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(54) **MODULAR STORAGE CONTAINER**

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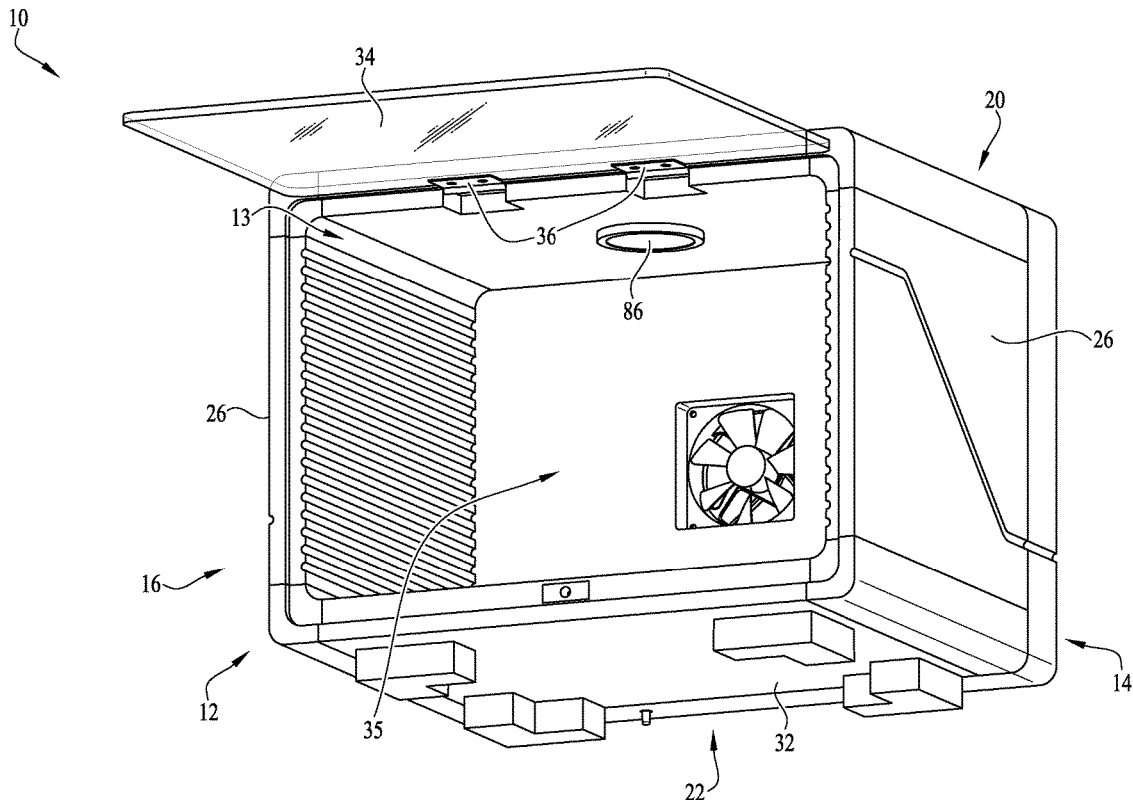
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(57)

ABSTRACT

A modular container comprising a housing, a contained volume defined within the housing, and a door panel providing access to the contained volume in an open position and preventing access to the contained volume in a closed position. One or more interengagement features can be provided with the container such that a plurality of containers can be stacked atop each other to define a plurality of stacked containers. In some example embodiments, the container comprises at least one fan and one or more lights.



