United States Patent [19]

Roush et al.

[11] **3,794,208**

[45] **Feb. 26, 1974**

[54] **TRAY**

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[73] Assignee: **Phillips Petroleum Company,** Bartlesville, Okla.

[22] Filed: **May 26, 1972**

[21] Appl. No.: **257,230**

[52] **U.S. Cl.** ..... **220/66,** 220/97 R

[51] **Int. Cl.** **B65d 7/42**

[58] **Field of Search**.....220/66, 97 R, 21, 102, 220/DIG. 15, 72, 83, 84; D9/177, 219, 242, 248

[56] **References Cited**

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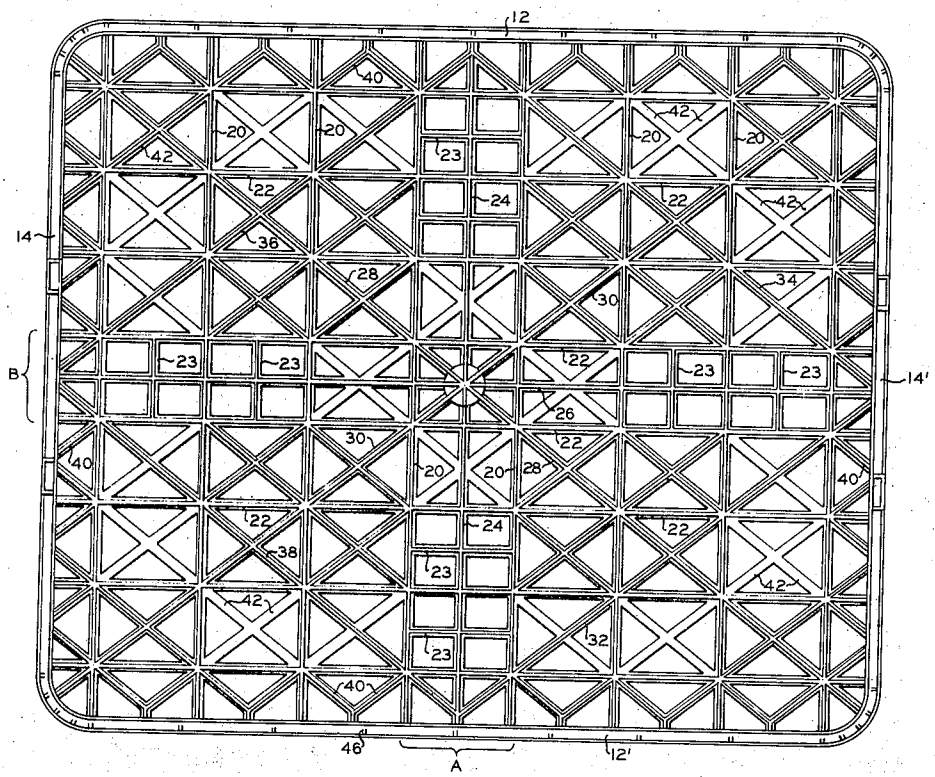
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Primary Examiner—William T. Dixson, Jr.
Assistant Examiner—Steven M. Pollard

[57] **ABSTRACT**

A tray comprising upstanding side and end walls and a gridwork bottom disposed between the lower edge portions of said walls. Each of said walls preferably comprises an essentially vertical lower section and an outwardly sloping upper section. Said gridwork bottom comprises a plurality of intersecting struts which form rows of rectangles generally parallel with said walls. Reinforcing strut members are provided in intersecting centrally disposed rows of said rectangles. A transverse strut member in at least one of said centrally disposed rows of rectangles provides a location for a denesting device to hook onto the gridwork bottom and remove a tray from a stack of nested trays.

