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(54) **STORAGE CABINET**

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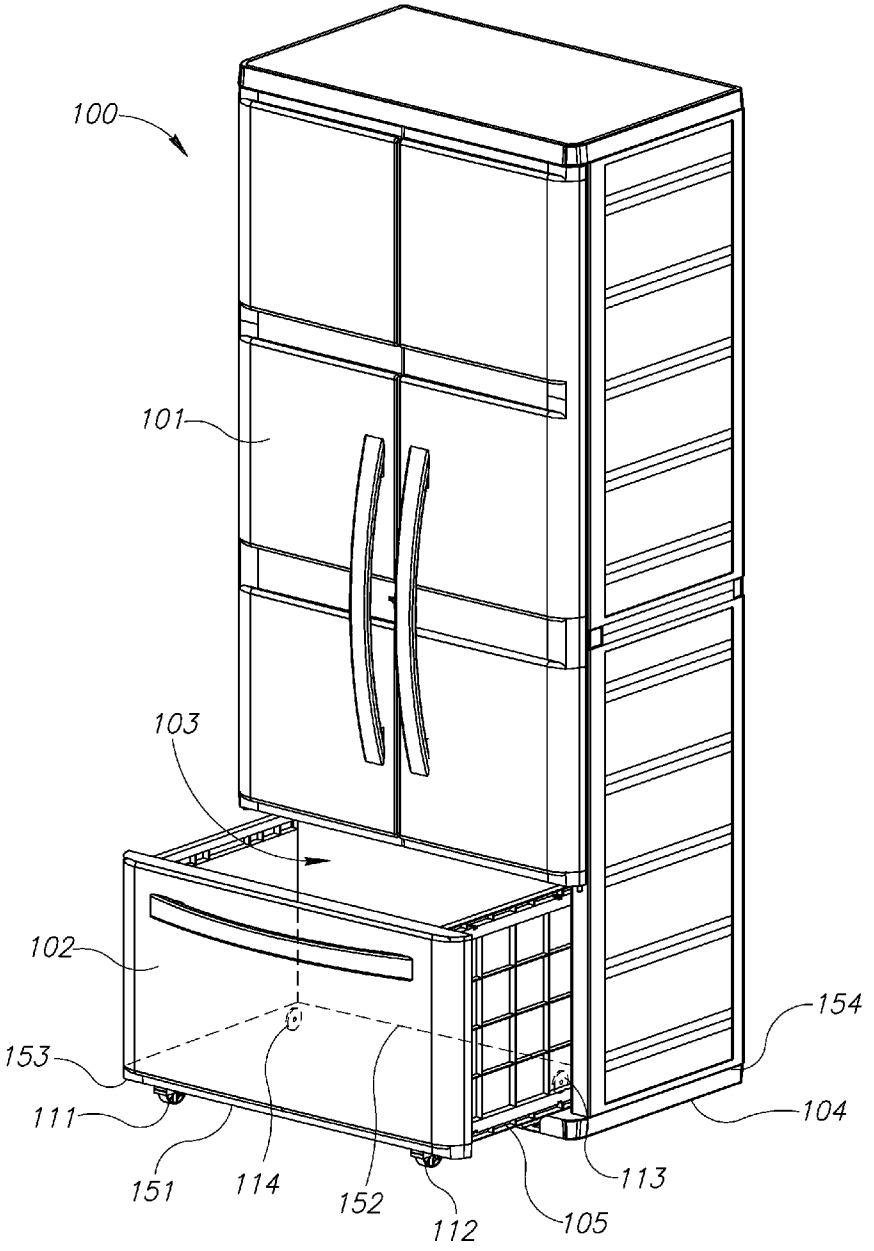
USPC **312/317.1**; 312/330.1; 312/334.7

(57) **ABSTRACT**

The present invention includes a storage cabinet including: a cabinet case having at least a lower cavity; a drawer adapted to fit within the lower cavity; and two front wheels connected to an outwardly-facing edge of the drawer. A first wheel of the two front wheels is located in proximity to a right-side corner of the outwardly-facing edge of the drawer; and a second wheel of the two front wheels is located in proximity to a left-side corner of the outwardly-facing edge of the drawer.