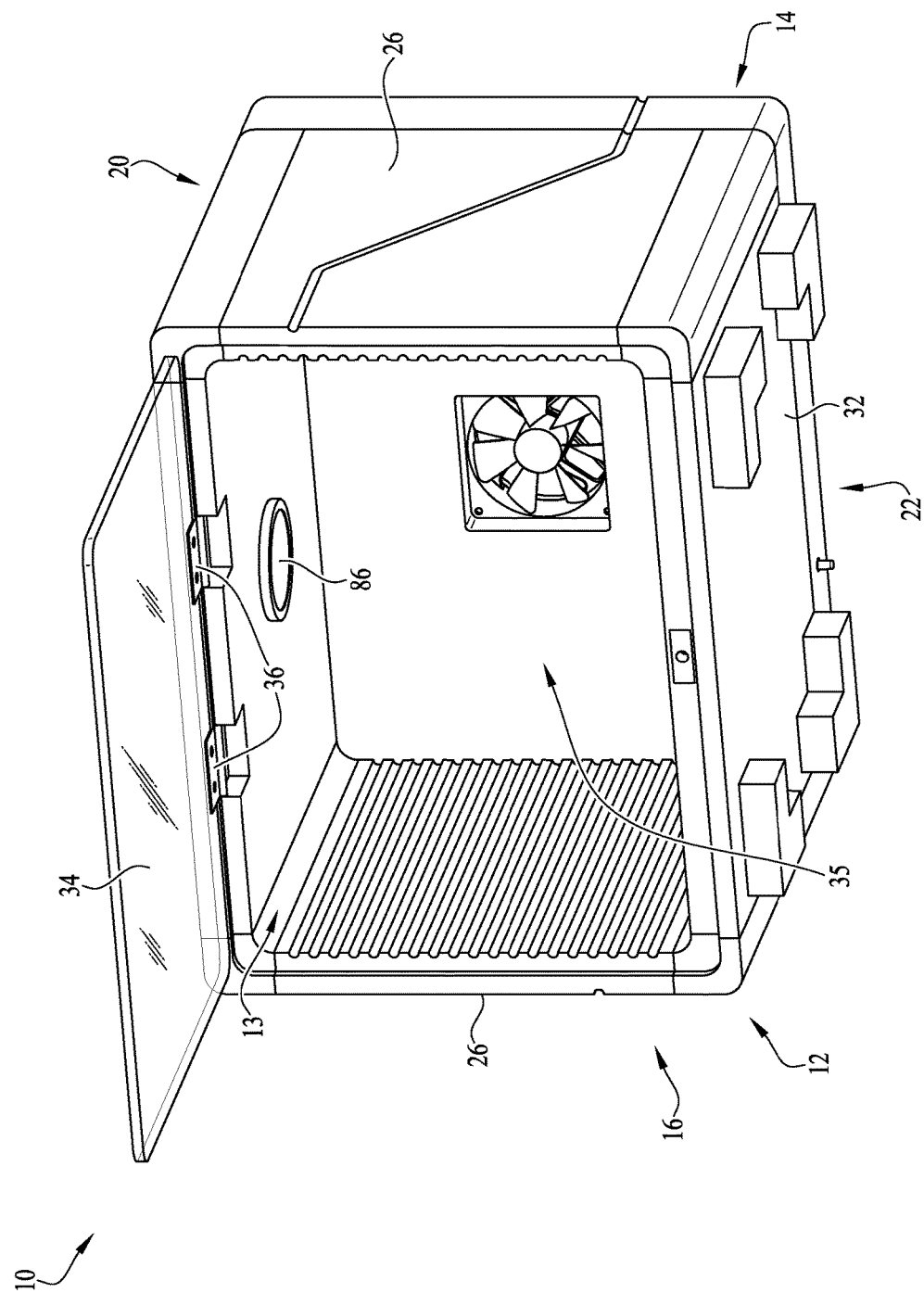


FIG. 1

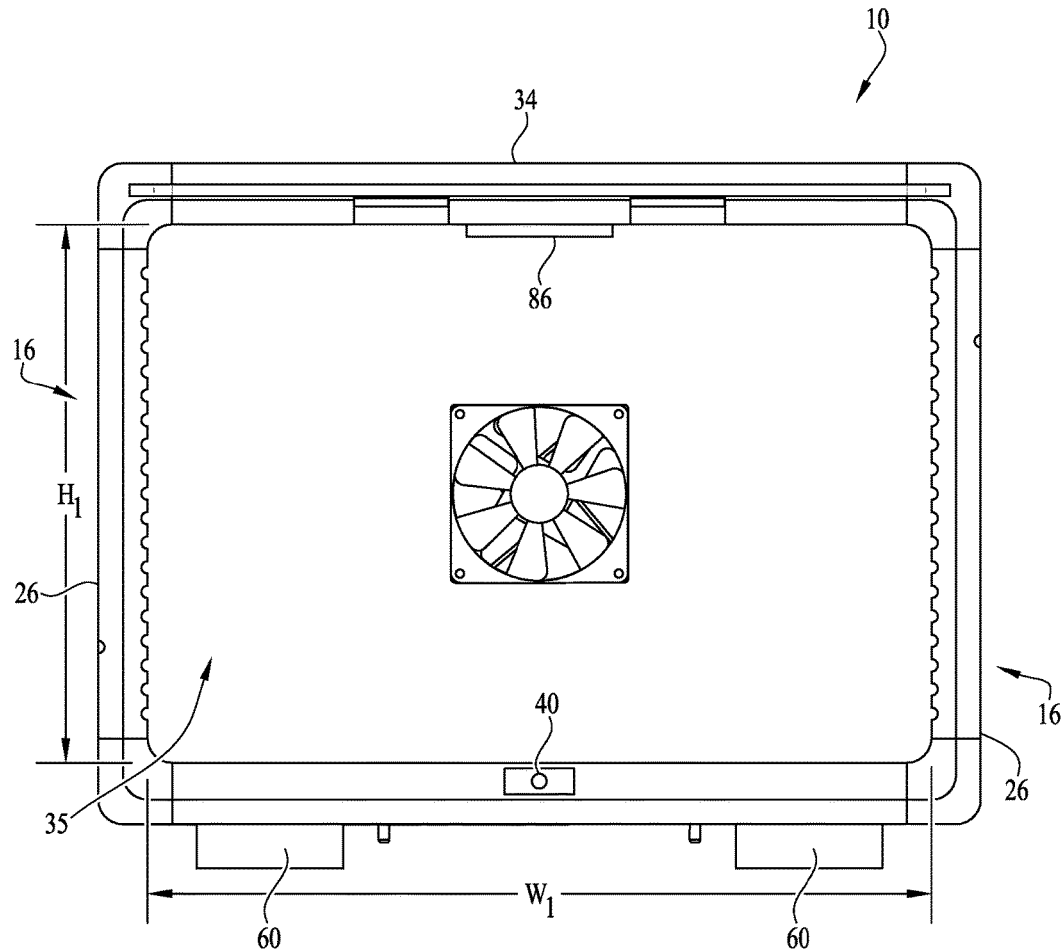


FIG. 2

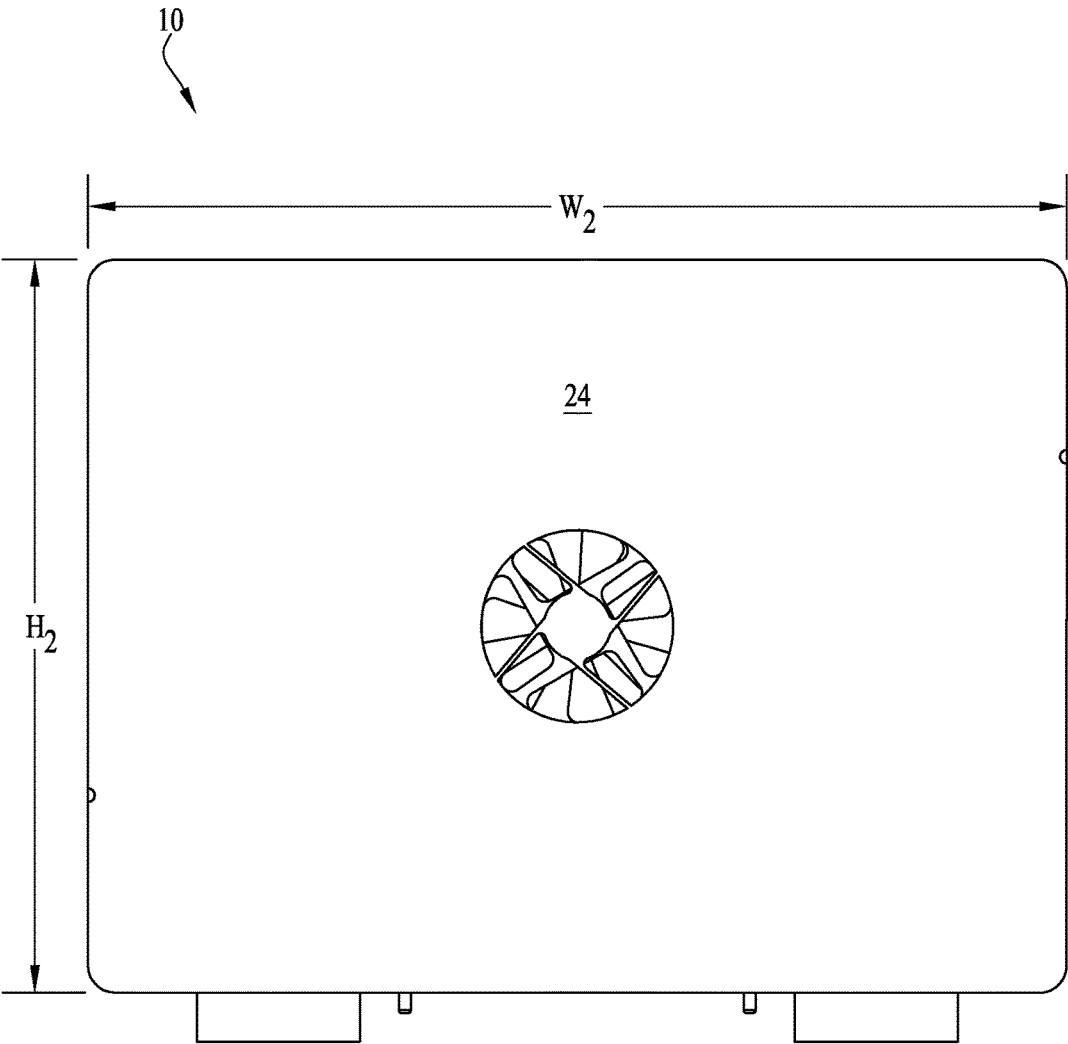


FIG. 3

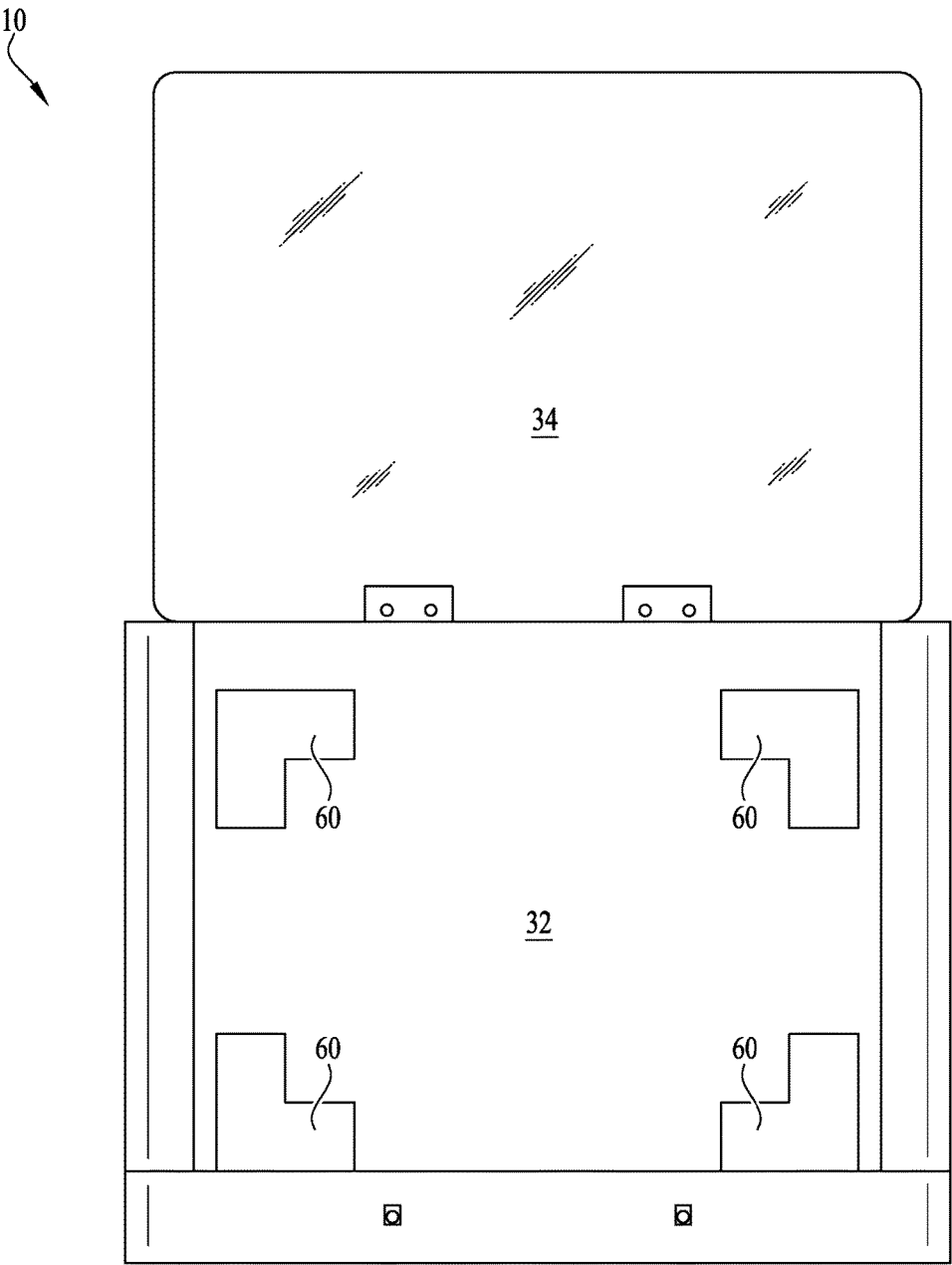


FIG. 4

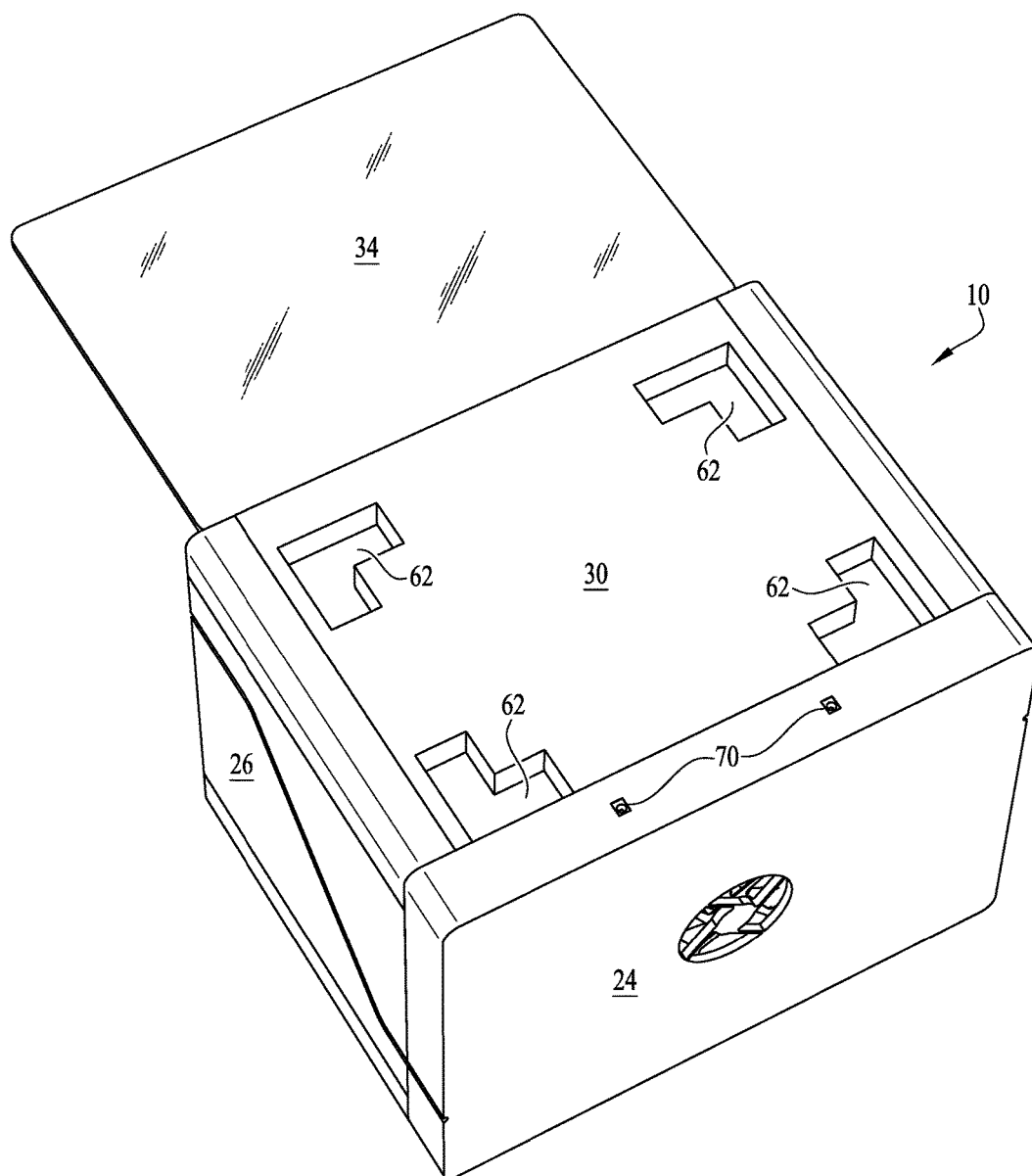


FIG. 5

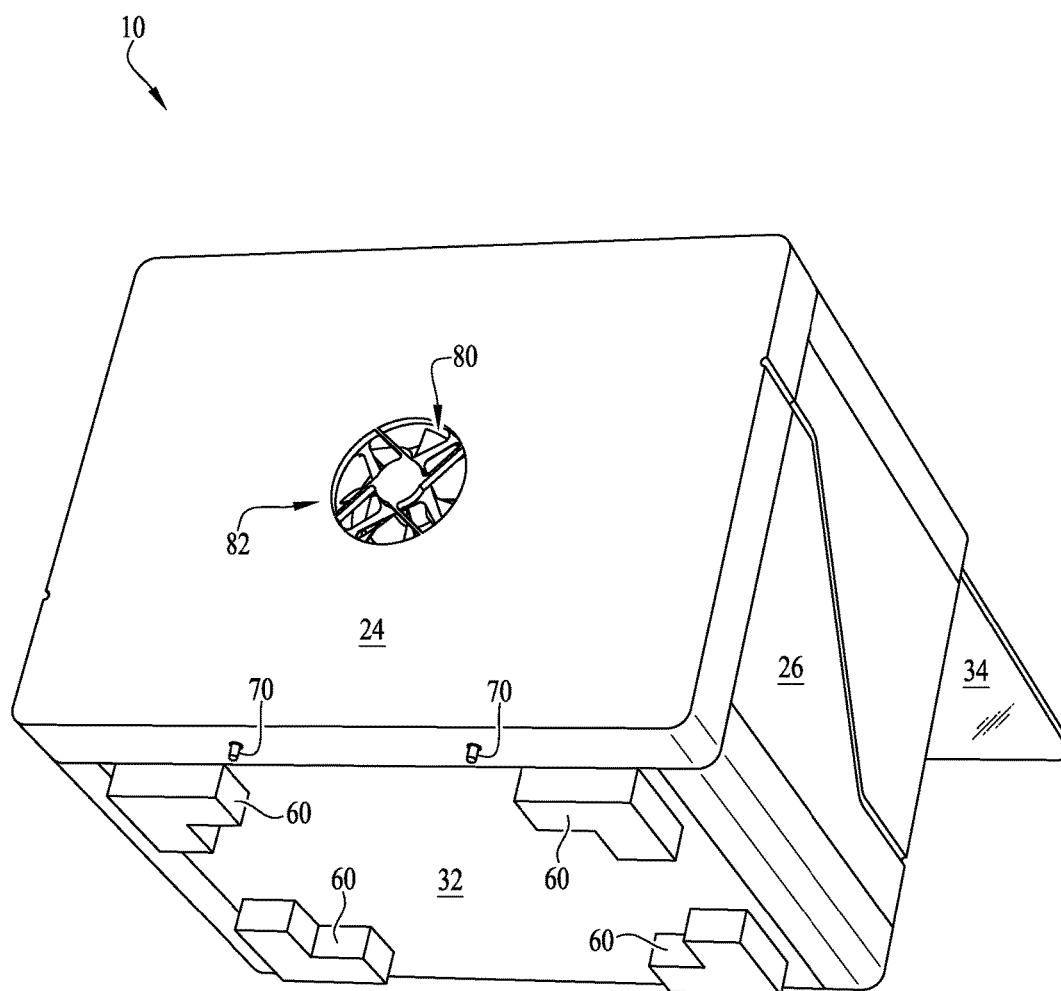
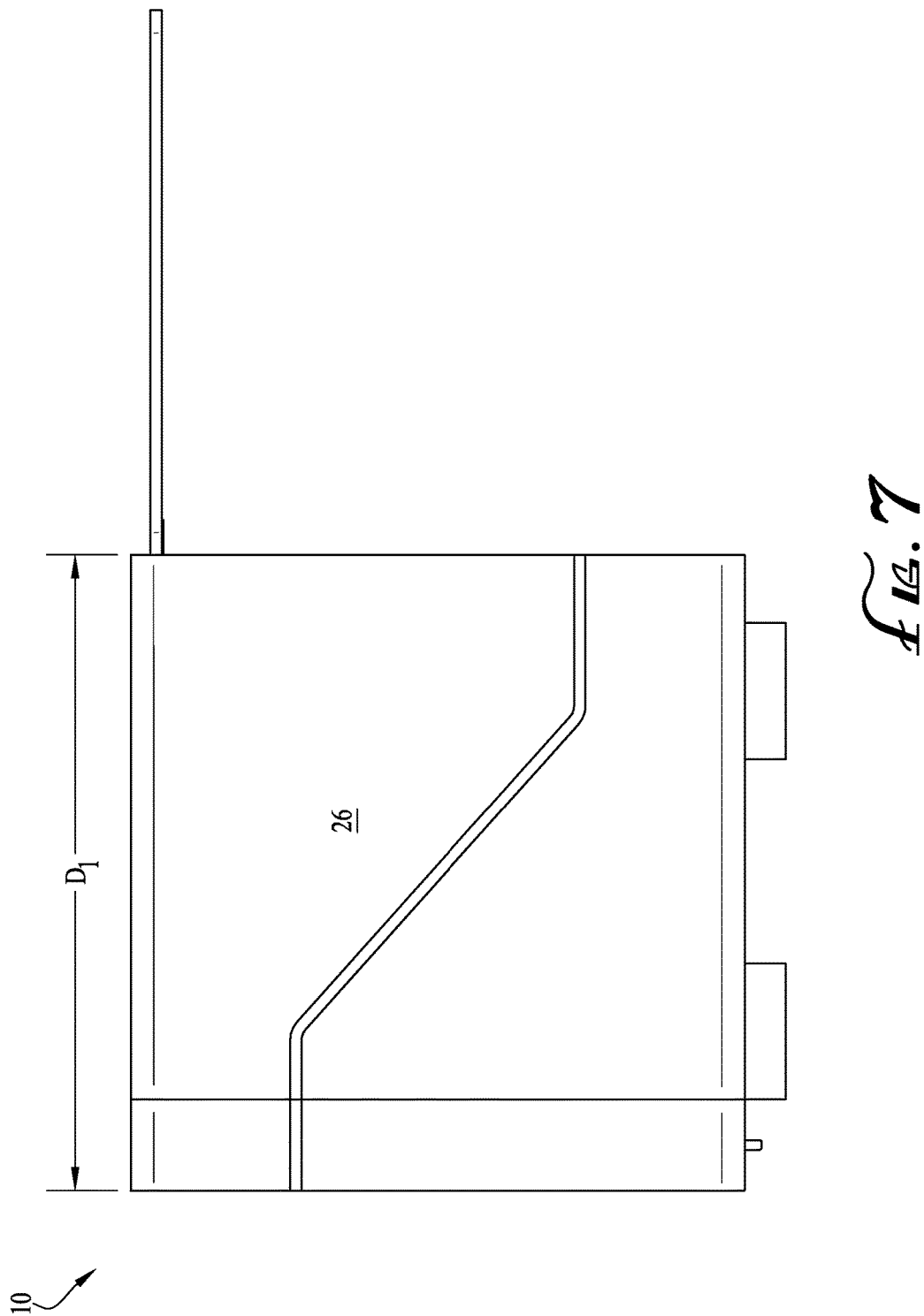


