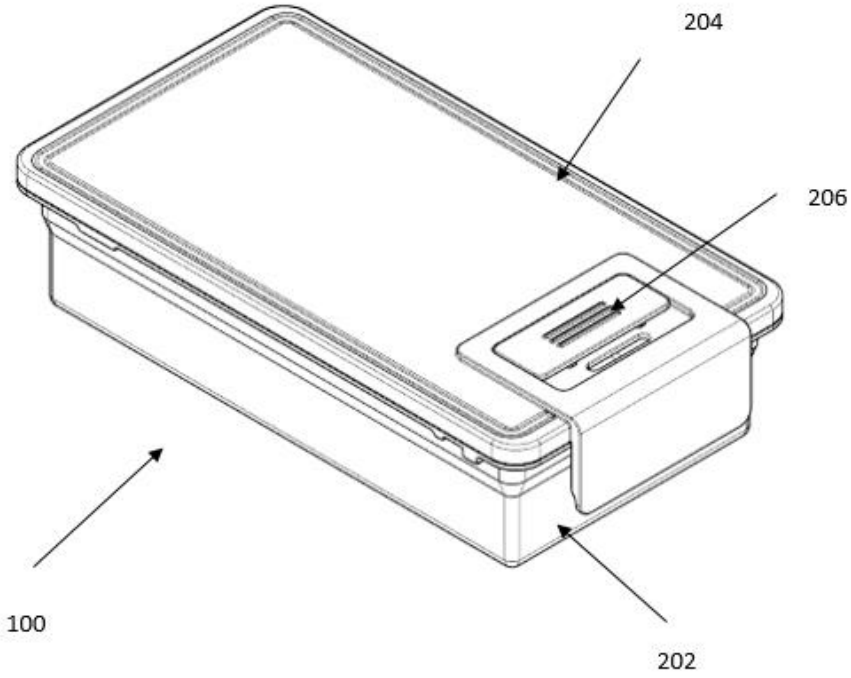


Figure 2(a)

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LG ELECTRONICS INC.
APPLICATION NO.:

TOTAL SHEETS: 05
SHEET NO. 01

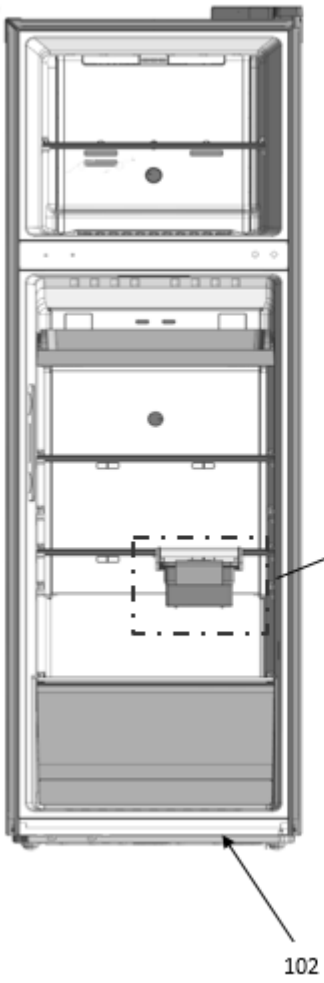


Figure 1(a)

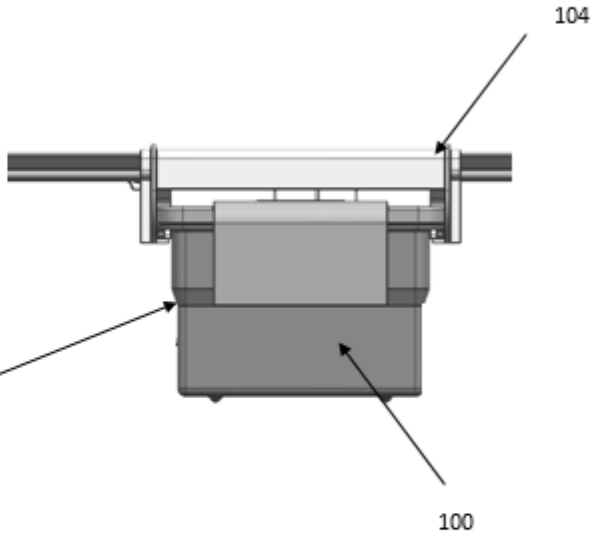


Figure 1(b)

