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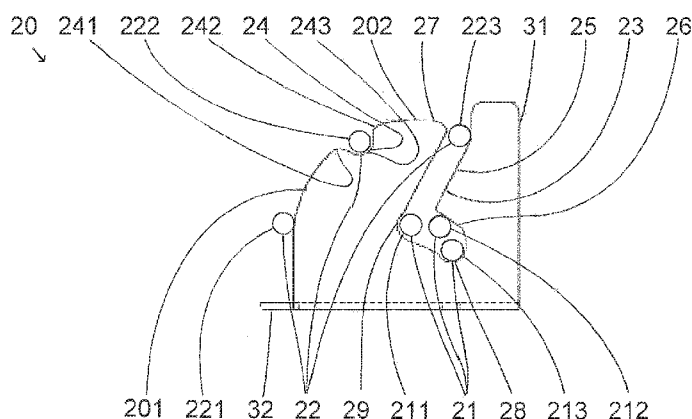


Fig. 2

(57) Abstract: A refrigerated food preparation table that includes a food item storage pan with a lid that is allowed to fully close and is held in a partially open position and in a fully open position and hinge brackets or apparatuses for holding a lid in a partially opened position and a fully opened position that include a slot, a surface, and an indentation that each engage pins on the lid. In various embodiments, the slot receives one such pin, the surface guides another pin on the lid as the lid is opened from a fully closed position to the partially opened position, the indentation receives the second pin when the lid is in the partially opened position, and the slot contains the first pin and the second pin when the lid is fully open. The food preparation table can be used to prepare pizza, for example.



REFRIGERATED FOOD PREPARATION TABLE AND HINGE BRACKET FOR HOLDING LID PARTIALLY OR FULLY OPEN

RELATED PATENT APPLICATIONS

5 **[0001]** This patent application claims priority to United States Patent Application Serial Number 15/063,557, filed March 8, 2016 contents of which are incorporated herein by reference.

FIELD OF THE INVENTION

10 **[0002]** Various embodiments of this invention relate to refrigerated food preparation tables that have a food item storage pan having a hinged lid thereon and to apparatuses for holding a lid in a partially open position and in a fully open position.

BACKGROUND OF THE INVENTION

15 **[0003]** Refrigerated food preparation tables have been used to store food items and prepare food products, for example, for service to customers. The refrigeration has preserved the food items until use and storage pans have been used to store multiple food items for ready access for production of the food products. Pivoted covers have been used to cover the food items. U.S. Patent 5182924 concerns
20 an example of a refrigerator unit for food products, for example, for storing and serving salads and sandwiches. In the prior art, refrigerated food preparation table covers were movable from a closed position to an open position that afforded at least some access to the food items, but various needs, potential areas for benefit, or opportunities for improvement exist for refrigerated food preparation tables that provide better access or
25 improved protection of the food items, for example, during food product preparation, when restocking the food items, or both.

[0004] Further, apparatuses have previously been contemplated that detent a hinged lid in fully open, partially open, and closed positions. U.S. Patent 4362118 concerns an example of a hatch cover for barges with a hinge detenting
30 mechanism that uses various pins and a spring. Various needs, potential areas for benefit, or opportunities for improvement exist, however, for improved or alternative apparatuses for holding a lid in partially open and fully open positions. Room for

improvement exists over the prior art in various areas that may be apparent to a person of ordinary skill in the art having studied this document.

SUMMARY OF PARTICULAR EMBODIMENTS OF THE INVENTION

5 **[0005]** This invention provides, among other things, various appliances, such as (e.g., refrigerated) food preparation tables that include a food item storage pan that has a lid. Further, in a number of embodiments, the lid is allowed to fully close over the food item storage pan and the lid is held in a partially open position and in a fully open position (e.g., connected with multiple hinges). Further, this invention also
10 provides, among other things, various apparatuses for holding a lid in a partially opened position and a fully opened position. In a number of embodiments, such an apparatus includes a slot, a surface, an indentation, or a combination thereof, for instance, that act on or engage pins on the lid. In various embodiments, the slot receives one such pin, the surface guides another pin on the lid, for example, as the lid is opened from a fully
15 closed position to the partially opened position, the indentation receives the second pin when the lid is in the partially opened position, the slot contains the first pin and the second pin when the lid is in the fully opened position, or a combination thereof.

[0006] Various embodiments provide, for example, as an object or benefit, that they partially or fully address or satisfy one or more of the needs, potential areas for
20 benefit, or opportunities for improvement described herein, or known in the art, as examples. For instance, certain embodiments provide various (e.g., refrigerated) food preparation tables that provide better access or improved protection of the food items, for example, during food preparation, when restocking the food items, or both. Further, particular embodiments provide various improved or alternative apparatuses for holding
25 a lid in partially open and fully open positions.