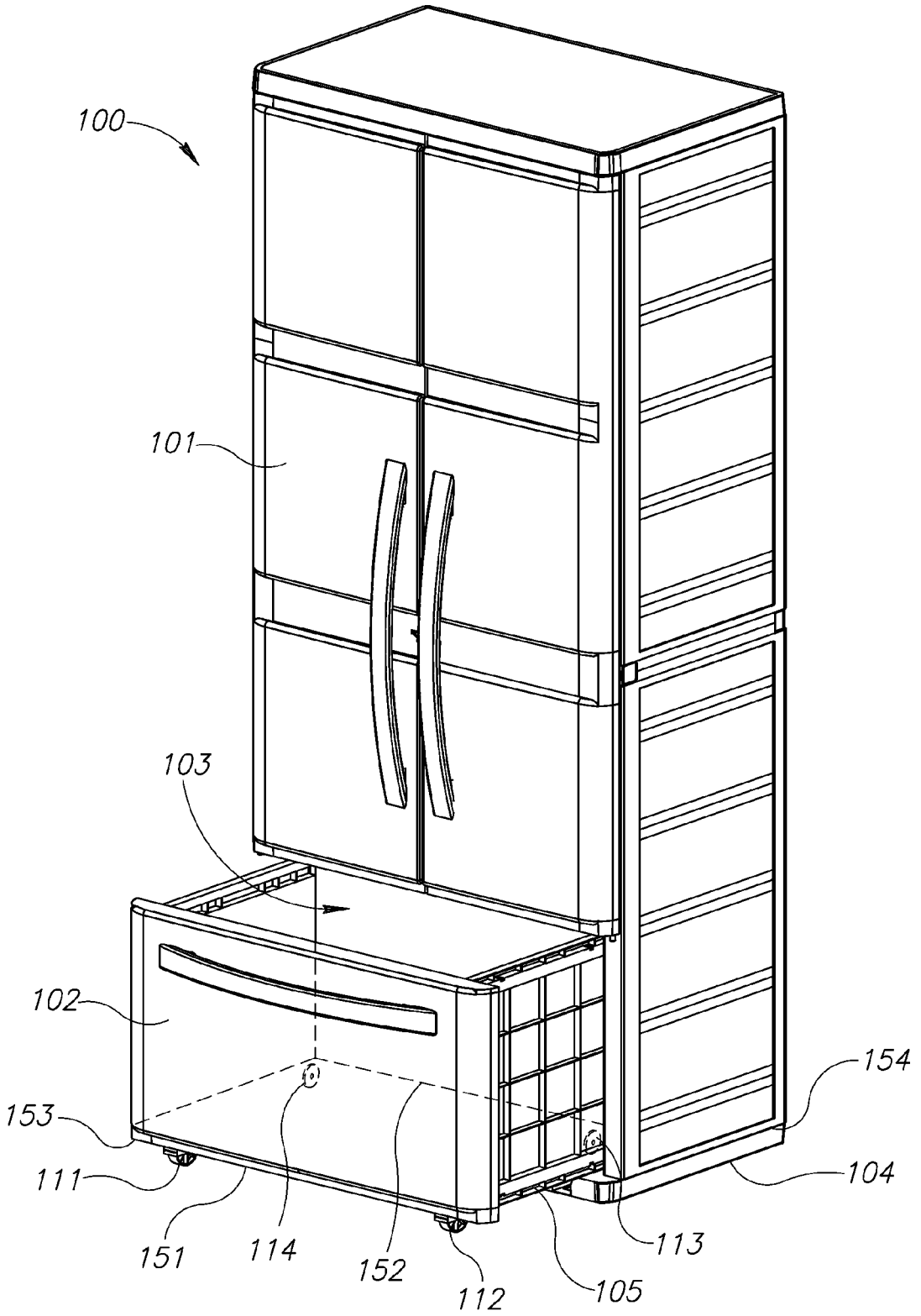


FIG.1A

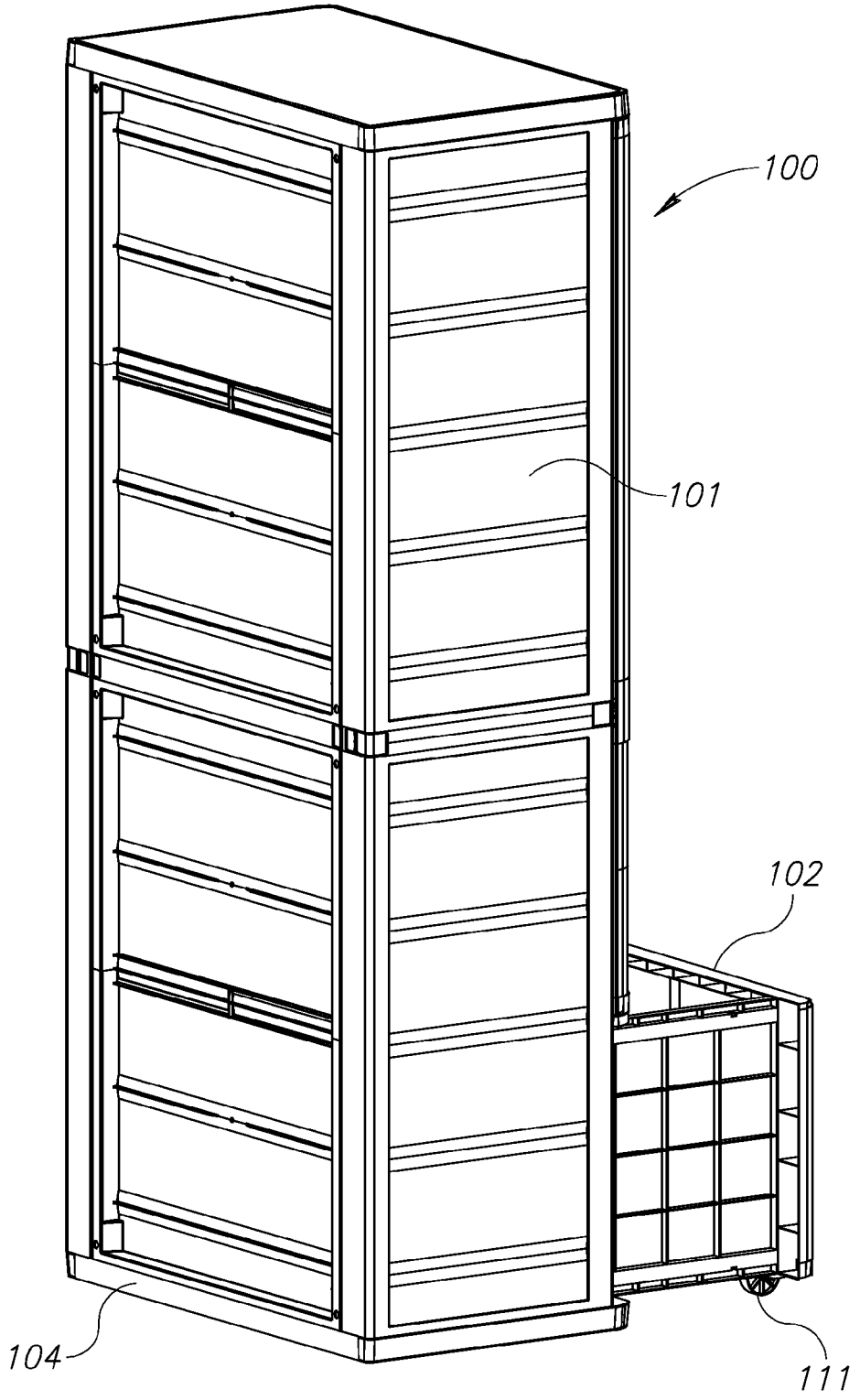


FIG.1B

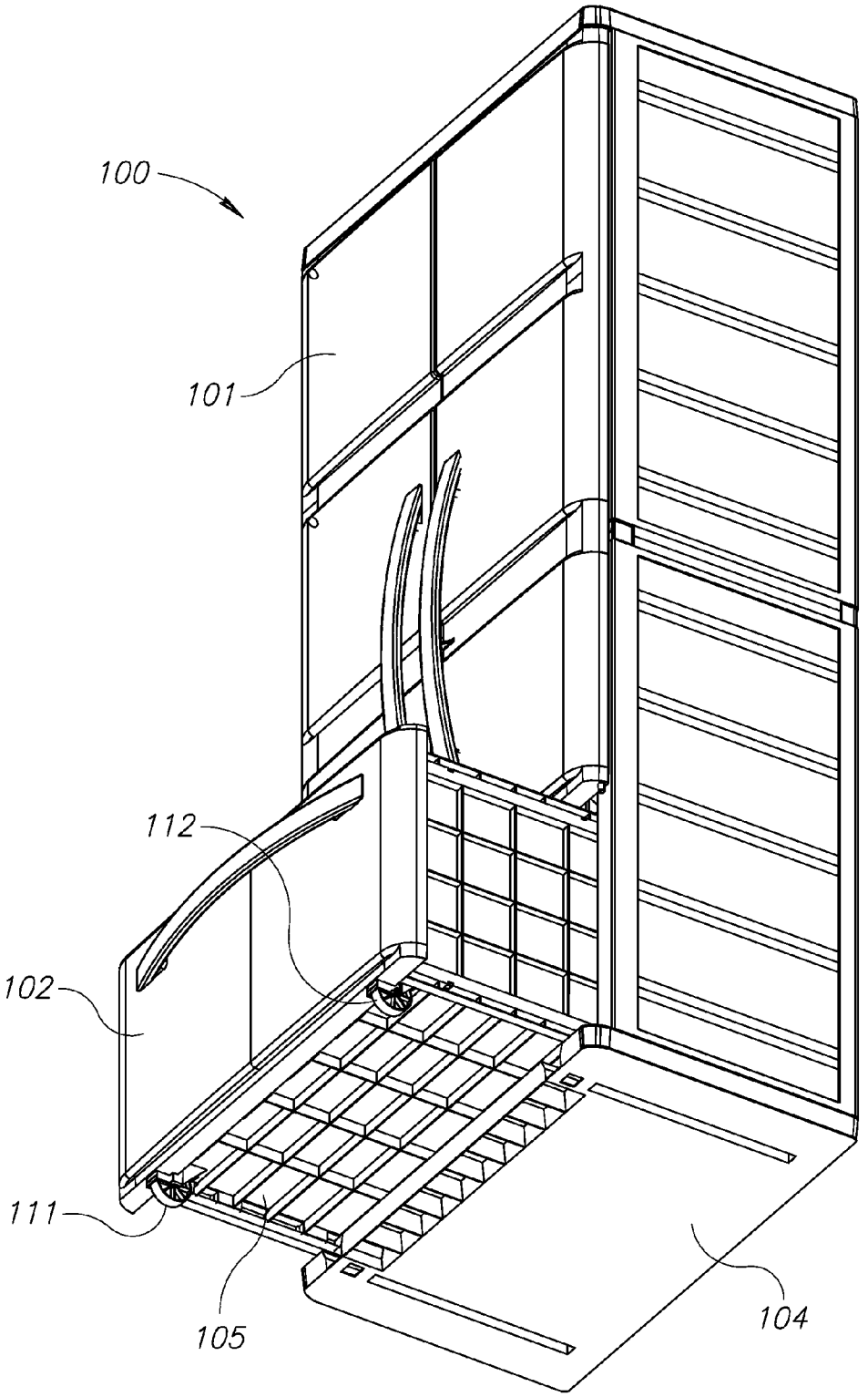


FIG.1C