17 Claims, 7 Drawing Figures



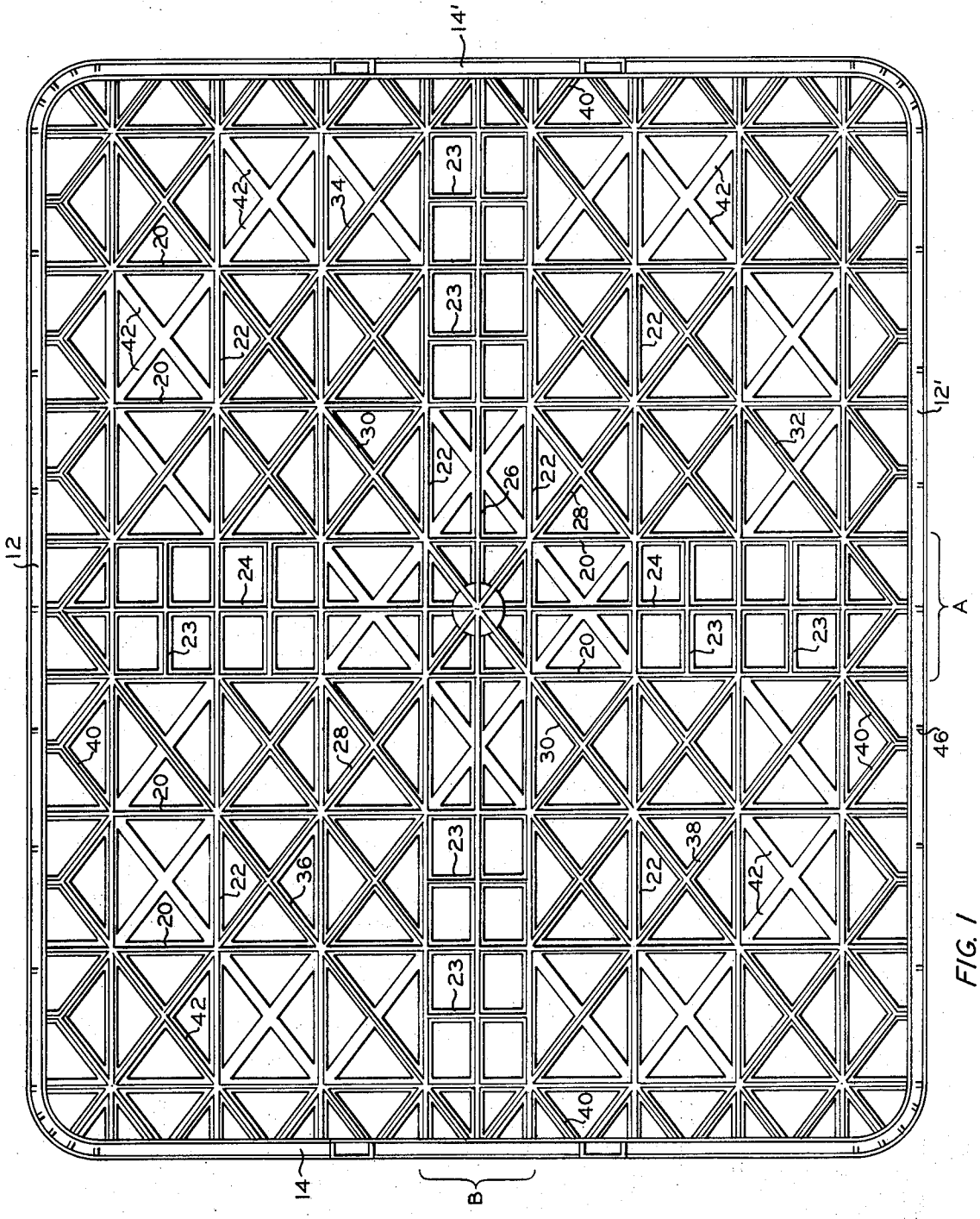


FIG. 1

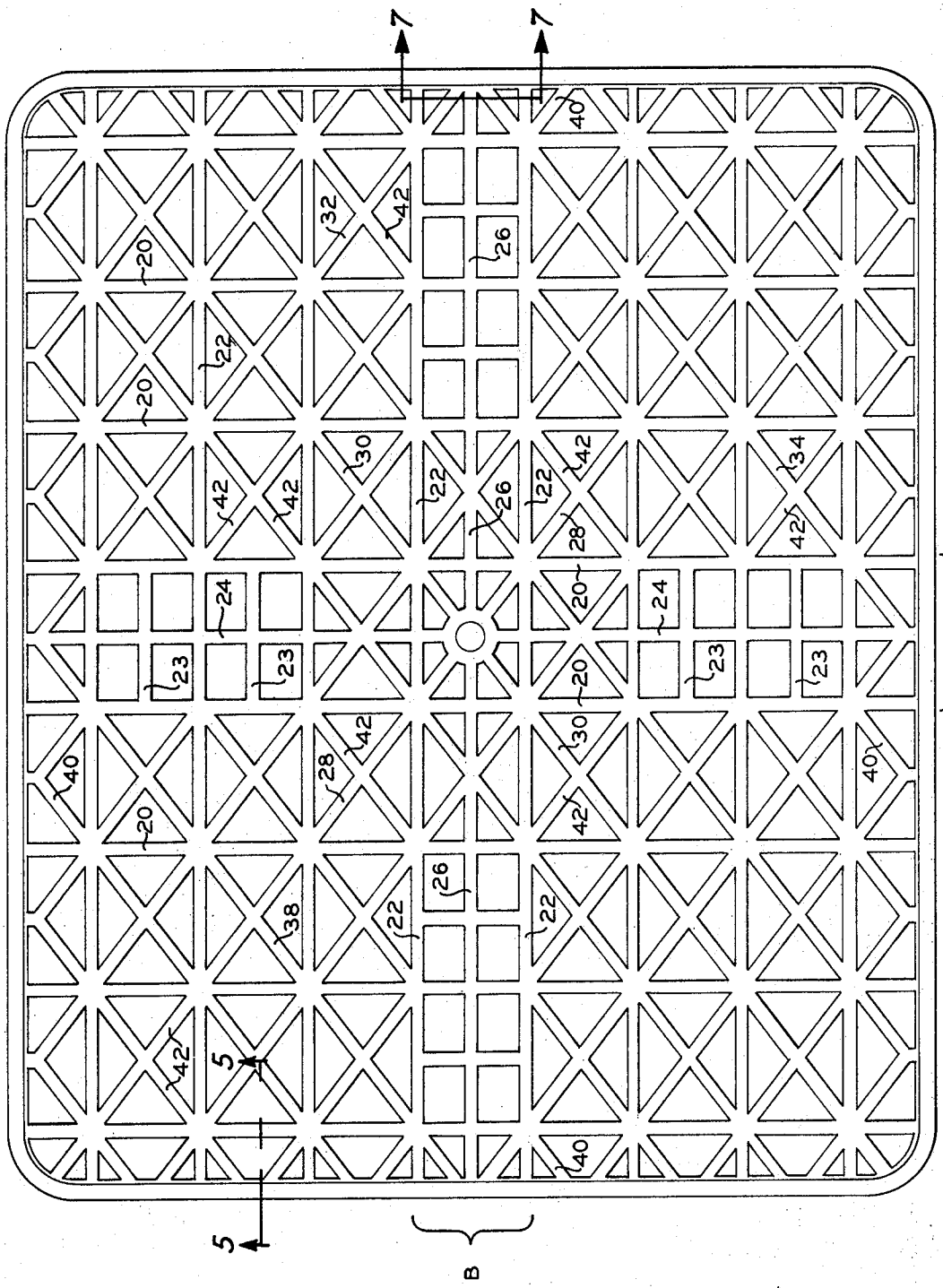


FIG. 2

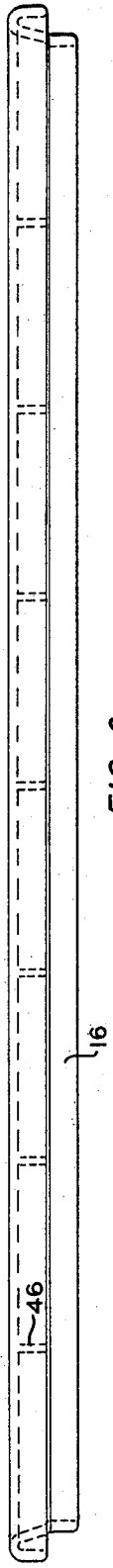


FIG. 3

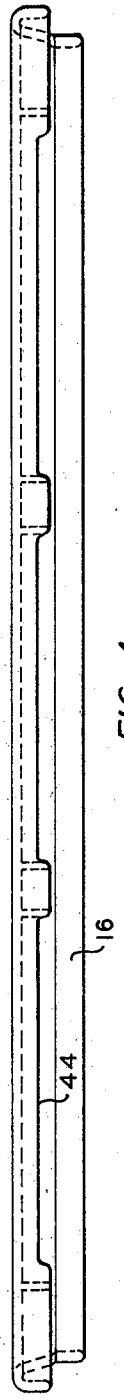


FIG. 4

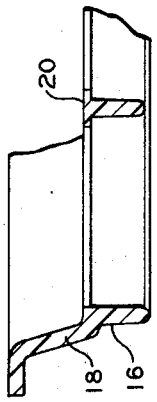


FIG. 6

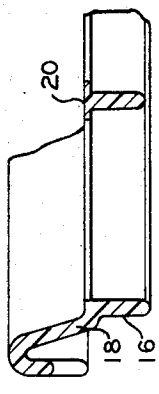


FIG. 5

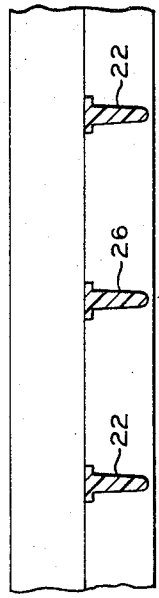


FIG. 7

TRAY

Trays of various kinds have been widely employed in moving commodities, e.g., foodstuffs, from one location to another. It is highly desirable that said trays be of a durable, rigid, lightweight structure, be easy to handle in use, be easy to store when not in use, be of a simple and inexpensive construction which is easy to manufacture, and be economical in cost, regardless of size. Few, if any, trays meeting all of the above requirements have been provided by the prior art.

The trays disclosed and claimed in U. S. Pat. No. 3,494,502, issued Feb. 10, 1970, to Roush et al, solve the above-described problem by providing a tray which meets all the above requirements. The trays of said patent are provided with a gridwork bottom which is comprised of intersecting struts, preferably generally T-shaped, and an outwardly extending turned-down flange which extends around the periphery of the tray. The trays of the present invention in various embodiments include structural changes in said gridwork bottom and/or the side walls which cooperate to impart greater rigidity, greater strength, greater durability, and other advantages to the tray, both during manufacture and subsequent use thereof. Said structural changes include reinforcing strut members which are provided in intersecting centrally disposed rows of rectangles in said gridwork bottom. A transverse strut member provided in at least one of said centrally disposed rows of rectangles provides a location for a pickup device to hook onto the gridwork bottom and move a tray, e.g., from a stack of nested trays. Thus, the trays of the present invention are an improvement over the trays of said patent.