[0007] Specific embodiments of the invention include, for example, various (e.g., refrigerated) food preparation tables that include a food item storage pan that includes a lid and multiple hinges connecting the lid to the remainder of the refrigerated food preparation table. In various embodiments, the multiple hinges allow the lid to fully
30 close over the food item storage pan, the hinges hold the lid in a partially open position, and the hinges hold the lid in a fully open position. Further, in some such embodiments, the lid includes a first pin and a second pin, and the multiple hinges include a slot, a first surface, an indentation, or a combination thereof, for instance, that act on or engage the first pin and the second pin. For example, in some embodiments, the slot receives the

first pin, the first surface guides the second pin as the lid is opened from the fully closed position to the partially opened position, or both. Further, in some embodiments, the indentation receives the second pin when the lid is in the partially opened position. Still further, in some embodiments, the slot contains the first pin and the second pin when
5 the lid is in the fully opened position. Even further, in particular embodiments, the first pin is parallel to the second pin.

[0008] A number of embodiments include a first (e.g., flat) plate, for example, that includes the slot, the first surface, the indentation, or a combination thereof. Further, various embodiments include a second (e.g., flat) plate, for instance,
10 perpendicular to the first (e.g., flat) plate. In some embodiments, the second plate is connected to the first plate. In some embodiments, for example, the second (e.g., flat) plate attaches (e.g., one of the multiple hinges) to the remainder of the refrigerated food preparation table. Still further, a number of embodiments include a second surface (e.g., on the first plate). For instance, in some embodiments, the second surface guides
15 the second pin, for example, as the lid is opened from the partially open position to the fully opened position. Even further, in some embodiments, the second surface is between the indentation and the slot. Further still, in various embodiments, the slot includes a top portion and a bottom portion. Even further still, in some such embodiments, the top portion slopes in a substantially opposite direction from the
20 bottom portion. Moreover, in certain embodiments, the top portion is at a (e.g., substantially) right angle to the bottom portion. In some embodiments, for example, the (e.g., substantially) right angle is substantially midway between a top and a bottom of the slot. Furthermore, in some embodiments, the indentation includes a first convex surface, a second convex surface, a concave surface, or a combination thereof. For
25 example, in particular embodiments, the concave surface is between the first convex surface and the second convex surface.

[0009] Other specific embodiments include various apparatuses for holding a lid in a partially opened position and a fully opened position. In some embodiments, for example, the apparatus includes, for example, a slot, a first surface,
30 an indentation, or a combination thereof, for instance, that engage various pins on the lid. In some embodiments, for example, the slot receives a first pin on the lid, the first surface guides a second pin on the lid as the lid is opened from a fully closed position to the partially opened position, the indentation receives the second pin when the lid is in the partially opened position, or a combination thereof. Further, in a number of

embodiments, the slot contains the first pin and the second pin when the lid is in the fully opened position.

[00010] Various such embodiments include other features described above and vice versa. For example, in some embodiments, the apparatus includes a first (e.g., flat) plate that includes the slot, the first surface, and the indentation. Further, some embodiments, include a second (e.g., flat) plate, for example, perpendicular to, connected to, or both, the first (e.g., flat) plate. Moreover, in some embodiments, the second (e.g., flat) plate is for, or includes multiple holes for, attaching the apparatus to a mounting surface that supports the lid. Still further, in some embodiments, a second surface (e.g., on the first plate) guides the second pin on the lid, for example, as the lid is opened from the partially open position to the fully opened position, and in particular embodiments, the first surface is curved, the second surface is curved, the second surface is between the indentation and the slot, or a combination thereof.

[00011] In various embodiments, the slot includes a top, a bottom, and a (e.g., right or substantially right) angle. Further, in a number of such embodiments, the (e.g., right or substantially right) angle is (e.g., substantially midway or midway) between the top and the bottom. Still further, in some embodiments, the slot includes a top portion and a bottom portion. In some such embodiments, for example, the top portion slopes in a substantially opposite direction from the bottom portion. Even further, in some embodiments, the top portion is at a (e.g., right or substantially right) angle to the bottom portion. Even further, in some embodiments, the indentation includes a first convex surface, a second convex surface, and a concave surface, for example, between the first convex surface and the second convex surface. In addition, various other embodiments of the invention are also described herein, and various benefits of certain embodiments may be apparent to a person of ordinary skill in the art.