FIG. 6



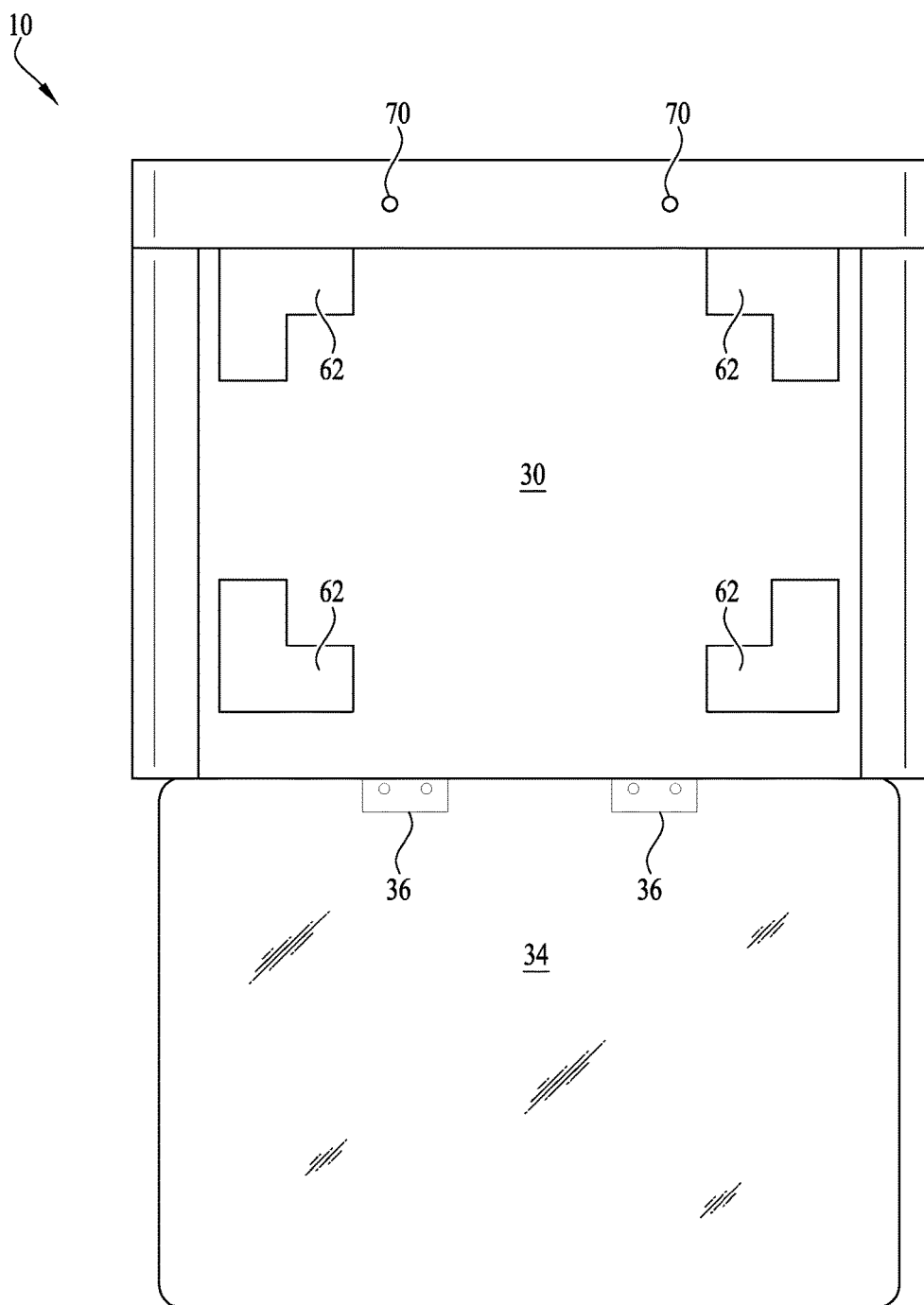


FIG. 8

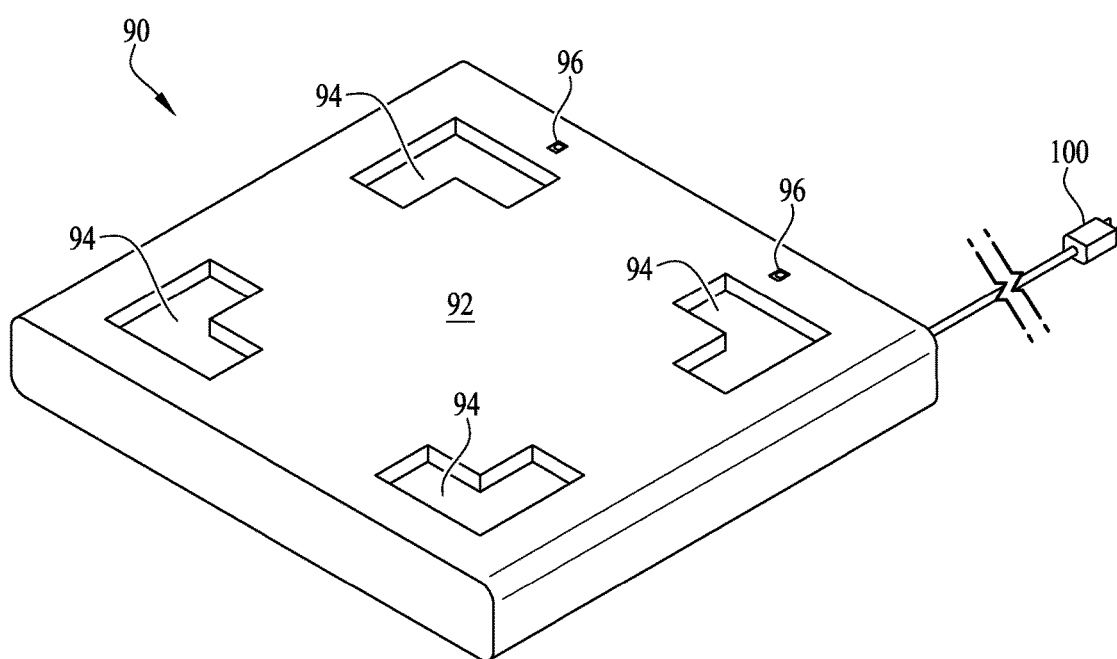


FIG. 9

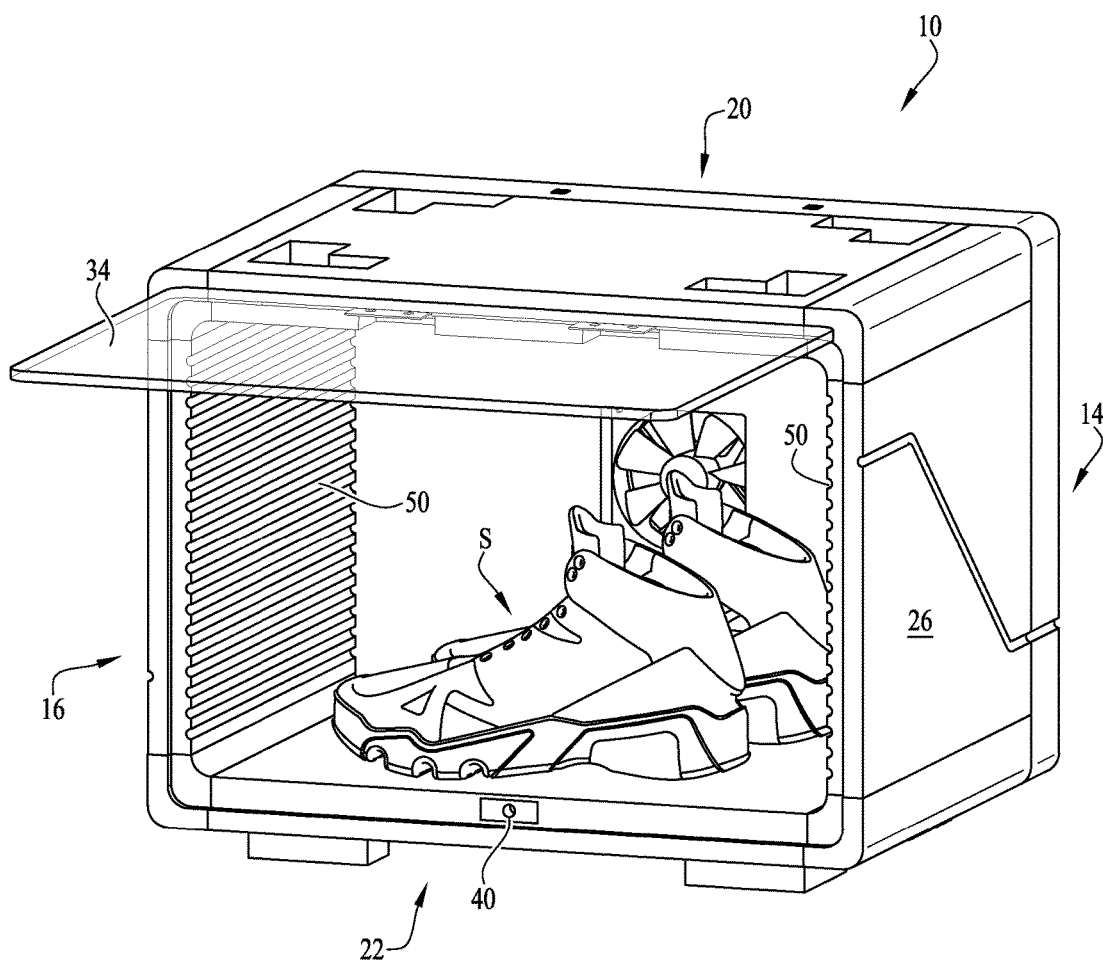


Fig. 10

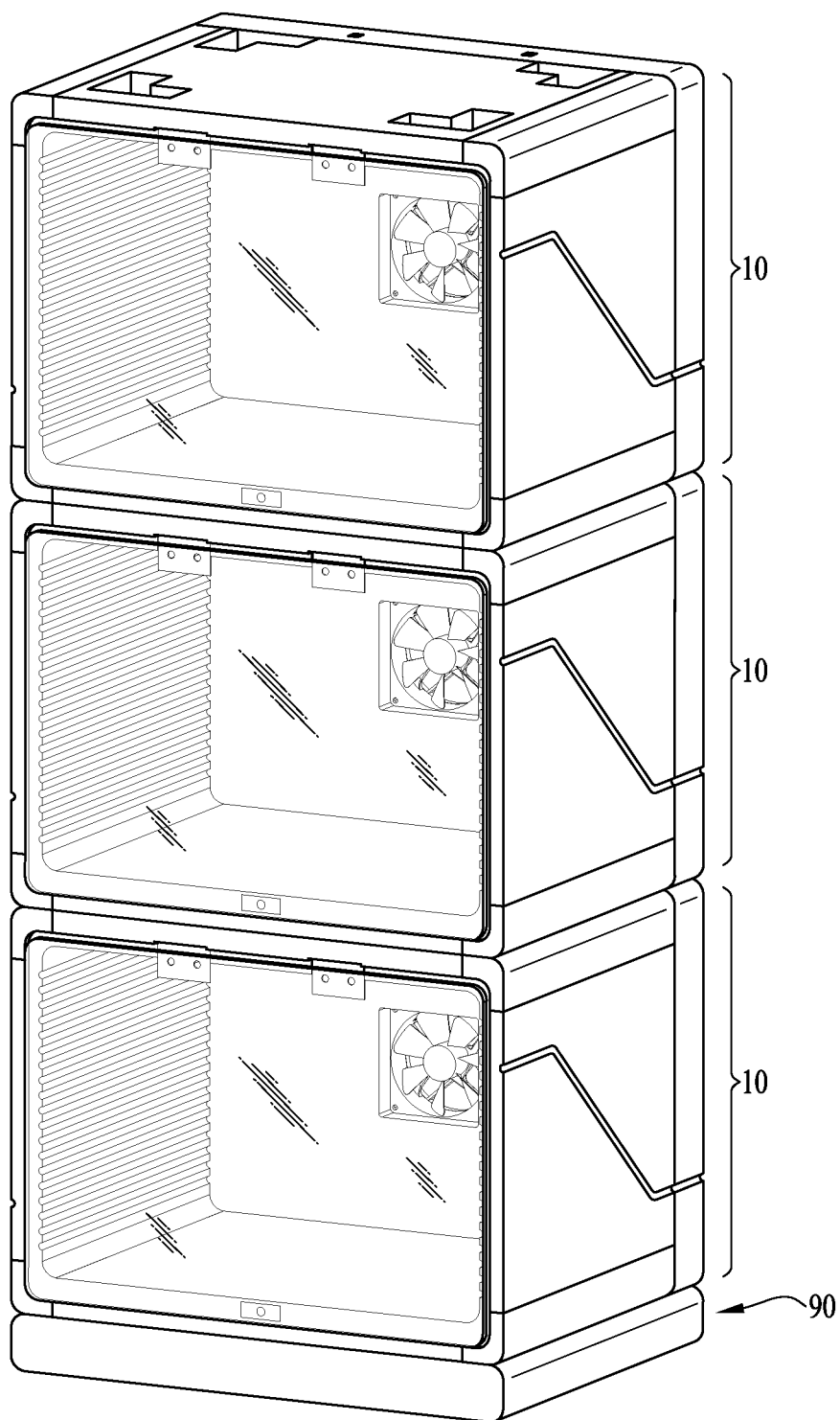


FIG. 11

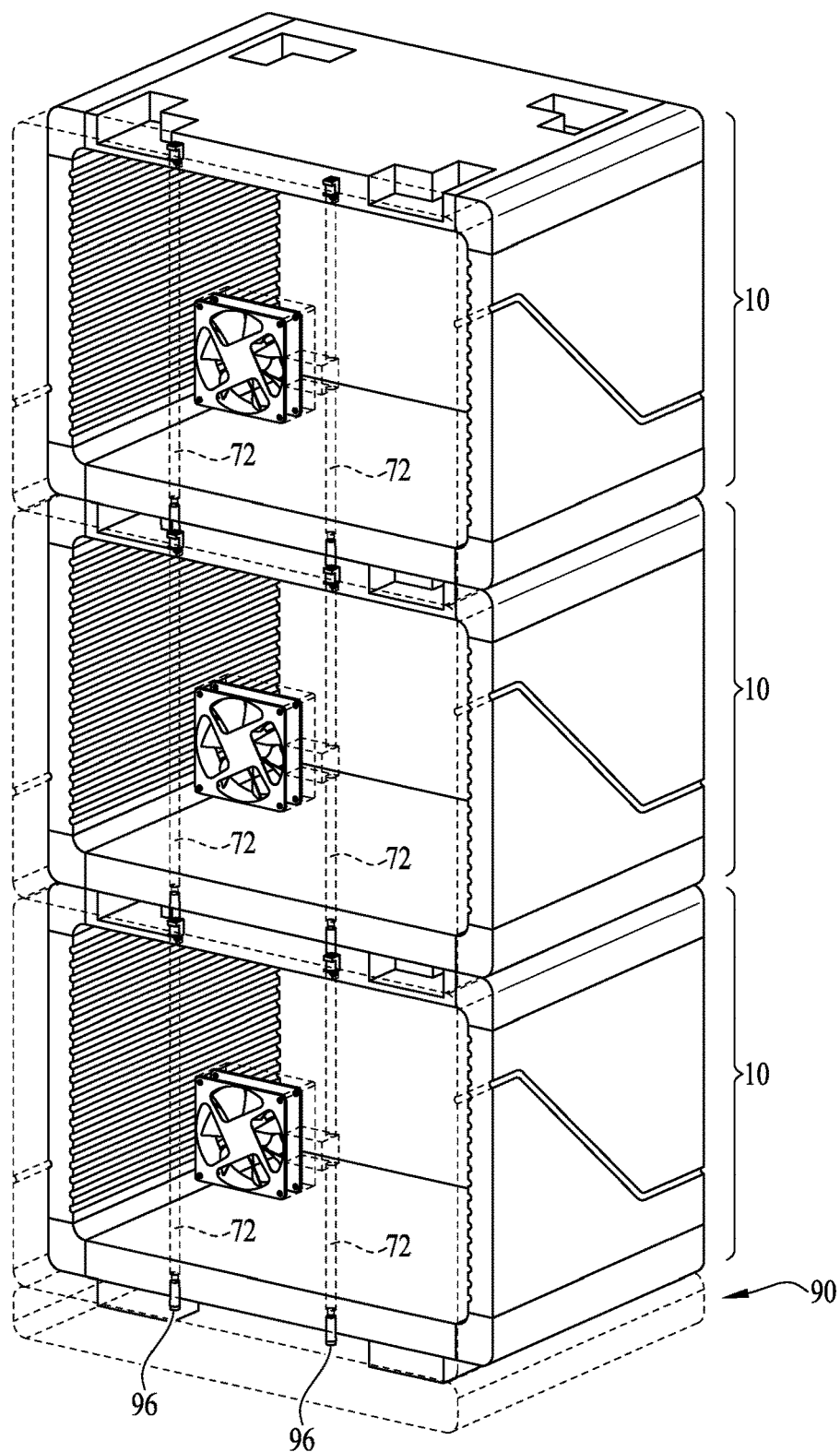


FIG. 12

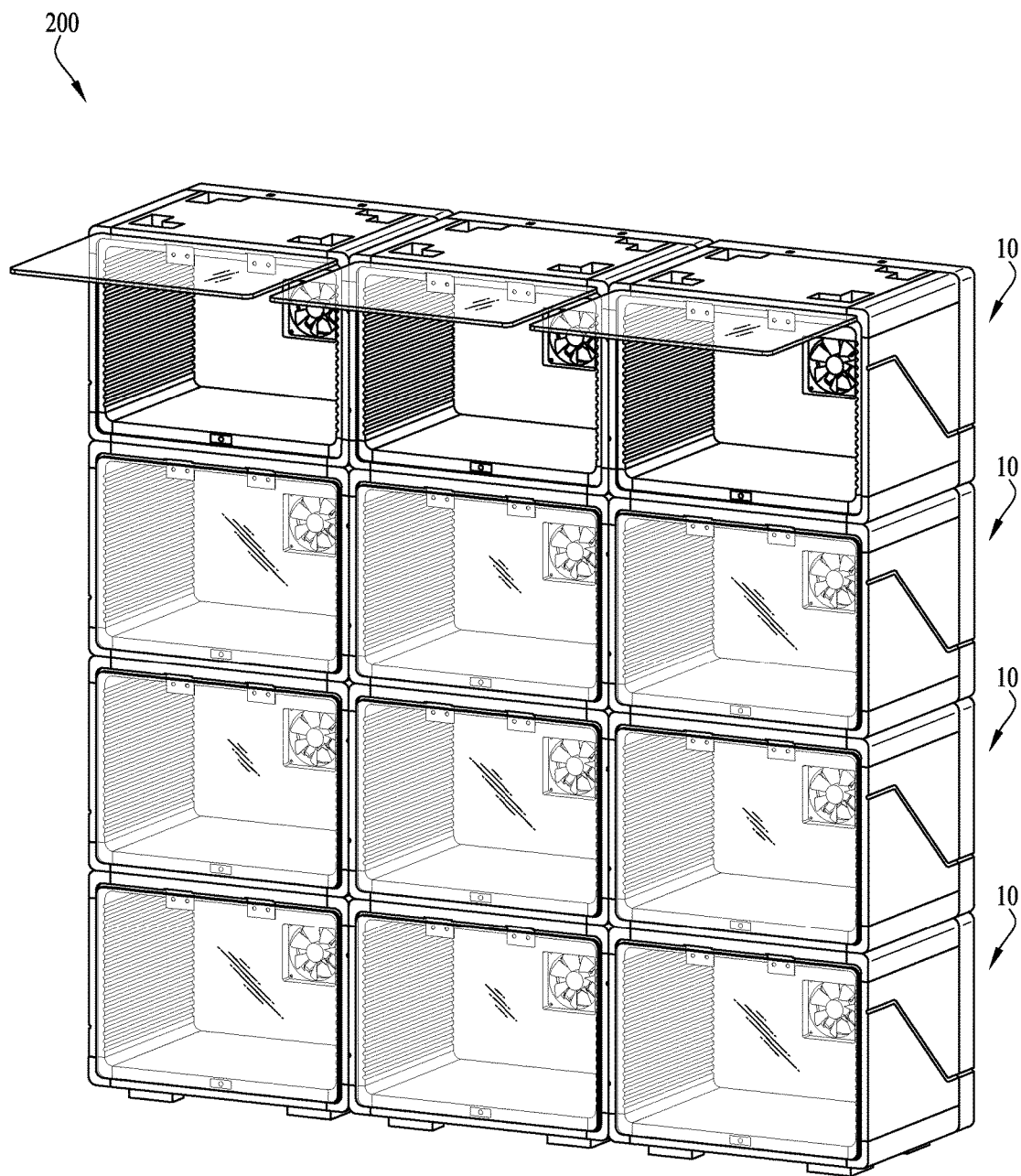


Fig. 13

