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(54) Title: REFRIGERATOR

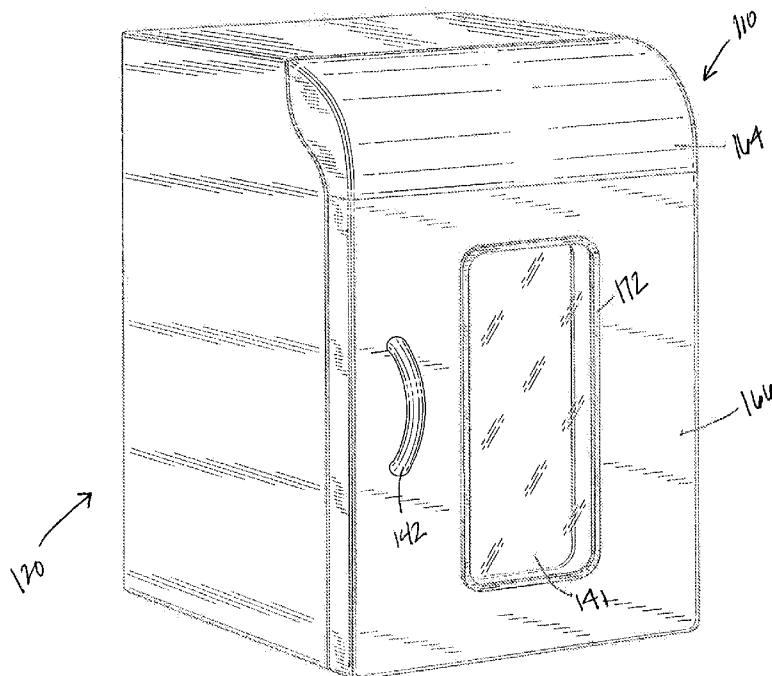


FIG. 1

[Continued on next page]

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TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, **Published:**

EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU,

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**(57) Abstract:** An exemplary refrigerator that can comprise a housing sized to be placed on a countertop and a door associated with the housing. The door can have an inner surface that contacts an opening surface of the housing when closed, wherein a significant portion of the inner surface is provided within a plane, and at least a part of the inner surface includes a curve that protrudes from the plane.

## REFRIGERATOR

### Cross-Reference to Related Application

[0001] This application relates to and claims priority from U.S. Provisional Patent Application No. 61/585,888 filed on January 12, 2012, the disclosure of which is  
5 incorporated herein by reference in its entirety.

### Field of the Disclosure

[0002] The present disclosure relates to a table or countertop miniature refrigerator, and a  
method for making the same.  
10

### Background Information

[0003] Single serve coffee machines have gained market share in the office, home and home-office settings, as compared to more traditional pot-brewed (e.g., drip-brewed) coffee machines. Single serve coffee machines can have a variety of configurations. For example,  
15 some single-serve coffee machines can provide drip-brewed capabilities (e.g., a smaller version of traditional “pot sized” machines), have single-serve coffee pods (e.g., like the Keurig® “K-cup”), or include various other single serve packet designs (e.g., liquid packets by Flavia®).

[0004] According to certain the present disclosure, exemplary embodiments of a countertop  
20 or table top refrigerator can be provided that can be used alone or in conjunction with other items to store accessories for single-serve beverage dispensers, e.g., accessories needing refrigeration, e.g., milk/cream. Such exemplary embodiments address at least some of the deficiencies of prior refrigerators.

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**Summary of Exemplary Embodiments**

[0005] According to certain exemplary embodiments of the present disclosure, an exemplary miniature refrigerator for single-serve coffee machines is described.

5 [0006] The exemplary refrigerator, in some configurations, can comprise a housing sized to be placed on a countertop and a door associated with the housing. The door can have an inner surface that contacts an opening surface of the housing when closed, wherein a significant portion of the inner surface is provided within a plane, and at least a part of the inner surface includes a curve that protrudes from the plane.

10 [0007] In some exemplary configuration, the exemplary refrigerator can have a depth of approximately 8 inches to 15 inches that extends along a side portion of the housing. In one configuration, the refrigerator can have a depth of approximately 10.5 inches that extends along a side portion of the housing.

15 [0008] In certain embodiments, the exemplary refrigerator can have a width of approximately 8 inches to approximately 16 inches that extends along a side of the door. In one configuration, the exemplary refrigerator can have a width of approximately 12.6 inches that extends along a side of the door.

[0009] The exemplary refrigerator can have a height of approximately 10 inches to 18 inches. In one configuration, the refrigerator can have a height of approximately 13.27 inches. The exemplary refrigerator, in some configurations, can include a handle feature associated  
20 with the door. The handle feature can have a length of approximately 2 inches to 5 inches.

[0010] These and other objects, features and advantages of the exemplary embodiment of the present disclosure will become apparent upon reading the following detailed description of the exemplary embodiments of the present disclosure, when taken in conjunction with the appended claims(s).

**Brief Description of the Drawings**

[0011] Exemplary objects, features and advantages of the present disclosure will become apparent from the following detailed description taken in conjunction with the accompanying Figs. showing illustrative embodiments of the present disclosure, in which:

5 [0012] Figure 1 is an exemplary refrigerator, according to an exemplary embodiment of the present disclosure;

[0013] Figure 2 is an exemplary refrigerator with the exemplary door in an open configuration;

[0014] Figure 3 is a front view of the exemplary refrigerator;

10 [0015] Figures 4A and 4B are side views of the exemplary refrigerator;

[0016] Figures 5A and 5B are back/rear views of exemplary refrigerators according to certain exemplary embodiments of the present disclosure;

[0017] Figure 6 is a bottom view of the exemplary refrigerator;

15 [0018] Figure 7 is a perspective view of another exemplary refrigerator, according to another exemplary embodiment of the present disclosure;

[0019] Figure 8 is a side view of the exemplary refrigerator according to certain exemplary embodiments of the present disclosure;

[0020] Figure 9 is a front view of the exemplary refrigerator according to certain exemplary embodiments of the present disclosure;

20 [0021] Figure 10 is a top view of the exemplary refrigerator according to certain exemplary embodiments of the present disclosure; and

[0022] Figure 11 is another perspective view of the exemplary refrigerator.

[0023] Throughout the drawings, the same reference numerals and characters, unless otherwise stated, are used to denote like features, elements, components, or portions of the  
25 illustrated embodiments. Moreover, while the present disclosure will now be described in

detail with reference to the figures, it is done so in connection with the illustrative embodiments and is not limited by the particular embodiments illustrated in the figures and/or the claim(s) appended herewith.

## 5 Detailed Description of Exemplary Embodiments

[0024] According to certain exemplary embodiments of the present disclosure, a miniature refrigerator can be provided that can be placed on a desk, a table or a countertop. The exemplary refrigerator can include a removable sliding shelf inside. The exemplary refrigerator can be sized to receive one or more beverage containers of a particular size. For  
10 example, the refrigerator can be configured to hold two quart sized cartons of milk, four pint sized cartons, and/or four standard cans of soda/beer. Any number of configurations, dimensions, or receivable products is also possible though.