BRIEF DESCRIPTION OF THE DRAWINGS

[00012] FIG. 1 is an isometric view of an example of a refrigerated food preparation table having a food item storage pan and a lid shown in a partially open position;

[00013] FIG. 2 is a side view of an apparatus for holding a lid (e.g., of the food preparation table shown in FIG. 1) in a partially opened position and a fully opened position, showing, among other things, locations of pins on the lid when the lid is in different positions; and

[00014] FIG. 3 is a top view of the apparatus for holding a lid of FIG. 2.

[00015] The drawings provided herewith illustrate, among other things, examples of certain aspects of particular embodiments. Other embodiments, however, may differ. Various embodiments may include aspects shown in the drawings, known in the art, or a combination thereof, as examples. Further, as used herein, the word “or”, except where indicated otherwise, does not imply that the alternatives listed are mutually exclusive. Even further, where alternatives are listed herein, it should be understood that in some embodiments, fewer alternatives may be available, or in particular embodiments, just one alternative may be available, as examples.

DETAILED DESCRIPTION OF EXAMPLES OF EMBODIMENTS

[00016] This patent application describes, among other things, examples of certain embodiments, and certain aspects thereof. Other embodiments may differ from the particular examples described in detail herein. Various embodiments are or concern appliances, such as (e.g., refrigerated) food preparation tables, for instance, that include a food item storage pan that has a lid. Further, in a number of embodiments, the lid is allowed to fully close over the food item storage pan and the lid is held in a partially open position and in a fully open position (e.g., by one or more of multiple hinges). Further, various embodiments are or concern apparatuses for holding a lid in a partially opened position and a fully opened position. In a number of embodiments, such an apparatus includes a slot, a surface, an indentation, or a combination thereof, for instance, that act on pins on the lid. In various embodiments, the slot receives one such pin, the surface guides another pin on the lid, for instance, as the lid is opened from the fully closed position to the partially opened position, the indentation receives the second pin when the lid is in the partially opened position, the slot contains the first pin and the second pin when the lid is in the fully opened position, or a combination thereof.

[00017] FIG. 1 illustrates refrigerated food preparation table 10 that includes food item storage pan 11 that includes lid 12 and multiple (i.e., two shown) hinges 13 and 14 connecting (i.e., pivotably connecting) lid 12 to remainder 15 of the refrigerated food preparation table 10. In the embodiment depicted, remainder 15 includes all of refrigerated food preparation table 10 except for lid 12 and multiple hinges 13 and 14. In the embodiment shown, the multiple hinges 13 and 14 allow lid 12 to fully close over food item storage pan 11 and the hinges (i.e., one or both of hinges 13 and 14) hold lid 12 in a partially open position (as shown), and the hinges (i.e., one or both of hinges 13

and 14) hold lid 12 in a fully open position (e.g., vertical). In the embodiment shown, lid 12 is moved manually by a chef, cook, or a food preparation technician, as examples.

[00018] In some embodiments, refrigerated food preparation table 10 is a pizza preparation table, for example, and food item storage pan 11 stores pizza toppings such as cheese, peperoni, sausage, ham, bell peppers, onions, black olives, pineapple, and the like for preparing pizzas. In some embodiments, lid 12 is closed to preserve the food items between orders of the food products (e.g., pizza), is positioned in the partially opened position when making the food products (e.g., pizza) and is positioned in the fully opened position (e.g., vertical) when restocking the food items (e.g., pizza toppings) in food item storage pan 11. In a number of embodiments, in the partially open position, lid 12 protects the food items better than when lid 12 is in the fully open position.

[00019] In various embodiments, a refrigerated food preparation table (e.g., 10) further includes one or more (e.g., refrigerated) drawers, cupboards, or both, for instance, for storing food (e.g., pizza dough, pizza toppings, pizza sauce, or a combination thereof). In a number of embodiments, the table (e.g., 10) is mounted on wheels (e.g., casters). Further, in various embodiments, a refrigerated food preparation table (e.g., 10) further includes a (e.g., forced air, capillary tube, 240 V) refrigeration system or unit, for instance, for cooling the food items. Further, in a number of embodiments, a refrigerated food preparation table (e.g., 10) further includes a table area that can include, in various embodiments, a cutting board. In some embodiments (e.g., as shown), the cutting board covers the table area (i.e., not including food item storage pan 11). Further, in some embodiments, the cutting board, food item storage pan (e.g., 11), lid (e.g., 12), or a combination thereof, are removable for washing. In some embodiments, the table (e.g., 10) is metal, such as stainless steel, aluminum, or both. In some embodiments, the table cutting board, or both, are plastic. For example, in some embodiments, the cutting board is polyethylene (e.g., white). Still further, in some embodiments, the refrigerated areas of the table are insulated (e.g., with polyurethane insulation).