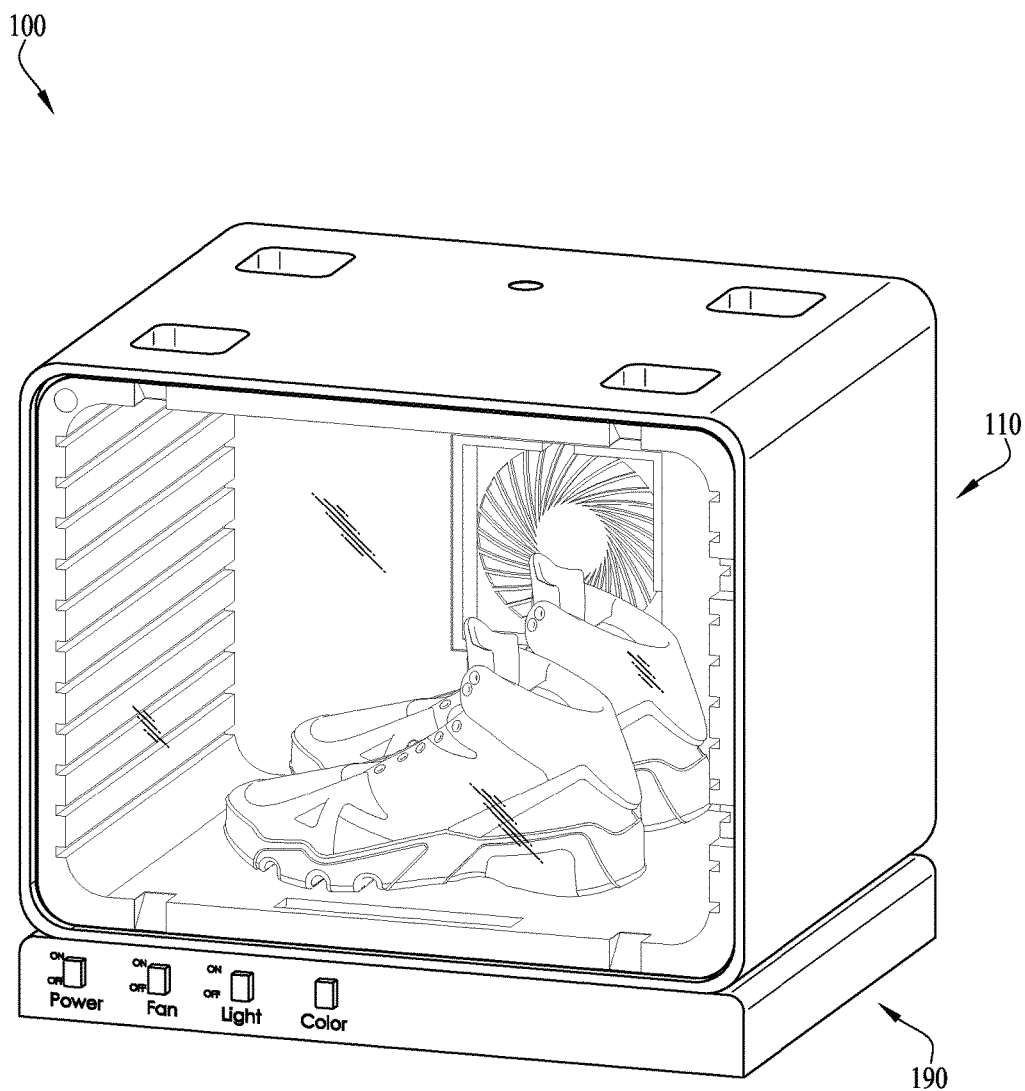


Fig. 14

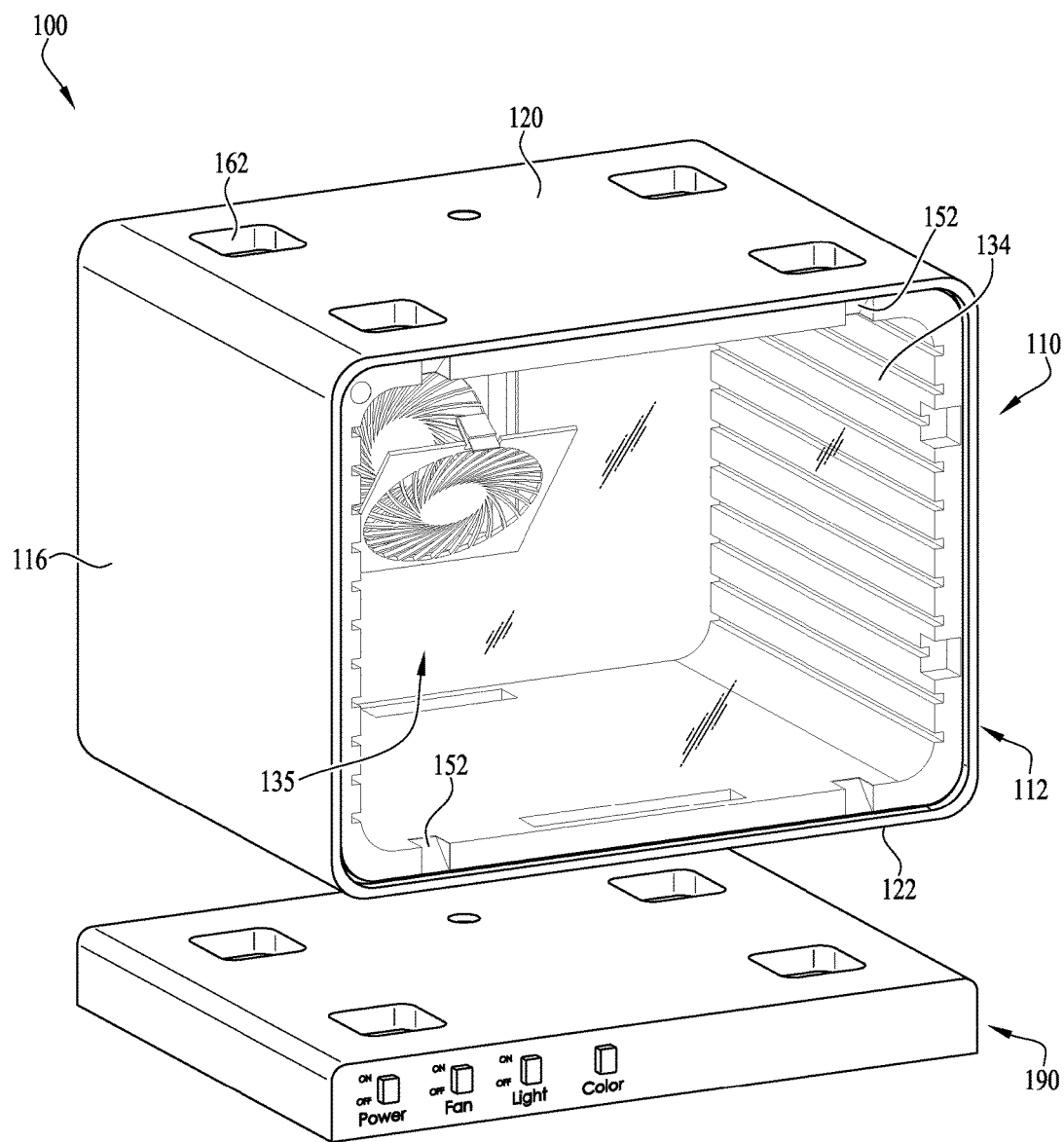


Fig. 15

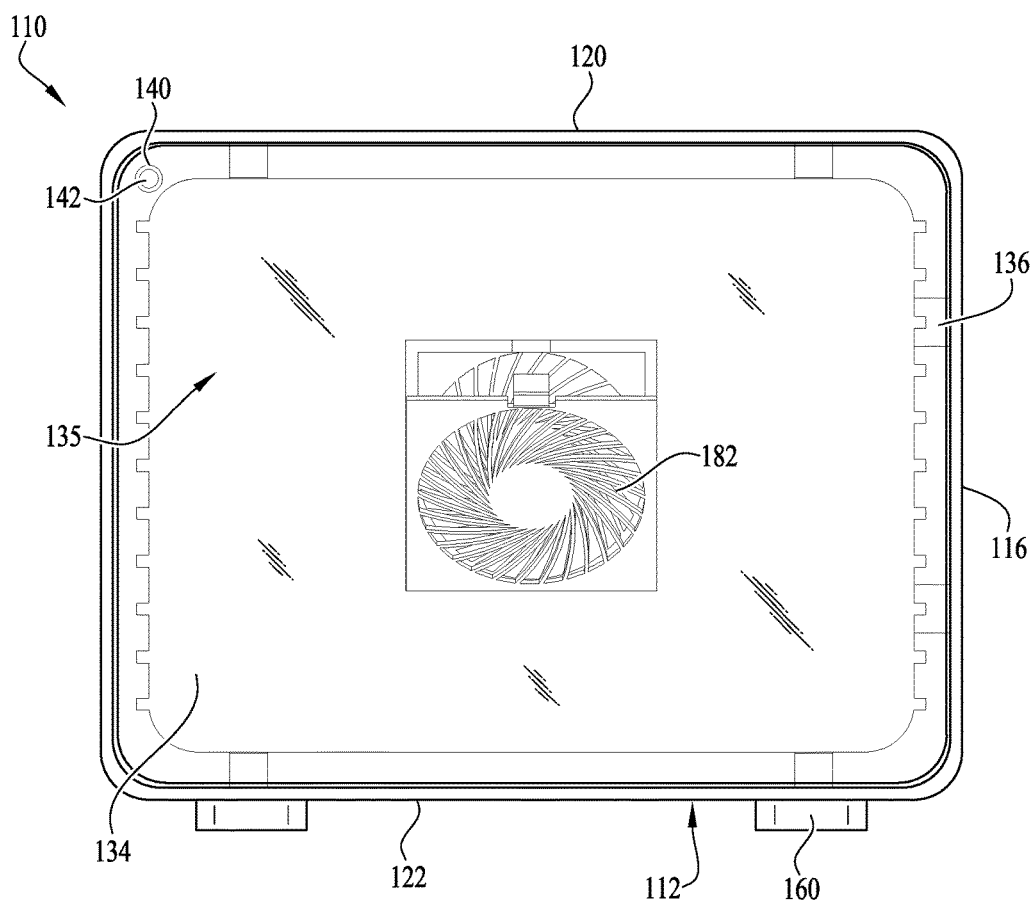


FIG. 10

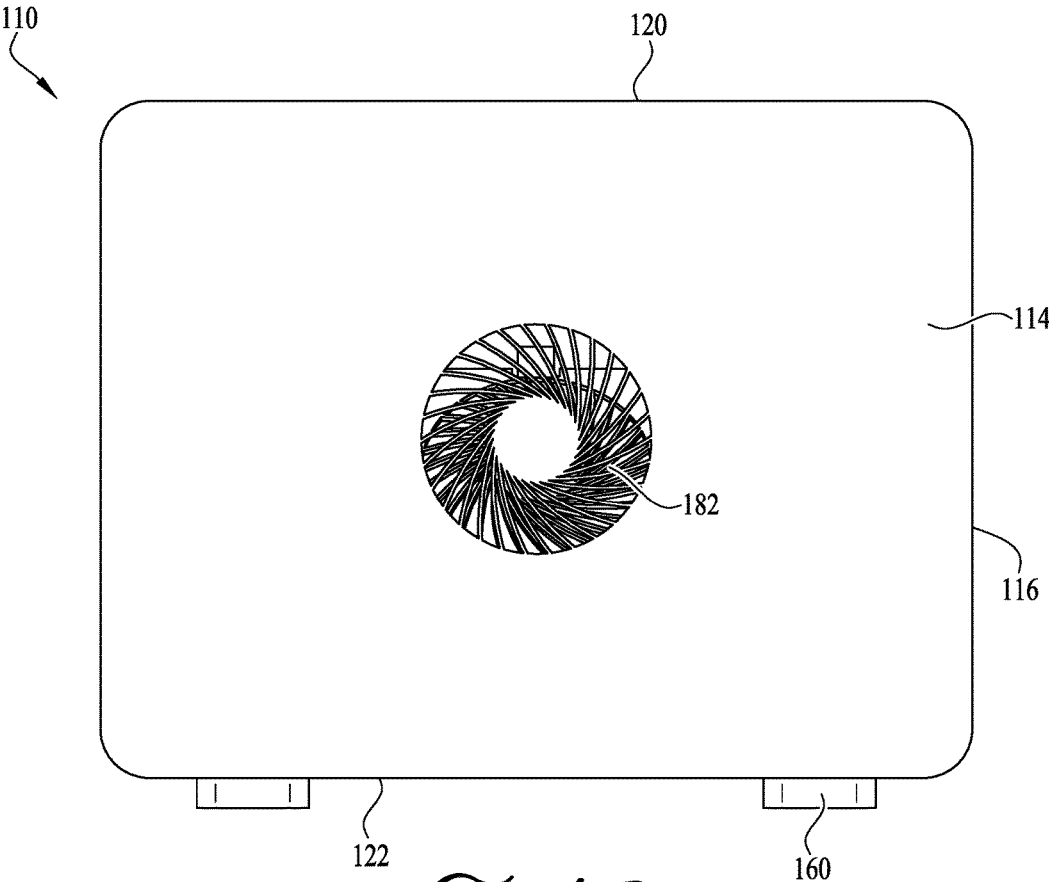


FIG. 17

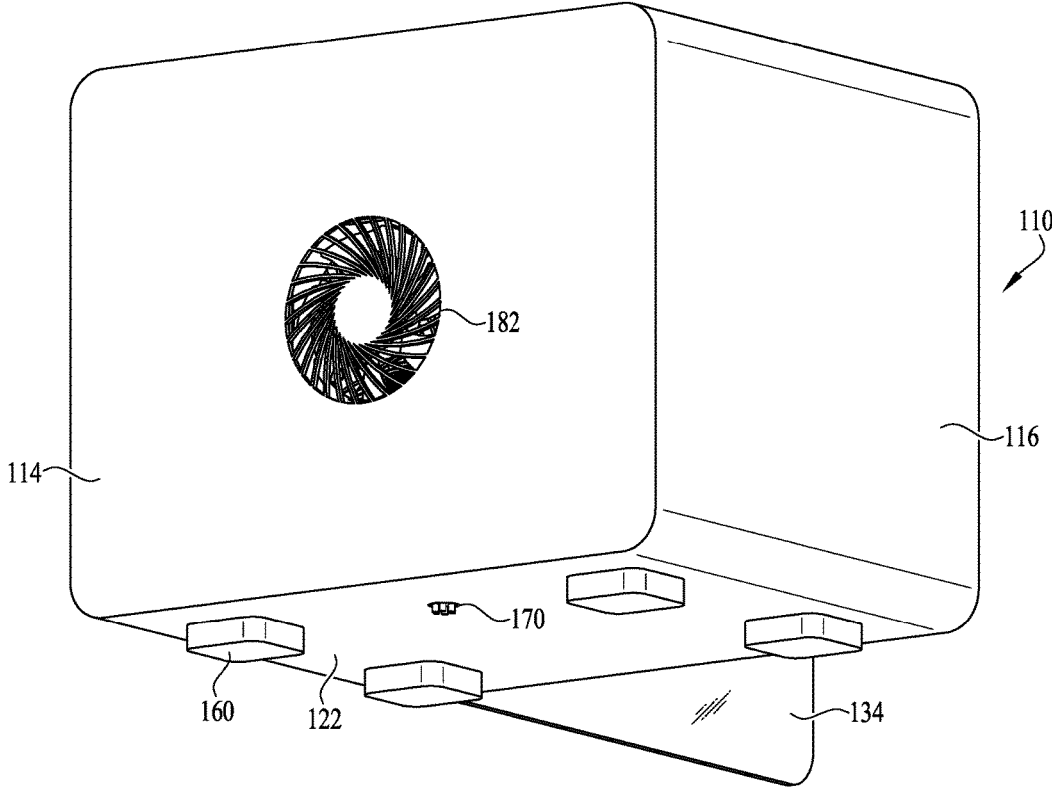


Fig. 18

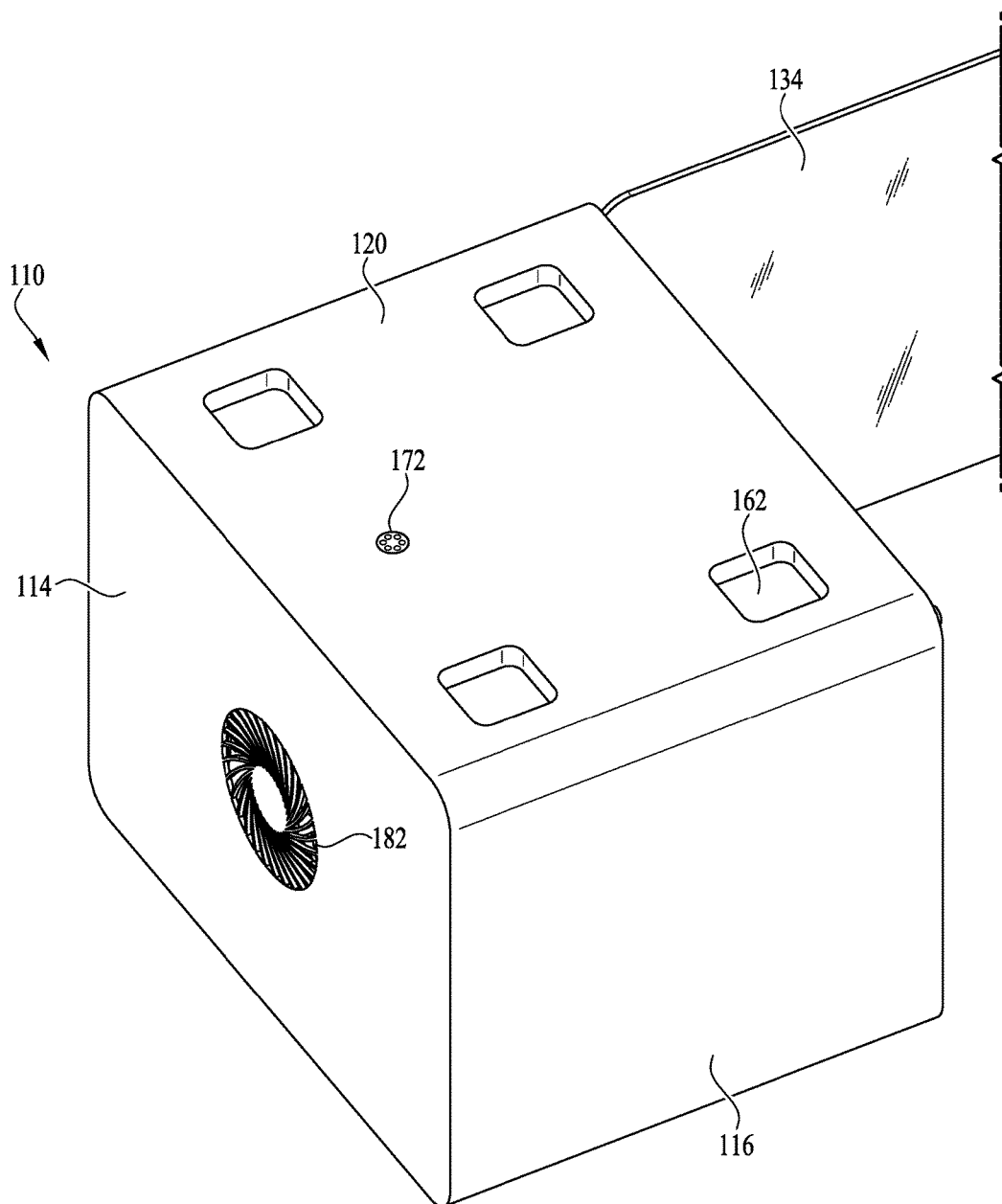


Fig. 19

