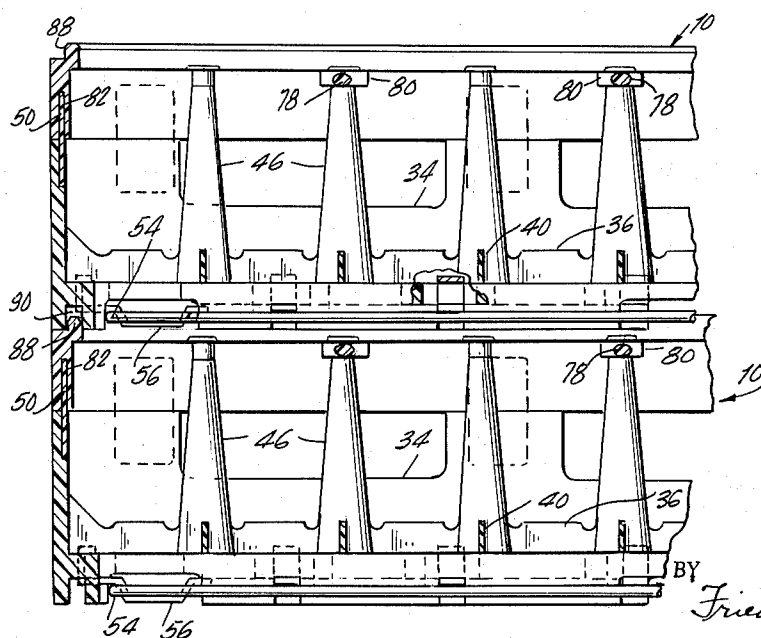


FIG. 9

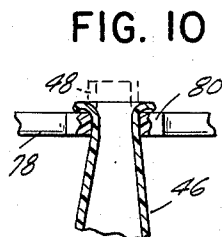


FIG. 10

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## DISH RACK

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12 Claims. (Cl. 211-41)

The present invention relates generally to racks or trays and in particular to racks or trays of the type employed for holding a group of articles such as dishes, cutlery and glassware for use in connection with washing, rinsing and drying machines.

It is an object of the present invention to provide a rack or tray construction adapted for use in standard washing, rinsing and drying machines and in which those portions of the tray which are engaged by the articles carried thereby is formed of a molded plastic.

It is another object of the present invention to provide a tray construction of the described type wherein there is provided a two part housing molded from a suitable plastic and provided with a metallic or similar indexing frame means for use in guiding the tray through the washing, rinsing and drying machine.

It is a further object of the present invention to provide a relatively lightweight tray construction formed essentially of a molded plastic wherein the tray assemblies may be stacked vertically for greater portability and more compact storage.

It is a still further object of the present invention to provide a substantially plastic tray construction which is of simple construction, inexpensive to manufacture and which has a minimum number of parts and is relatively easy to use and efficient in operation.

Other and further objects and advantages of the present invention will be readily apparent to those skilled in the art from a consideration of the following description taken in connection with the accompanying drawings.

In the drawings, which illustrate the best mode presently contemplated for carrying out the invention.

FIGURE 1 is an end elevation view of a tray pursuant to the present invention with portions broken away for purposes of illustration;

FIGURE 2 is a side elevation view of a tray pursuant to the present invention with portions broken away for purposes of illustration;

FIGURE 3 is a top plan view taken on the line 3-3 of FIGURE 2 with parts being broken away for purposes of illustration;

FIGURE 4 is a fragmentary exploded view on an enlarged scale taken on the line 4-4 of FIGURE 3;

FIGURE 5 is a fragmentary bottom plan view on an enlarged scale taken on the line 5-5 of FIGURE 2;

FIGURE 6 is a fragmentary detail view taken on the line 6-6 of FIGURE 5;

FIGURE 6A is a fragmentary detail view and illustrates the assembly of the metallic portion of the plastic portion of the tray assembly;

FIGURE 7 is a fragmentary detail view taken on the line 7-7 of FIGURE 3 on an enlarged scale and illustrates dishes disposed within the tray;

FIGURE 8 is a bottom plan view of the assembled tray and illustrates typical index frame members or inserts used for guiding the tray through an automatic washing machine;

FIGURE 9 is a fragmentary view through a pair of trays which are in stacked relation; and

FIGURE 10 is a fragmentary detail view which illustrates the securement of a portion of the lower plastic part of the tray housing to the upper plastic part thereof.

Referring now to the drawings in detail, there is shown a tray assembly 10 pursuant to the present invention.

The tray assembly 10 comprises a two part housing 12 having an upper housing part 14 and a lower housing part 16. Said housing parts are each preferably molded as a single unit from a suitable plastic such as polypropylene and the lower or bottom housing part 16 is provided with an open metallic indexing framework 18 at the bottom thereof.