[00020] FIG. 2 illustrates hinge, hinge bracket, or apparatus 20 for holding a lid (e.g., 12 shown in FIG. 1) in a partially opened position (e.g., as shown in FIG. 1) and a fully opened position (e.g., vertical). Apparatus 20 is an example of an apparatus for holding a lid (e.g., 12) in a partially opened position and a fully opened position. In the embodiment depicted, the lid (e.g., 12) or hinge (e.g., 13 or 14) includes first pin 21 and second pin 22 each shown in three alternate locations in FIG. 2. In the embodiment

shown, apparatus 20 (e.g., at least one of multiple hinges or a hinge bracket) includes slot 23, first surface 201, and indentation 24, that together act on first pin 21 and second pin 22 in this embodiment. In the embodiment shown, slot 23 receives first pin 21, and first (e.g., curved, for example, convex) surface 201 guides second pin 22 as the lid (e.g., 12) is opened from the fully closed position to the partially opened position. As used herein, a surface is “curved” if at least part of the surface is curved and the total curvature of the surface exceeds a 10 degree angle.

[00021] Apparatus 20 is an example of one of, or part of one of, hinges 13 and 14 shown in FIG. 1. In certain embodiments, each of hinges 13 and 14 of refrigerated food preparation table 10 includes one of apparatus 20 and first pin 21 and second pin 22. In other embodiments, however, one of hinges 13 and 14 of refrigerated food preparation table 10 includes one apparatus 20 and first pin 21 and second pin 22 and the other of hinges 13 and 14 is a different type of hinge, for example, a conventional hinge, for instance, with a single pin. Still other embodiments have one or more intermediate hinges, and in some embodiments, such intermediate hinge(s) include an apparatus 20. Further, some embodiments (e.g., of food preparation tables) include multiple lids and, in particular embodiments, more than one of the multiple lids include one, two, or more of apparatus 20, for example. Even further, in the embodiment illustrated, apparatus 20 allows lid 12 to be removed, for example, for cleaning. Moreover, as used herein, a hinge “connecting” a lid (e.g., to a remainder of a table), does not preclude that the lid can be lifted off, for example, by sliding first pin 21 out of slot 23.

[00022] Referring to FIG. 2, in the embodiment shown, first pin 21 and second pin 22 are in locations 211 and 221 (respectively) when the lid (e.g., 12) is in the fully closed position, first pin 21 and second pin 22 are in locations 212 and 222 (respectively) when the lid (e.g., 12) is in the partially open position (e.g., as shown in FIG. 1), and first pin 21 and second pin 22 are in locations 213 and 223 (respectively) when the lid (e.g., 12) is in the fully open position. Thus, in the embodiment illustrated, indentation 24 receives second pin 22 when the lid (e.g., 12) is in the partially opened position. Further, in this particular embodiment, slot 23 contains first pin 21 and second pin 22 when the lid (e.g., 12) is in the fully opened position (e.g., vertical). Further still, in this particular embodiment, slot 23 contains first pin 21 when the lid (e.g., 12) is in any of the fully closed position, the partially open position (e.g., as shown in FIG. 1), and the fully opened position (e.g., vertical). Even further, in the embodiment depicted, first pin 21 is parallel to second pin 22. As used herein, “parallel” means parallel to within 10

degrees, unless indicated otherwise. In different embodiments, however pins 21 and 22 are parallel to within 5, 15, 20, 25, or 30 degrees, as other examples. In the embodiment depicted, first pin 21 and second pin 22 are right circular cylinders, for example, and their centerlines are parallel (i.e., to within 10 degrees).

5 **[00023]** In the embodiment illustrated, hinge, hinge bracket, or apparatus 20 includes first (e.g., flat) plate 31, shown in FIGS. 2 and 3, for example, that includes (e.g., as shown in FIG. 2) slot 23, first (e.g., curved or convex) surface 201, and (e.g., concave) indentation 24. Further, in the embodiment illustrated, slot 23, first (e.g., convex) surface 201, and (e.g., concave) indentation 24 are formed or cut into first (e.g.,
10 flat) plate 31. Further still, apparatus 20 includes, in the embodiment shown, second (e.g., flat) plate 32, which is shown, perpendicular to first (e.g., flat) plate 31. In the embodiment shown, second plate 32 is connected to first plate 31, for instance, via a bend or weld. As used herein, a plate is considered to be flat if the plate is flat to within the thickness of the plate. In some embodiments, one or more of the plates described
15 herein is flat according to this criteria. In other embodiments, a plate described herein is flat to within $1/10$, $1/4$, $1/2$, $3/4$, 1.5 times, 2 times, or 3 times the thickness of the plate, as other examples. Further, as used herein, two plates are considered to be “connected” if the plates are integral but are separated by bend of more than 25 degrees. In other embodiments, plates can be connected (i.e., as used herein) in another way, for
20 example, with a weld. Still further, as used herein, “perpendicular”, unless indicated otherwise, means to within 10 degrees. Even further, where two plates are described herein as being perpendicular (i.e., to within 10 degrees), in other embodiments, such plates are perpendicular to within 5, 15, 20, 25, 30, 40, 45, or 50 degrees, as other examples.