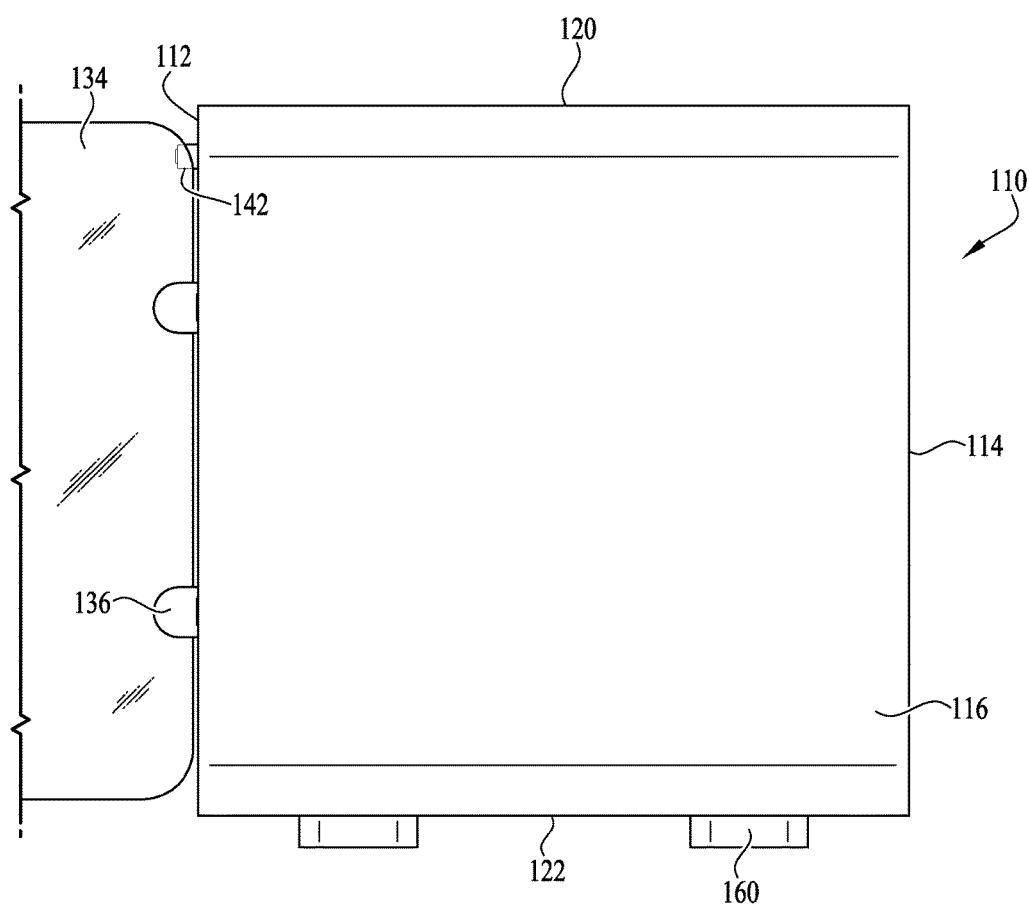


FIG. 20

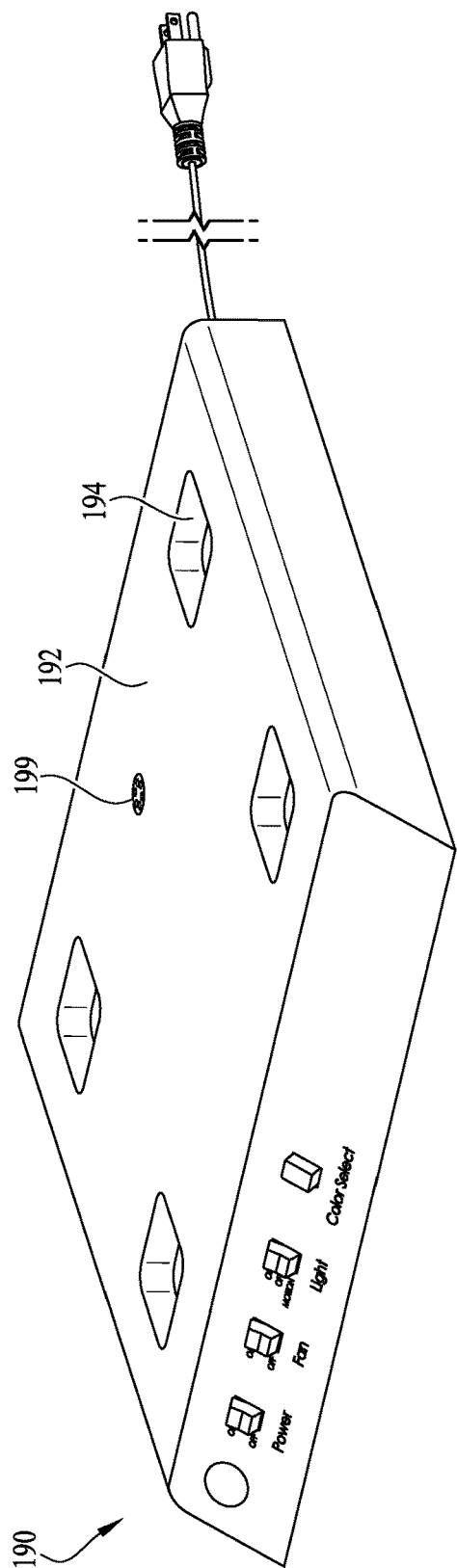


Fig. 21

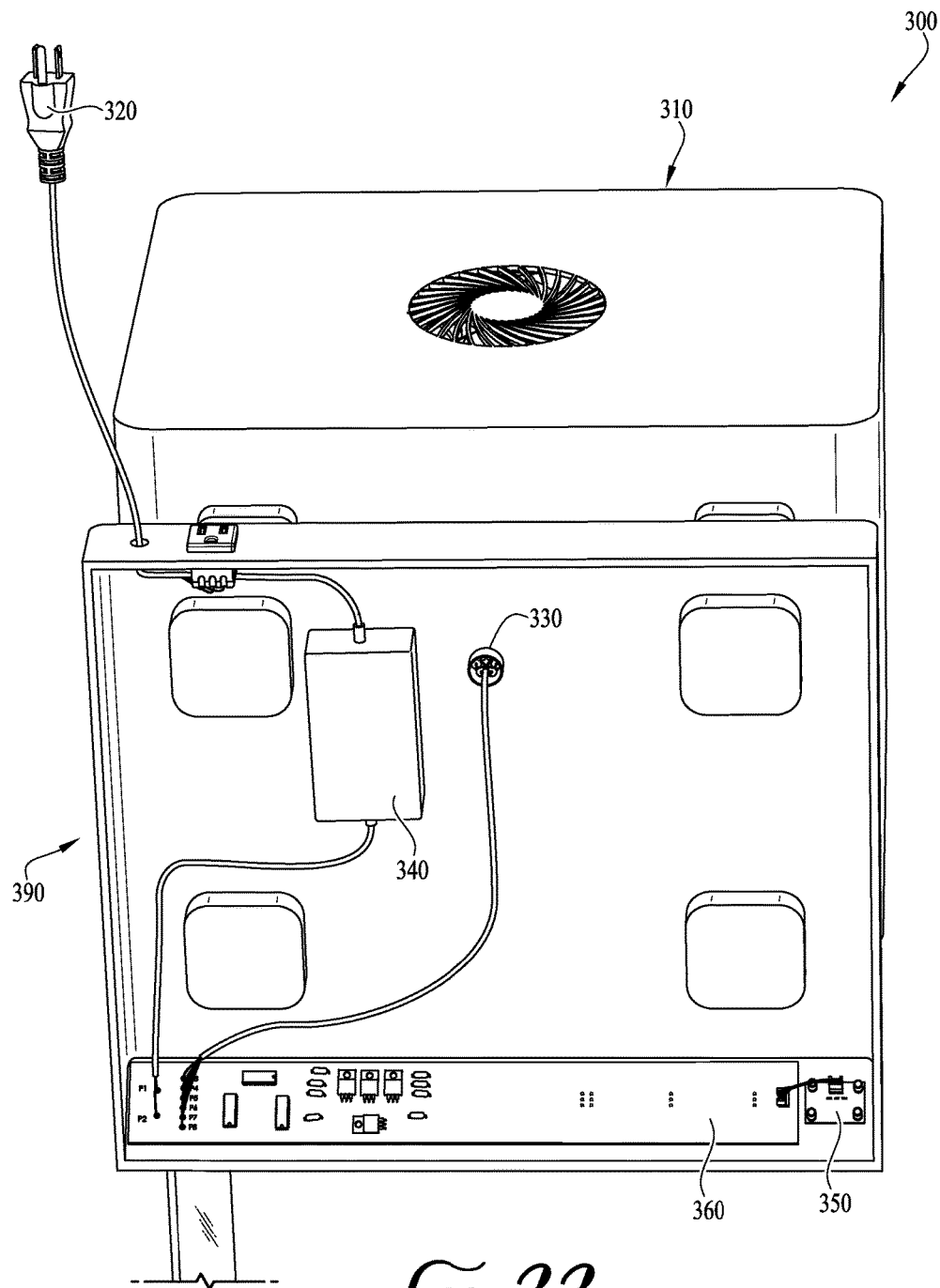


FIG. 22

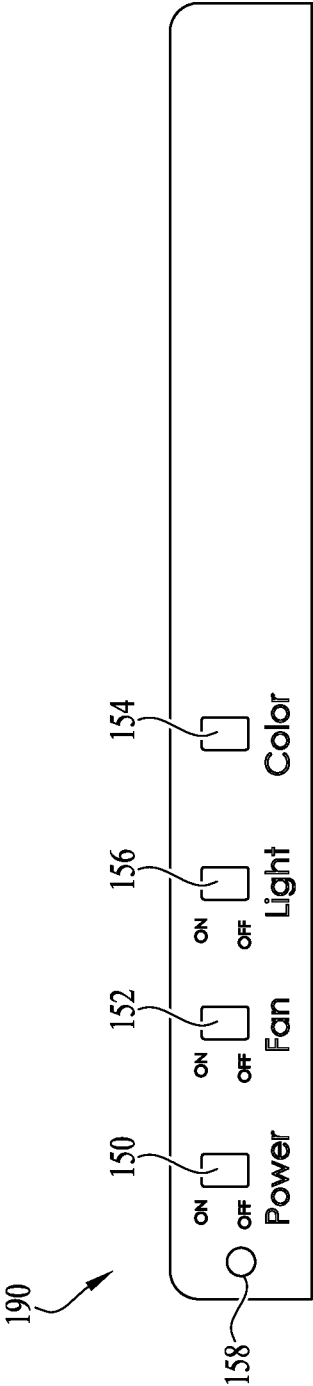


Fig. 23

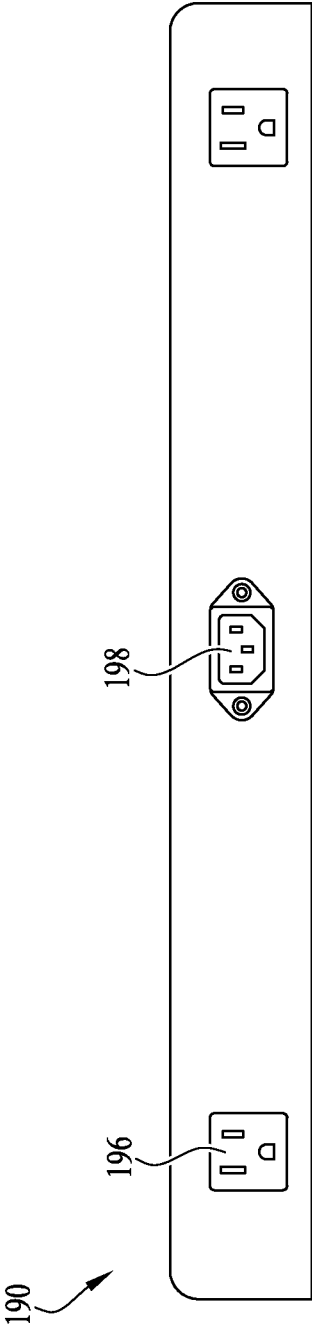
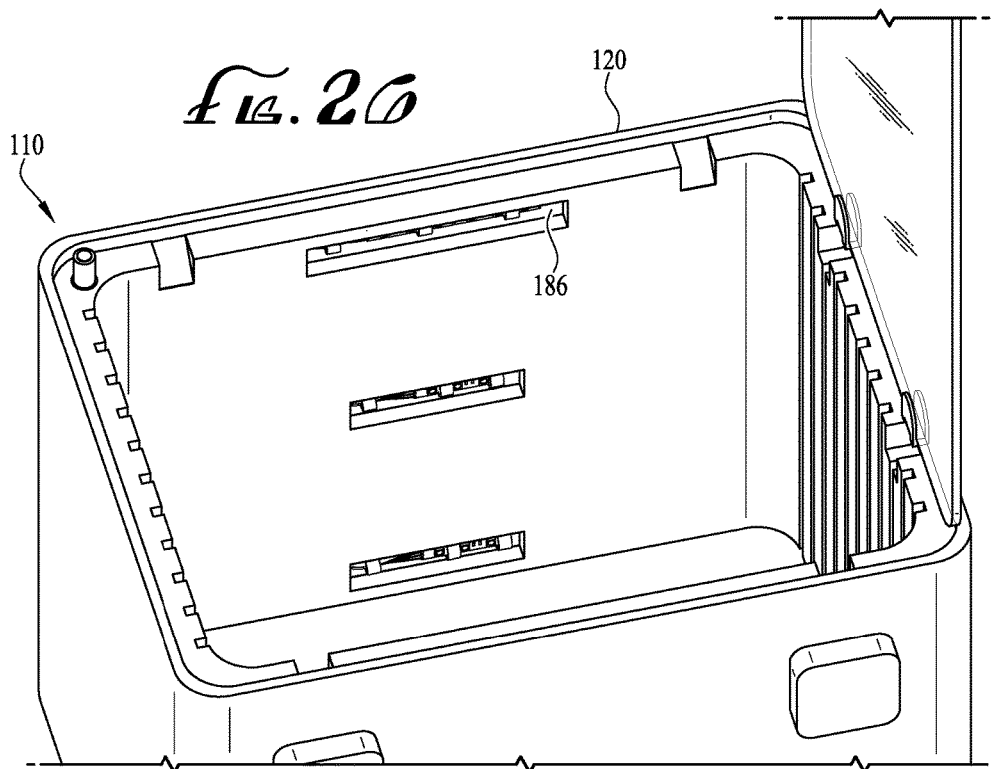
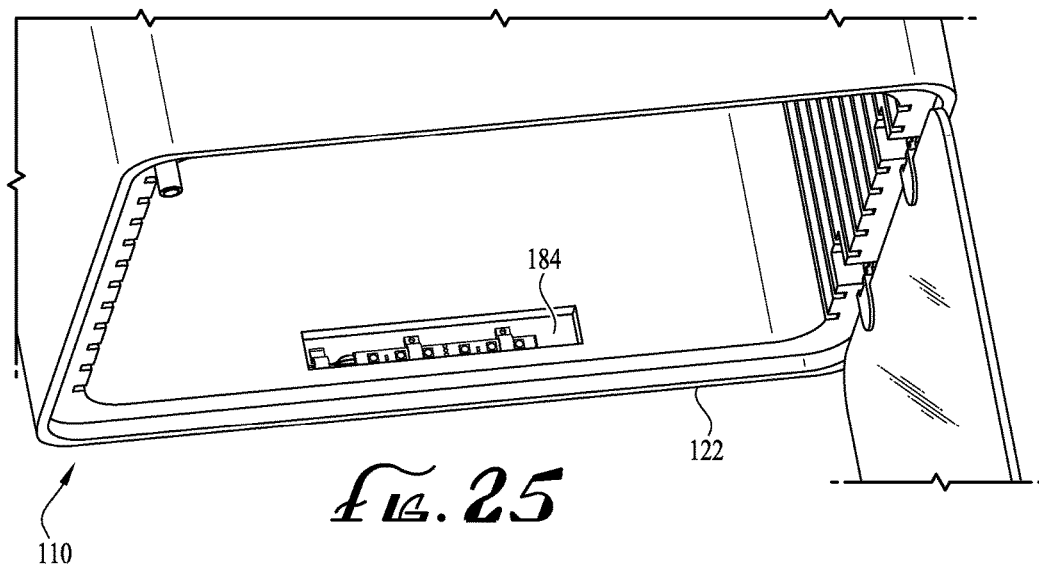