The lower housing part 16 is essentially an open molded frame of essentially rectangular construction having the integral opposing end walls 20 and 22 and the integral opposing side walls 24 and 26 the end and side walls merge into each other to form the four corners 28. At the bottom of said end and side walls there is formed a continuous inwardly directed flange 30 in which there is defined a plurality of apertures or slots 32. Along the upper marginal edge thereof said end and side walls are provided with open recessed portions 34. Extending between the opposing end walls 20 and 22 thereof the lower housing part 16 is provided with the transverse integral baffles 36 which are provided with notches 38. Similarly, as best seen in FIGURE 7, transverse baffles 40 are provided between the opposing side walls 24 and 26 and the baffles 40 are also provided with notches 42. It will be readily apparent that the baffles 36 and 40 are in intersecting relation so as to define substantially rectangular pockets 44 as best seen in FIGURE 3. At the intersections or cross points of the baffles 36 and 40 there is formed preferably hollow conical fingers 46 which taper upwardly and inwardly to a free open end 48. It will be understood that the end walls, the side walls, the intersecting baffles and the cones of the lower housing part 16 are all molded in integral relation so as to form a single molded plastic part. It will be noted that the notches 42 are disposed in spaced relation around the circumference of the base of the conical fingers 46. The arrangement therefore permits the tray or rack to be used as an "all purpose" device particularly if the upper housing part 14 or the transversely extending ribs 78 thereof are removed. Under such conditions dishes may be disposed in all directions about the cones and the tray may be used for almost any type of dishes, glasses, cups or similar utensils. At the inner surfaces thereof adjacent the upper marginal ends thereof the end walls 20-22 and the side walls 24-26 of the lower housing part 16 are provided with upwardly extending strips or tongues 50 which may be integral therewith or which may be suitably secured thereto for a purpose which is hereinafter described.

The lower housing part is provided with the previously mentioned metallic index framework 18 which serves as a guide for moving the tray through automatic washing machines or the like. It will be understood that the tray need not be provided with any index framework except when used in connection with equipment requiring the same. When thus required, the index frames may be used singly or in combination. As here shown, the metallic guide indexing framework 18 comprises an inner rectangular wire member 52 and an outer rectangular wire member 54. Said rectangular wire members are secured together in the disposition thereof illustrated in FIGURE 5 by means of metallic straps 56 which extend therebetween and which are suitably secured thereto as by welding or the like. The straps 56 are also utilized to secure the assembled rectangular wire members 52 and 54 to the lower housing part 16. In this connection, it will be noted that the previously identified flange 30 on the inner surface of the four walls of the lower housing part 16 is provided with a depending skirt 58. The skirt 58 is provided with apertures 61 which are adjacent to the apertures 32 defined in the flange. As best shown in FIGURE 4 each strap 56 is bent down-

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wardly between the parallel wires 52 and 54 so as to provide additional rigidity therebetween. The strip is bent upwardly as at 60 at its free end where it is welded to the inner wire 52. The strip is also bent upwardly as at 62 where it is welded to the outer wire 54. As best shown in FIGURE 6, each strip 56 extends from its bend 62 through an aperture or recess 61 in the skirt 58 as previously described and after passing through the recess 61 the strip is bent upwardly substantially into a right angle so as to extend through the associated aperture 32 in the flange 30 as best shown in FIGURE 6A with the free end 64 of the strip projecting upwardly through the aperture 32. The free end 64 is then bent inwardly as indicated by the arrow 66 in FIGURE 6A so as to overlie the flange 30 as best shown in FIGURE 3. The end 64 of the strip may be preformed with all of the bends heretofore described and thus inserted into position through apertures 32. Under such circumstances the preformed strip will snap into position by reason of the resilience of the material from which it is formed. The metallic grid index framework 18 is provided substantially centrally thereof within the inner rectangular wire member 52 with a lattice or ladder-like portion 68 which functions as a guide means for moving the tray assembly through a suitable type washing machine or the like.

The upper housing part 14 is also an open framework rectangular member having the opposing end walls 70 and 72 and the opposing side walls 74 and 76 all of which are in integral relation being similarly molded of a plastic material such as polypropylene. Between the opposing end walls 70 and 72 thereof, the upper housing part 14 is provided with a plurality of transversely extending ribs 78 which are provided with apertures 80 defined therein. It will be understood that the ribs 78 are integral with the walls of the upper housing part, the entire assembly being formed by a molding operation. The end and side walls of the upper housing part are also provided with slots or recesses 82 which are open at the lower marginal edges of the walls and which extend upwardly into the walls.