25 **[00024]** In some embodiments, the second (e.g., flat) plate (e.g., 32) attaches (e.g., one of the multiple hinges, for instance, apparatus 20) to the remainder (e.g., 15 shown in FIG. 1) of the refrigerated food preparation table (e.g., 10). Moreover, in the embodiment shown, second (e.g., flat) plate 32 is for attaching apparatus 20 to a mounting surface that supports the lid (e.g., 12). The top of pan 11
30 shown in FIG. 1 is an example of such a mounting surface. Further, the top of remainder 15 of table 10 shown in FIG. 1 is another example of such a mounting surface. Further, in the embodiment illustrated, plate 32 includes multiple holes (e.g., two holes) 34 and 35 shown in FIG. 3 for attaching apparatus 20 to the mounting surface, for instance, top of pan 11, or remainder 15, of table 10, that supports the lid
35 (e.g., 12), for example, with fasteners such as screws, rivets, or bolts, as examples.

[00025] Further, in the embodiment illustrated, hinge bracket or apparatus 20 further includes third (e.g., flat) plate 33, shown in FIG. 3, that is, in this particular embodiment, essentially the same as plate 31, and first and second pins 21 and 22 extend through plates 33 and 31. In some embodiments, plate 33 includes, among
5 other things described herein, duplicates of slot 23, first surface 201, and indentation 24, for example. In the embodiment shown, plates 31, 32, and 33 are formed by cutting and bending one piece of flat sheet metal into the three plates of apparatus 20. Other embodiments differ. In some embodiments, for example, plate 33 is omitted, plate 31 is attached to plate 32 by welding, or both.

[00026] Still further, the embodiment of apparatus 20 shown in FIG. 2 includes second (e.g., curved, for example, convex) surface 202 on first plate 31. In this particular embodiment, second surface 202 guides second pin 22 as the lid (e.g., 12) is opened from the partially open position (e.g., shown for lid 12 in FIG. 1) to the fully
15 opened position (e.g., where pins 21 and 22 are at locations 213 and 223 respectively shown in FIG. 2). Even further, in the embodiment depicted, second surface 202 is between indentation 24 and slot 23. Further still, in other embodiments, first (e.g., curved) surface 201, second (e.g., curved) surface 202, or both, are concave, as other examples. Moreover, in still other embodiments, where first surface 201, second surface 202, or both, are shown herein, in other embodiments, a straight or flat surface
20 is provided, as still other examples.

[00027] Further still, in the embodiment illustrated, slot 23 includes top portion 25 and bottom portion 26. As shown, top portion 25 slopes in a substantially opposite direction from bottom portion 26. As used herein, two features slope in substantially opposite directions if one feature slopes to the left from vertical and the
25 other features slopes to the right from vertical. Even further, as used herein, indications of direction such as “vertical”, “top”, and “bottom”, refer to directions when the product is in use. In a number of embodiments, the direction of gravity (e.g., acting on lid 12) is relevant to the functioning of the apparatus or table when in use. Moreover, in the embodiment illustrated, top portion 25 slopes in the opposite direction from bottom
30 portion 26. As used herein, two features slope the opposite direction (without opposite being preceded by “substantially”) if one feature slopes to the left from vertical and the other features slopes to the right from vertical and an angle between the slopes of the two features is between 45 and 135 degrees.

[00028] Even further, in the embodiment shown, top portion 25 is at a
35 substantially right angle 29 to bottom portion 26. As used herein, “substantially”, when

referring to right angles, means to within 15 degrees of a perfect right angle, and is measured from whichever side (e.g., left side or right side as shown) of the portion (e.g., 25 or 26) is closer to a right angle. Even further still, in the embodiment shown, top portion 25 is at a right angle 29 to bottom portion 26. As used herein, "right angle",
5 when not preceded by the word "substantially", means to within 10 degrees of a perfect right angle, and is measured from whichever side of the portion (e.g., 25 or 26) is closer to a right angle. In other words, in the embodiment shown, angle 29 is both a substantially right angle and a right angle. Other embodiments, however, may differ.