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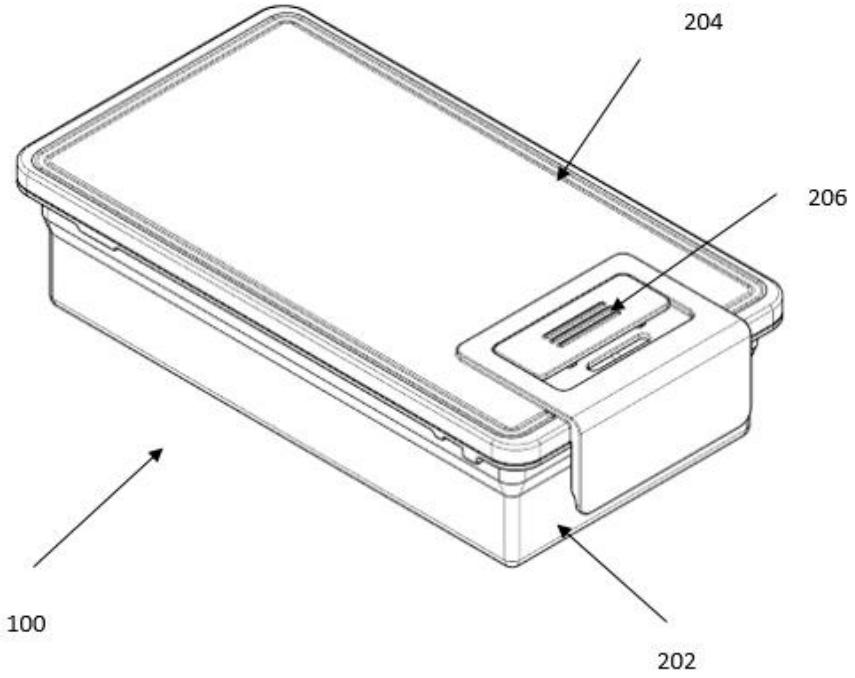


Figure 2(a)

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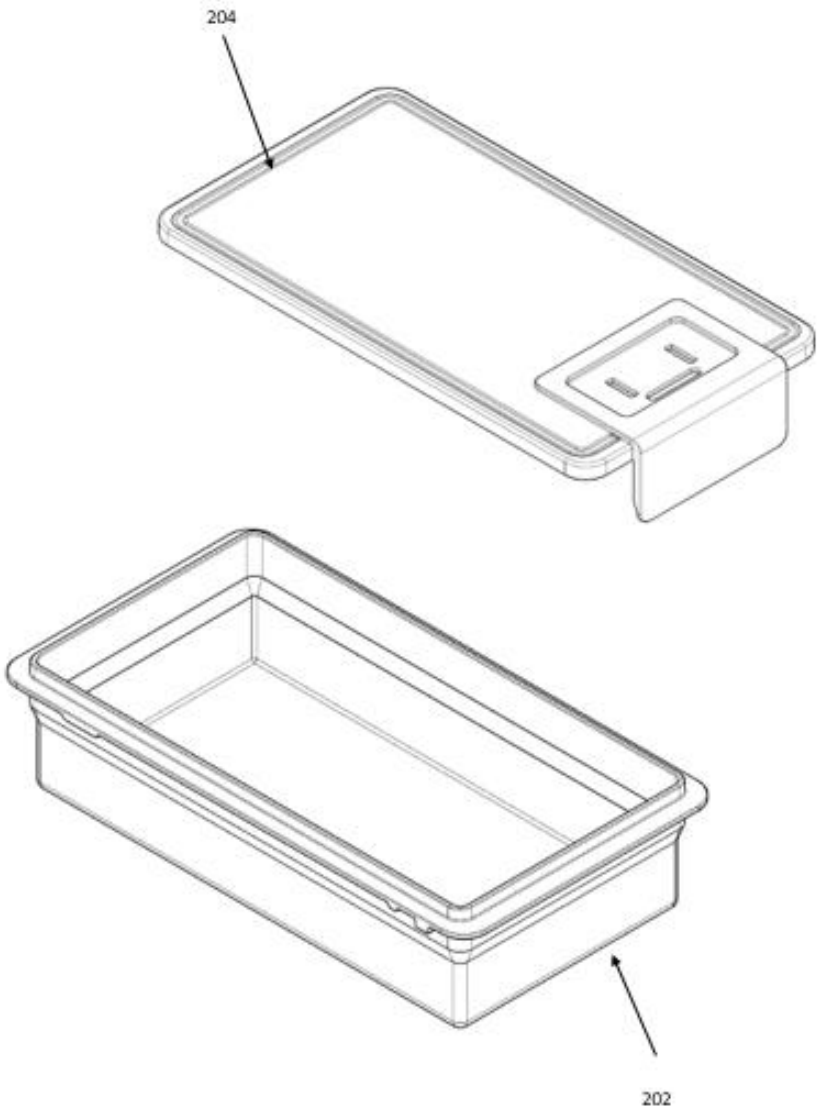


Figure 2(b)