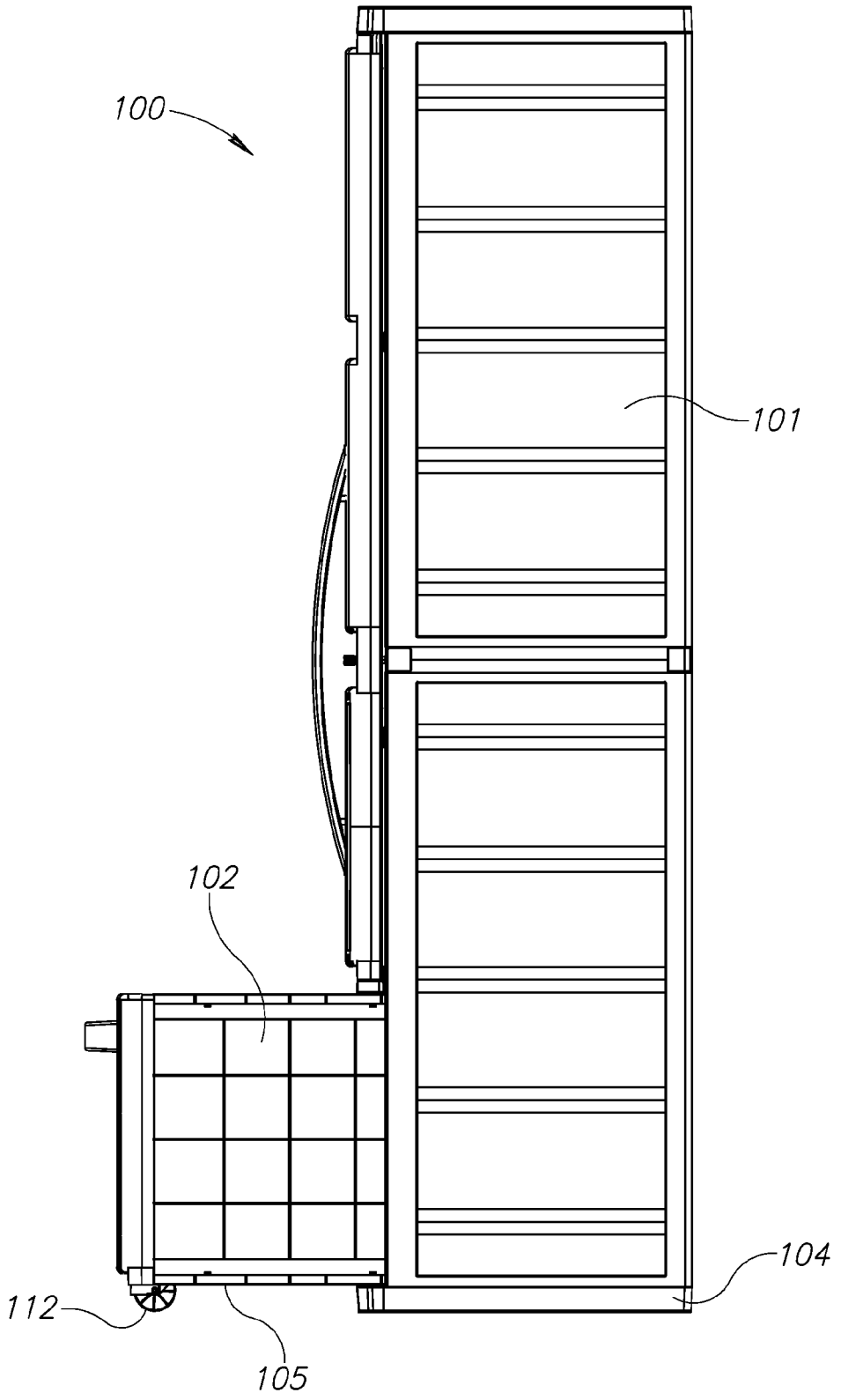


FIG.1D

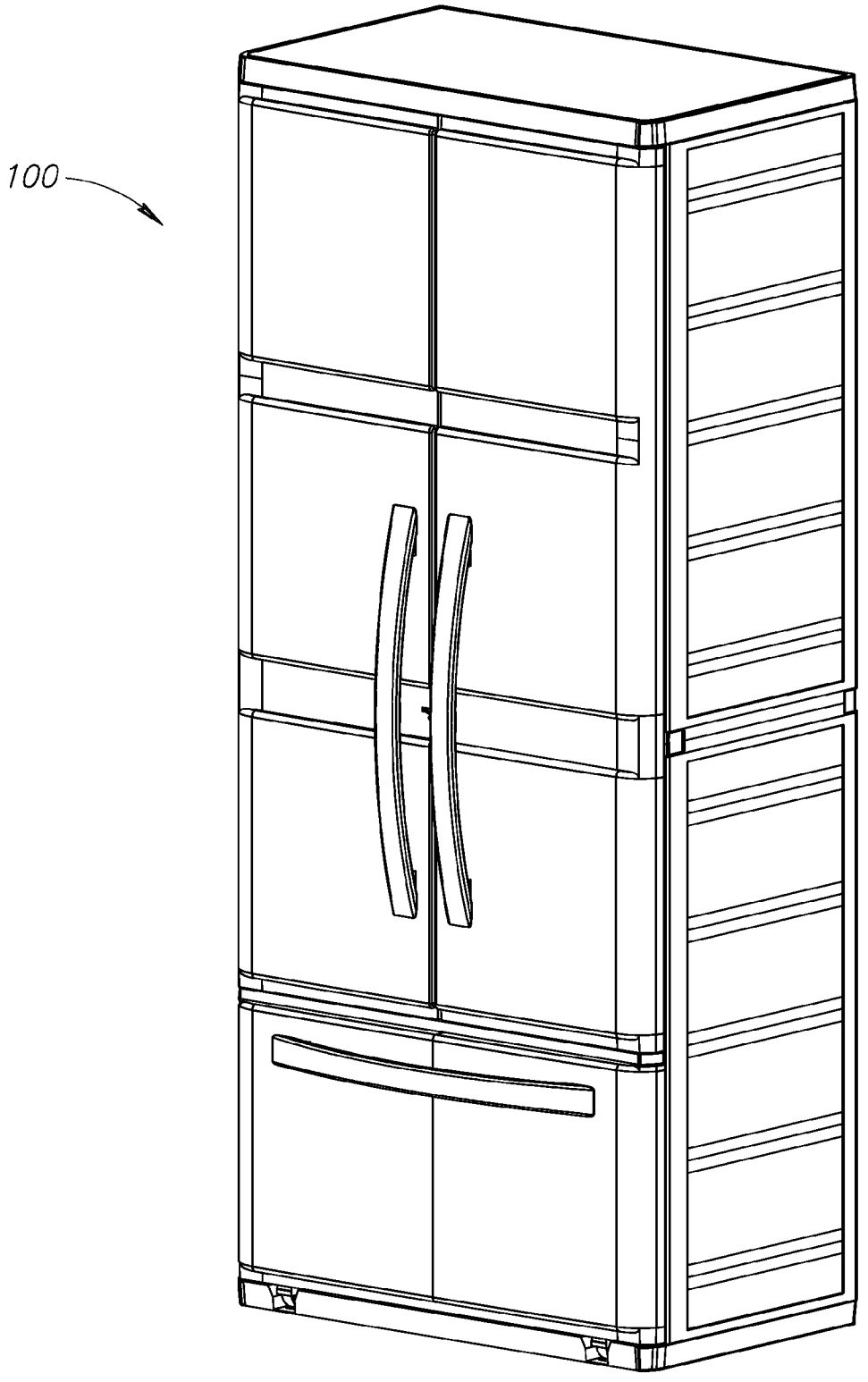


FIG.2A

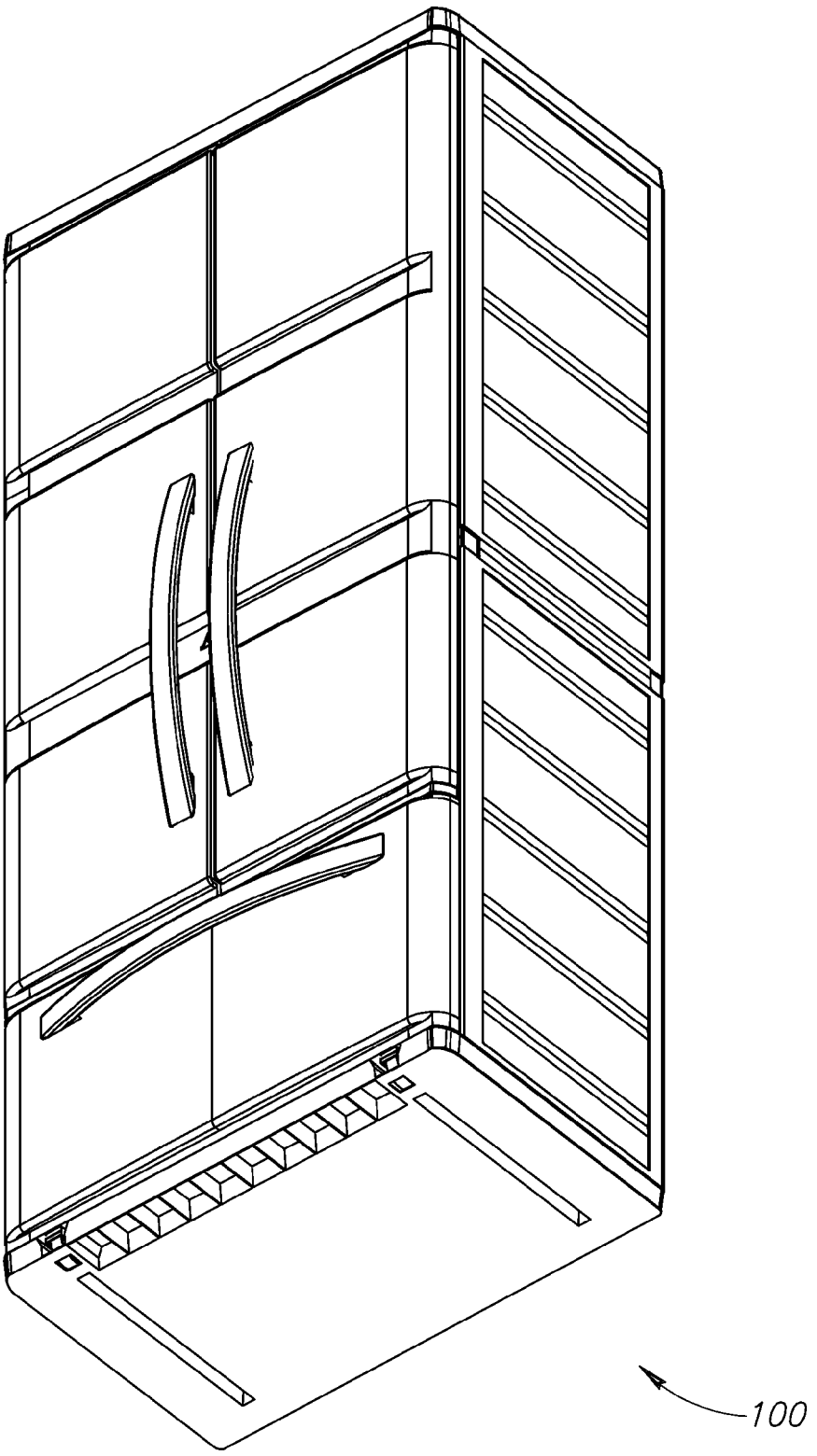


FIG.2B

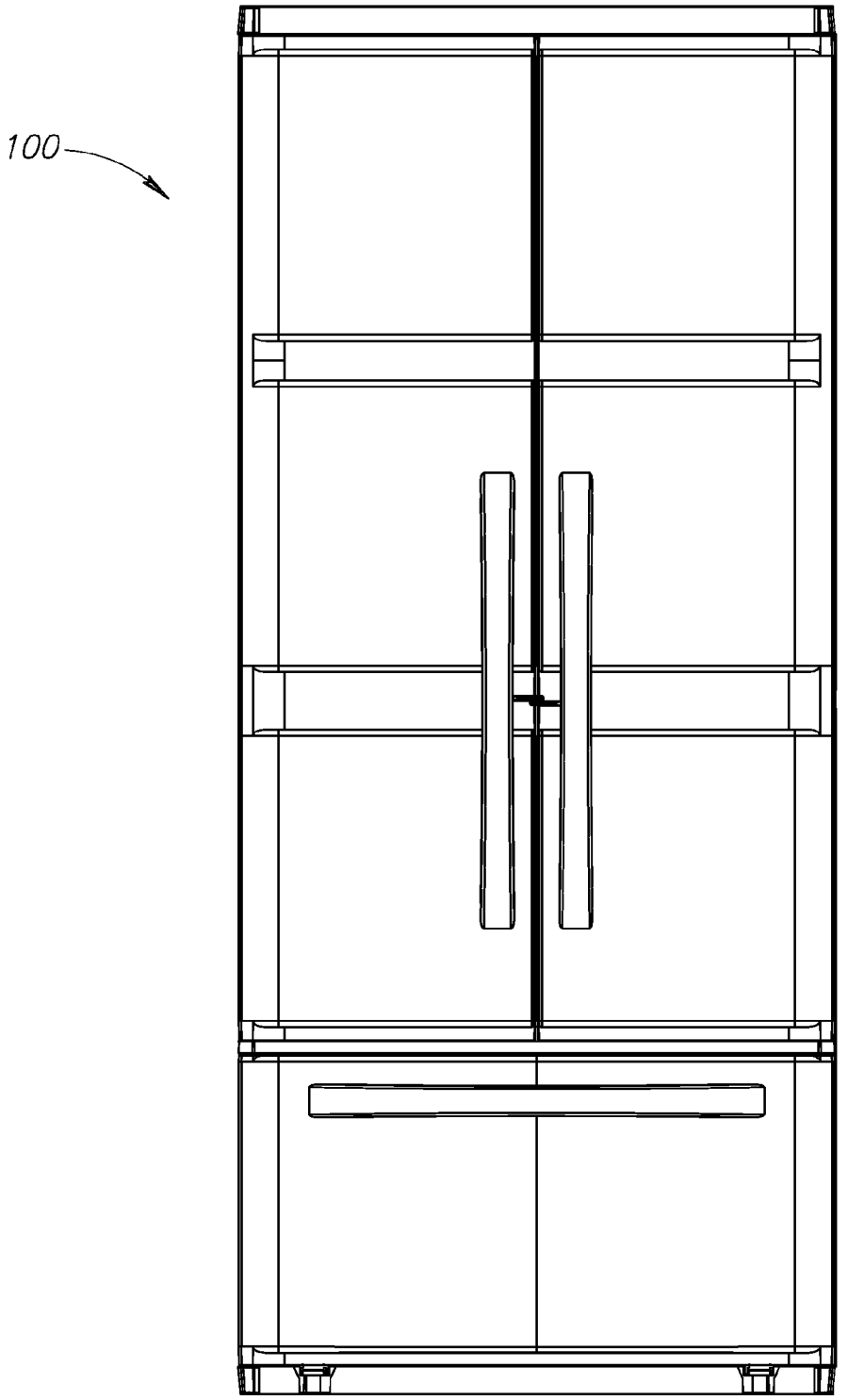