Fig. 24



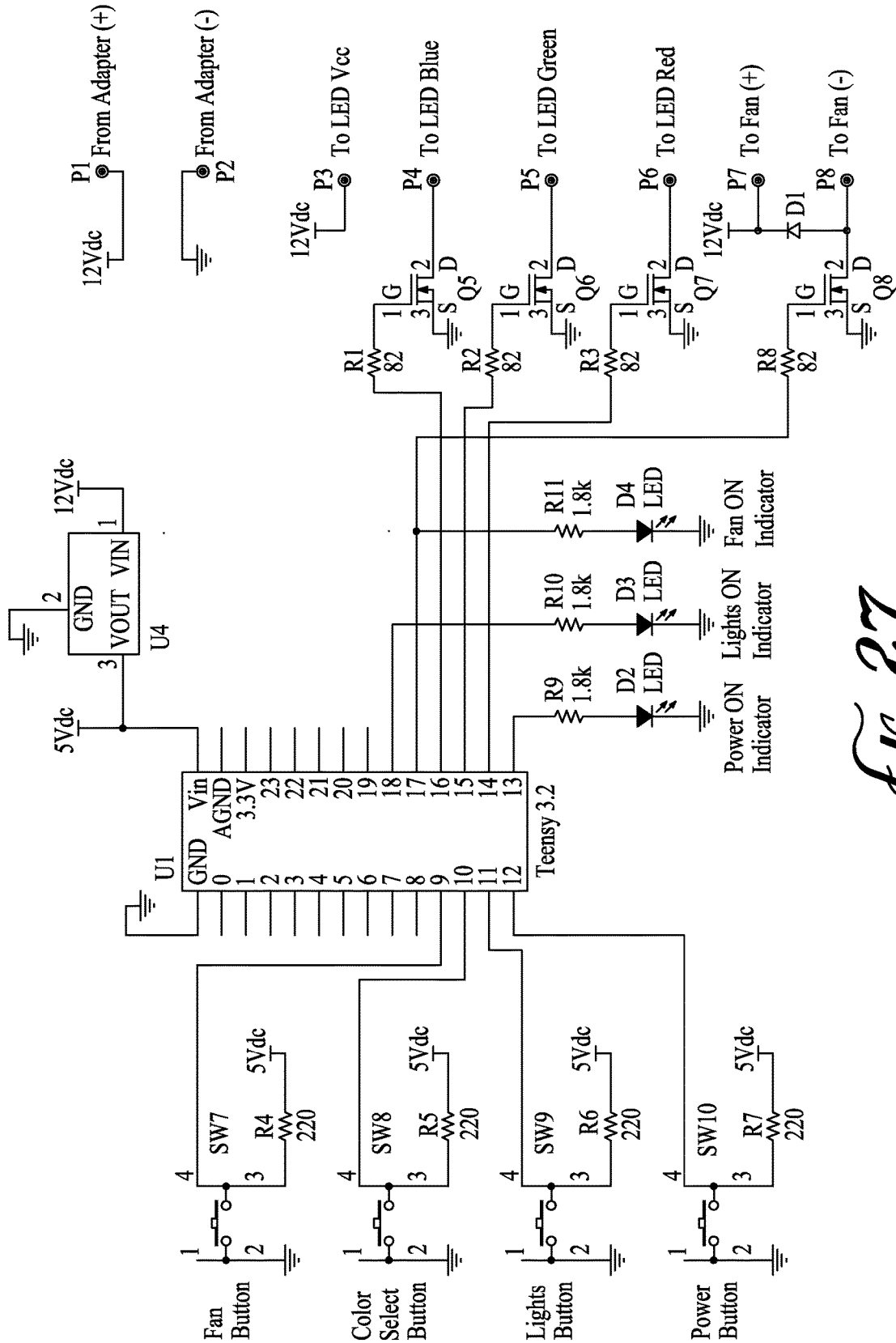


Fig. 27

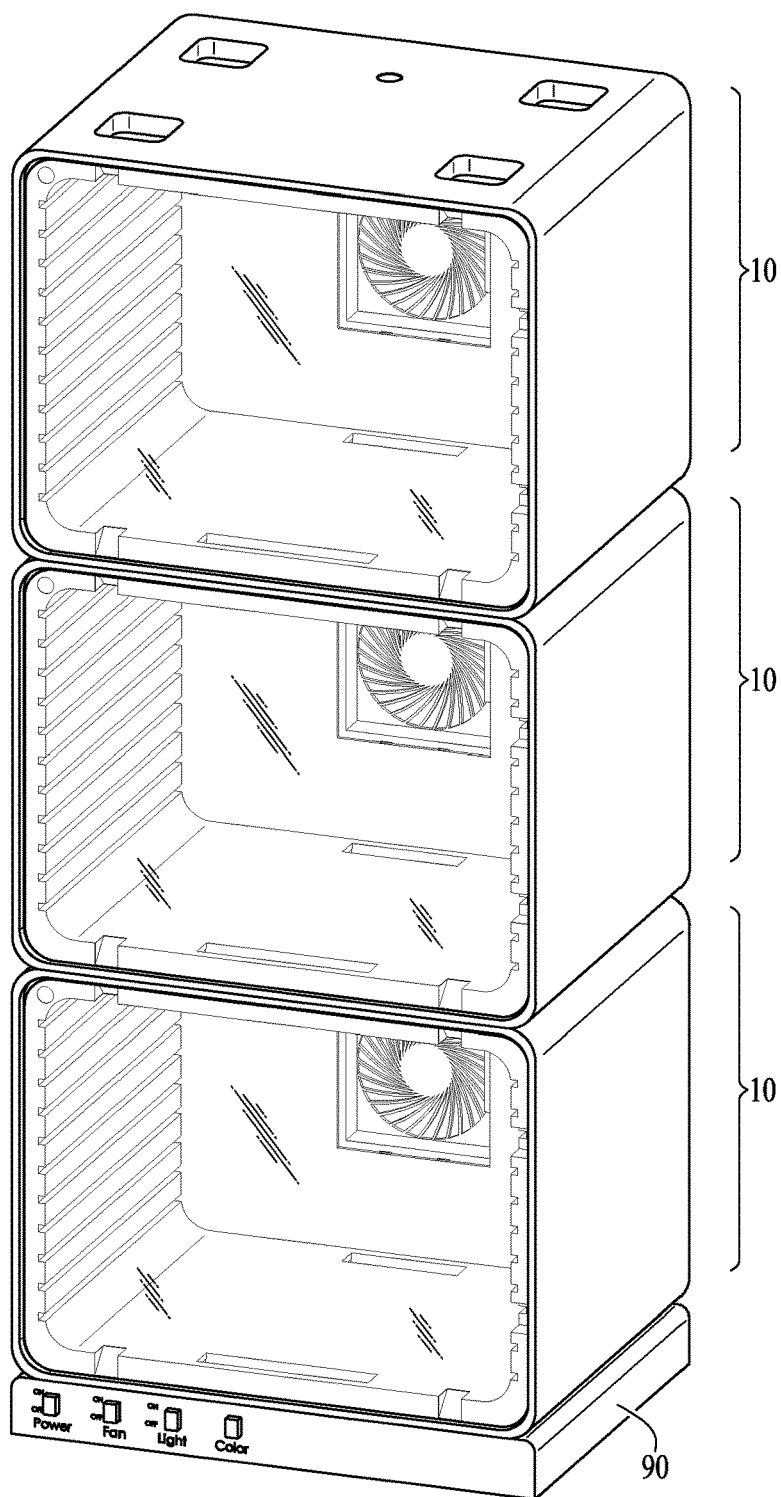


FIG. 28

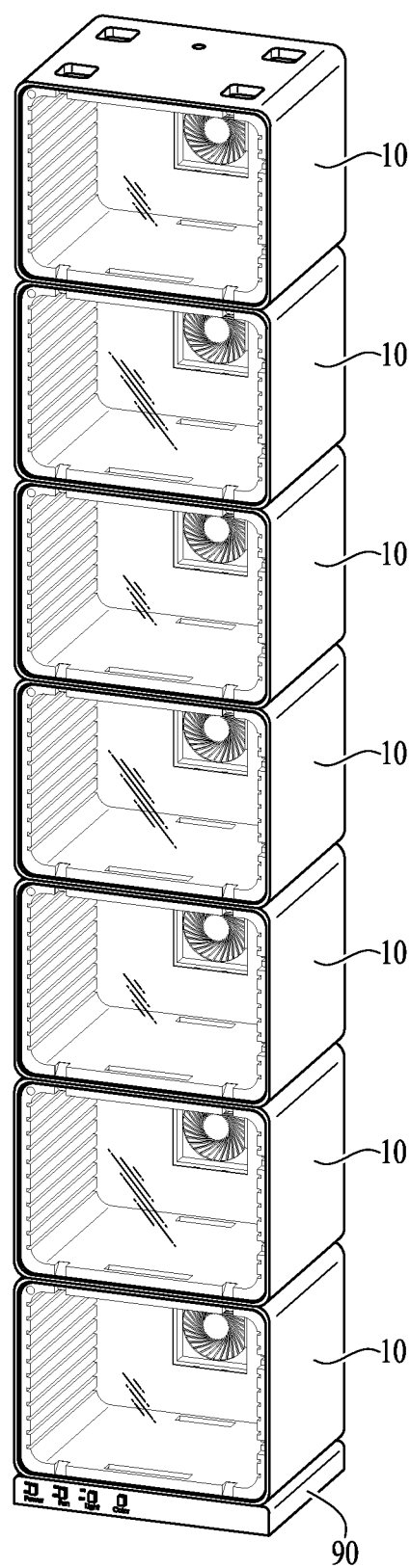


FIG. 29

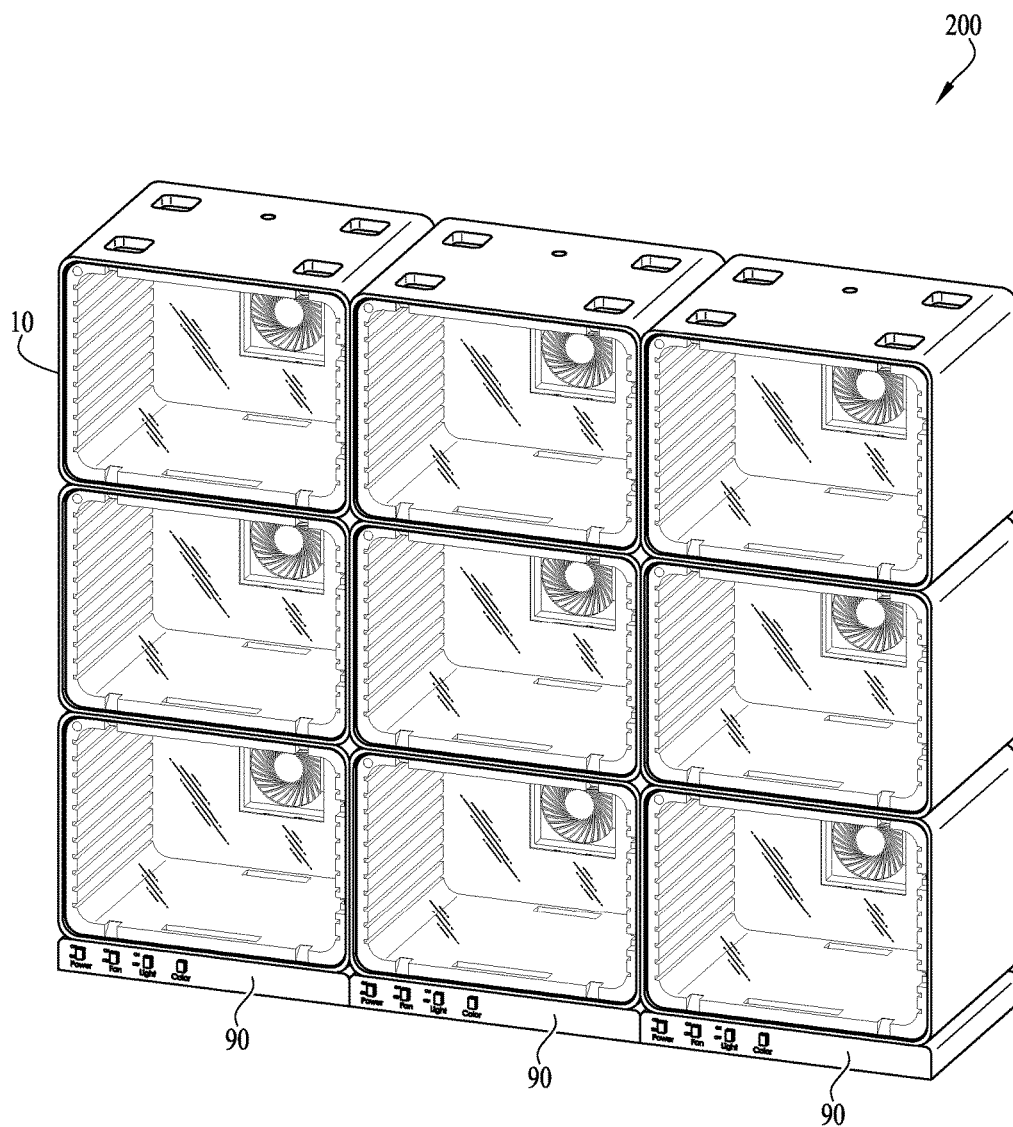
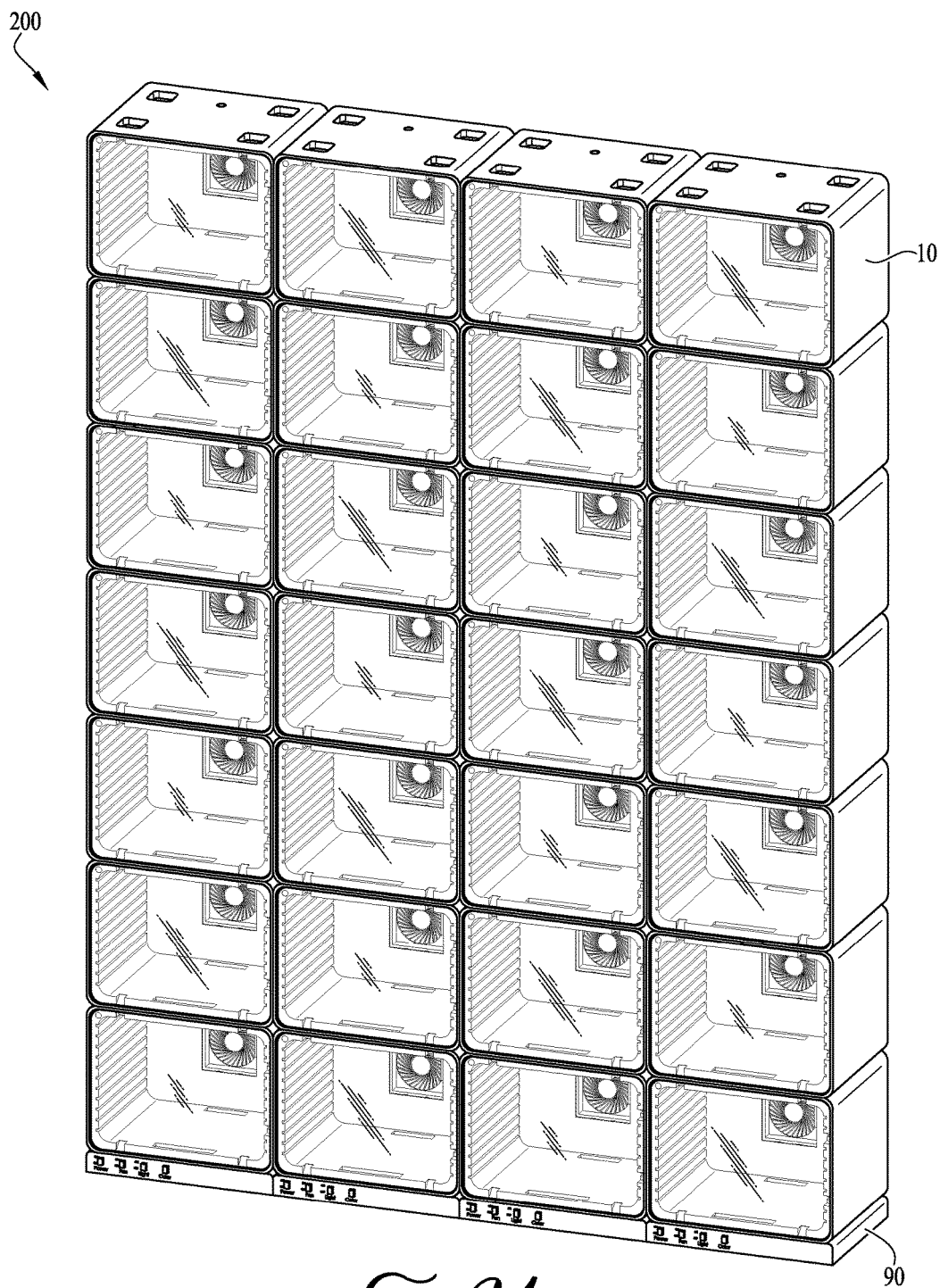


FIG. 30



MODULAR STORAGE CONTAINER**CROSS-REFERENCE TO RELATED APPLICATION**

[0001] This application claims the benefit of U.S. Provisional Patent Application Ser. No. 62/414,835, filed Oct. 31, 2016, the entirety of which is hereby incorporated herein by reference.

TECHNICAL FIELD

[0002] The present invention relates generally to storage reservoirs or containers, and more particularly the present invention relates to modular and stackable storage containers providing selective access thereto and being powered to provide additional functionality.

SUMMARY

[0003] In example embodiments, the present invention relates to a modular storage container including a container having a housing and defining an internal contained volume, and having a door movable between an open position providing access to the contained volume and a closed position preventing access to the contained volume.

[0004] In one aspect, the invention relates to a modular container including a housing, a contained volume defined within the housing, and a door panel. The housing includes a front end, a rear end, sides, a top end, and a bottom end, the front end defining an opening, the rear end defining a rear panel, the sides defining side panels, the top end defining a top panel, and the bottom end defining a bottom panel. The door panel is mounted to one of the panels and is movable between an open position for providing access to the contained volume and a closed position for preventing access to the contained volume.

[0005] In another aspect, the invention relates to a container including a housing defining an internal contained volume. The container includes one or more complementary interengagement features for providing complementary interengagement with at least one other container comprising complementary interengagement features. In example forms, the complementary interengagement features of the containers provide for the ability to stack a plurality of containers atop each other and/or beside each other to define a plurality of interconnected containers.

[0006] In still another aspect, the invention relates to A modular storage container system comprising at least a first and second modular container each comprising a top and a bottom, wherein the first and second modular containers comprise at least one accessory and a base assembly. The first modular container is configured to sit atop and electrically couple to the base assembly. The second modular container is configured to sit atop and electrically couple to the first modular container. The base assembly is configured to control the accessory of both the first modular container and the second modular container.

[0007] These and other aspects, features and advantages of the invention will be understood with reference to the drawing figures and detailed description herein, and will be realized by means of the various elements and combinations particularly pointed out in the appended claims. It is to be understood that both the foregoing general description and the following brief description of the drawings and detailed description of example embodiments are explanatory of

example embodiments of the invention, and are not restrictive of the invention, as claimed.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] FIG. 1 shows a perspective view of a modular storage container according to an example embodiment of the present invention.

[0009] FIG. 2 shows a front view of the modular storage container of FIG. 1.

[0010] FIG. 3 shows a back view of the modular storage container of FIG. 1.

[0011] FIG. 4 shows a bottom view of the modular storage container of FIG. 1.

[0012] FIG. 5 shows an upper rear perspective view of the modular storage container of FIG. 1.

[0013] FIG. 6 shows a lower rear perspective view of the modular storage container of FIG. 1.

[0014] FIG. 7 shows a side view of the modular storage container of FIG. 1.

[0015] FIG. 8 shows a top view of the modular storage container of FIG. 1.

[0016] FIG. 9 shows a perspective view of a base assembly for use with the modular storage container of FIG. 1.

[0017] FIG. 10 shows a perspective view of the modular storage container of FIG. 1, and showing a pair of shoes within the container for storage and display.

[0018] FIG. 11 shows a plurality of the modular storage containers of FIG. 1 stacked atop each other to define an array of modular storage containers, and showing the base assembly positioned below the bottom-most modular storage container for providing power thereto.

[0019] FIG. 12 shows a rear perspective view of the array of stacked modular storage containers of FIG. 11.