In assembling the upper housing part to the lower housing part, it will be understood that the apertures 80 are of complementary configuration with and are adapted to receive the free ends 48 of the cones 46. The recesses 82 are adapted to receive the projecting strips or tongues 50. In order to effect the securement of the upper housing part to the lower housing part, the housing parts are assembled so that the strips or tongues 50 are received in the recesses 82 and free upper end portions 48 of the cones 46 which are aligned with the ribs 78 are received in the apertures 80 in said ribs. The straps or tongues 50 are secured in the recesses 82 by any suitable means, for example, by riveting, welding or heat sealing, and the free ends 48 of the cones are secured in the aligned apertures 80 by upsetting the open free end portions 48 over the portions of the ribs 78 which define the associated apertures 80 as best shown in FIGURE 10. In this manner the upper housing part is secured in assembled relation to the lower housing part which in turn is provided with the metallic gridwork index assembly 18.

As best seen in FIGURE 3, the overlying ribs 78 are in registry with certain of the transverse baffles 36 so as not to impede entry into or access to the pockets 44 through the upper housing part. The open pockets 44 are adapted to receive various articles which may be placed therein for washing and drying purposes such as the cups 84 and the plates 86 as best shown in FIGURE 7. It will be noted that the circumferential edges of the plates are conveniently engaged in the recesses or notches 42 in the baffles which define the associated pocket. The notch arrangement prevents a plate or the like, when disposed therein, from slipping out of position. This slippage would permit the plates to be flipped

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against each other with consequent damage. The notches thus serve to effectively locate and maintain plates or the like in the same position as when initially inserted. The plates are thus maintained in uniform relation with each other and accidental contact between adjacent plates is prevented thereby eliminating the possibility of their chipping or breaking. The angular inclination of the plates remain constant. This remains true even when the ribs 78 are eliminated. Moreover, cups may be conveniently mounted on the previously described cones 46 in inverted relation as shown in FIGURE 7 so that the cups 84 face the direction of the bottom of the tray. It will be understood that as a result of the open top, bottom and sides of the tray assembly 10 water may be sprayed upwardly from the bottom of the tray assembly as well as downwardly from the top thereof and air circulation is promoted through the wall openings 34 and the bottom slots to efficiently wash, rinse and dry the contents of the tray assembly.

The tray assemblies 10 may be conveniently stacked in assembled relation as shown in FIGURE 9 for transportation and storage, when empty. When so stacked the trays occupy a minimum of space. For this purpose the upper housing part is provided at the upper end thereof with a continuous peripheral inset 88 as best shown in FIGURE 9. The inset at peripheral edge 88 is adapted to be received within the recess 90 defined along the bottom edge of the lower housing part by the flange 30, the inner skirt 58 and the bottom of the walls which bound the lower housing part. As best seen in FIGURE 9, when the tray assemblies are in stacked relation the peripheral inset 88 is received within the recess 90.

From the foregoing, it will be apparent that there has been illustrated and described a highly novel tray assembly which is formed of a relatively few number of parts constituted by a two part housing assembly having an integral upper part and an integral lower part molded from a suitable plastic. The lower part is provided with a preferably metallic guide index framework when appropriate for facilitating the movement of the assembly through a washing machine or the like. The assembly is open at all sides thereof as well as at the top and bottom thereof so as to permit for the subjection of the contents thereof to sprays of water as well as to sprays of steam for cleaning and air drying the contents. It will be understood that various changes and modifications may be made in the tray assembly of the present invention without however departing from the inventive concept thereof as set forth in the appended claims.

I claim:

1. A tray construction comprising a pair of molded housing parts defining a housing assembly, a lower one of said housing parts having opposing side walls and opposing end walls provided with openings defined therein, a first series of spaced parallel baffles extending between said side walls, a second series of spaced parallel baffles extending between said end walls in intersecting relation with said first series of baffles, integral formations extending upwardly from the points of intersection of said baffles, an upper one of said housing parts having opposing side walls and opposing end walls in marginal peripheral abutment with respective associated walls of said lower housing part.

2. A tray construction comprising a pair of molded housing parts defining a housing assembly, a lower one of said housing parts having opposing side walls and opposing end walls provided with openings defined therein, a first series of spaced parallel baffles extending between said side walls, a second series of spaced parallel baffles extending between said end walls in intersecting relation with said first series of baffles, integral formations extending upwardly from the points of intersection of said baffles, an upper one of said housing parts having opposing side walls and opposing end walls in marginal peripheral

eral abutment with respective associated walls of said lower housing part, and an open grid frame formation extending between the walls of said upper housing part and secured to the free ends of predetermined ones of said integral formations.

3. A tray construction as in claim 2, said first and second series of spaced baffles defining article receiving compartments, and said integral formations defining upward projections from said compartments for engagement with articles received therein.