[0025] The exemplary refrigerator can include a main housing 120 and a door 110, e.g., a hinged door that swings open from the left or right side of a front of the refrigerator. The  
15 exemplary door can include a magnetic closure, and can be biased in the closed position, such that the door remains in a closed configuration when not held open. The door 110, when closed, can contact the main housing along an opening edge 130. The opening edge 130 can include a ridge 132 around the whole or part of the whole opening edge 130. The exemplary door 110 can include a groove 134 dimensioned and aligned with the ridge 132 such that  
20 when closed, the ridge 132 nests within the groove 134. The exemplary groove 134 can include a gasket 135 within the groove 134, which can be rubber, silicone, or any type of suitable material that can make a tighter seal with ridge 132 when the door is closed than the groove 134 does alone. In other exemplary embodiments, the ridge 132 can be on the door 110, while groove 134 and/or gasket 135 can be on the opening edge 130.

[0026] In one exemplary configuration, the exemplary refrigerator according to an exemplary embodiment of the present disclosure can have a depth 144 (as shown in Figures 8 and 10) ranging from approximately 8 inches to 15 inches. For example, in one configuration, the exemplary depth 144 can be approximately 10.50 inches. The exemplary refrigerator can  
5 have a height 148 ranging from approximately 10 inches to 18 inches (as shown in Figure 9). For example, in one exemplary configuration, the exemplary height 148 can be approximately 13.27 inches. The exemplary refrigerator can have a width 196 ranging from approximately 8 inches to 16 inches (as shown in Figure 9). In another exemplary configuration, the width 196 can be approximately 12.60 inches.

10 [0027] The exemplary door 110 can be connected in any number of ways, such as with a single hinge 140 (as illustrated in Figure 4B), two hinges 140 (as illustrated in Figure 2), more than two hinges, a single hinge of substantially the whole length, hole and peg connectors at the door corners, or any number of other suitable connectors and/or any other suitable sizes of those connectors.

15 [0028] The exemplary refrigerator can include a handle feature 142 to facilitate opening the door 110. In one configuration, for example as shown in Figures 1, 3, 4, and 7, the handle feature 142 can have a crescent moon configuration attached to the door 110 at the two ends of the handle feature 142. In other exemplary configurations, for example as shown in Figure 8, the handle feature 142 can be attached to the door 110 at only one end of the handle feature  
20 142. In yet other exemplary configurations, the handle feature 142 can be similar to a lever mechanism which disengages the door 110 from the main housing 120 as the user pulls on the handle feature 142. For example, a lever handle of the handle feature 142 can pivot about a pivot point as the user pulls the handle feature 142 causing the door to disengage.

[0029] Figure 9 illustrates an exemplary configuration of the exemplary handle feature 142  
25 with a set of exemplary dimensions and measurements. For example, the exemplary handle

feature 142 can have a length 156 that ranges from 2 inches to 5 inches. For example, in one exemplary configuration, the length 156 can be approximately 2.750 inches. In one exemplary configuration, the exemplary handle feature 142 can have a thickness 158 of approximately 0.500 inches. The exemplary handle feature 142 can be positioned on the  
5 exemplary door 110 at a distance 160 of approximately 4.00 inches (distance 160 being measured from the edge of the exemplary door 110 to the edge of the exemplary handle feature 142 as shown in Figure 9). It should be appreciated that in other exemplary embodiments, the handle feature 142 can have other shapes, dimensions, and/or configurations.

10 [0030] The exemplary refrigerator can further include a temperature control sensor (not shown). The temperature control sensor can be configured to regulate and maintain the temperature of the exemplary refrigerator. In one exemplary configuration, the exemplary temperature control sensor can maintain the temperature of the exemplary refrigerator at approximately 40 degrees Fahrenheit. The exemplary refrigerator, in one exemplary  
15 configuration, can have thresholds that trigger a control system to either start a cool down process or stop the cool down process of the exemplary refrigerator. For example, in one exemplary configuration, the temperature sensor can be configured such that when the temperature within the exemplary refrigerator raises to 53.6 degree Fahrenheit measured at the top of the inside of the refrigerator and 44.6 degrees Fahrenheit measured in the center of  
20 the inside of the refrigerator, the temperature sensor triggers the control system to start the cool down process. In contrast, when the temperature within the exemplary refrigerator raises to 46.4 degrees Fahrenheit measured at the top of the inside of the refrigerator and 37.4 degrees Fahrenheit measured at the center of the inside of the refrigerator, the temperature sensor trigger the control system to stop the cooling down process. For example, having the  
25 temperature sensor configured to trigger the control system ensures the temperature of the

contents within the refrigerator, e.g., milk, soda, and/or beer, is maintained, for example, at or below 40 or 41 degrees Fahrenheit. In other exemplary configurations, the exemplary temperature control sensor can be configured to maintain the temperature of the exemplary refrigerator at or below other temperatures, e.g., 50 degrees Fahrenheit, 60 degrees  
5 Fahrenheit, or other temperatures.

[0031] The exemplary refrigerator can also include a fan that can facilitate maintaining the temperature of the refrigerator. The fan can be integrated within the back wall of the main housing 120, or in other configurations, can be behind the back wall of the main housing 120, or in yet other configurations, can stick out behind the back of the main housing 120. For  
10 example, Figure 5A shows an exemplary configuration of the exemplary refrigerator where the fan can be seen outside. Figure 5B shows an exemplary configuration of the exemplary refrigerator where the fan is integrated within the housing and cannot be seen from the outside.

[0032] The exemplary refrigerator can also include feet 146 on a bottom surface that can grip  
15 to a surface (e.g., a countertop surface), which can prevent the unit from sliding. The feet 146 can be made of rubber, silicon, or other suitable material that prevents the unit from sliding. Figure 6 illustrates one exemplary embodiment of the feet 146 with a set of exemplary dimensions. For example, the feet 146 shown in Figure 6 can have a generally oval shape and in some configurations, can have a radius 186 of approximately 0.08 inches.  
20 The exemplary feet 146 can be positioned at a distance 188 of 0.670 inches from one edge (as shown in Figure 6), and at a distance 190 of 0.220 inches from a second edge. The exemplary feet 146 can, in one configuration, be positioned at a distance 192 of approximately 3.700 inches from the center of the exemplary fridge. The exemplary feet 146 can have a length 194 of approximately 0.540 inches. It is appreciated that in other  
25 configurations, the feet 146 can have other configurations, shapes, and dimensions.

[0033] According to further exemplary embodiments of the present disclosure, the exemplary refrigerator can have a left side opening door, a right side opening door, a top side opening door, and/or a bottom side opening door (e.g., similar to a dish washer design). Alternatively, the top side can open and the exemplary refrigerator door can be the whole top surface of the refrigerator (e.g., similar to a stand alone freezer design). The door orientation can be fixed or adjustable (e.g., from right-side orientation to left-side and vice versa).

[0034] The exemplary refrigerator can include a transparent or translucent front window 141, which can be configured to allow a user to see the contents of the exemplary refrigerator. In one exemplary configuration, for example as illustrated in Figures 1 and 3, the window 141 can have a substantially rectangular configuration. In other exemplary configurations, for example as illustrated in Figure 7, the window 141 can have a generally triangular shape.