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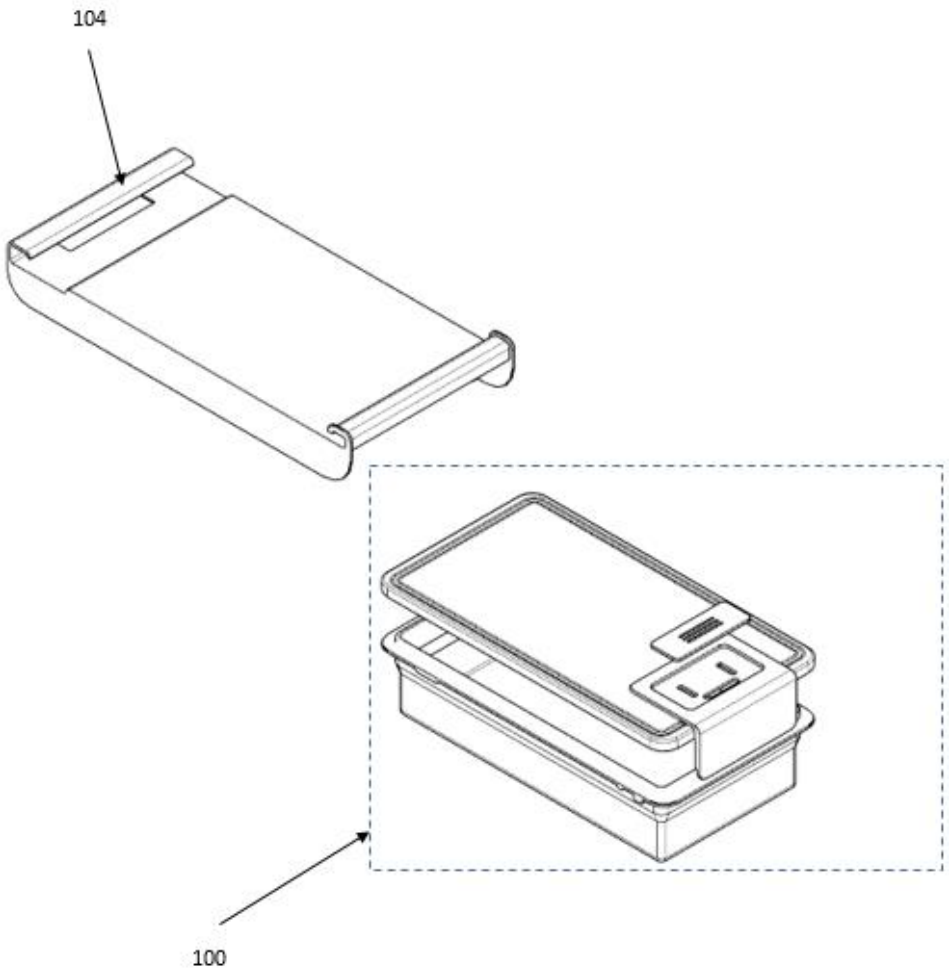


Figure 3

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APPLICATION NO.:

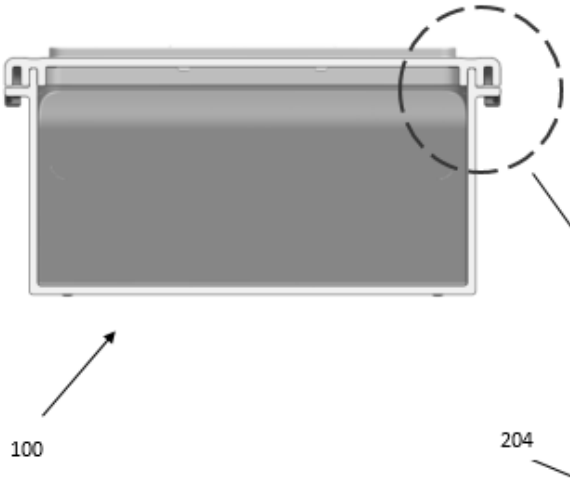


Figure 4(a)

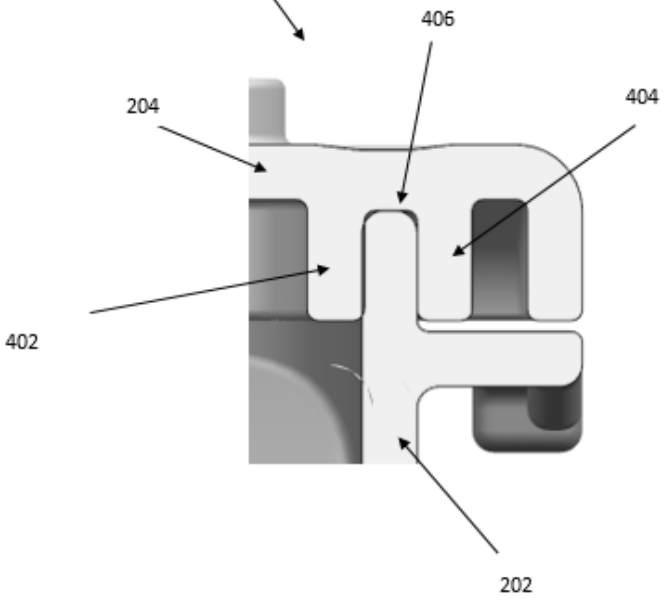


Figure 4(b)

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FORM 2
THE PATENTS ACT, 1970
(39 of 1970)

And

THE PATENTS RULES, 2003

Complete Specification

(*See* Section 10 and Rule 13)

1. Title of the invention

A STORAGE CONTAINER WITH AIR TIGHT SEALING IN A REFRIGERATOR

2. Applicant(s)

(a) Name: **LG ELECTRONICS INC.**

(b) Nationality: Korean

(c) Address: 20 Yeouido-dong, Yeongdeungpo-gu, Seoul 150-721, Republic of Korea

The following specification particularly describes the invention and the manner in which it is to be performed.