Thus, according to the invention, there is provided in a tray comprising, a pair of upstanding opposed first walls, a pair of upstanding opposed second transverse walls connected to said first walls along the upstanding edges thereof, and a gridwork bottom connected to the lower portions of said first walls and said second walls to provide a generally rectangular open top structure, the improvement of a gridwork bottom comprising: a first plurality of strut members and a second plurality of strut members which intersect said first strut members to form a first plurality of rectangles arranged in rows generally parallel with said second walls, and a second plurality of rectangles arranged in rows generally parallel with said first walls; said first plurality of rectangles including a first generally central row of said rectangles extending across said tray between said first walls and generally centrally disposed with respect to said second pair of walls; a first reinforcing strut member extending longitudinally across said first central row of rectangles with the distances between said reinforcing strut and the strut members generally parallel and adjacent thereto which form two sides of said rectangles being less than the distances between said side struts and the adjacent strut members of said plurality of strut members; said second plurality of rectangles including a second generally central row of said rectangles extending across said tray between said second walls, generally centrally disposed with respect to said first pair of walls and intersecting said first central row of rectangles at a generally centrally disposed rectangle common to both of said central rows of rectangles; a second reinforcing strut member extending longitudinally across said second central row of rectangles, with the distances between said reinforcing strut and the strut members generally parallel and adjacent thereto which form two sides of said rectangles being less than the distances between said side struts and the adjacent strut members of said plurality of strut members; and a transverse strut member disposed generally perpendicular to and intersecting one of said first and second reinforcing strut members in, and extending across, at least one rectangle, other than said common rectangle, in at least one of (a) said first central row of rectangles and (b) said second central row of rectangles.