[0035] Figure 9 illustrates one exemplary configuration of the window 141 and an exemplary set of dimensions for the various components and/or parts of the exemplary refrigerator. For example, the window 141 can have a height 152 of approximately 7.500 inches. The window 141 can have a width 154 of approximately 3.525 inches. The exemplary window 141 can be positioned at a distance 168 of approximately 1.400 inches measured from the curved portion 164 of the exemplary door 110, and can be positioned at a distance 170 of approximately 1.600 inches measured from the bottom edge of the flat portion 166. In some exemplary configurations, for example as illustrated in Figure 9, the window 141 can include a window frame 172 that outlines the perimeter of the exemplary window 141. The window frame 172 can have a width 174 of approximately 0.200 inches. The window frame 172, in one exemplary embodiment, can also have a thickness 184 (shown in Figure 11) of approximately 0.05 inches. In some configurations, the exemplary window 141 and the window frame 172 can have curved corners. For example, as illustrated in Figure 9, the window frame 172 can have curved corners with an inner radius 176 of approximately 0.400 inches and outer radius

178 of approximately 0.600 inches. In yet other exemplary configurations, further possible shapes, dimensions, and configurations of the window 141 are possible.

[0036] The exemplary door 110 can be flat on a plane (not shown), or can include a curved portion 164, such as is illustrated in the exemplary figures. For example, as illustrated in the exemplary refrigerator of Figure 9, the exemplary door 110 can have a curved portion 164 and a flat portion 166 adjacent the curved portion 164. The curved portion 164 can have a height 180, for example, of approximately 2.500 inches, and in some configurations, the flat portion 166 can have a height 182 of approximately 10.500 inches. The door curve portion 164 can have a corresponding curve in the housing on the side with the opening.

[0037] The exemplary refrigerator can be stand alone accessory units, e.g., paired with a single-serve beverage dispenser, or can be joined with additional complementary accessory units, e.g., all paired with the single-serve beverage dispenser.

[0038] The foregoing merely illustrates the principles of the disclosure. Various modifications and alterations to the described embodiments will be apparent to those skilled in the art in view of the teachings herein. Other suitable dimensions and measurements can also be used. It will thus be appreciated that those skilled in the art will be able to devise numerous systems, arrangements, and procedures which, although not explicitly shown or described herein, embody the principles of the disclosure and can be thus within the spirit and scope of the disclosure. In addition, all publications and references referred to above can be incorporated herein by reference in their entireties. In addition, certain terms used in the present disclosure, including the specification, drawings and claims thereof, can be used synonymously in certain instances, including, but not limited to, e.g., data and information. It should be understood that, while these words, and/or other words that can be synonymous to one another, can be used synonymously herein, that there can be instances when such words can be intended to not be used synonymously. The term “about” and “approximately,” as

used herein, should generally be understood to refer to both the corresponding number and a range of numbers. Moreover, all numerical ranges herein should be understood to include each whole integer within the range. Further, to the extent that the prior art knowledge has not been explicitly incorporated by reference herein above, it can be explicitly being

5 incorporated herein in its entirety. All publications referenced above can be incorporated herein by reference in their entireties.

**WHAT IS CLAIMED:**

1. A refrigerator, comprising:
  - a housing sized to be placed on a countertop; and
  - a door associated with the housing, and having an inner surface that contacts an opening surface of the housing when closed, wherein a significant portion of the inner surface is provided within a plane, and at least a part of the inner surface includes a curve that protrudes from the plane.
2. The refrigerator of claim 1, wherein the refrigerator has a depth of approximately 8 inches to 15 inches that extends along a side portion of the housing.
3. The refrigerator of claim 1, wherein the refrigerator has a depth of approximately 10.5 inches that extends along a side portion of the housing.
4. The refrigerator of claim 1, wherein the refrigerator has a width of approximately 8 inches to approximately 16 inches that extends along a side of the door.
5. The refrigerator of claim 1, wherein the refrigerator has a width of approximately 12.6 inches that extends along a side of the door.
6. The refrigerator of claim 1, wherein the refrigerator has a height of approximately 10 inches to 18 inches.
7. The refrigerator of claim 1, wherein the refrigerator has a height of approximately 13.27 inches.

8. The refrigerator of claim 1, further comprising a handle feature associated with the door, the handle feature having a length of approximately 2 inches to 5 inches.