A STORAGE CONTAINER WITH AIR TIGHT SEALING IN A REFRIGERATOR

FIELD OF THE INVENTION

[0001] The present invention generally relates to a storage container. In particular, the present invention relates to air tight sealing storage container in a refrigerator.

BACKGROUND OF THE INVENTION

[0002] Generally, storage containers may be used to store vegetables, food items and other non-consumable items like medicinal products, cosmetics etc inside the refrigerators. Consumables like food products when exposed to surroundings changes slowly because of various kinds of fungi existing in air. In conventional refrigerators shelve surface temperature is maintained at 2-30 C. When the storage container is kept on the glass shelve, conduction heat transfer takes place from glass shelve surface to box bottom surface. Products kept in the container start cooling faster from bottom to top causing initial temperature gradient cooling which causes condensation inside the box.

[0003] In light of the above, there is a need to provide an effective storage provision without causing condensation inside the storage container.

SUMMARY OF THE INVENTION

[0004] In accordance with an embodiment of the present invention, a storage container with air-tight sealing in

a refrigerator is provided. The storage container includes a storage box with an internal space for storage, a box cover to close the box, the box cover is provided with a contact surface for air tight sealing, a holding assembly provided in a shelf inside the refrigerator to hold the storage container.

[0005] Further, the storage box slides through the box cover via the contact surface providing an air tight sealing, the storage container slides through the holding assembly such that the storage container hangs from the holding assembly without any direct contact inside the refrigerator eliminating conduction heat transfer and facilitating in uniform temperature and moisture distribution.

[0006] Further, the contact surface in the box cover is a three-point contact surface including two adjacent side surfaces and one top surface. An interference is provided in any one of the side surfaces for easy movement of the storage box along the box cover and the top surface is a no-clearance surface providing air tight sealing.

[0007] Further, the storage box slides between the two adjacent side surface and the top surface of the box cover. The box cover further comprises a sliding knob for temperature and moisture inside the storage container. The sliding knob slides to reveal an opening in the storage box. The opening facilitates sin the flow of cold air inside the storage box. The sliding knob slides between a first position, a second position and a third position.

[0008] Further, in the first position, the sliding knob is completely opened allowing maximum amount of cold air entering the storage box causing low temperature and low moisture. In the second position, the sliding knob is partially opened allowing less amount of cold air entering the storage box causing relatively warmer temperature and higher moisture retention inside the storage box. Furthermore, in the third position, the sliding knob is completely closed stopping the cold air entering the storage box causing warmer temperature and high moisture retention inside the storage box.

[0009] Further, uniform temperature and moisture distribution in the storage container is maintained by uniform air flow distribution across the storage box via convective heat transfer. In an embodiment of the present invention, the holding assembly is one of: a guide rail assembly and a lock and hook assembly.

[0010] Other aspects, advantages, and salient features of the present invention will become apparent to those skilled in the art from the following detailed description read in conjunction with the drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011] The present invention is described by way of embodiments illustrated in the accompanying drawings wherein:

[0012] Figures 1(a) and 1(b) illustrate a refrigerator with a storage container and an enlarged view of a storage

container respectively in accordance with an embodiment of the present invention;

[0013] Figure 2(a) illustrates an isometric view and an exploded view of a storage container respectively in accordance with an embodiment of the present invention;

[0014] Figure 2(b) illustrates an exploded view of a storage container in accordance with an embodiment of the present invention;

[0015] Figure 3 illustrates an exploded view of a storage container and a guide rail assembly in accordance with an embodiment of the present invention; and

[0016] Figures 4(a) and 4(b) illustrate a front view of a storage container and an enlarged view of a contact surface of a storage container respectively in accordance with an embodiment of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

[0017] The following disclosure is provided in order to enable a person having ordinary skill in the art to practice the present invention. Exemplary embodiments are provided only for illustrative purposes and various modifications will be readily apparent to persons skilled in the art. The general principles defined herein may be applied to other embodiments and applications without departing from the spirit and scope of the present invention. Also, the terminology and phraseology used is for the purpose of describing exemplary embodiments and should not be considered limiting. Thus, the present

invention is to be accorded the widest scope encompassing numerous alternatives, modifications and equivalents consistent with the principles and features disclosed. For the purpose of clarity, details relating to technical material that is known in the technical fields related to the present invention have not been described in detail so as not to unnecessarily obscure the present invention.

[0018] The present invention would now be discussed in the context of embodiments as illustrated in the accompanying drawings.

[0019] Figures 1(a) and 1(b) illustrate a refrigerator with a storage container and an enlarged view of a storage container respectively in accordance with an embodiment of the present invention. Figure 2(a) illustrates an isometric view and an exploded view of a storage container respectively in accordance with an embodiment of the present invention. Figure 2(b) illustrates an exploded view of a storage container in accordance with an embodiment of the present invention. For the sake of brevity, figures 1(a), 1(b), 2(a) and 2(b) are described together.