FIG.2C

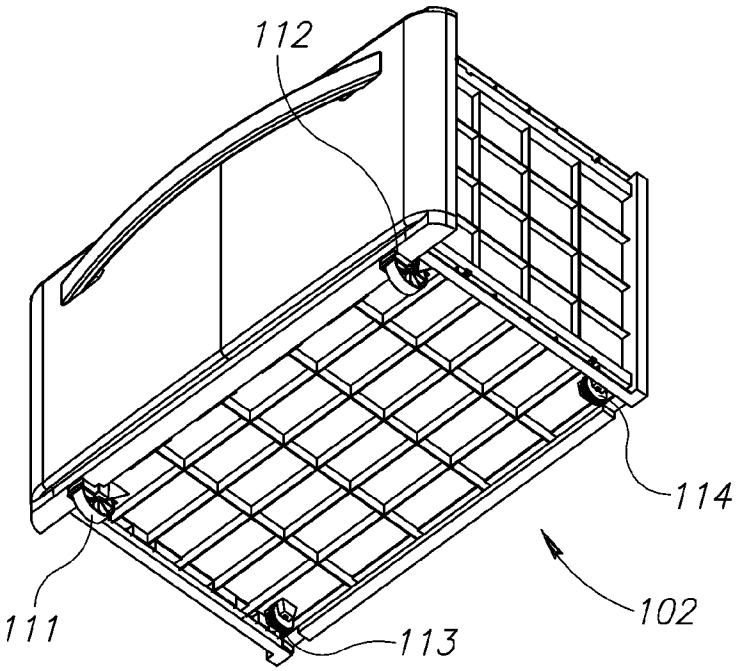


FIG.3A

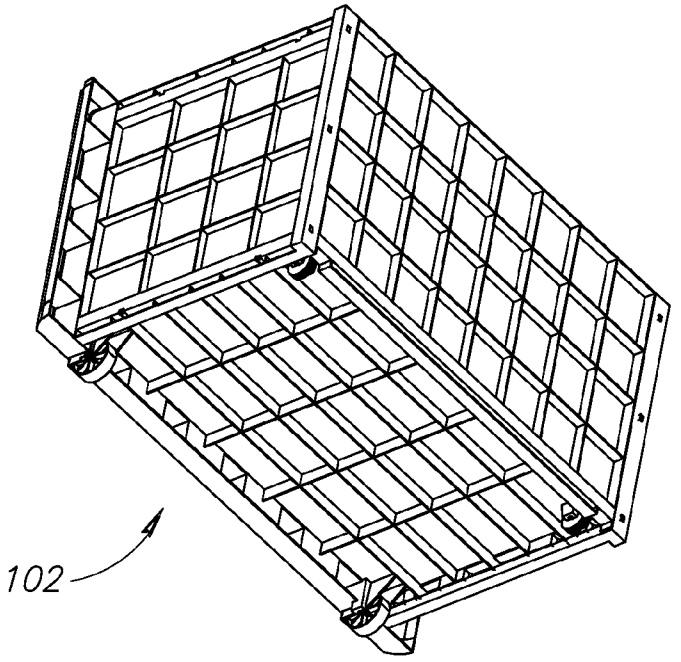


FIG.3B

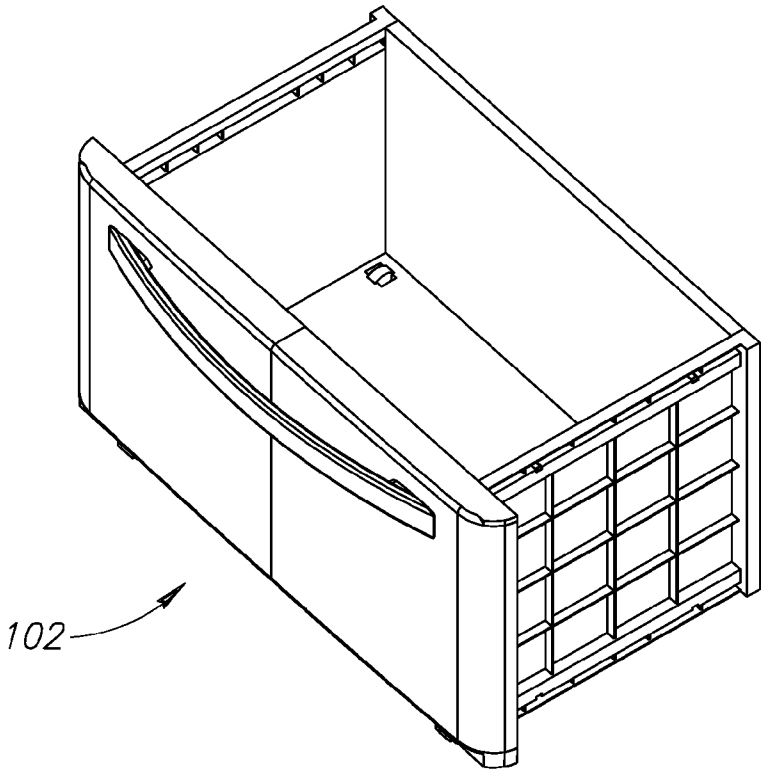


FIG.3C