[0020] FIG. 13 shows a perspective view of a plurality of modular storage containers of FIG. 1, showing the containers stacked atop each other in a side-by-side configuration to define a matrix of modular storage containers.

[0021] FIG. 14 shows a perspective view of a modular storage container system according to another example embodiment of the present invention.

[0022] FIG. 15 shows an exploded view of the modular storage container system of FIG. 14.

[0023] FIG. 16 shows a front view of the modular storage container of the modular storage container system of FIG. 14.

[0024] FIG. 17 shows a back view of the modular storage container of FIG. 16.

[0025] FIG. 18 shows a lower rear perspective view of the modular storage container of FIG. 16.

[0026] FIG. 19 shows an upper rear perspective view of the modular storage container of FIG. 16.

[0027] FIG. 20 shows a side view of the modular storage container of FIG. 16.

[0028] FIG. 21 shows a perspective view of the base assembly of the modular storage container system of FIG. 14.

[0029] FIG. 22 shows a lower rear perspective view of a exploded modular storage container system according to an example embodiment of the present invention.

[0030] FIG. 23 shows a front view of the base assembly of FIG. 21.

[0031] FIG. 24 shows a rear view of the base assembly of FIG. 21.

[0032] FIG. 25 is an upper perspective view of the modular storage container of FIG. 16.

[0033] FIG. 26 is a lower perspective view of the modular storage container of FIG. 16.

[0034] FIG. 27 is a circuit diagram of the base assembly of FIG. 21.

[0035] FIG. 28 shows a modular storage container system of an example embodiment of the invention in which a plurality of modular storage containers are stacked atop each other to define an array of modular storage containers, and showing the base assembly positioned below the bottom-most modular storage container for providing power thereto.

[0036] FIG. 29 shows a modular storage container system of an example embodiment of the invention in which a plurality of modular storage containers are stacked atop each other to define an array of modular storage containers, and showing the base assembly positioned below the bottom-most modular storage container for providing power thereto.

[0037] FIG. 30 shows a modular storage container system of an example embodiment of the invention in which a plurality of modular storage containers are stacked atop each other in a side-by-side configuration to define a matrix of modular storage containers.

[0038] FIG. 31 shows a modular storage container system according to an example embodiment of the invention in which a plurality of modular storage containers are stacked atop each other in a side-by-side configuration to define a matrix of modular storage containers.

DETAILED DESCRIPTION OF EXAMPLE EMBODIMENTS

[0039] The present invention may be understood more readily by reference to the following detailed description of example embodiments taken in connection with the accompanying drawing figures, which form a part of this disclosure. It is to be understood that this invention is not limited to the specific devices, methods, conditions or parameters described and/or shown herein, and that the terminology used herein is for the purpose of describing particular embodiments by way of example only and is not intended to be limiting of the claimed invention. Any and all patents and other publications identified in this specification are incorporated by reference as though fully set forth herein.

[0040] Also, as used in the specification including the appended claims, the singular forms “a,” “an,” and “the” include the plural, and reference to a particular numerical value includes at least that particular value, unless the context clearly dictates otherwise. Ranges may be expressed herein as from “about” or “approximately” one particular value and/or to “about” or “approximately” another particular value. When such a range is expressed, another embodiment includes from the one particular value and/or to the other particular value. Similarly, when values are expressed as approximations, by use of the antecedent “about,” it will be understood that the particular value forms another embodiment.

[0041] With reference now to the drawing figures, wherein like reference numbers represent corresponding parts throughout the several views, FIGS. 1-10 show a modular storage container 10 according to an example embodiment of the present invention. In example embodiments, the modular storage container 10 generally comprises a housing comprising a front end 12, a rear end 14, sides 16, a top end 20, and a bottom end 22. The front end 12 defines an opening

13 for providing access within the container 10. In example embodiments, the rear end 14 defines a rear panel 24, the sides 16 define side panels 26, the top end 20 defines a top panel 30, and the bottom end 22 defines a bottom panel 32. In example embodiments, the panels 24, 26, 30, 32 define an internal contained volume 35, which is accessible through the opening 13. In example embodiments, the front end 12 preferably accommodates a pivotally mounted door panel 34, which is movable between an open position to provide access to the opening 13 and the internal contained volume 35, and a closed position to prevent access to the opening 13 and the internal contained volume 35. In example embodiments, the housing comprising the panels 24, 26, 30, 32 is generally rectangular in cross-sectional shape (as depicted in the figures). Optionally, the housing can be shaped as desired, for example, generally cubical or square, hexagonal, circular or spherical, cylindrical, or other cross-sectional shapes as desired. In some example forms, the shape of the container can be configured for complementary interengagement with at least one other container, for example, to provide the ability to stack a plurality of containers atop each other and/or beside each other, to define a plurality of interconnected containers, which according to some example embodiments (as will be described below) can be electrically connected when interengaged, connected or stacked with other containers 10.

[0042] In example embodiments, the panels 24, 26, 30, 32 are generally integrally connected together to form a generally unitary structure. In alternate embodiments, one or more of the panels can be formed separately and assembled together to form the container 10. As depicted in FIGS. 2-3 and 7, a dimension W1 is defined between the inner surfaces of the side panels 26, a dimension H1 is defined between the inner surfaces of the top and bottom panels 30, 32, a dimension W2 is defined between the outer surfaces of the side panels, a dimension H2 is defined between the outer surfaces of the top and bottom panels 30, 32, and a dimension D1 is defined between the front and rear ends 12, 14. In example embodiments, the dimension W1 is between about 8-24 inches, for example about 16 inches according to one example embodiment, the dimension H1 is between about 6-24 inches, for example about 12 inches according to one example embodiment, the dimension W2 is between about 9-32 inches, for example about 18 inches according to one example embodiment, and the dimension H2 is between about 7-30 inches, for example about 14 inches according to one example embodiment. The container 10 defines a depth D1 that is generally between about 6-26 inches, for example about 12.5 inches according to one example embodiment. In example embodiments, the depth of the interior of the container 10 (e.g., defining the internal contained volume) is generally between about 7-24 inches, for example about 12 inches according to one example embodiment.

[0043] The front end 12 of the container 10 generally comprises an inner recessed portion for receiving the door panel 34, for example, so that the door panel 34 is generally flush with the end 12 when in the closed position. In example embodiments, the recessed portion is generally dimensioned to define a depth of between about 0.20-0.50 inches, for example about 0.39 inches according to one example embodiment, and the door panel 34 generally comprises a thickness of between about 0.10-0.45 inches, for example about 0.20 inches according to one example embodiment. In

alternate example embodiments, the inner recessed portion and the thickness of the door panel 34 can be dimensioned as desired.

[0044] In example forms, the door panel 34 is pivotally mounted to the front end 12 by two hinges 36. In the depicted example embodiments, the hinges 30 are generally mounted to an upper portion of the front end 12 proximal the top end 20, for example, such that the door panel 34 generally pivots about a horizontal axis. In other embodiments, the hinges 34 can be alternatively mounted, for example on the side or lower portion of the front end. In example embodiments, the hinges are generally spring-loaded or biased to force the door to a fully open position. To provide closure to the door panel 34, a latch is provided at a lower portion of the front end 12, which preferably catches at least a portion of the door panel 34 to keep it in a fully closed position. In one example embodiment, pushing on the lower portion of the door panel 34 near the latch 40 causes the latch to release the door panel 34 such that the bias of the hinges 36 cause upward pivoting of the panel 34 to a fully open position. The bias of the spring can be overcome, for example, to cause movement of the door from an open position to a closed position, by pushing on at least a portion of the door to the closed position, for example, such that the latch can catch the door and keep it in a closed position.

[0045] In alternate embodiments, other hinges, pivoting mechanisms, latches, etc. can be used to accommodate moving the door between an open and closed position. Optionally, the door panel 34 can be configured to at least partially retract within one or more of the panels 24, 26, 30, 32, for example, so that in the open position the door panel 34 is removed from extending outwardly from the container 10. Further optional, the door panel 34 can be provided with a locking mechanism for secure closure of the door panel. In some example embodiments, a handle or other grasping member can be provided with the door panel 34 to assist in opening and/or closing the door. In some example embodiments, standard hinges can be used and a magnetic closure mechanism can be implemented to provide a removable securing mechanism for keeping the door panel 34 in the closed position. In some example embodiments, the opening and closure of the door panel 34 can be entirely automated, for example, to automatically open and close the door panel 34 as desired. In some example forms, two door panels can be provided, for example, which can generally open and be received within one or more of the panels of the housing, for example, to remain generally out if the way and not interfering with an individual accessing the contained volume 35. In example embodiments, when the door panel is pivotally mounted to the housing, the door panel 34 can pivot about a generally horizontal axis (as depicted), or the door panel 34 can pivot about a generally vertical axis. In further example embodiments, the door panel 34 can be configured similarly to a garage door. For example, wherein a mechanism or other actuating member, component or system provides for movement of the door panel along a guidance track such that the door can move between the open and closed positions, either automatically or manually. In some example embodiments, the door comprises a plurality of interconnected segments or components, for example, to become compact when retracted or recessed within the container (e.g., thereby providing access within the internal contained volume).

[0046] In the depicted example embodiment, the door panel 34 is generally transparent or at least partially translucent, for example, to provide a viewing window to see the contents stored within the housing. In other example embodiments, the door panel 34 can be generally opaque, for example, to maintain privacy and prevent the contents within the contained volume from being viewable, for example, unless the door panel 34 is moved to the open position.

[0047] In example embodiments, the interior surfaces of the side panels 26 comprise an array of shelving receivers or ridges 50, for example, which extend generally horizontally along the interior surfaces of the side panels 26 from the front end 12 to an interior surface of the rear panel 24. Preferably, a shelf or other divider member (not shown) can be engaged with an opposing pair of ridges 50, for example, to form a divider within the contained volume 35. Preferably, the shelf can be positioned at any height within the contained volume 35, for example, to generally divide the contained volume 35 into two areas, for example, wherein the shelf generally acts as a divider therebetween.

[0048] In example embodiments, the container 10 preferably accommodates being stacked atop another container 10 (or multiple containers 10), for example, to provide an assembly of multiple stacked containers 10. For example, when more than one container 10 is desirable, the containers can be generally stacked or removably fitted with each other as desired (see FIGS. 11-13). In example embodiments, the bottom panel 32 comprises a plurality of lower legs or stacking feet 60 for providing complementary removable engagement with a plurality of upper recesses or stacking receivers 62 of the top panel 30. For example, as depicted in FIGS. 2 and 4, the bottom panel 32 comprises four generally block-shaped, spaced-apart stacking feet 60, which are generally protruding from an outer surface of the bottom panel 32. In example forms, the feet 60 are generally spaced inwardly from an outer edge of the bottom and side panels 32, 26 and protrude from the outer surface of the bottom panel 32. In example forms, the feet 60 extend outwardly from the outer surface of the bottom panel 32 between about 0.25-2.5 inches. In alternate example embodiments, the feet 60 can be shaped as desired, for example, generally triangular, L-shaped, other polygonal shapes, round, oval, or other shapes as desired.

[0049] As similarly shown in FIGS. 5 and 8, the outer surface of the top panel 30 comprises the plurality of receivers 62 for providing complementary interengagement with the feet 60 of another container 10, for example, to allow for one of the containers to be stacked atop another container 10. In a similar configuration, the receivers 62 define four inwardly spaced block-shaped recesses formed within an outer surface of the top panel 30, which are preferably sized and shaped to provide complementary removable engagement with the feet 60 of the bottom panel 32. In alternate example embodiments, rather than providing feet 60 and receivers 62 for stacking, the top and bottom panels 30, 32 can comprise magnets to removably mount the containers 10 together as desired. In some example embodiments, the outer surfaces of the top and bottom panels 30, 32 are generally smooth and the magnets are integrally formed within the housing in a desired polarity configuration, for example, to cause the outer surface of the top panel 30 of a first container to be attracted to the outer surface of the bottom panel 32 of a second container. Optionally, the feet

and receivers **60**, **62** can comprise magnets therein, which can further facilitate the removable connection between the containers **10**.

[0050] In some example embodiments, the container **10** can be provided with one or more accessories, for example, for providing additional functionality to the container **10**. According to one example embodiment, the container **10** can comprise at least one fan **82** and/or at least one light **86**, for example, for providing air ventilation to the contained volume **35** and for providing light and illuminating the contained volume **35**. In example embodiments, the rear panel **24** comprises an opening **80** that is configured for receiving a fan **82** (and optional filter) to provide air ventilation to the contained volume **35**. In example embodiments, the fan **82** can force air from exterior the contained volume **35** to be input therein, or the fan **82** can be configured to withdraw air within the contained volume **35** to its exterior surroundings.

[0051] In the case of storing articles of clothing or other objects potentially having an undesirable scent, the fan **82** (and optional filter) can be utilized in removing the undesirable scent from the article being contained within the contained volume **35** of the container **10**. In some example embodiments, the fan is generally fixedly mounted to the rear panel **24**, for example, such that the fan **82** is generally incapable of being removed therefrom. In other example embodiments, the fan **82** is removably mounted to the opening **80** of the rear panel **24**, for example, such that it can be removed as desired. In some example embodiments, a covering or other member can be provided to mount or fasten to the rear panel **24**, for example, to generally close the opening **80** when the fan **82** is not being used or when the fan **82** is removed from attachment with the rear panel **24**. In alternate example embodiments, a single fan is provided in the bottom-most container **10** (or in a base assembly **90** as described below), and air flow provided by the fan moves throughout the containers **10** that are stacked together. In some example embodiments, the container **10** comprises one or more air ducts or conduits for facilitating the flow of air therethrough. In some example embodiments, when each container comprises a fan **82**, one or more air ducts or conduits can be formed through one or more portions of the door, or housing.

[0052] In example embodiments, one or more lights **86** (see FIGS. 1-2) can be provided within the container to illuminate the contained volume **35**. In example embodiments, the light **86** is generally housed within the container and positioned near an interior surface of the top panel **30**. The light color can be chosen as desired, for example, which can be a white/natural color, or can be multi-colored and capable of transitioning between a plurality of colors. In some example embodiments, a blue LED light can be provided for inhibiting bacterial and fungal growth, or for example, a UV black light can be provided for similar antibacterial properties. In example embodiments, the light **86** is generally in the form of a light-emitting diode (LED), which preferably emits a substantially amount of light while not generating much heat. Optionally, when it is desired to provide heat within the contained volume, a heat lamp or other light capable of generating heat can be provided as desired. According to one example form, the one or more lights **86** are generally fixedly mounted to in interior surface of the top panel **30**, or can be recessed within the interior surface of the top panel **30**. Optionally, the one or more

lights **86** can be removably mounted to any of the panels within the container as desired, for example, to provide the desired illumination and functionality.

[0053] In example embodiments, the container **10** can be electrically powered to provide electricity to the fan **82** and the one or more lights **86**. In one example embodiment, as depicted in FIG. 9, a base assembly **90** can be provided, which is preferably electrically connectable with a standard electrical outlet. For example, the base assembly **90** comprises an upper surface **92** that has a plurality of receivers **94** that are configured substantially similar to the receivers **62** of the top panel **30**, and which are preferably engageable with the feet **60** of the bottom panel **32**. The base assembly **90** further comprises a pair of electrical connectors **96** generally positioned near a rear end portion of the base assembly **90** (as will be described below), and an electrical plug **98** extends from a portion of the base assembly **90** for connecting to an electrical outlet. With the electrical plug of the base assembly **90** connected to an electrical outlet and with the feet **60** of the container **10** engaged with the receivers **94** of the base assembly **90**, the fan **82** and the one or more lights **86** are preferably powered and provided with electricity from the electrical outlet. For example, as depicted in FIG. 6, the exterior surface of the bottom panel **32** comprises one or more electrical connectors **70**, which are positioned to be received within one or more electrical connectors **96** of the base assembly **90**. Thus, with the base assembly **90** connected to an electrical outlet, engaging the feet **60** of the container **10** within the recesses **94** of the base assembly **90** causes the container to electrically connect with the base assembly **90** (via connection of the electrical connectors **70** with the electrical connectors **96**), thereby providing electricity to the container **10** to provide power to the fan **82** and one or more lights **86**.

[0054] Similarly, as depicted in FIGS. 5 and 8, the exterior surface of the top panel **30** comprises a pair of electrical connectors **70**, for example, such that another container **10** can be stacked atop the container that is connected to the base assembly **90**, for example, to provide electricity to both of the containers **10**. In example embodiments, the electrical connectors **70** are configured to complement stacking one of the containers **10** atop another, for example, such that the electrical connectors **70** provided at the bottom panel **32** are generally interengageable with the electrical connectors **70** provided at the top panel **30**. For example, according to one example form, the electrical connectors **70** at the bottom panel **32** are male connectors and the electrical connectors **70** at the top panel **30** are female connectors. Thus, when a container **10** is stacked atop another container **10**, the feet **60** of the upper container are received within the receivers **62** of the bottom container **10** and the male electrical connectors **70** of the upper container are received within the female electrical connectors **70** of the bottom container **10**. Thus, preferably, a plurality of containers **10** can be stacked together (one on top of the other) while providing an electrical connection therebetween, for example, such that each of the fans **82** and one or more lights **86** can be powered.

[0055] Optionally, according to additional example embodiments of the present invention, a plurality of electrical connectors can be provided, for example, instead of the pair of connectors as described above. In additional example embodiments, the one or more electrical connectors can be provided generally anywhere on the containers, for

example, so that at least some type of electrical connection can be provided between the containers when adjacent or stacked atop each other.