4. A tray construction as in claim 3, said baffles having free marginal edges in which are defined detent notches for engagement with said articles.

5. A tray construction comprising a pair of molded housing parts defining a housing assembly, a lower one of said housing parts having opposing side walls and opposing end walls provided with openings defined therein, a first series of spaced parallel baffles extending between said side walls, a second series of spaced parallel baffles extending between said end walls in intersecting relation with said first series of baffles, integral formations extending upwardly from the points of intersection of said baffles, an upper one of said housing parts having opposing side walls and opposing end walls in marginal peripheral abutment with respective associated walls of said lower housing part, and an open grid frame formation extending between the walls of said upper housing part and secured to the free ends of predetermined ones of said integral formations, and an indexing framework secured adjacent at the bottom of said lower housing part and defining the bottom of said housing assembly.

6. A tray construction as in claim 2, and complementary mating formations defined in said upper and lower housing parts for stacking housing assemblies in superposed relation.

7. A tray construction comprising a pair of molded housing parts defining a housing assembly, a lower one of said housing parts having opposing side walls and opposing end walls provided with openings defined therein, a first series of spaced parallel baffles extending between said side walls, a second series of spaced parallel baffles extending between said end walls in intersecting relation with said first series of baffles, integral formations extending upwardly from the points of intersection of said baffles, an upper one of said housing parts having opposing side walls and opposing end walls in marginal peripheral abutment with respective associated walls of said lower housing part, and an open grid frame formation extending between the walls of said upper housing part and secured to the free ends of predetermined ones of said integral formations, said open grid frame formation of said upper housing part comprising a plurality of laterally spaced parallel ribs extending between opposing walls of said upper housing part and in registry with predetermined baffles of said lower housing part, said ribs having apertures defined therein and the projections from said predetermined baffles being secured at their free ends in associated rib apertures, said projections being hollow conical formations having their free ends extending through and upset over the respective rib apertures.

8. A tray construction comprising a pair of molded housing parts defining a housing assembly, a lower one of said housing parts having opposing side walls and opposing end walls provided with openings defined therein, a first series of spaced parallel baffles extending between said side walls, a second series of spaced parallel baffles extending between said end walls in intersecting relation with said first series of baffles, integral formations extending upwardly from the points of intersection of said baffles, an upper one of said housing parts having opposing side walls and opposing end walls in marginal peripheral abutment with respective associated walls of said lower housing part, and an open grid frame formation

extending between the walls of said upper housing part and secured to the free ends of predetermined ones of said integral formations, said open grid frame formation of said upper housing part comprising a plurality of laterally spaced parallel ribs extending between opposing walls of said upper housing part and in registry with predetermined baffles of said lower housing part, said ribs having apertures defined therein and the projections from said predetermined baffles being secured at their free ends in associated rib apertures.

9. A tray construction comprising a pair of molded housing parts defining a housing assembly, a lower one of said housing parts having opposing side walls and opposing end walls provided with openings defined therein, a first series of spaced parallel baffles extending between said side walls, a second series of spaced parallel baffles extending between said end walls in intersecting relation with said first series of baffles, integral formations extending upwardly from the points of intersection of said baffles, an upper one of said housing parts having opposing side walls and opposing end walls in marginal peripheral abutment with respective associated walls of said lower housing part, and an open grid frame formation extending between the walls of said upper housing part and secured to the free ends of predetermined ones of said integral formations, the walls of said lower housing part having projections extending upwardly therefrom and the walls of said upper housing part having open end slots defined therein in which said projections are secured.

10. A tray construction comprising a pair of molded housing parts defining a housing assembly, a lower one of said housing parts having opposing side walls and opposing end walls provided with openings defined therein, a first series of spaced parallel baffles extending between said side walls, a second series of spaced parallel baffles extending between said end walls in intersecting relation with said first series of baffles, integral formations extending upwardly from the points of intersection of said baffles, an upper one of said housing parts having opposing side walls and opposing end walls in marginal peripheral abutment with respective associated walls of said lower housing part, and an open grid frame formation extending between the walls of said upper housing part and secured to the free ends of predetermined ones of said integral formations, and an indexing framework secured adjacent at the bottom of said lower housing part and defining the bottom of said housing assembly, said indexing framework having inner and outer rectangular laterally spaced ribs, and metallic straps extending between said ribs and secured to said lower housing part.

11. A tray construction as in claim 10, said lower housing part having an inwardly extending flange at the walls thereof, apertures defined in said flange, and said straps extending through said flange apertures and being secured to said flange.

12. A tray construction as in claim 10, and a metallic guide ladder provided on said inner rectangular rib.

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