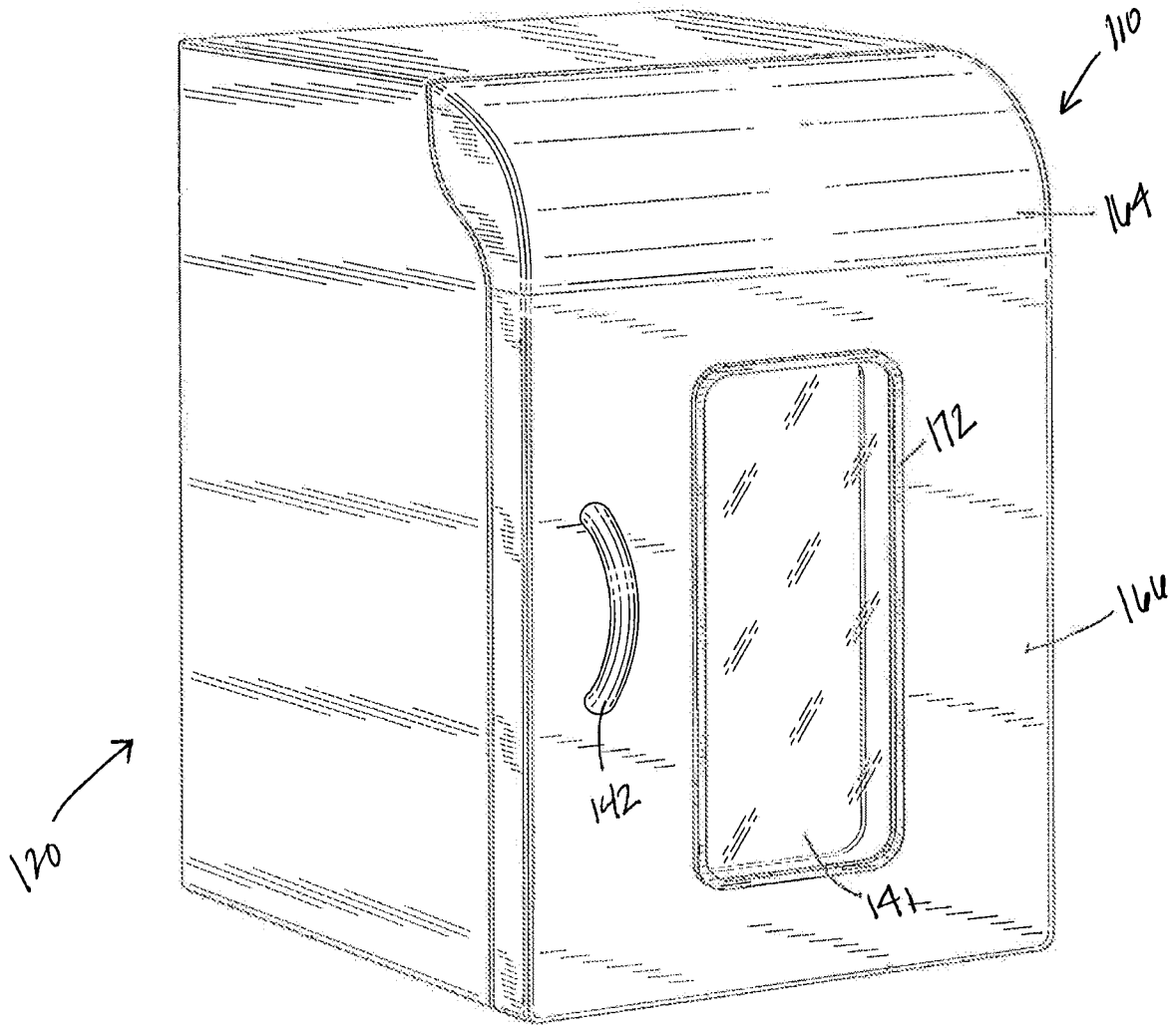


FIG. 1

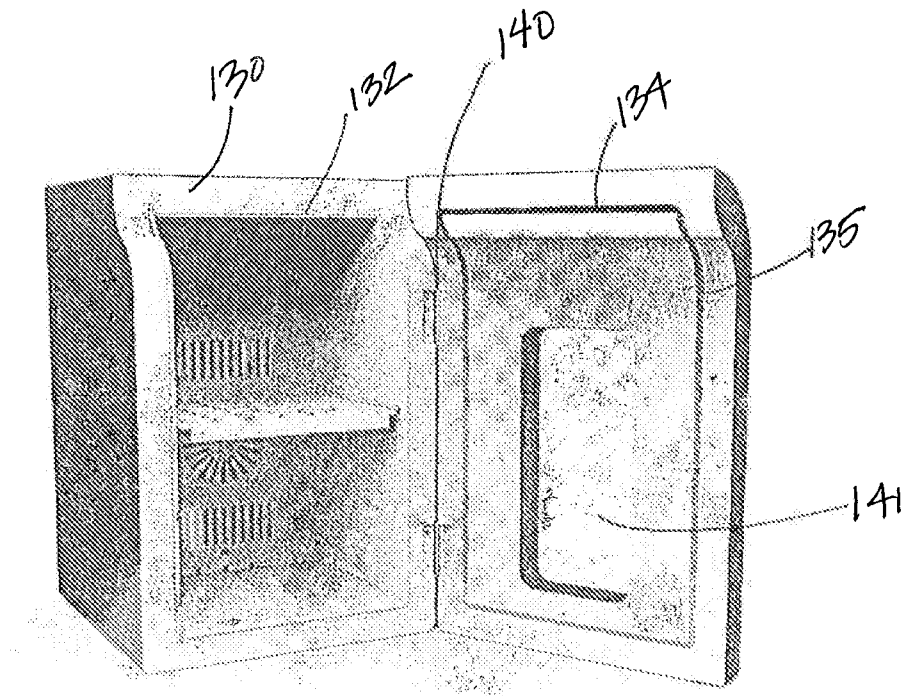


FIG. 2

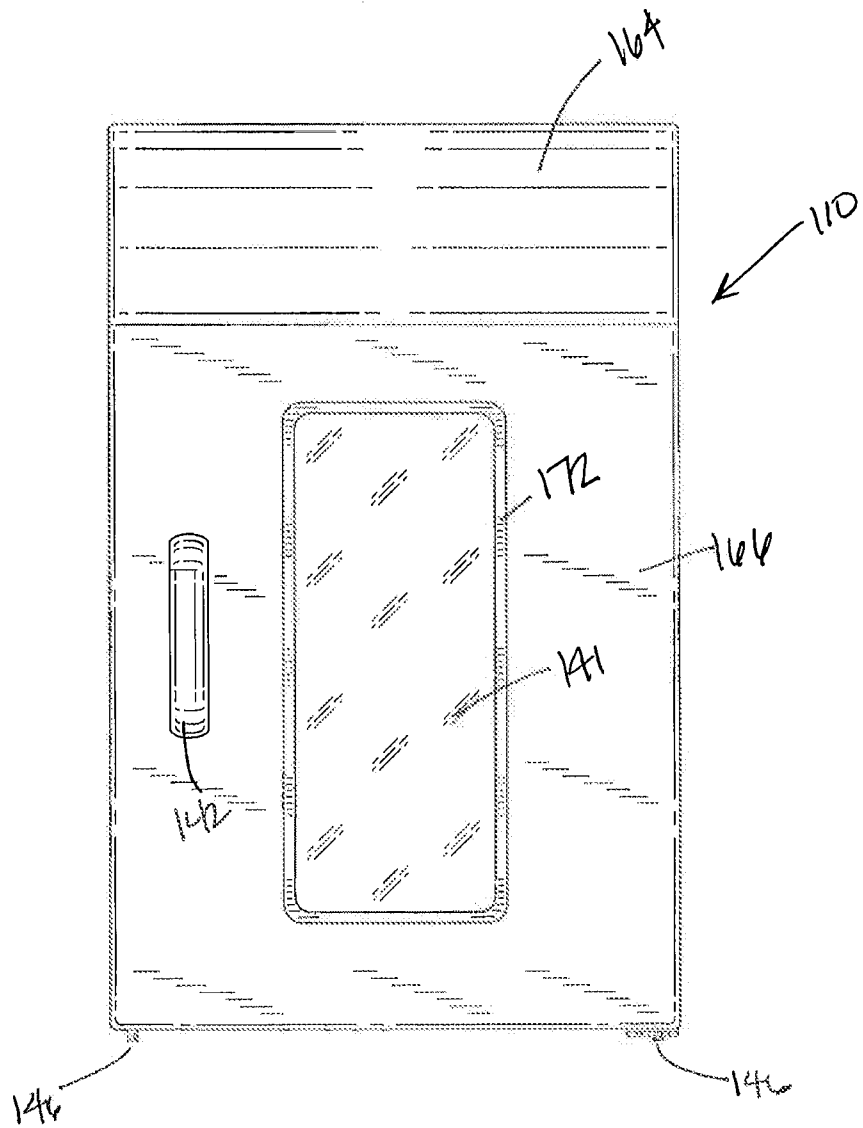