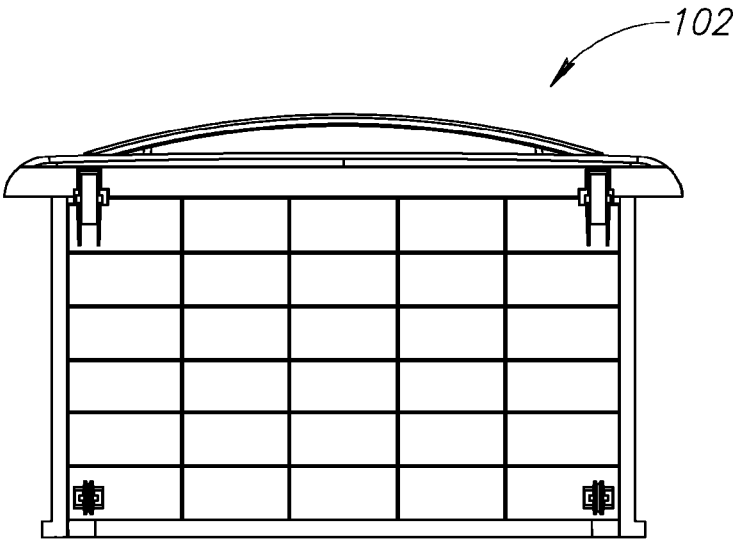


FIG.3D

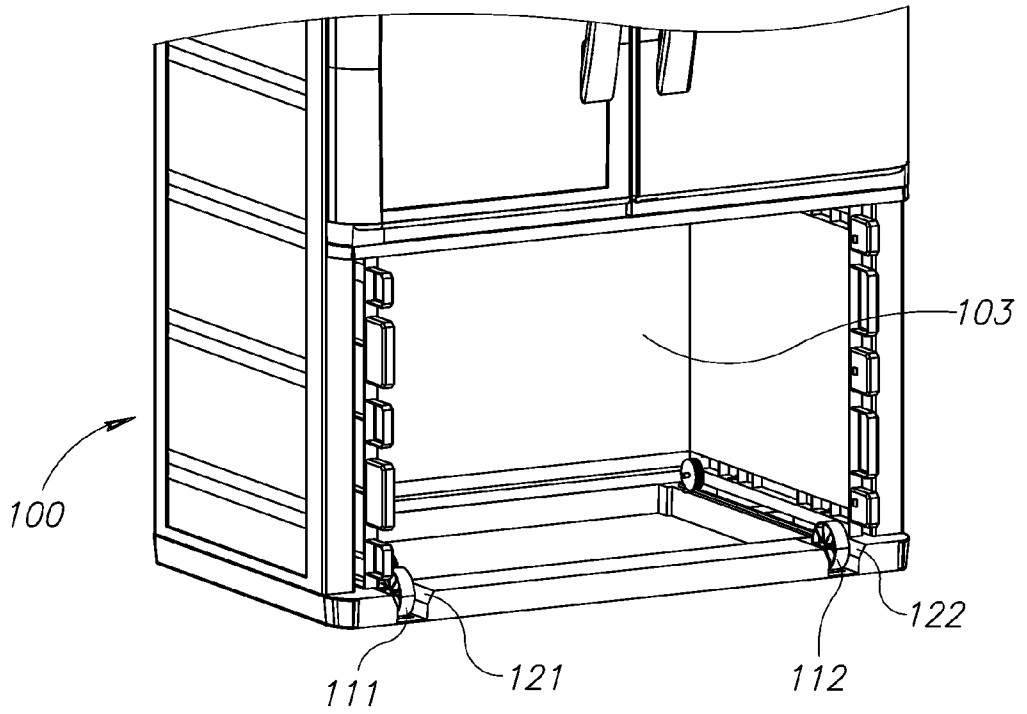


FIG.4A

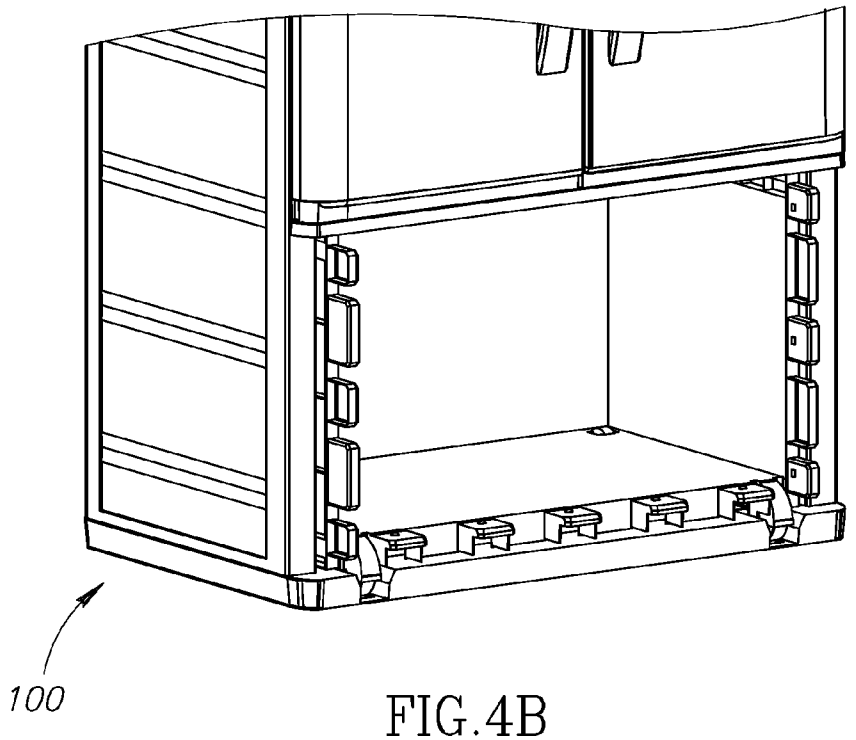


FIG.4B

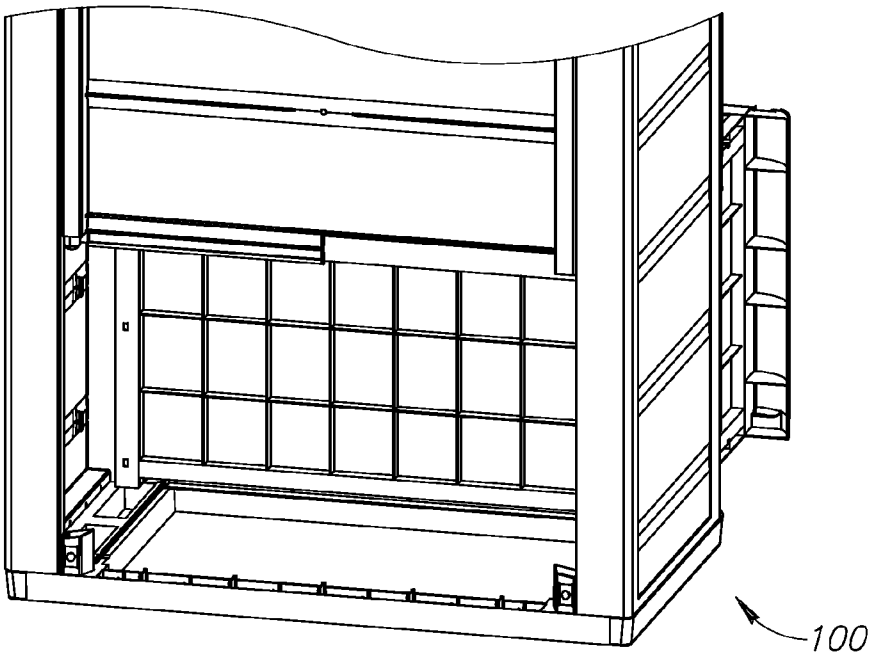