[0020] In an embodiment of the present invention, the storage container (100) may be used to store vegetables, food items, cosmetics etc. In an exemplary embodiment of the present invention, the storage container (100) may be used to store dough. The storage container (100) comprises a storage box (202) with an internal space for storage, a box cover (204) to close the box, the box cover (204) is

provided with a contact surface for air tight sealing and a holding assembly provided in a shelf inside the refrigerator (102) to hold the storage container (100). In an embodiment of the present invention, the holding assembly is one of: a guide rail assembly (104) and a lock and hook assembly. In an embodiment of the present invention, the storage container (100) may be placed inside the refrigerator (102).

[0021] Further, the box cover (204) further comprises a sliding knob (206) for temperature and moisture inside the storage container (100). The sliding knob (206) slides between a first position, a second position and a third position. In the first position, the sliding knob (206) is completely opened allowing maximum amount of cold air entering the storage box (202) causing low temperature and low moisture. In the second position, the sliding knob (206) is partially opened allowing less amount of cold air entering the storage box (202) causing relatively warmer temperature and higher moisture retention inside the storage box (202). In the third position, the sliding knob (206) is completely closed stopping the cold air entering the storage box (202) causing warmer temperature and high moisture retention inside the storage box (202).

[0022] Figure 3 illustrates an exploded view of a storage container and a guide rail assembly in accordance with an embodiment of the present invention. In an embodiment of the present invention, the holding assembly is provided in a shelf of the refrigerator (102). The

storage container (100) hangs from the holding assembly without any direct contact inside the refrigerator (102). The storage container (100) is string up by the holding assembly having no direct contact with any part of refrigerator (102) hence avoiding conduction heat transfer. In an embodiment of the present invention, the storage container (100) may be hung from the shelf by either sliding into the guide rail assembly (104) or by hanging it by the hook provided on inner sides of the refrigerator (102). Furthermore, uniform temperature and moisture distribution in the storage container (100) is maintained by uniform air flow distribution across the storage box (202) via convective heat transfer.

[0001] Figures 4(a) and 4(b) illustrate a front view of a storage container and an enlarged view of a contact surface of a storage container respectively in accordance with an embodiment of the present invention. Further, the box cover (204) is a removable lid that is attached with the storage box (202) of the container. The storage box (202) slides through the box cover (204) via the contact surface providing an air tight sealing. In an embodiment of the present invention, the contact surface in the box cover (204) is a three-point contact surface including two adjacent side surfaces (402, 404) and one top surface (406). Further, an interference is provided in any one of the side surfaces (402, 404) for easy movement of the storage box (202) along the box cover (204). Further, the top surface (406) is a no-clearance surface providing air tight sealing to the storage box (202). In an embodiment

of the present invention, the interference may be of 0.1 mm clearance. The storage box (202) slides between the two adjacent side surfaces (402, 404) and the top surface (406) of the box cover (204).

[0023] Accordingly, the present invention provides the following effects or advantages.

[0024] The storage container (100) provides for efficient way of storing required products without having the problem of condensation and moisture retention. The storage container (100) is maintained in uniform temperature without direct contact cooling. This maintains moisture level and acidic (pH) levels thereby restricting growth of mold and yeast count up to 48 hours of storage. Further, the storage container (100) provides air tight sealing for improved shelf life. Furthermore, the storage container (100) is provided with a slidable knob (206) for adjusting the moisture and temperature. Additionally, if used inside the refrigerator (102), the storage container (100) provides accessibility for stored food products by providing flexibility in storage management inside the refrigerator (102).

[0025] While the exemplary embodiments of the present invention are described and illustrated herein, it will be appreciated that they are merely illustrative. It will be understood by those skilled in the art that various modifications in form and detail may be made therein without departing from or offending the scope of the present invention as defined by the appended claims

I/We claim:

1. A storage container (100) with air-tight sealing in a refrigerator (102), the storage container (100) comprising:

a storage box (202) with an internal space for storage;

a box cover (204) to close the storage box (202), the box cover (204) is provided with a plurality of contact surfaces for air tight sealing; and

a holding assembly provided in a shelf inside the refrigerator (102) to hold the storage container (100),

wherein the storage box (202) slides through the box cover (204) via the contact surface providing an air tight sealing, the storage container (100) is held by the holding assembly such that the storage container (100) hangs from the holding assembly without any direct contact inside the refrigerator (102) eliminating conduction heat transfer and facilitating in uniform temperature and moisture distribution.

2. The storage container (100) as claimed in claim 1, wherein the contact surface in the box cover (204) is a three-point contact surface including two adjacent side surfaces (402, 404) and one top surface (406).

3. The storage container (100) as claimed in claim 2, wherein an interference is provided in any one of the

side surfaces (402, 404) for easy movement of the storage box (202) along the box cover (204) and the top surface (406) is a no-clearance surface providing air tight sealing.

4. The storage container (100) as claimed in one of claims 1 to 3, wherein the storage box (202) slides between the two adjacent side surfaces (402, 404) and the top surface (406) of the box cover (204).

5. The storage container (100) as claimed in claim 1, wherein the box cover (204) comprises a sliding knob (206) for temperature and moisture inside the storage container (100), further wherein the sliding knob (206) slides between a first position, a second position and a third position.