FIG. 3

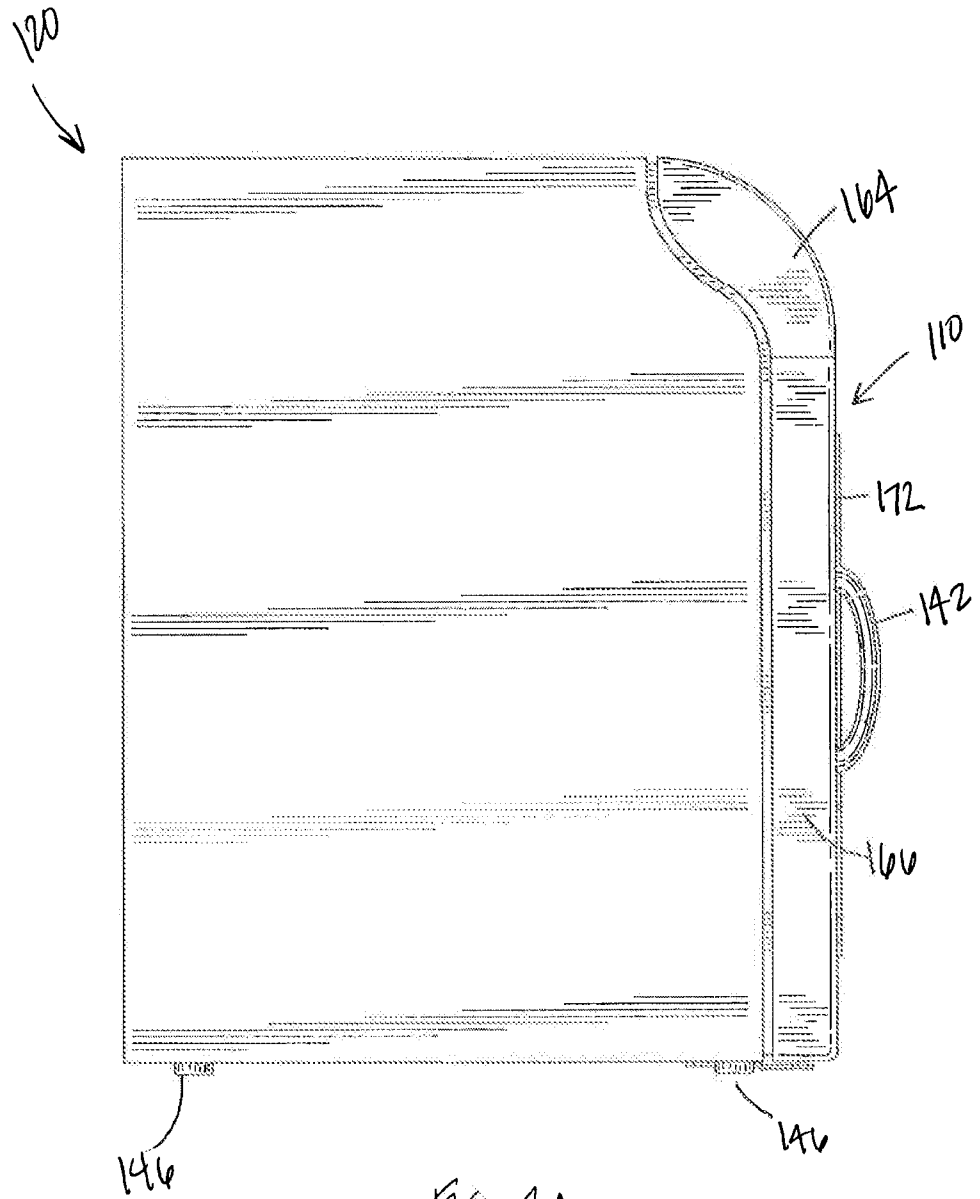


FIG. 4A

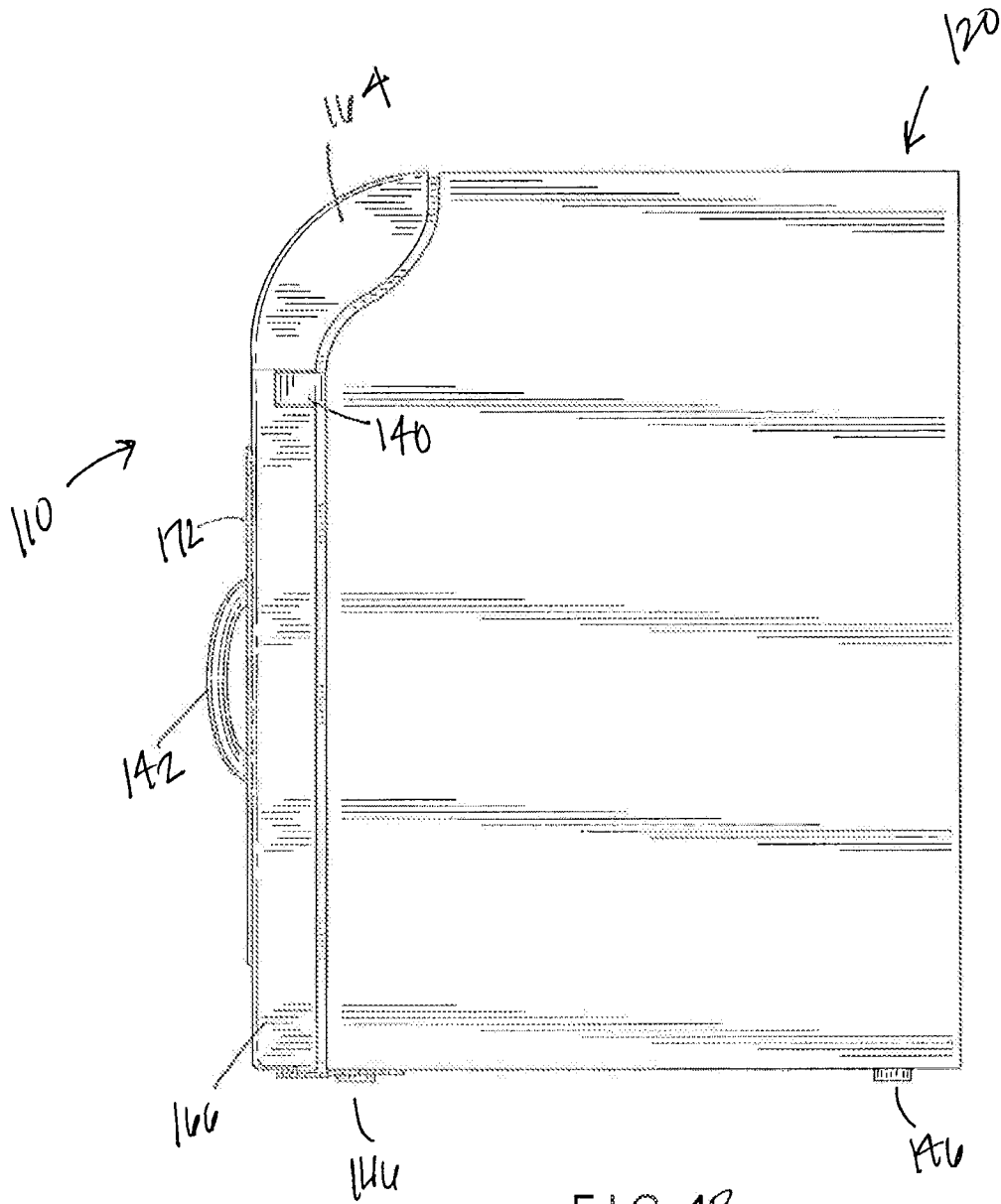
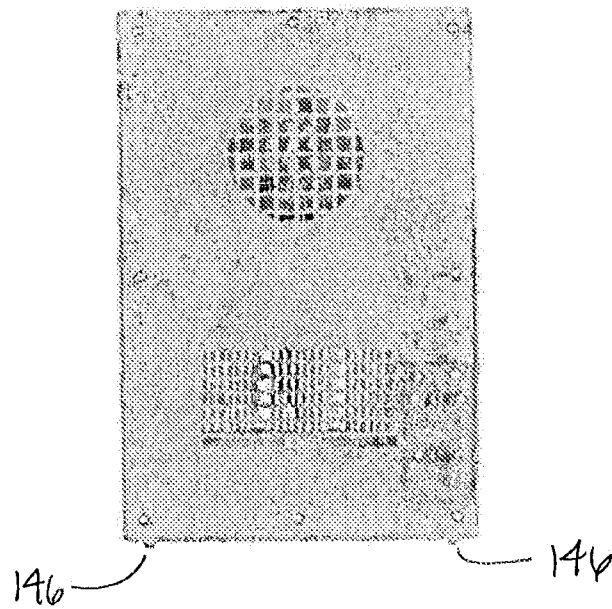