FIG. 1 is a bottom plan view illustrating features of the improved tray of the invention and showing in detail a preferred gridwork bottom structure.

FIG. 2 is a top plan view of the tray of FIG. 1.

FIG. 3 is a side elevation view of the tray of FIGS. 1 and 2.

FIG. 4 is an end elevation view of the trays of FIGS. 1 and 2.

FIG. 5 is a cross section taken along the lines 5—5 of FIG. 2.

FIG. 6 is a cross section view illustrating a modification of the rim of the tray.

FIG. 7 is a cross section taken along the lines 7—7 of FIG. 2.

Referring now to the drawings, wherein like reference numerals are employed to denote like elements, the invention will be more fully explained. In a presently preferred embodiment, the trays of the invention are generally rectangular in shape. Thus, in FIGS. 1 and 2, there is shown a tray comprising an upstanding wall extending around the periphery of the tray, a bottom connected to the lower section of said wall to provide an open top structure, and an outwardly extending flange connected to the upper edge of said wall and extending around the periphery of the tray. In a preferred embodiment, said wall comprises a pair of upstanding opposed first or side walls **12** and **12'**, and a pair of opposed second or end walls **14** and **14'** which are disposed transverse to said first walls and are connected to like sections of said first walls along the upstanding edges thereof. Each of said walls comprises an essentially vertical lower section **16** and an outwardly sloping upper section **18** connected to said lower section. See FIGS. **5** and **6**. An outwardly extending flange is connected to the upper edge of said upper wall section and extends around the periphery of the tray. Said flange can be shaped as in FIG. **6**, or preferably can be turned downwardly as in FIG. **5**. A gridwork bottom is connected to the lower sections of said first walls and the lower sections of said second walls. Said gridwork bottom is comprised of a first plurality of strut members **20** which are spaced apart from each other, extend between said pair of first walls **12** and **12'**, and are disposed generally parallel to said second walls **14** and **14'**. A second plurality of strut members **22** are spaced apart from each other, extend between said second walls **14** and **14'**, and are disposed generally parallel to said first walls **12** and **12'**. Said second plurality of strut members intersect the strut members of said first plurality of strut members at substantially **90** degree angles to form a first plurality of rectangles which are arranged in rows generally parallel with said second walls, and a second plurality of rectangles arranged in rows generally parallel with said first walls.

Said first plurality of rectangles includes a first generally central row of rectangles A which extends across

said tray between said first walls **12** and **12'** and which is generally centrally disposed with respect to said second walls **14** and **14'**. A first reinforcing strut member **24** extends longitudinally across and, preferably, generally bisects said first central row of rectangles, with the distances between said reinforcing strut **24** and the strut members **20** generally parallel and adjacent thereto which form two sides of said rectangles being less than the distances between said side struts and the adjacent strut members **20** of said first plurality of strut members. Said second plurality of rectangles includes a second generally central row of rectangles B extending across said tray between said second walls **14** and **14'** and which is generally centrally disposed with respect to said first walls **12** and **12'**. Said second central row of rectangles B intersects said first central row of rectangles at a generally centrally disposed rectangle which is common to both of said central rows of rectangles. A second reinforcing strut member **26** extends longitudinally across and, preferably, generally bisects said second central row of rectangles B, with the distances between said reinforcing strut **26** and the strut members **22** generally parallel and adjacent thereto which form two sides of said rectangles being less than the distances between said side struts and the adjacent strut members **22** of said second plurality of strut members. Preferably, the distances between one of said reinforcing struts **24** or **26**, and the strut members **20** or **22** adjacent thereto, will be in the range of from 0.25 to 0.75 times the distance between two adjacent strut members **20** or two strut members **22**.

A transverse strut member **23** is disposed generally perpendicular to and intersects one of said first reinforcing strut member **24** and said second reinforcing strut member **26** in, and extends across, at least one rectangle, other than said common rectangle, in at least one of said first central row of rectangles A and said second central row of rectangles B. Preferably, a said transverse strut member **23** is so provided in at least one rectangle of each of said central rows of rectangles A and B. Still more preferably, a said transverse strut member **23** is provided in at least one rectangle of said first central row of rectangles A on each side of said common rectangle; and a said transverse strut member **23** is also provided in at least one rectangle of said second central row of rectangles B on each side of said common rectangle. A particularly presently preferred arrangement is to provide one of said transverse strut members **23** in each of at least two adjacent rectangles in said first central row of rectangles A, on each side of said common rectangle, with said adjacent rectangles being spaced from said common rectangle by at least one rectangle; and to also provide one of said transverse strut members **23** in each of at least two adjacent rectangles in said second central row of rectangles B, on each side of said common rectangle, with said adjacent rectangles being spaced from said common rectangle by at least one rectangle. However, it is within the scope of the invention to provide one of said transverse strut members **23** in each of the rectangles, on both sides of said common rectangle, in each of said central rows of rectangles A and B. Preferably, where provided as described above, each of said transverse strut members **23** will generally bisect the rectangle in which it is provided. It is presently preferred that a said transverse strut member will not be provided in the outermost rectangles which are adjacent the tray walls in said central rows of rectangles A and B.