FIG.4C

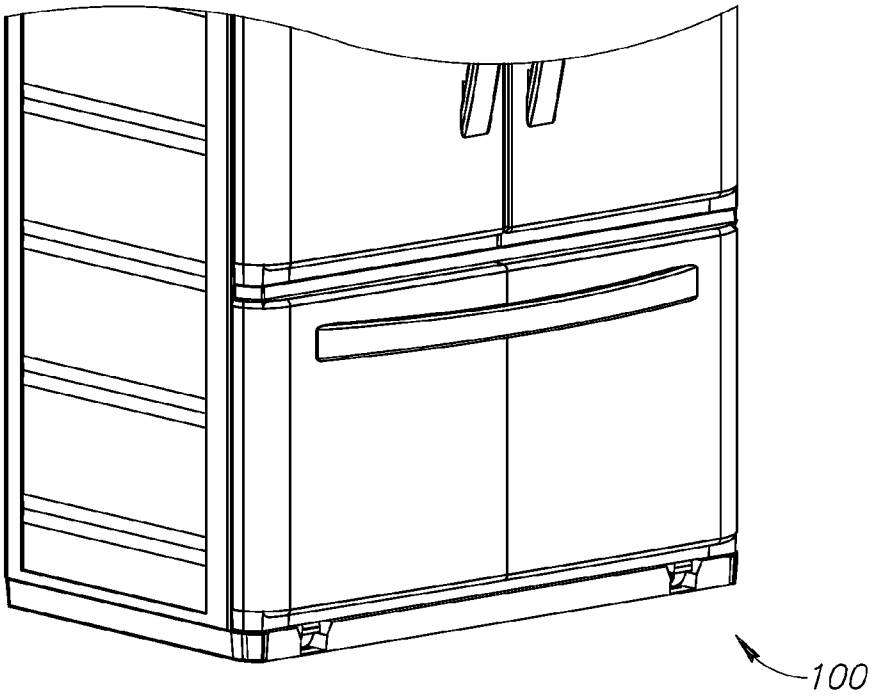


FIG.4D

STORAGE CABINET

FIELD

[0001] The present invention is related to the field of storage cabinets.