FIG. 4B

FIG. 5A



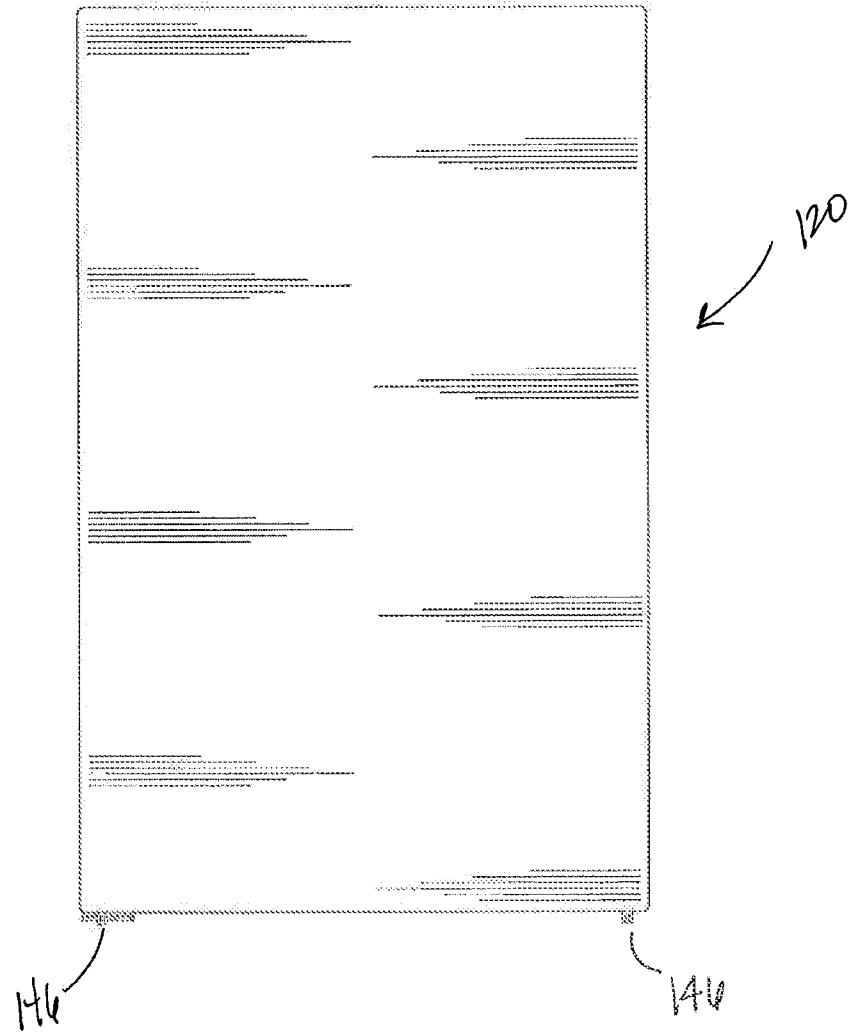


FIG. 5B

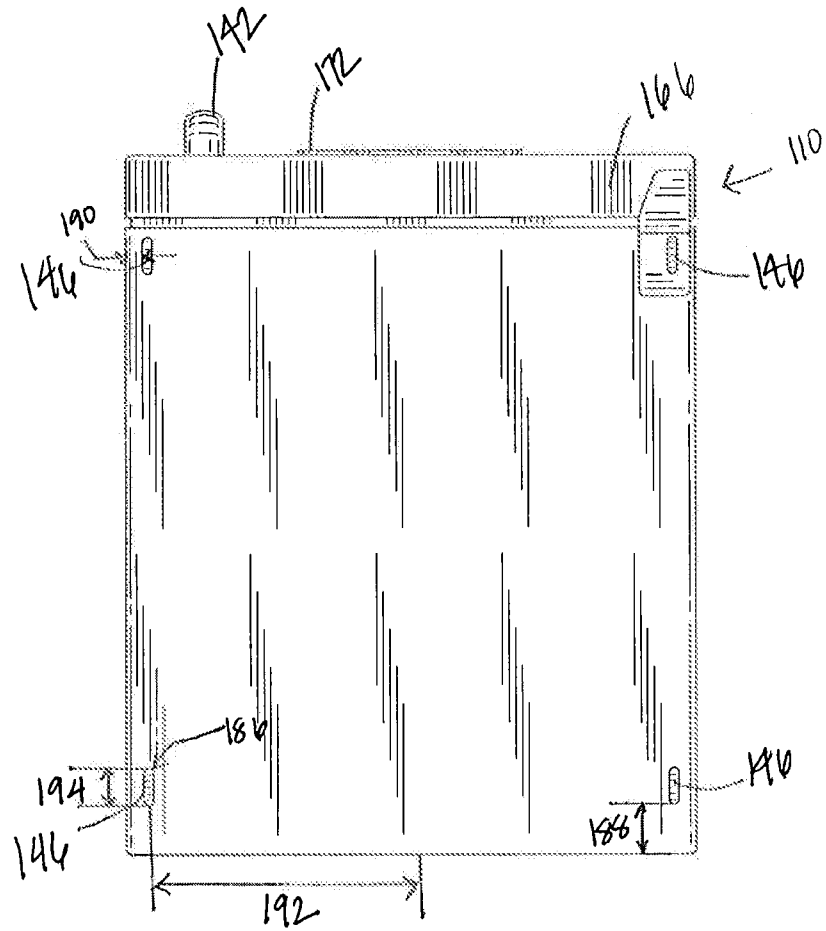