Each of said transverse strut members **23** and the space surrounding same, when provided as described above, provides a location for the hook(s) of a moving mechanical pickup device to "drop into" the gridwork bottom, hook onto said strut member **23**, and move a tray from a stack of trays to a conveyor belt or other desired location. It has been found that the cooperation between said transverse strut members **23** and mechanical pickup devices is more positive and reliable than the cooperation between strut members which extend diagonally across the rectangles, as shown elsewhere in the drawings. Any suitable mechanical pickup device can be employed with the trays of the invention, and the pickup device, per se, forms no part of the invention. One suitable type of mechanical pickup device is manufactured by Baker Perkins, Inc., Saginaw, Michigan.

In one preferred embodiment of the invention, a pair of generally diagonally extending reinforcing struts **28** and **30** are also provided. Said strut **28** extends in a direction, preferably diagonal, across the tray between one pair of diagonally opposite corners thereof, and said strut **30** extends in a direction, preferably diagonal, across the tray between the other pair of diagonally opposite corners thereof.

In another preferred embodiment of the invention, third, fourth, fifth, and sixth reinforcing struts **32, 34, 36,** and **38** are also provided. Said third reinforcing strut **32** extends generally diagonally across a first quadrant of the tray in a direction between one end portion of said first reinforcing strut **24** and one end portion of said second reinforcing strut **26.** Preferably, one end of said third reinforcing strut **32** can be connected to said one end portion of said first reinforcing strut **24** adjacent the outer end thereof, and the other end of said third reinforcing strut **32** can be connected to said one end portion of said second reinforcing strut **26** adjacent the outer end thereof. Said fourth reinforcing strut **34** extends generally diagonally across a second quadrant of the tray in a direction between the other end portion of said first reinforcing strut **24** and said one end portion of said second reinforcing strut **26.** Preferably, one end of said fourth reinforcing strut **34** can be connected to said other end portion of said first reinforcing strut **24** adjacent the outer end thereof, and the other end of said fourth reinforcing strut **34** can be connected to said one end portion of said second reinforcing strut **26** adjacent the outer end thereof. A fifth reinforcing strut **36** extends generally diagonally across a third quadrant of said tray in a direction between said other end portion of said first reinforcing strut **24** and the other end portion of said second reinforcing strut **26.** Preferably, one end of said fifth reinforcing strut **36** can be connected to said other end portion of said first reinforcing strut **24** adjacent the outer end thereof, and the other end of said fifth reinforcing strut **36** can be connected to said other end portion of said second reinforcing strut **26** adjacent the outer end thereof. A sixth reinforcing strut **38** extends generally diagonally across a fourth quadrant of said tray in a direction between said one end portion of said first reinforcing strut **24** and said other end portion of said second reinforcing strut **26.** Preferably, one end of said sixth reinforcing strut **38** can be connected to said one end portion of said first reinforcing strut **24** adjacent

the outer end thereof, and the other end of said sixth reinforcing strut **38** can be connected to said other end portion of said second reinforcing strut **26** adjacent the outer end thereof. If desired, such as when the mold is inserted to reduce the size of the outer rows of rectangles as discussed below, the ends of said third, fourth, fifth, and sixth reinforcing struts **32, 34, 36,** and **38** can be connected to the adjacent tray walls.

If desired, said gridwork bottom can be coved upwardly a small distance, e.g., 1/16 to ⅛ inch, from the outer edge toward the center of the tray. This will provide increased accommodation for heavier loads, i.e., without causing the bottom to sag.

Preferably, in the outer rows of rectangles adjacent the tray walls, there is provided, in each outer rectangle, a generally Y-shaped reinforcing strut **40.** The leg of the Y in said Y-shaped struts is connected to the adjacent wall of the tray. In the outer rows of rectangles adjacent walls **12** and **12'**, the arms of the Y are connected to the adjacent strut members **20** of said first plurality of struts and/or the adjacent strut member **22** of said second plurality of strut members. In the outer rows of rectangles adjacent walls **14** and **14'**, the arms of the Y are connected to the adjacent strut members **22** of said second plurality of struts and/or the adjacent strut member **20** of said first plurality of struts. In the rectangles at the ends of said central rows of rectangles A and B, said third, fourth, fifth, and sixth reinforcing struts become the arms of the Y, and said first and second reinforcing strut members become the leg of the Y.

The structure provided in said outer rows of rectangles provides a convenient and economical means of adjusting the dimensions of the trays of the invention to meet the requirements of different customers. Thus, for example, the mold can be inserted, by methods known in the art, to change the size of said outer rectangles and shorten, lengthen, or even omit, the leg of the Y-shaped reinforcing strut member. It is also within the scope of the invention to omit a portion of the arms of the Y when the leg of the Y is omitted. Any other suitable type of reinforcing struts can be employed in said outer rows of rectangles.

The above-describd strut members and reinforcing struts are load-bearing members, i.e., they bear the load imposed on the tray. The reinforcing struts increase the stiffness, stability, and load capacity of the tray. The term "load capacity" refers to the ability or capacity of the tray to bear or support a given load without objectionable sag or other deformation such as warping or twisting. Said first and second reinforcing struts **24** and **26,** by extending across the central portion of the tray in two directions, impart sufficient increased stiffness, stability, and load capacity to the tray to permit markedly reducing the weight of the tray. In accordance with the invention, this reduction in weight is accomplished by eliminating the diagonally intersecting strut members in the individual rectangles formed by said first plurality and said second plurality of strut memers and, if desired, replacing them with relatively lightweight, ribbon-like support members **42.** Thus, in a tray intended for relatively light duty, e.g., relatively light loads, the strut members **20** of said first plurality of strut members, the strut members **22** of said second plurality of strut members, said transverse strut members **23,** and said first and second reinforcing struts **24** and **26** can be the sole load-bearing members in the rectangles formed by said intersecting first and second plurality of strut members. In such instances, the primary purpose of said support members **42,** when provided, is to prevent soft articles such as bread or pastry from sagging between a pair of load-bearing members, e.g., strut members **20** or **22.** Preferably, said support members **42** are flat or ribbon-like as illustrated in the drawings, but any other suitable shape or profile is within the scope of the invention.