[00029] Moreover, in the embodiment depicted, (e.g., substantially) right
10 angle 29 is substantially midway between top 27 and bottom 28 of slot 23. As used herein "substantially midway between" two locations means between 1/3 and 2/3s of the distance between the two locations from either location. In some embodiments, an (e.g., substantially) right angle is "midway between" a top and a bottom of a slot, such as slot 23. As used herein "midway between" two locations, without being preceded by
15 "substantially" means between 40 percent and 60 percent of the distance between the two locations from either location. Furthermore, in the embodiment shown, indentation 24, shown in FIG. 2, includes first convex surface 241, second convex surface 242, and concave surface 243. In the embodiment illustrated, concave surface 243 is between first convex surface 241 and second convex surface 242. Various surfaces described
20 herein, (e.g., 201, 201, 241, 242, and 243) re formed into an edge of first (e.g., flat) plate 31, in the embodiment shown. Other embodiments, however, may differ.

CLAIMS

What is claimed is:

1. A refrigerated food preparation table comprising a food item storage pan comprising a lid and multiple hinges connecting the lid to a remainder of the refrigerated food preparation table, wherein: the multiple hinges allow the lid to fully close over the food item storage pan; the hinges hold the lid in a partially open position; and the hinges hold the lid in a fully open position.
- 5 2. The refrigerated food preparation table of claim 1, the lid comprising a first pin and a second pin, the multiple hinges comprising:
 - 10 a slot receiving the first pin;
 - a first surface that guides the second pin as the lid is opened from the fully closed position to the partially opened position; and
 - an indentation receiving the second pin when the lid is in the partially opened position;
 - 15 wherein the slot contains the first pin and the second pin when the lid is in the fully opened position.
3. The refrigerated food preparation table of claim 2 comprising a first flat plate comprising the slot, the first surface, and the indentation.
4. The refrigerated food preparation table of claim 3 further comprising a second flat plate perpendicular to the first flat plate, wherein the second flat plate attaches to the remainder of the refrigerated food preparation table.
- 20 5. The refrigerated food preparation table of claim 2 further comprising a second surface that guides the second pin as the lid is opened from the partially open position to the fully opened position.
256. The refrigerated food preparation table of claim 5 wherein the second surface is between the indentation and the slot.
7. The refrigerated food preparation table of claim 2 wherein the slot comprises a top portion and a bottom portion, wherein the top portion slopes in a substantially opposite direction from the bottom portion.

8. The refrigerated food preparation table of claim 7 wherein the top portion is at a right angle to the bottom portion.
9. The refrigerated food preparation table of claim 2 wherein the indentation comprises a first convex surface, a second convex surface, and a concave surface between the first convex surface and the second convex surface.
10. The refrigerated food preparation table of claim 2 comprising:
- a first plate comprising the slot, the first surface, the indentation, and a second surface that guides the second pin on the lid as the lid is opened from the partially open position to the fully opened position, wherein:
 - the first pin is parallel to the second pin;
 - the second surface is between the indentation and the slot;
 - the slot comprises a top portion and a bottom portion;
 - the top portion slopes in a substantially opposite direction from the bottom portion;
 - the top portion is at a substantially right angle to the bottom portion; and
 - the substantially right angle is substantially midway between a top and a bottom of the slot; and
 - a second plate substantially perpendicular to the first plate and connected to the first plate, that attaches one of the multiple hinges to the remainder of the refrigerated food preparation table.
11. An apparatus for holding a lid in a partially opened position and a fully opened position, the apparatus comprising:
- a slot for receiving a first pin on the lid;
 - a first surface that guides a second pin on the lid as the lid is opened from a fully closed position to the partially opened position; and
 - an indentation that receives the second pin when the lid is in the partially opened position;
- wherein the slot contains the first pin and the second pin when the lid is in the fully opened position.

12. The apparatus of claim 11 comprising a first flat plate comprising the slot, the first surface, and the indentation.
13. The apparatus of claim 12 further comprising a second flat plate perpendicular to the first flat plate, wherein the second flat plate comprises multiple holes for attaching the
5 apparatus to a mounting surface that supports the lid.
14. The apparatus of claim 11 further comprising a second surface that guides the second pin on the lid as the lid is opened from the partially open position to the fully opened position.
15. The apparatus of claim 14 wherein the first surface is curved, the second surface is
10 curved, and the second surface is between the indentation and the slot.
16. The apparatus of claim 11 wherein the slot comprises a top, a bottom, and a right angle, wherein the right angle is substantially midway between the top and the bottom.
17. The apparatus of claim 11 wherein the slot comprises a top portion and a bottom portion, wherein the top portion slopes in a substantially opposite direction from the
15 bottom portion.
18. The apparatus of claim 17 wherein the top portion is at a right angle to the bottom portion.
19. The apparatus of claim 11 wherein the indentation comprises a first convex surface, a second convex surface, and a concave surface between the first convex surface and
20 the second convex surface.
20. The apparatus of claim 11 comprising:
a first plate comprising the slot, the first surface, the indentation, and a second surface that guides the second pin on the lid as the lid is opened from the partially open position to the fully opened position, wherein:
25 the second surface is between the indentation and the slot;
the slot comprises a top portion and a bottom portion;

the top portion slopes in a substantially opposite direction from the bottom portion;