FIG. 6

Fig.  
7

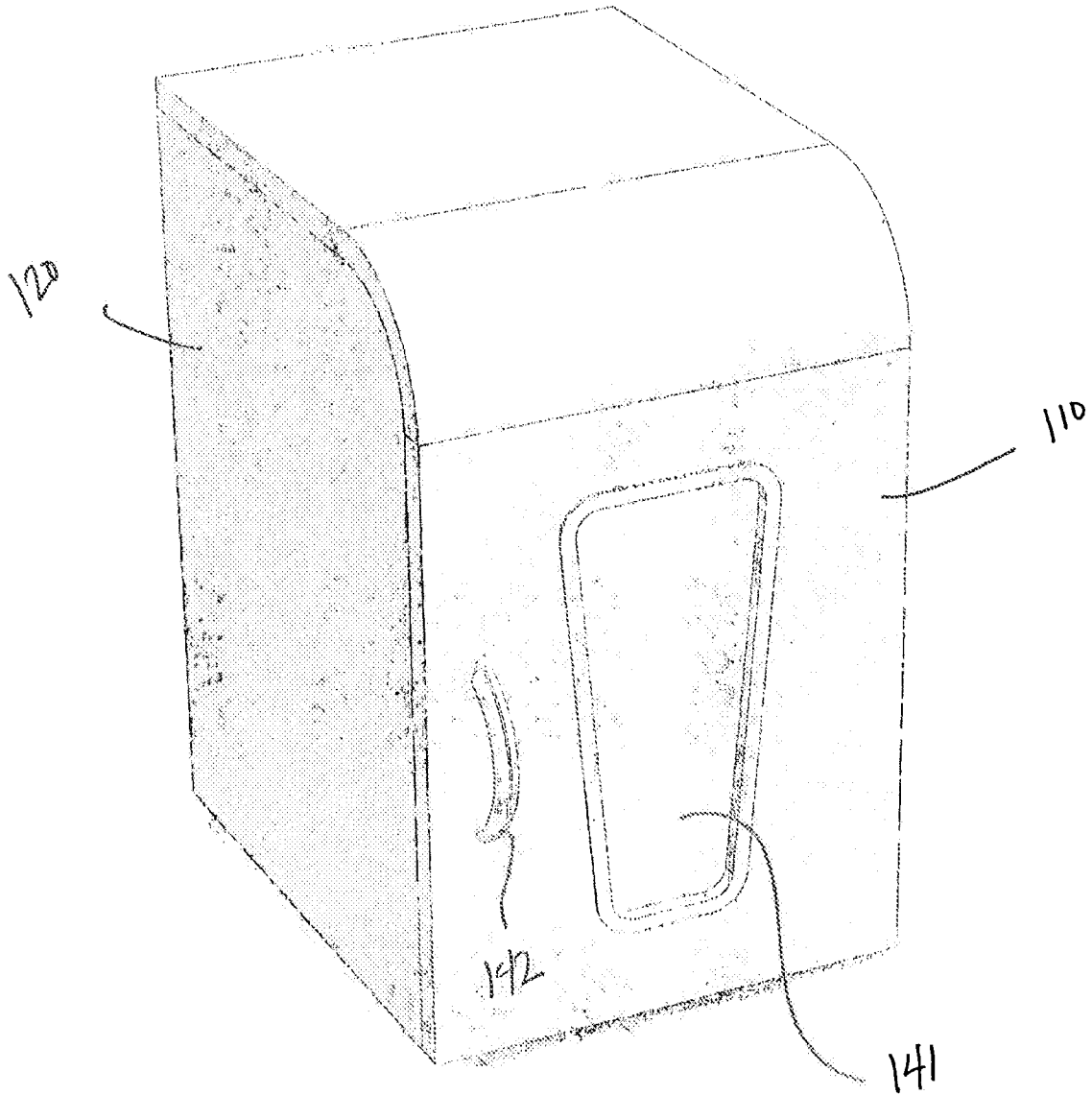
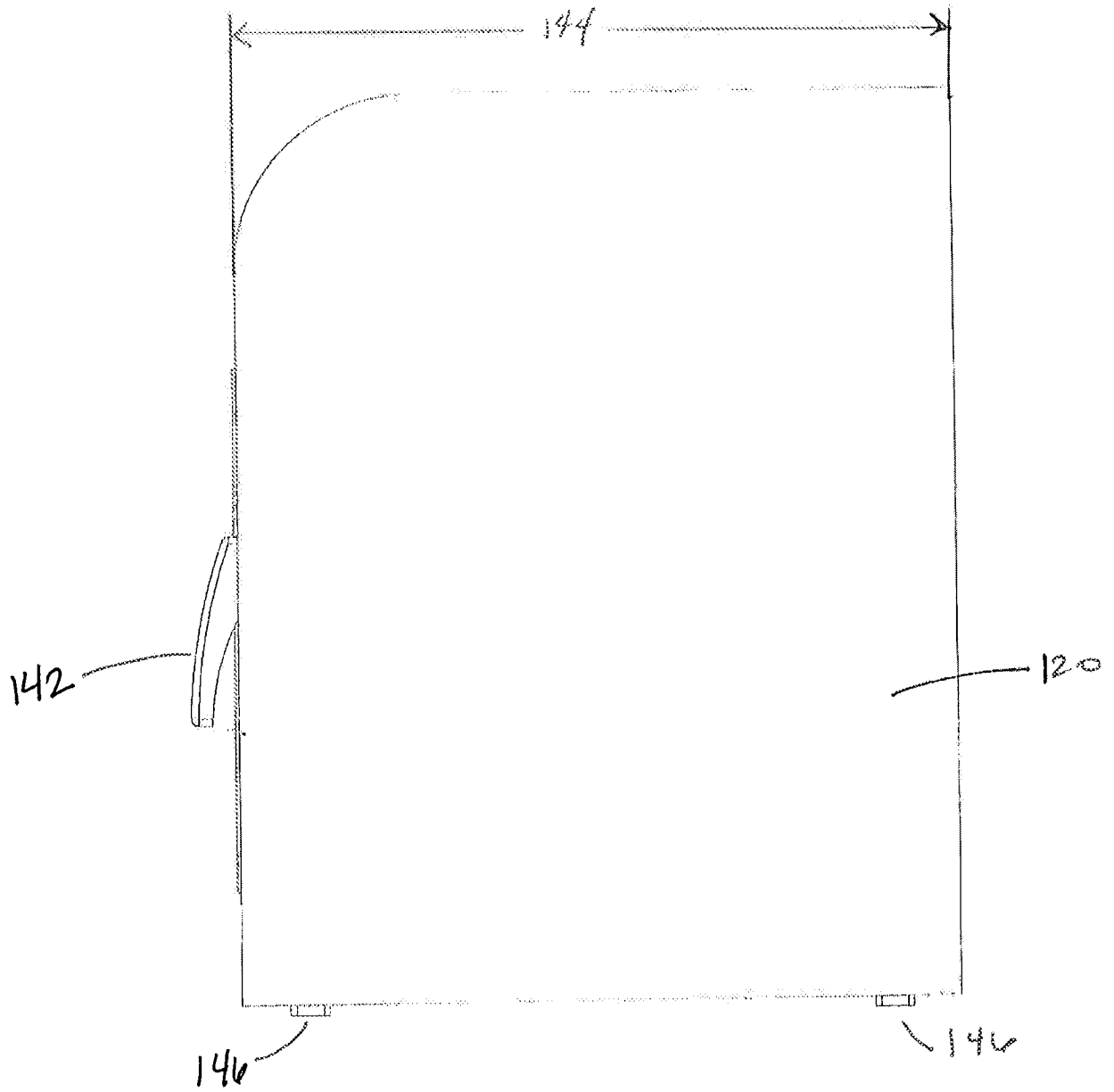