As the intended duty or load capacity of the tray increases, it is desirable to provide additional reinforcing strut members such as **28** and **30** as additional load-bearing members. In the presently most preferred all-purpose tray of the invention, the reinforcing strut members **32, 34, 36,** and **38** are also provided as additional load-bearing members.

Said strut members **20** and **22,** said transverse strut members **23,** and said reinforcing strut members **24, 26, 28, 30, 32, 34,** and **36** are preferably generally T-shaped. However, it is within the scope of the invention for said members to have other shapes such as generally Z-shaped, or a channel shape generally like an inverted U. It is preferred that said members present a generally flat surface to the open top of the tray.

Preferably, the upper sections **18** of said opposed first walls **12** and **12'** and said opposed second walls **14** and **14'** slope outwardly away from each other from bottom to top. The extent to which the trays will nest one within another will be determined by the thickness and the degree of slope of said side and end walls. The taper or slope of the walls should be sufficient that the trays are easily withdrawn from nested position. Usually a slope within the range of from about 5° to about 25° from the vertical will be sufficient.

Said flange extends peripherally around the upper edge of the tray. If desired, when said flange is turned down as in FIG. **5,** the turned-down portion of said flange can be provided with a plurality of spaced apart scallops or recesses **44** therein (see FIG. **4**) which extend upwardly from the lower edge of the turned-down portion of the flange. Said recesses can also be provided in the flanges on the side walls, if desired. Said recesses provide convenient places for insertion of fingers, either hand or mechanical, to remove the trays from nested position, or to pick up the tray and transport it from one location to another. Preferably, a plurality of spaced apart reinforcing ribs **46** are disposed between and connected to the turned-down portion of said flange and the side wall adjacent thereto.

The corners of the trays of the invention are preferably arcuate. However, it is within the scope of the invention for said corners to have other shapes, e.g., essentially square.

Trays fabricated in accordance with the invention possess a number of advantages over trays of the prior art. The trays of the invention are of a durable, lightweight structure. This is an important consideration in the use of said trays. For example, said trays are particularly well adapted for transporting bakery goods, both within the baking shop and the delivery truck. The bakery goods can be placed in the trays and the trays then placed in racks which can be easily pushed around the shop. The trays can also be readily loaded onto racks in a delivery truck. The light weight of the trays is a distinct advantage in that handling of the trays is not only less tiring for personnel handling same but also reduces the load on trucks. Thus, lighter weight trucks can be employed with obvious savings in operating expenses.

The relatively broad top surface of the preferred T-shaped struts provides a surface across which the bakery goods can be easily moved as by sliding and provides a surface which essentially eliminates the marking of soft goods, such as rolls, etc. The transverse strut members **23** provide excellent locations for mechanical pickup devices to hook onto a tray and move same, thus increasing the utility of the trays.

The trays of the invention can be fabricated in any suitable manner known to the art. Injection molding, for example, is one presently preferred method for fabricating said trays. Said trays can be fabricated from any suitable material. High density polyethylenes are especially desirable materials from which to fabricate said trays. The high density polyethylene and other polyolefins prepared by the methods disclosed and claimed by J. P. Hogan et al. in U. S. Pat. No. 2,825,721, issued Mar. 4, 1958, are one group of presently preferred materials. Said trays can also be fabricated from butadiene-styrene copolymers, and other plastic materials. If desired, a reinforcing fibrous material, such as asbestos or glass fibers, can be incorporated in the plastic material. While the various plastics are presently preferred for the manufacture of the trays, it is within the scope of the invention to fabricate said trays from other materials, e.g., lightweight metals such as aluminum, reinforcing pulp materials, etc.

As an example, one model of a tray fabricated in accordance with the invention had a length of about 27.5 inches, a width of about 21.75 inches, the largest, rectangles formed in the gridwork bottom were about 3.25 × 2.5 inches, the top surface of the T-shaped struts was about 0.25 inch wide, and the side walls were about 1 inch in height. The remainder of the elements of the tray were generally proportional in size. These dimensions are given by way of example only, are not to be construed as limiting on the invention in any way, and all can be varied within the scope of the invention.

While the invention has been described with particular reference to rectangular-shaped trays, the invention is not so limited. It is within the scope of the invention for said trays to have other shapes, e.g., circular or elliptical.

Herein and in the claims, the word "rectangular" has been employed generically to include four-sided structures which are generally square and four-sided structures wherein one pair of sides is longer than the other pair of sides.

While certain embodiments of the invention have been described for illustrative purposes, the invention is not limited thereto. Various other modifications or embodiments of the invention will be apparent to those skilled in the art in view of this disclosure. Such modifications or embodiments are within the spirit and scope of the disclosure.