BACKGROUND

[0002] A cabinet may be used for storing miscellaneous items, for example, in an office or a home. Some cabinets may be generally box-shaped, and may have doors and/or drawers which may be opened and closed by a user.

[0003] Some cabinets may be implemented as stand-alone furniture, whereas other cabinets may be built into a building cavity or may be attached to a wall.

SUMMARY

[0004] The present invention may include a storage cabinet having a lower drawer which may be opened and closed by a user. The lower drawer may move on rails, and may include two stabilizing wheels which may be connected underneath the lower drawer. For example, a first stabilizing wheel may be connected at or near a first outward corner (e.g., a front right corner) of the lower drawer, and a second stabilizing wheel may be connected at or near a second outward corner (e.g., a front left corner) of the lower drawer.

[0005] The two stabilizing wheels may allow smooth and/or efficient opening and closing of the drawer; may stabilize the storage cabinet; may prevent tipping of the storage cabinet due to partial or full opening of the lower drawer, or due to placement of heavy items in the lower drawer while in an open position; and may support the movement of the lower drawer, thereby reducing pressure and wear-and-tear from the rails on which the lower drawer is mounted.

[0006] In accordance with the present invention, for example, a storage cabinet may include: a cabinet case having at least a lower cavity; a drawer adapted to fit within said lower cavity; and two front wheels connected to an outwardly-facing edge of said drawer.

[0007] In accordance with the present invention, for example, a first wheel of the two front wheels may be located in proximity to a right-side corner of the outwardly-facing edge of the drawer; and a second wheel of the two front wheels may be located in proximity to a left-side corner of the outwardly-facing edge of the drawer.

[0008] In accordance with the present invention, for example, the two front wheels may include two non-swiveling wheels.

[0009] In accordance with the present invention, for example, the lower drawer may be located above a base surface of the storage cabinet.

[0010] In accordance with the present invention, for example, the storage cabinet may further include two rear wheels connected underneath an inwardly-facing edge of the lower drawer.

[0011] In accordance with the present invention, for example, the two rear wheels may be adapted to roll within the lower cavity of the cabinet case on top of the base surface.

[0012] In accordance with the present invention, for example, the two rear wheels may be on top of the base surface; and the two front wheels may touch a surface on which the storage cabinet stands.

[0013] In accordance with the present invention, for example, the base surface may include two recesses therein to receive the two front wheels.

[0014] In accordance with the present invention, for example, the storage cabinet may be a non-portable and/or non-rollable storage cabinet.

[0015] In accordance with the present invention, for example, the storage cabinet may include rails mounted within side panels of the lower cavity, and the lower drawer may slide on the rails.

[0016] In accordance with the present invention, for example, at least the lower drawer may be formed of plastic.

[0017] In accordance with the present invention, for example, substantially all components of the storage cabinet may be formed of plastic.

[0018] In accordance with the present invention, for example, at least the lower drawer may be formed of one or more injected plastic materials.

[0019] In accordance with the present invention, for example, substantially all components of the storage cabinet may be formed of one or more injected plastic materials.

[0020] The present invention may provide other and/or additional benefits and/or advantages.

BRIEF DESCRIPTION OF THE DRAWINGS

[0021] For simplicity and clarity of illustration, elements shown in the figures have not necessarily been drawn to scale. For example, the dimensions of some of the elements may be exaggerated relative to other elements for clarity of presentation. Furthermore, reference numerals may be repeated among the figures to indicate corresponding or analogous elements. The figures are listed below.

[0022] FIGS. **1**A-**1**C are schematic illustrations of perspective views of a storage cabinet having wheels supporting a lower drawer, the lower drawer being in in an open position, in accordance with the present invention;

[0023] FIG. **1**D is a schematic illustration of a right-side view of the storage cabinet in an open position, in accordance with the present invention;

[0024] FIGS. **2**A-**2**B are schematic illustrations of perspective views of the storage cabinet in a closed position, in accordance with the present invention;

[0025] FIG. **2**C is a schematic illustration of a front-side view of the storage cabinet in a closed position, in accordance with the present invention;

[0026] FIGS. **3**A-**3**C are schematic illustrations of perspective views of a lower drawer of the storage cabinet, in accordance with the present invention;

[0027] FIG. **3**D is a schematic illustration of a bottom view of the lower drawer of the storage cabinet, in accordance with the present invention;

[0028] FIG. **4**A is a schematic illustration of the lower drawer within the storage cabinet, shown from the front side without a front panel, in accordance with the present invention;

[0029] FIG. **4**B is a schematic illustration of the lower drawer within the storage cabinet, shown from the front side without a front panel and without a bottom panel, in accordance with the present invention;

[0030] FIG. **4**C is a schematic illustration of the lower drawer in an open position, shown from the rear side, in accordance with the present invention; and

[0031] FIG. **4**D is a schematic illustration of the lower drawer in a closed position, shown from the front side, in accordance with the present invention.

DETAILED DESCRIPTION

[0032] In the following detailed description, numerous specific details are set forth in order to provide a thorough understanding of some embodiments. However, it will be understood by persons of ordinary skill in the art that some embodiments may be practiced without these specific details. In other instances, well-known methods, procedures, components, units and/or circuits have not been described in detail so as not to obscure the discussion.

[0033] Applicants have realized that a lower drawer of a storage cabinet may cause a safety hazard, for example, since opening a heavily-loaded lower drawer may cause the storage cabinet to tip over and fall.

[0034] Applicants have further realized that a lower drawer is located close to the ground or floor, and thus the ground or floor may be utilized to provide support for the lower drawer, for example, by having wheels mounted underneath the lower drawer.

[0035] Reference is made to FIGS. **1**A-**1**C, which are schematic illustrations of perspective views of a storage cabinet **100** having wheels supporting a lower drawer, the lower drawer being in an open position, in accordance with the present invention; as well as to FIG. **1**D, which is a schematic illustration of a right-side view of storage cabinet **100** in an open position, in accordance with the present invention. Storage cabinet **100** may include an upper storage area **101** and a lower drawer **102**.

[0036] Upper storage area **101** may optionally include one or more chambers, drawers, doors, compartments, divider, shelves, handles, or other units or components.

[0037] Lower drawer **102** may fit inside a lower cavity **103** of storage cabinet **100** (the spatial location of lower cavity **103** is partially filled by lower drawer **102** in FIG. **1**A), and may be opened and closed by a user. Optionally, lower drawer **102** may be movable over a base surface **104** of storage cabinet **100**. Lower drawer **102** may include multiple wheels, for example, four wheels **111-114**, which may be connected under a lower panel **105** of lower drawer **102**. Wheels **111-114** may be implemented, for example, as a pair of front wheels **111-112** which may be closer to an outward edge **151** of lower drawer **102**, while a pair of rear wheels **113-114** (shown in FIG. **3**A) which may be closer to an inward edge **152** of lower drawer **102**.

[0038] Optionally, the pair of rear wheels **113-114** may be able to roll on top of bottom panel **105**, whereas the pair of front wheels **111-112** may be able to roll on a floor or ground located in front of bottom panel **105**. Optionally, the pair of rear wheels **113-114** may be able to roll internally within storage cabinet **100**, whereas the pair of front wheels **111-112** may be able to roll on a floor or ground located externally to storage cabinet **100**.

[0039] Each one of rear wheels **113-114** may be substantially identical to each one of front wheels **111-112**. Alternatively, rear wheels **113-114** may have dimensions or characteristics which may be different from those of front wheels **111-112**. For example, rear wheels **113-114** may be smaller and/or narrower relative to front wheels **111-112**, for example, since rear wheels **113-114** may roll internally within storage cabinet **100** whereas front wheels **111-112** may roll externally to storage cabinet **100**.