6. The storage container (100) as claimed in claim 5, wherein in the first position, the sliding knob (206) is completely opened allowing maximum amount of cold air entering the storage box (202) causing low temperature and low moisture.

7. The storage container (100) as claimed in claim 5, wherein in the second position, the sliding knob (206) is partially opened allowing less amount of cold air entering the storage box (202) causing relatively warmer temperature and higher moisture retention inside the storage box (202).

8. The storage container (100) as claimed in claim 5, wherein in the third position, the sliding knob (206)

is completely closed stopping the cold air entering the storage box (202) causing warmer temperature and high moisture retention inside the storage box (202).

9. The storage container (100) as claimed in one of claims 1 to 8, wherein uniform temperature and moisture distribution in the storage container (100) is maintained by uniform air flow distribution across the storage box (202) via convective heat transfer.

10. The storage container (100) as claimed in claim 1, the holding assembly is one of: a guide rail assembly (104) and a lock and hook assembly.

Dated this 27th day of April 2023

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Agent for applicant
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ABSTRACT

A STORAGE CONTAINER WITH AIR TIGHT SEALING IN A REFRIGERATOR

[0026] The present invention discloses storage container (100) with air-tight sealing in a refrigerator (102). The storage container (100) includes a storage box (202) with an internal space for storage, a box cover (204) to close the box, the box cover (204) is provided with a contact surface for air tight sealing and a holding assembly provided in a shelf inside the refrigerator (102) to hold the storage container (100). Further, the storage box (202) slides through the box cover (204) via the contact surface providing an air tight sealing, the storage container (100) slides through the holding assembly such that the storage container (100) hangs from the holding assembly without any direct contact inside the refrigerator (102) eliminating conduction heat transfer and facilitating in uniform temperature and moisture distribution.

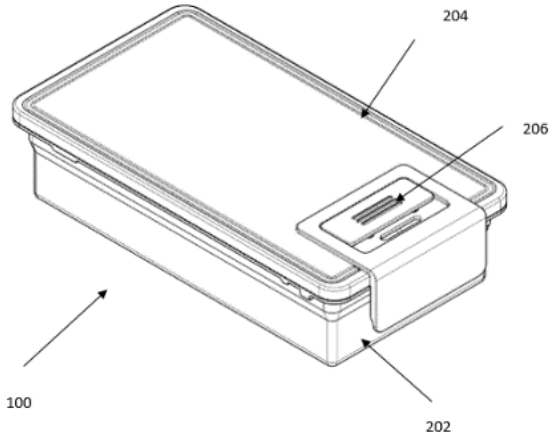


Figure 2(a)

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APPLICATION NO.:

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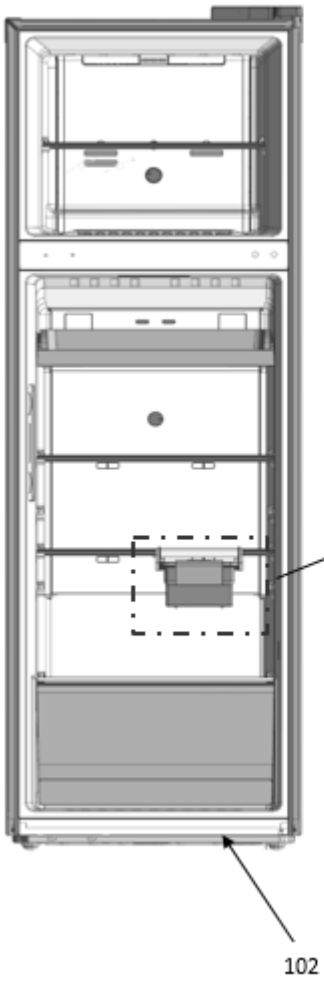


Figure 1(a)

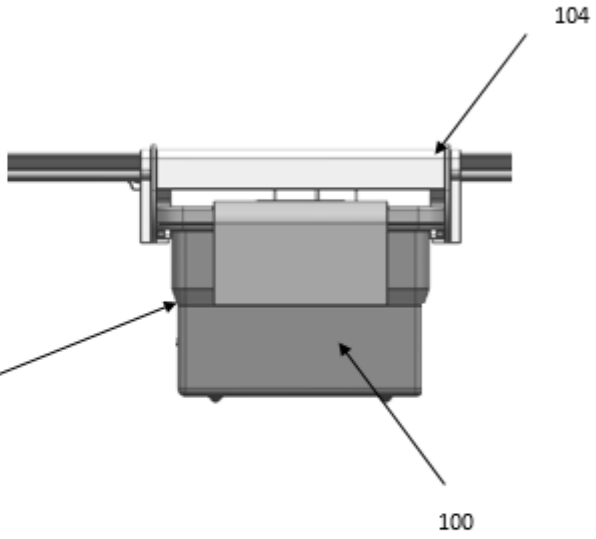


Figure 1(b)