We claim:

1. In a tray comprising, a pair of upstanding opposed first walls, a pair of upstanding opposed second transverse walls connected to said first walls along the upstanding edges thereof, and a gridwork bottom connected to the lower portions of said first walls and said second walls to provide a generally rectangular open top structure, the improvement of a gridwork bottom comprising:

a first plurality of strut members and a second plurality of strut members which intersect said first strut members to form a first plurality of rectangles arranged in rows generally parallel with said second walls, and a second plurality of rectangles arranged in rows generally parallel with said first walls;

said first plurality of rectangles including a first generally central row of said rectangles extending across said tray between said first walls and generally centrally disposed with respect to said second pair of walls;

a first reinforcing strut member extending longitudinally across said first central row of rectangles with the distances between said reinforcing strut and the strut members generally parallel and adjacent thereto which form two sides of said rectangles being less than the distances between said side struts and the adjacent strut members of said plurality of strut members;

said second plurality of rectangles including a second generally central row of said rectangles extending across said tray between said second walls, generally centrally disposed with respect to said first pair of walls and intersecting said first central row of rectangles at a generally centrally disposed rectangle common to both of said central rows of rectangles;

a second reinforcing strut member extending longitudinally across said second central row of rectangles, with the distances between said reinforcing strut and the strut members generally parallel and adjacent thereto which form two sides of said rectangles being less than the distances between said side struts and the adjacent strut members of said plurality of strut members; and

a transverse strut member disposed generally perpendicular to and intersecting one of said first and second reinforcing strut members in, and extending across, at least one rectangle, other than said common rectangle, in at least one of (a) said first central row of rectangles and (b) said second central row of rectangles.

2. A tray according to claim **1** wherein:

the distances between said first reinforcing strut member and said strut members generally parallel and adjacent thereto is within the range of from about 0.25 to about 0.75 times the distance between the adjacent pair of strut members in said first plurality of strut members; and

the distance between said second reinforcing strut member and said strut members generally parallel and adjacent thereto is within the range of from about 0.25 to about 0.75 times the distance between the adjacent pair of strut members in said second plurality of strut members.

3. A tray according to claim **1** wherein each of said transverse strut members generally bisects the rectangle across which it extends.

4. A tray according to claim **1** wherein a said transverse strut member is provided in at least one rectangle of each of said central rows of rectangles.

5. A tray according to claim **1** wherein:

a said transverse strut member is provided in at least one rectangle of said first central row of rectangles on each side of said common rectangle;

a said transverse strut member is provided in at least one rectangle of said second central row of rectangles on each side of said common rectangle.

6. A tray according to claim **1** wherein:

one of said transverse strut members is provided in each of at least two adjacent rectangles in said first central row of rectangles, on each side of said common rectangle, which are spaced from said common rectangle by at least one rectangle; and

one of said transverse strut members is provided in each of at least two adjacent rectangles in said second central row of rectangles, on each side of said common rectangle, which are spaced from said common rectangle by at least one rectangle.

7. A tray according to claim **5**, further comprising:

a pair of diagonally extending reinforcing struts, one extending generally diagonally across said tray between one pair of diagonally opposite corners thereof, and the other extending generally diagonally across said tray between the other pair of diagonally opposite corners thereof.

8. A tray according to claim **7** wherein: the strut members of said first plurality of strut members, the strut members of said second plurality of strut members, said transverse strut members, said first reinforcing strut members, said second reinforcing strut member, and said diagonally extending reinforcing strut members are the sole load-bearing members in the rectangles formed by said intersecting first and second pluralities of strut members.

9. A tray according to claim **7**, further comprising:

a third reinforcing strut extending generally diagonally across a first quadrant of said tray in a direction between one end portion of said first reinforcing strut and one end portion of said second reinforcing strut;

a fourth reinforcing strut extending generally diagonally across a second quadrant of said tray in a direction between the other end portion of said first reinforcing strut and said one end portion of said second reinforcing strut;

a fifth reinforcing strut extending generally diagonally across a third quadrant of said tray in a direction between said other end portion of said first reinforcing strut and the other end portion of said second reinforcing strut; and

a sixth reinforcing strut extending generally diagonally across a fourth quadrant of said tray in a direction between said one end portion of said first reinforcing strut and said other end portion of said second reinforcing strut.

10. A tray according to claim **9** wherein: the strut members of said first plurality of strut members, the strut members of said second plurality of strut members, said transverse strut members; said first reinforcing strut member, said second reinforcing strut member, said diagonally extending reinforcing strut members, and said third, fourth, fifth, and sixth reinforcing struts are the sole load-bearing members in the rectangles formed by said intersecting first and second pluralities of strut members.

11. A tray according to claim **9** wherein:

one end of said third reinforcing strut is connected to said one end portion of said first reinforcing strut adjacent the outer end thereof, and the other end of said third reinforcing strut is connected to said one end portion of said second reinforcing strut adjacent the outer end thereof;

one end of said fourth reinforcing strut is connected to said other end portion of said first reinforcing strut adjacent the outer end thereof, and the other end of said fourth reinforcing strut is connected to said one end portion of said second reinforcing strut adjacent the other end thereof;

one end of said fifth reinforcing strut is connected to said other end portion of said first reinforcing strut adjacent the outer end thereof, and the other end of said fifth reinforcing strut is connected to said other end portion of said second reinforcing strut adjacent the outer end thereof; and

one end of said sixth reinforcing strut is connected to said one end portion of said first reinforcing strut adjacent the outer end thereof, and the other end of said sixth reinforcing strut is connected to said other end portion of said second reinforcing strut adjacent the outer end thereof.

12. A tray according to claim **9** wherein:

an outwardly extending turned-down flange is connected to the upper edges of said walls and extends around the periphery of said tray;

a plurality of reinforcing ribs are provided between the turned-down portion of said flange and the tray wall adjacent thereto; and

each of said strut members and each of said reinforcing strut members is generally T-shaped, and the crossbar of said T is disposed facing the open top of the tray.