Fig. 8





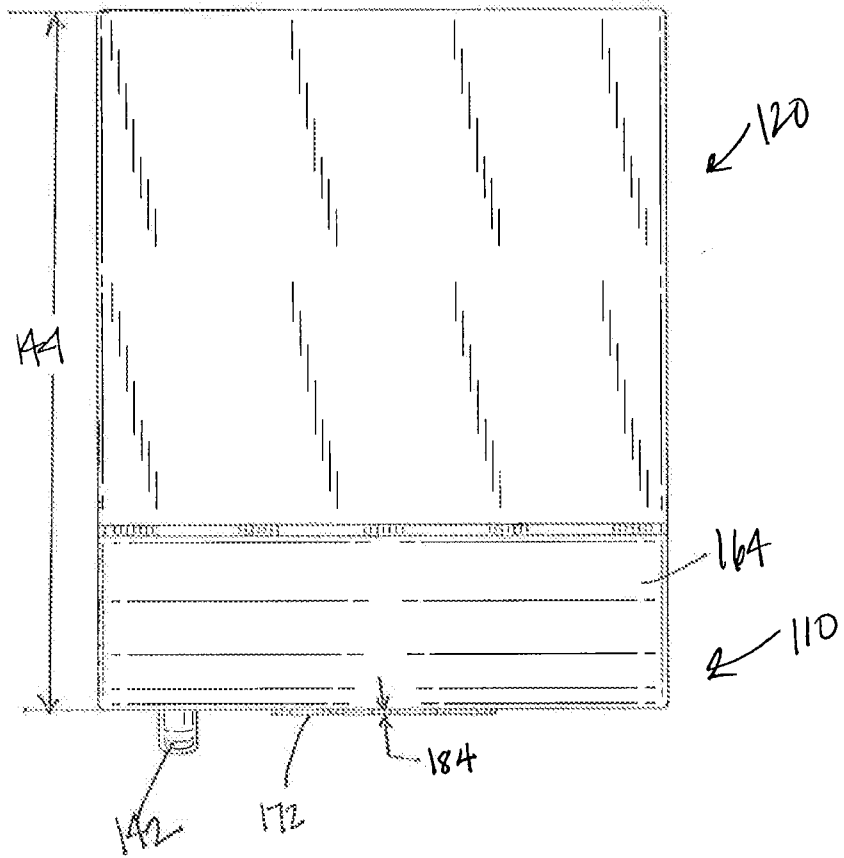


FIG. 10

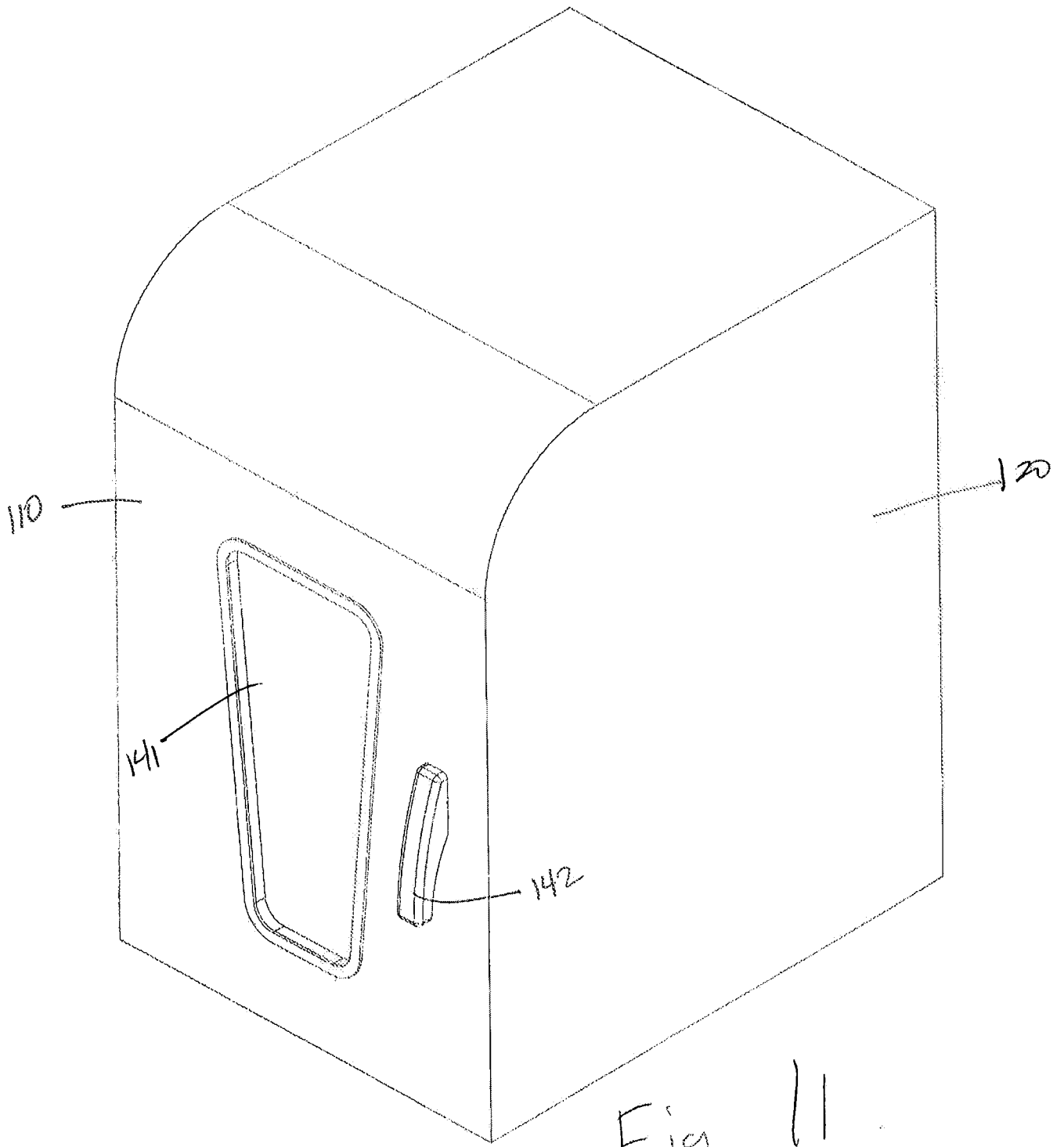


Fig. 11

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 2013/021304

## A. CLASSIFICATION OF SUBJECT MATTER

*F25D 11/00 (2006.01)**F25D 23/02 (2006.01)**F25D 15/00 (2006.01)*

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)

F25D 11/00, 15/00, 23/00-23/12, 31/00

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

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

PatSearch (RUPTO internal), Esp@cenet, PAJ, USPTO

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	RU 2213308 C2 (BSKH BOSH UND SIMENS KHAUSGERETE GMBH) 27.09.2003, fig. 1, p. 6, lines 13-16	1-8
Y	JP 2002081842 A (SANYO ELECTRIC CO LTD) 22.03.2002, fig. 2	1-8
Y	RU 2315926 C2 (BSKH BOSH UND SIMENS KHAUSGERETE GMBH) 27.01.2008, fig. 1	8
A	RU 2416062 C2 (BSKH BOSH UND SIMENS KHAUSGERETE GMBH) 10.04.2011	1-8
A	US 2008/0302124 A1 (GREGG BOND) 11.12.2008	1-8



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:	"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
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"E" earlier document but published on or after the international filing date	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
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"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

20 March 2013 (20.03.2013)

Date of mailing of the international search report

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