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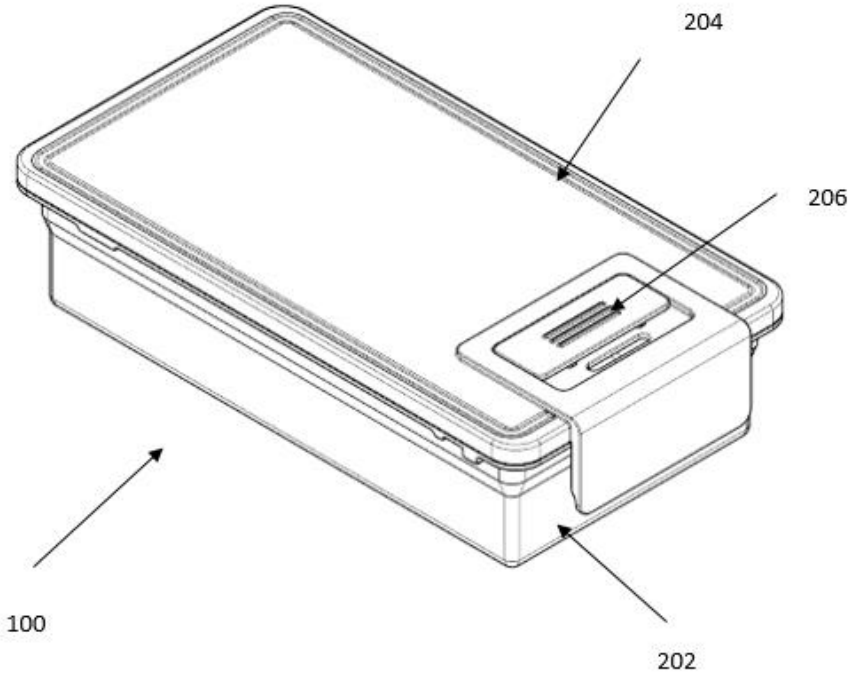


Figure 2(a)

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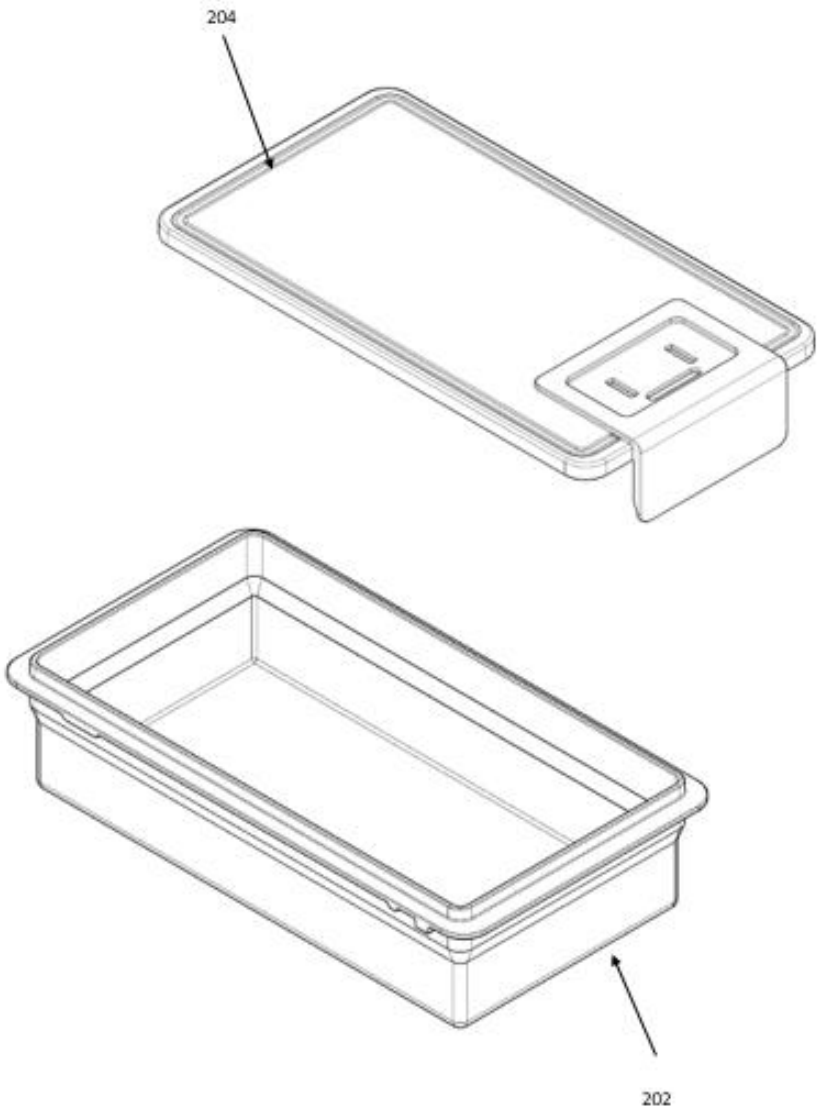


Figure 2(b)