[0040] Each one of wheels **111-114** may be located at a corner, or in proximity to a corner, of lower panel **105** of lower drawer **102**. For example, a distance between each one of wheels **111-114** (for example, wheel **111**) and a nearest corner of lower drawer **102** (for example, a corner **153**) may be smaller than ten percent of the longest horizontal edge of lower drawer **102** (e.g., outward edge **151**).

[0041] In a fully-closed position of lower drawer **102**, front wheels **111-112** may slightly protrude out of storage cabinet **100**. Alternatively, in a fully-closed position of lower drawer **102**, front wheels **111-112** may fit into recesses **121-122** (shown more clearly in FIG. **4**A), respectively, in base surface **104**, such that front wheels **111-112** may not protrude out of storage cabinet **100**, or may be completely or partially hidden within storage cabinet **100**. Recesses **121-122** may be implemented as cavities, tunnels, slopes, or other structures, and may optionally allow the front wheels **111-112** to remain at a same height or to be slightly elevated relative to a floor or ground on which storage cabinet **100** may stand.

[0042] In a fully closed position of lower drawer **102**, as well as in a partially or fully opened position of lower drawer **102**, front wheels **111-112** may be able to touch a floor or ground on which storage cabinet **100** stands. In contrast, in a fully closed position of lower drawer **102**, as well as in a partially or fully opened position of lower drawer **102**, rear wheels **113-114** may not be able to touch a floor or ground on which storage cabinet **100** stands; rather, rear wheels **113-114** may touch an upper side **154** of base surface **104**, and may be movable on top of base surface **104**. Accordingly, even though lower drawer **102** may be mounted on top of four wheels **111-114**, base surface **104** may remain steady and non-moving on a floor or ground, and storage cabinet **100** may not be rollable, and may not roll sideways. In accordance with the present invention, storage cabinet **100** may be non-rollable, non-movable, not easily movable, non-portable, or not easily portable; and may be moved by applying substantial force to push or lift or drag the entirety of storage cabinet **100**, rather than to roll storage cabinet **100** on wheels (since storage cabinet **100** itself may not be mounted on four wheels, in contrast with lower drawer **102**).

[0043] The four wheels **111-114**, or alternatively, at least the two front wheels **111-112**, may be non-swiveling wheels which may be able to roll forward and backward but may not be able to turn sideways relative to a vertical axis. This may force each one of wheels **111-112** to move only along a pre-defined line of movement, and/or may prevent an accidental or intentional attempt to move lower drawer **102** sideways relative to storage cabinet **100**.

[0044] Optionally, lower drawer **102** may be mounted on, and may be movable on rails, which may be installed on two side panels of lower cavity **103**. In such implementation, wheels **111-114** may support the movement of lower drawer **102** relative to the rails, and may reduce pressure applied by lower drawer **102** to the rails, thereby possibly reducing wear-and-tear of the rails or preventing breaking of such rails.

[0045] Storage cabinet **100** may be formed of plastic; or, one or more components of storage cabinet **100** (e.g., lower drawer **102** and/or wheels **111-114**) may be formed of plastic. Optionally, one or more of the components of storage cabinet **100** may be formed of injection molding of one or more raw plastic material(s). The present invention may be exercised using other suitable materials, for example, wood, metal(s),

or the like; and/or using plastic components which may be formed by injection molding or by other plastic manufacturing processes.

[0046] For example, storage cabinet **100** may be formed or assembled such that substantially all the components of storage cabinet **100**, in accordance with the present invention, may be formed or plastic, or injected plastic material(s), or wood, or metal, or the like. Optionally, at least lower drawer **102** may be formed or plastic, or injected plastic material(s), or wood, or metal, or the like. Other suitable material(s) or combinations of materials may be used.

[0047] Storage cabinet **100**, or components thereof, are further depicted in FIGS. **2**A-**2**C, in FIGS. **3**A-**3**D, and in FIGS. **4**A-**4**D.

[0048] Particularly, FIGS. **2**A-**2**C show storage cabinet **100** while lower drawer **102** is in a closed position. As shown, FIGS. **2**A-**2**C demonstrate how all four wheels **111-114** in such closed position are within storage cabinet **100**, and none of wheels **111-114** protrudes out of storage cabinet **100**. In the closed position demonstrated in FIGS. **2**A-**2**C, substantially the entirety of lower drawer **102** is within storage cabinet **100**.

[0049] FIGS. **3**A-**3**D show lower drawer **102** in greater detail. Particularly, all four wheels **111-114** are shown, as well as their demonstrative locations under a bottom panel of lower drawer **102**. Further demonstrated are additional or optional features, for example, the pair of rear wheels **113-114** may be slightly smaller than the pair of front wheels **111-112**; the pair of rear wheels **113-114** may be slightly elevated relative to the pair of front wheels **111-112**; and the distance between the pair of rear wheels **113-114** may be slightly greater than the distance between the pair of front wheels **111-112**.

[0050] FIGS. **4**A-**4**D show in greater detail a lower half of storage cabinet **100**. Particularly demonstrated are cavity **103**, into which lower drawer **102** may fit; as well as recesses **121-122**, into which front wheels **111-112** may fit.

[0051] Functions, operations, components and/or features described herein with reference to one or more embodiments, may be combined with, or may be utilized in combination with, one or more other functions, operations, components and/or features described herein with reference to one or more other embodiments, or vice versa.

[0052] While certain features of some embodiments of the present invention have been illustrated and described herein, many modifications, substitutions, changes, and equivalents may occur to those skilled in the art. Accordingly, the claims are intended to cover all such modifications, substitutions, changes, and equivalents.

What is claimed is:

1. A storage cabinet comprising:
a cabinet case having at least a lower cavity;
a drawer adapted to fit within said lower cavity; and
two front wheels connected to an outwardly-facing edge of said drawer.

2. The storage cabinet of claim **1**, wherein a first wheel of the two front wheels is located in proximity to a right-side corner of said outwardly-facing edge of said drawer, and wherein a second wheel of the two front wheels is located in proximity to a left-side corner of said outwardly-facing edge of said drawer.

3. The storage cabinet of claim **1**, wherein the two front wheels comprise two non-swiveling wheels.

4. The storage cabinet of claim **1**, wherein the lower drawer is located above a base surface of the storage cabinet.

5. The storage cabinet of claim **4**, further comprising two rear wheels connected underneath an inwardly-facing edge of the lower drawer.

6. The storage cabinet of claim **5**, wherein the two rear wheels are adapted to roll within the lower cavity of the cabinet case on top of the base surface.

7. The storage cabinet of claim **5**, wherein the two rear wheels are on top of the base surface, and wherein the two front wheels touch a surface on which the storage cabinet stands.

8. The storage cabinet of claim **4**, wherein said base surface comprises two recesses therein to receive said two front wheels.

9. The storage cabinet of claim **1**, wherein the storage cabinet comprises a non-portable storage cabinet.

10. The storage cabinet of claim **1**, wherein the storage cabinet comprises a non-rollable storage cabinet.

11. The storage cabinet of claim **1**, further comprising rails mounted within side panels of the lower cavity, wherein the lower drawer is to slide on said rails.

12. The storage cabinet of claim **1**, wherein at least the lower drawer is formed of plastic.

13. The storage cabinet of claim **1**, wherein substantially all components of the storage cabinet are formed of plastic.

14. The storage cabinet of claim **1**, wherein at least the lower drawer is formed of one or more injected plastic materials.

15. The storage cabinet of claim **1**, wherein substantially all components of the storage cabinet are formed of one or more injected plastic materials.

* * * * *