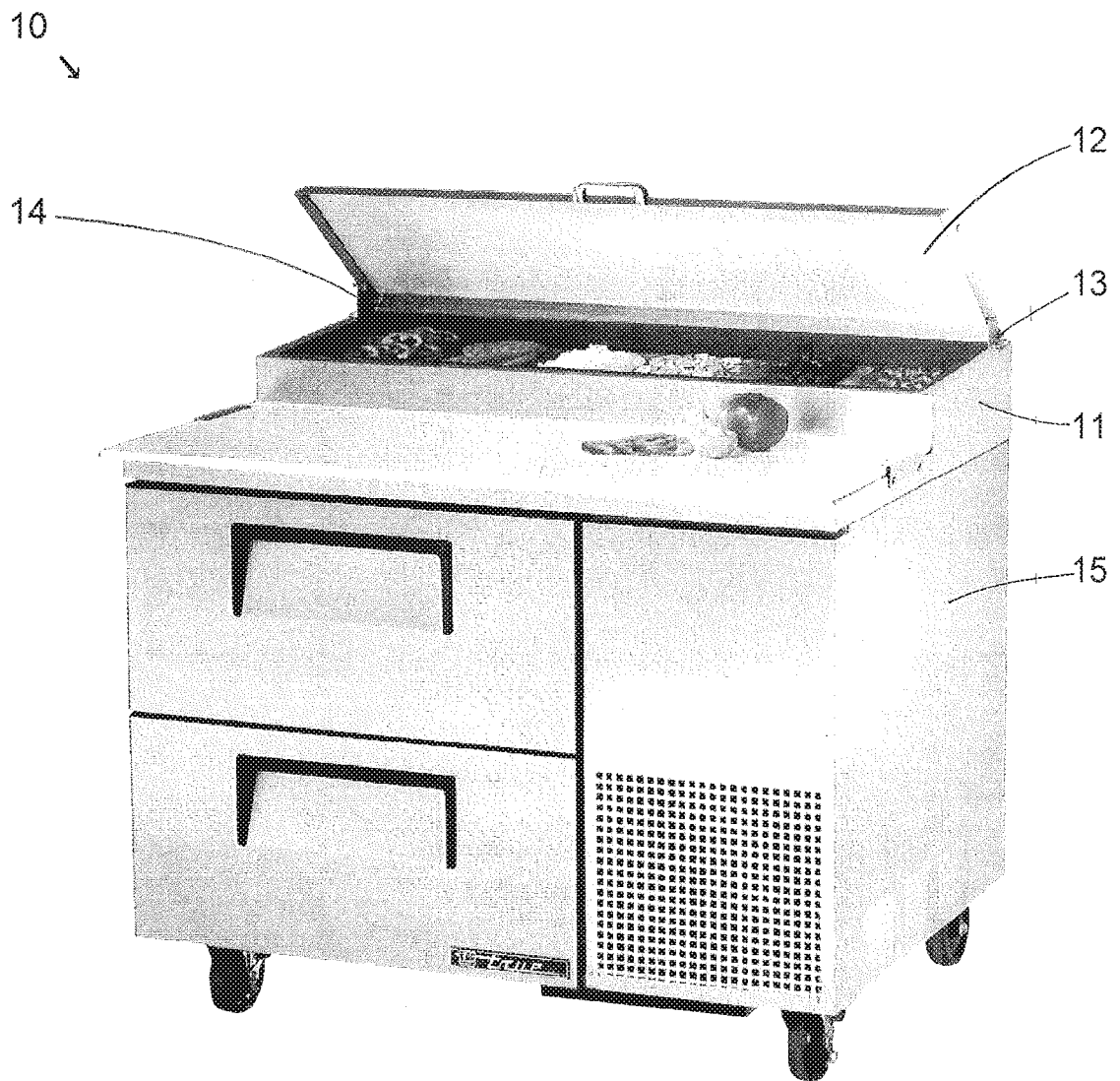
the top portion is at a substantially right angle to the bottom portion; and

the substantially right angle is substantially midway between a top and a
5 bottom of the slot;

the indentation comprises a first convex surface, a second convex surface, and a concave surface between the first convex surface and the second convex surface; and

a second plate substantially perpendicular to the first plate and connected to the
10 first plate, for attaching the apparatus to a mounting surface that supports the lid.