13. A tray according to claim **11** wherein:

an outwardly extending turned-down flange is connected to the upper edges of said walls and extends around the periphery of said tray;

a plurality of reinforcing ribs are provided between the turned-down portion of said flange and the tray wall adjacent thereto; and

each of said strut members and each of said reinforcing strut members is generally T-shaped, and the crossbar of said T is disposed facing the open top of the tray.

14. A tray according to claim **9** wherein:

each said first wall and each said second wall comprises an essentially vertical lower section and an outwardly sloping upper section connected to said lower section;

like sections of said second walls are connected to like sections of said first walls along the upstanding edges thereof;

said gridwork bottom is connected to said lower sections of said first walls and said lower sections of said second walls; and

an outwardly extending flange is connected to the upper edges of said upper wall sections and extends around the periphery of said tray.

15. A tray according to claim **14** wherein:

said outwardly extending flange is a turned-down flange;

a plurality of reinforcing ribs are provided between the turned-down portion of said flange and the tray wall adjacent thereto; and

each of said strut members and each of said reinforcing strut members is generally T-shaped, and the crossbar of said T is disposed facing the open top of said tray.

16. A tray according to claim **6**, further comprising:

a pair of diagonally extending reinforcing struts, on extending generally diagonally across said tray between one pair of diagonally opposite corners thereof, and the other extending generally diago-

nally across said tray between the other pair of diagonally opposite corners thereof;

a third reinforcing strut extending generally diagonally across a first quadrant of said tray in a direction between one end portion of said first reinforcing strut and one end portion of said second reinforcing strut;

a fourth reinforcing strut extending generally diagonally across a second quadrant of said tray in a direction between the other end portion of said first reinforcing strut and said one end portion of said second reinforcing strut;

a fifth reinforcing strut extending generally diagonally across a third quadrant of said tray in a direction between said other end portion of said first reinforcing strut and the other end portion of said second reinforcing strut;

a sixth reinforcing strut extending generally diagonally across a fourth quadrant of said tray in a direction between said one end portion of said first reinforcing strut and said other end portion of said second reinforcing strut;

an outwardly extending turned-down flange is connected to the upper edges of said walls and extends around the periphery of said tray;

a plurality of reinforcing ribs are provided between the turned-down portion of said flange and the tray wall adjacent thereto; and

each of said strut members and each of said reinforcing strut members is generally T-shaped, and the crossbar of said T is disposed facing the open top of the tray.

17. In a tray comprising, a pair of upstanding opposed first walls, a pair of upstanding opposed second transverse walls, and a gridwork bottom connected to the lower portions of said first walls and said second walls to provide a generally rectangular open top structure, the improvement of a gridwork bottom comprising:

a plurality of strut members and a second plurality of strut members which intersect said first strut members to form a plurality of rectangles arranged in rows generally parallel with said second walls, and a second plurality of rectangles arranged in rows generally parallel with said first walls;

said first plurality of rectangles including a first generally central row of said rectangles extending across said tray between said first walls and generally centrally disposed with respect to said second pair of walls;

a first reinforcing strut member extending longitudinally across said first central row of rectangles with the distances between said reinforcing strut and the strut members generally parallel and adjacent thereto which form two sides of said rectangles being less than the distances between said side struts and the adjacent strut members of said plurality of strut members;

said second plurality of rectangles including a second generally central row of said rectangles extending across said tray between said second walls, generally centrally disposed with respect to said first pair of walls and intersecting said first central row of rectangles at a generally centrally disposed rectangle common to both of said central rows of rectangles;

a second reinforcing strut member extending longitudinally across said second central row of rectangles, with the distances between said reinforcing strut and the strut members generally parallel and adjacent thereto which form two sides of said rectangles being less than the distances between said side struts and the adjacent strut members of said plurality of strut members; and

a transverse strut member disposed generally perpendicular to and intersecting one of said first and second reinforcing strut members in, and extending across, at least one rectangle, other than said common rectangle, in at least one of (a) said first central row of rectangles and (b) said second central row of rectangles.

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,794,208 Dated February 26, 1974

Inventor(s) Gale S. Roush, et al.

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

column 7, line 67, after "of" insert -- rows of --
column 8, line 1, delete "in rows"
column 8, line 2, after "of" insert -- rows of --
column 8, line 3, delete "in rows"
column 8, line 4, after "of" insert -- rows of --
column 8, line 5, after "of" delete "said"
column 8, line 17, after "of" insert -- rows of --
column 8, line 63, after "rectangle;" insert -- and --
column 10, line 3, "other" should be -- outer --
column 10, line 64, "on" should be -- one --
column 11, line 40, after "a", first occurrence, insert -- first --
column 12, line 1, after "a" insert -- first --
column 12, line 1, after "of" insert -- rows of --
column 12, lines 1 and 2, after "arranged" delete -- in rows" --
column 12, line 3, after "of" insert -- rows of --
column 12, line 3, after "arranged" delete -- in rows --
column 12, line 5, after "of" insert -- in rows --
column 12, line 6, after "of" delete "said"
column 12, line 18, after "of" insert -- rows of --
column 12, line 19, after "of" delete "said".

Signed and sealed this 1st day of October 1974.

(SEAL)
Attest:

McCOY M. GIBSON JR.
Attesting Officer

C. MARSHALL DANN
Commissioner of Patents

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