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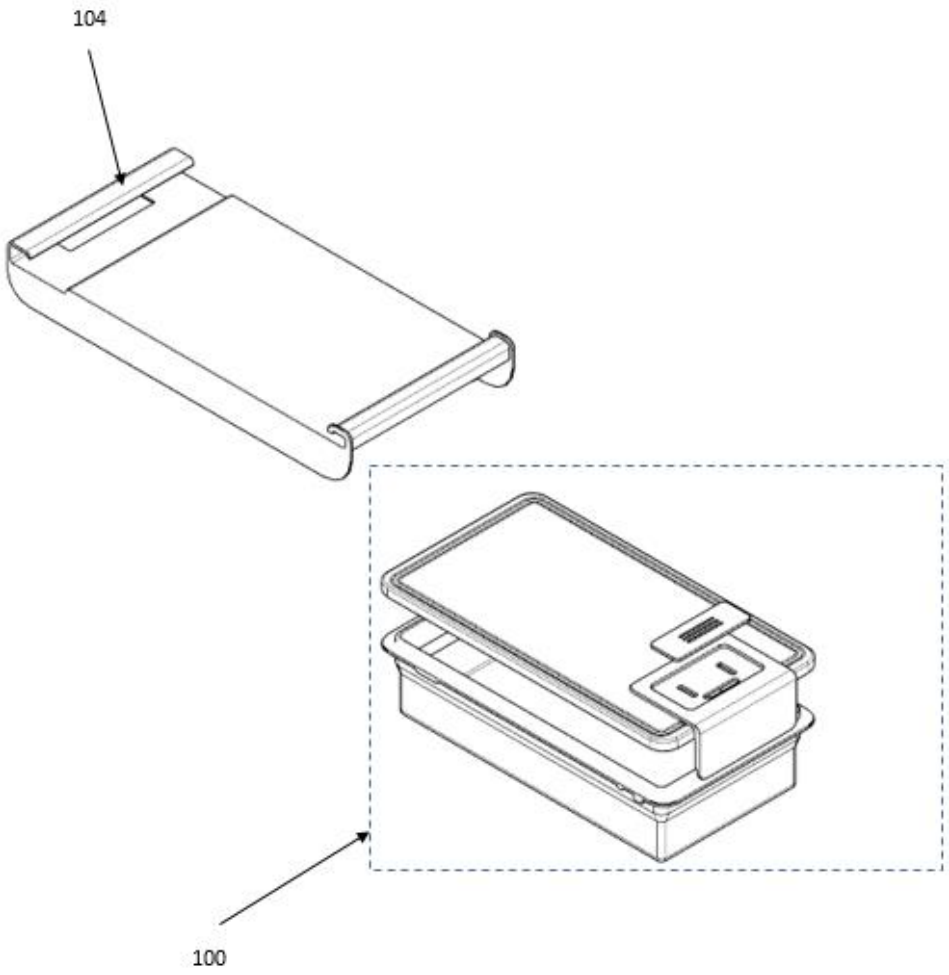


Figure 3

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NAME OF THE APPLICANT:
LG ELECTRONICS INC.
APPLICATION NO.:

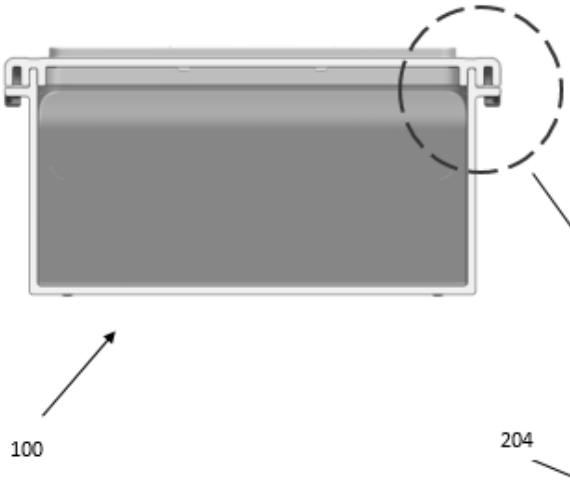


Figure 4(a)

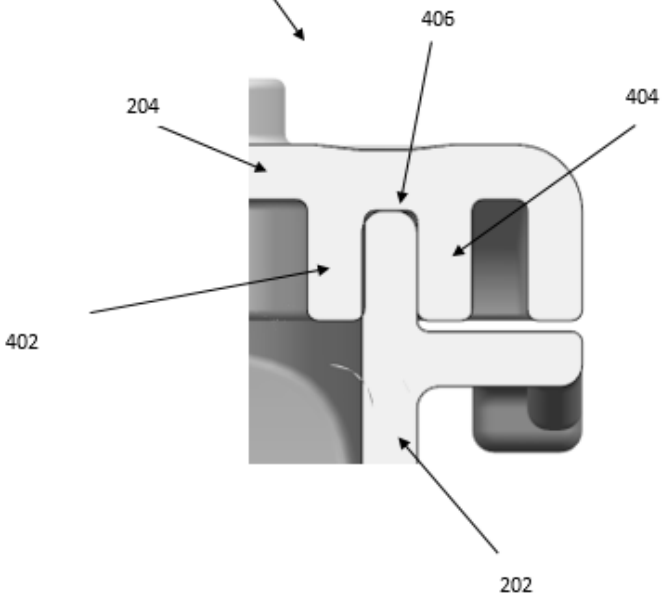


Figure 4(b)

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