1/2

*Fig. 1*

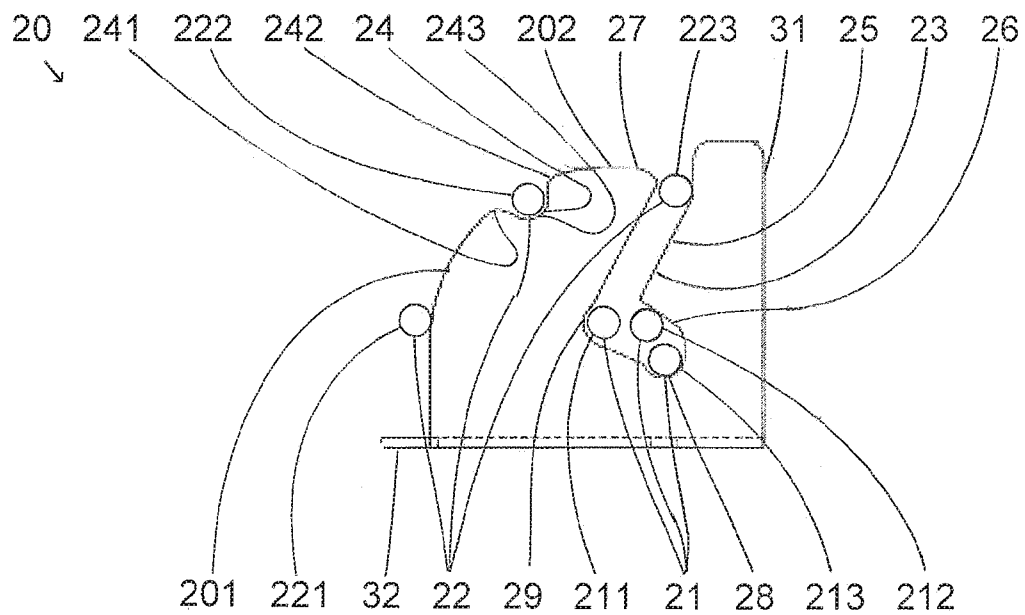


Fig. 2

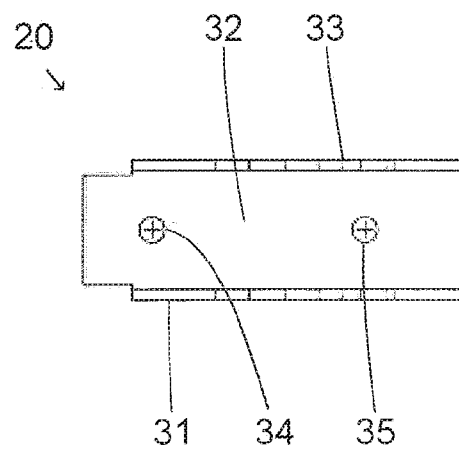


Fig. 3

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2017/021243**A. CLASSIFICATION OF SUBJECT MATTER****A47B 31/02(2006.01)i, A47B 13/08(2006.01)i, A47B 33/00(2006.01)i**

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

A47B 31/02; A61F 17/00; F35D 23/12; F25D 25/02; A47C 7/54; B60N 2/46; A47B 13/08; A47B 13/00; A47B 33/00

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS(KIPO internal) & keywords: refrigerated food preparation table, storage pan, lid, hinge, remainder, partially open position, slot, first pin, second pin, indentation

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5168719 A (BRANZ et al.) 08 December 1992 See column 8, lines 4-42 and figures 1-5.	1-20
Y	KR 10-1999-0049517 A (DAEWOO ELECTRONICS CO., LTD.) 05 July 1999 See abstract, page 3 and figures 2-5.	1-20
Y	US 2011-0316310 A1 (RUNDE, DAVID M.) 29 December 2011 See paragraphs [0028]-[0029] and figures 5-7.	7-8, 10, 16-18, 20
A	KR 10-0875879 B1 (KOAS CO., LTD.) 24 December 2008 See paragraphs [0038]-[0059] and figures 2-5.	1-20
A	US 7243406 B1 (WRAY, GREGORY W.) 17 July 2007 See column 3, line 25 - column 4, line 9 and figures 1-5.	1-20



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:

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"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

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"&" document member of the same patent family

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/US2017/021243

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5168719 A	08/12/1992	WO 93-13371 A1	08/07/1993
KR 10-1999-0049517 A	05/07/1999	None	
US 2011-0316310 A1	29/12/2011	CA 2759128 A1	16/09/2010
		CA 2759128 C	20/09/2016
		US 8449029 B2	28/05/2013
		WO 2010-102381 A1	16/09/2010
KR 10-0875879 B1	24/12/2008	None	
US 7243406 B1	17/07/2007	CA 2581461 A1	09/09/2007