[0056] As depicted in FIGS. 11-12 and 28, three containers 10 are stacked together to form an array of stacked containers 10. As shown, the base assembly 90 is coupled with the bottom-most container 10, thereby providing electrical power to each of the containers. In example embodiments, as depicted in FIG. 12, each of the containers comprise electrical conduit 72 (positioned within each of the rear panels 24) for facilitating the connection of the electrical connectors 70, 96. In example embodiments, the electrical conduit 72 is generally integrally formed with the rear panels 24, for example, such that electrical wiring can pass therethrough to connect to the electrical connectors 70. In example embodiments, the electrical wiring is electrically connected to the fan 82, one or more lights 86 of each of the containers 10, and to the electrical connectors of the top and bottom panels. According to one example embodiment, about seven containers 10 can be stacked atop each other, thereby comprising an array of seven stacked containers, as shown in FIG. 29. Optionally, more or less than seven containers can be stacked atop each other.

[0057] According to another example embodiment of the present invention, as depicted in FIG. 13, the containers 10 can be stacked together to form a matrix of containers 200. In example forms, the size of the matrix of containers 200 is a 4×3 matrix, for example, having four rows and three columns. In other embodiments, the matrix of containers is 3×3 as shown in FIG. 30. In still other embodiments, the matrix of containers can be 7×4, as shown in FIG. 31. Optionally, the size of the matrix can be chosen as desired. In the depicted embodiment, each column of the matrix of containers 200 has base assembly. In example embodiments, the base assemblies 200 are electrically connected such that the matrix 200 can be controlled as a single unit. In other embodiments, a single base assembly 190 can support multiple columns of containers 10. According to one example embodiment, a bracket or other mounting fastener can be provided for securing the uppermost container to a support, structure or other generally stabilizing member. For example, to eliminate the risk of the containers falling over or unintentionally malfunctioning due to a user error, a bracket, strap, or other securing member or device can be provided to ensure the stacked containers remain stacked atop each other.

[0058] In example embodiments, a base assembly 90 is generally electrically connected to each of the bottom-most containers 10, for example, to provide electrical power to each individual column of stacked containers 10. In alternate example embodiments, a rechargeable battery can be implemented into each base assembly 90, for example, such that the base assembly 90 need not be connected to an electrical outlet to provide power to each of the stacked containers 10. Optionally, one or more of the containers 10 can be provided with a rechargeable battery to allow for powering each of the containers 10 individually, for example, such that the containers 10 are not relying on an electrical outlet, or a single battery supply from the base assembly 90. In some example embodiments, the electrical connectors 70, 96 can be in other forms, for example, other electrically connectable connectors, which are generally conductive and permit electricity to flow through the connection and power each of the containers 10. According to one example form, the electrical

connectors can be generally wireless or include components generally found in wireless induction chargers, for example, such that merely placing one container atop another container provides an electrical connection therebetween.

[0059] In example embodiments, the container 10 of the present invention can be used for various purposes. For example, as depicted in FIG. 10, a pair of shoes S can be stored within the container 10. Preferably, the fan 82 can be utilized to provide airflow within the contained volume 35, for example, to dry the shoes and remove any unwanted scents. For example, an individual wearing the shoes may remove them and place them within the container after use, for example, to extract and remove the moisture and undesirable scents, body and foot odor, bacteria, etc. from the shoes S. In some example embodiments, one or more scent-emitting devices, filters, or other members can be provided for filling the contained volume with a desired scent, which over time can cause the shoes S to have the same desired scent. According to one example form, the size of the container 10 is such that 1 pair of medium to high top shoes/heels can fit within the contained volume, or for example, two pairs of low top shoes positioned in a side-by-side configuration. According to another example embodiment, the container 10 is sized such that at least one pair of extra long boots can stand upright within the container 10. According to another example embodiment, the container is sized such that a single pair of low top shoes can be placed within the container, for example, in a stacked configuration where a divider is provided and positioned at the middle of the container, an wherein one shoe is positioned on the divider and the other shoe is positioned on a bottom interior surface of the container. In example embodiments, one or more containers 10 can be used in an individual's home to provide storage and organization to their shoes, or can be used to showcase them. In some example embodiments, a shoe store or other retailer can utilize one or more containers 10 to showcase or organize shoes or other products that are for sale.

[0060] In other example embodiments, the containers 10 can be used in public places such as water parks, amusement parks, bowling alleys, indoor playgrounds and other places where an individual's belongings can be safely stored while being left unattended. In such situations, a lock or other tamper proof securing mechanism can be implemented with each of the containers, for example, to prevent theft and the likelihood that the individual's belongings could be stolen. In additional example embodiments, one or more of the containers can be used in other places, for example, gyms, schools, athletic complexes, yoga studios, spas, massage parlors, industrial plants, and other work places where it may be desirable to provide a secure and convenient place to temporarily store an individual's belongings.

[0061] According to another example embodiment of the present invention, the containers 10 can be used for storing or displaying hats, watches, helmets, clothes (leather, etc.), memorabilia, collector's items, jewelry, or other personal items. According to other example embodiments, the containers 10 can be used for storing/preserving food items such as wine, fruit, bread, cheese and other consumables. In some example embodiments, a cooling module or refrigerator component can be implemented with the container 10, for example, to ensure the food or consumable remains at a desired temperature. According to one example, beef or other meat can be temporarily stored within the container 10

at a grocery store, and the cooling module can keep the internal volume **35** at a desired temperature to prevent the meat from spoiling. In addition to the cooling module, the one or more lights **86** can be configured to further prevent fungal and bacteria growth, as described above.

[0062] In example embodiments, the container **10** is generally formed from a plastic or synthetic material, for example, which can be generally molded or constructed such that the housing is generally one unitary piece, or very few pieces to reduce assembly. In other example embodiments, the container can be formed from a metal, composite or other natural or synthetic materials, or combinations thereof. In some example embodiments, a heating element can be provided for example, for removing moisture from one or more objects or goods contained within the contained volume **35**, or for example, for keeping food or other consumable good warm. According to some example embodiments, when a heating element is to be provided, the housing can be constructed from a plastic material having high temperature resistance, or for example, the housing can be constructed from a metal. In some example embodiments, when it is desired to maintain the internal contained volume **35** at a certain temperature, the housing (and optionally the door panel **34**) can be insulated as desired. According to some example forms, the container **10** is formed from a solid plastic material. Optionally, the container **10** is formed from a semi-solid plastic material, which can optionally include an insulation material occupying the voids within the semi-solid plastic container **10**.

[0063] According to another example embodiment of the present invention, the container **10** and/or the base assembly **90** can comprise a control system, for example, such that the components of the container (e.g., light(s), fan(s), etc.) can be controlled via an automated system, or can be controlled via an automatic timer and/or remote control. In example embodiments, the control system can control the lights, fans, and any other electrical components that may be incorporated into the container(s), whether using a single container or several containers. In example embodiments, the control system can comprise a timing feature where the user can set certain times where the fan or lights will automatically turn on. The controls can either be on the base to control the entire array of stacked containers, or there can be an external remote/phone app to control either each array of stacked containers or individual boxes. In some example embodiments, a motion sensor is provided in the base or in each individual container, for example, to turn on the lights (or other components of the container) when an individual walks in front of one or more of the containers. According to some example embodiments, the control system is compatible with connecting to a wireless network (via WiFi), or for example, can be connected to an electronic device via Bluetooth, or for example, can be compatible for communicating with IR or RF signals. In some example embodiments, the control system allows for a smart phone application to connect, for example, to control the functionality of the container (and its components thereof) wirelessly and without any input directly with the container or the base. In some example forms, a locking mechanism can be controlled by the control system, for example, such that a feature on the smart phone application allows for selective locking/unlocking of the door of the container. In example embodiments, the control system can be housed within a portion of the housing or base, or can be housed as desired.

In some example embodiments, the control system is housed within the base, and the plurality of containers stacked atop the base (and electrically connected to the base) can be controlled via the control system of the base. In other example embodiments, a control system is provided for each container.

[0064] FIG. **14-31** show a modular storage container system **100** according to another example embodiment of the present invention. The modular storage container system **100** generally comprises a modular storage container **110** and a base assembly **190**. The modular storage container **110** is configured to sit atop the base assembly **190** and the base assembly **190** is configured to power various accessories in the modular storage container. In example embodiments, a plurality of modular storage container **110** can be stacked atop each other to define an array of modular storage containers. A base assembly **190** can be positioned below the bottom-most modular storage container for providing power to the modular storage containers **110** in the array.

[0065] The modular storage container **110** has a similar shape and dimension of the modular storage container **10** of the previous embodiment, having a housing comprising a front end **112**, a rear end **114**, sides **116**, a top end **120**, and a bottom end **122** which enclose an internal contained volume **135**. Like in the previous embodiment, the front end **112** modular storage container **110** includes a pivotally mounted door panel **134**, which is movable between an open position to provide access to the internal contained volume **135**, and a closed position to prevent access to the internal contained volume. Like in the previous embodiment, the door panel **134** can be pivotally mounted to the front end **112** by two hinges **136**. In the depicted embodiment, the hinges **136** are generally mounted to a side portion of the front end **112** such that the door panel **34** generally pivots about a vertical access. To provide closure to the door panel **134** a magnetic latch **140** is provided at an upper portion of the front end **112**, which preferably provides for complementary engagement with a magnetic portion **142** of the door panel **134**, for example, such that positioning the magnetic portion generally near the pin causes attraction therebetween and connects the magnetic portion to the pin such that the door panel remains closed. In example embodiments, the hinges **136** are spring-loaded or biased as in the previous embodiment. In one example embodiment, pushing on the side portion of the door panel **134** opposite the hinges **136** near the magnetic latch **140** causes the latch to release the door panel **134** such that the bias of the hinges cause outward pivoting of the panel to a fully open position.

[0066] As in the previous embodiments, the container **110** preferably accommodates being stacked atop another container **110** (or an array of containers), for example, to provide an assembly of multiple stacked containers **110**. The bottom end **122** comprises a plurality of lower legs or stacking feet **160** for providing complementary removable engagement with a plurality of upper recesses or stacking complementarily dimensioned receivers **162** on the top end **120** of the container. In the example embodiment, the legs **160** are generally square shaped. In example embodiments, the legs **160** and receivers **162** are positioned such that the containers **110** can be stacked in multiple directions. In other words, the containers **110** can be stacked such that the rear end **114** of one container aligns with the front end **112** of another.

[0067] In example embodiments, the container 110 can include one or more accessories, for example, for providing additional functionality to the container. The accessories can include at least one fan 182, a light 184, and a heating element 186. As in the previous embodiment, the container 110 includes a fan 182 positioned at the rear end 114 of the container. The fan 182 is configured to provide air ventilation to the contained volume 135, as in the previous embodiment. In the example embodiment, one or more channels or vent openings 152 are formed within a portion of the container, for example, to provide for adequate ventilation or circulation. In example embodiments, when air is being forced within the contained volume 135 (via the fan 182), the one or more openings 152 permit at least some of the air to vent or pass through the one or more openings and back to the container's exterior surroundings. In another example embodiment, when the fan 182 is configured to withdraw air from within the contained volume to the container's exterior surroundings, the one or more openings 152 permit at least some air surrounding the container's exterior to be drawn into the contained volume 135 and back to the container's exterior, thereby providing adequate air circulation. In example embodiments, the fan can include a device for dispensing a scent into the contained volume 135.

[0068] In example embodiments, one or more lights 184 (see FIG. 25) can be provided within the container 110 to illuminate the contained volume 135 and/or inhibit bacterial and fungal growth. The light 184 is similar to the previous embodiment, but in the container 110 the light 184 is positioned in the bottom portion of the contained volume 135. The container 110 can also include one or more heating elements 186 (see FIG. 26). The heating elements 186 can include a heating lamp or a light capable of generating heat. The heating element 186 can assist in drying or warming the items stored in the container 110. In the depicted embodiment, the heating elements 186 are positioned on the top portion of the contained volume 135.

[0069] In example embodiments, the accessories of the container 110 are electrically powered by a base assembly 190, shown in FIGS. 21-24. As in the previous embodiment, the base assembly comprises an upper surface 192 that has a plurality of receivers 194 that are configured to engage the legs 160 of the bottom end 122 of the container 110. The base assembly 190 also includes a pair of electrical connectors 196 and an electrical plug 198 as in the previous embodiment. The base assembly 190 also includes a female connector 199 positioned on the upper surface 192 of the base. The female connector 199 is configured to engage a male connector 170 positioned on the bottom end 122 of the container 110 (as shown in FIG. 18). In example embodiments, the female connector 99 and male connector 70 can comprise an electrical connection to power the accessories of the container. In other embodiments, the female connector 199 can comprise a spinning device configured to engage and spin the male connector 170 and thereby power the fan 182 of the container 110. In the depicted embodiment, the container 110 includes a female connector 172 positioned on the top end 120 of the container 110 (as shown in FIG. 19). The female connector 172 is configured to engage the male connector 170 of a container 110 when another container is stacked above it. This connection serves to link an area of stacked containers 110 to a single base assembly 110.

[0070] In the depicted embodiment, the base assembly 110 includes one or more switches positioned on the front

portion of the base panel. These switches can include a power switch 150 and a fan switch 152. In example embodiments, the power and fan switches 150, 152 are two position rocker switches. The base assembly 110 can also include a push button 154 that allows a user to change the color of the light accessory 184. In example embodiments, the push button 154 can be pushed to cycle through the color options. In the depicted embodiment, a three position rocker switch 156 is used to control power to the light accessory 184. The light switch 156 can be toggled between an on setting, an off setting, and a motion sensor setting. In the motion sensor setting, the light will illuminate when a motion sensor 158 positioned at the front of the base assembly 190 detects motion in the vicinity of the container. In alternate embodiment, the motion sensor 158 can be applied to other accessories of the container. In other embodiments, the lights can be controlled by a two position, on/off switch. In still other embodiment, the base assembly 190 can be remotely controlled by an electronic device. The base assembly can communicate with the electronic device using wireless means such as Bluetooth, infrared, or a wireless internet connection.

[0071] FIG. 22 shows the electrical systems of the base assembly 390 of a modular container system 300 according to an example embodiment of the invention. The base assembly includes a power cord 320 configured to plug into an AC outlet. The power cord 320 is coupled to an AC-DC adaptor. In example embodiment, the adaptor has an output of around 12 volts and 5 amps and an input of between about 90 and 264 VAC. The base assembly 390 also includes a PIR motion sensor 350 coupled to base circuit 360 configured to manage the input from the switches on the base assembly 390. The base circuit is coupled to the female connector 330 which is configured to couple to the modular container 310 and thereby power and control the accessories of the modular container.

[0072] While the invention has been described with reference to example embodiments, it will be understood by those skilled in the art that a variety of modifications, additions and deletions are within the scope of the invention, as defined by the following claims.

What is claimed is:

1. A modular container comprising:

- a housing comprising a front end, a rear end, sides, a top end, and a bottom end, the front end defining an opening, the rear end defining a rear panel, the sides defining side panels, the top end defining a top panel, and the bottom end defining a bottom panel;
- a contained volume defined within the panels; and
- a door panel mounted to one of the panels, the door panel being movable between an open position for providing access to the contained volume and a closed position for preventing access to the contained volume.

2. The modular container of claim 1, wherein an interior surface of each of the side panels comprise an array of ridges, the ridges capable of interengagement with a shelf.

3. The modular container of claim 1, further comprising an opening formed within at least one of the panels for receiving a fan, the fan providing airflow within or out the contained volume.

4. The modular container of claim 1, further comprising one or more lights mounted within the container.

5. The modular container of claim 4, wherein the one or more lights comprise blue LED lights for preventing fungal and bacterial growth.

6. The modular container of claim 1, further comprising a plurality of feet protruding from an outer surface of the bottom panel.

7. The modular container of claim 6, further comprising a plurality of receivers formed within an outer surface of the top panel.

8. The modular container of claim 7, wherein the feet and receivers are configured for complementary interengagement to enable stacking of one container atop another container.

9. The modular container of claim 8, further comprising a base assembly, the base assembly comprising a plurality of receivers for providing complementary interengagement with the feet of a container.

10. The modular container of claim 9, wherein the base is provided with an electrical connector for connecting with an electrical outlet, and wherein one or more electrical connectors of the base are configured for electrically connecting with one or more electrical connectors of the container.

11. The modular container of claim 10, wherein the one or more electrical connectors of the container are provided generally near a pair of the feet of the bottom panel, and wherein the one or more electrical connectors of the base are provided near a pair of the receivers of the base assembly, and wherein interengagement of the feet of the container with the receivers of the base assembly cause interengagement of the electrical connectors of the base assembly with the electrical connectors of the container such that the electricity provided to the base assembly can freely move through the electrical connectors to provide electrical power to the container.

12. The modular container of claim 1, wherein the housing is formed from at least one material selected from plastic, metal, composite or other natural or synthetic materials, or combinations thereof.

13. The modular container of claims 3 and 4, further comprising a control system for controlling the lights, fans, and any other electrical components that may be incorporated with the container.

14. A container comprising a housing defining an internal contained volume, the container comprising one or more complementary interengagement features for providing complementary interengagement with at least one other container comprising complementary interengagement features, wherein the complementary interengagement features of the containers provide the ability to stack a plurality of containers atop each other and/or beside each other to define a plurality of interconnected containers.

15. A modular storage container system comprising:

at least a first and second modular container each comprising a top and a bottom, wherein the first and second modular containers comprise at least one accessory;

a base assembly;

wherein the first modular container is configured to sit atop and electrically couple to the base assembly;

wherein the second modular container is configured to sit atop and electrically couple to the first modular container;

wherein the base assembly is configured to control the accessory of both the first modular container and the second modular container.

16. The modular storage container system of claim 15, wherein the accessory comprises one of a fan, a light, or a heating element.

17. The modular storage container system of claim 15, wherein the base assembly is controlled remotely.

18. The modular storage container system of claim 15, wherein the base assembly comprises an interengagement feature configured to engage a complimentary interengagement feature of the first modular container.

19. The modular storage container system of claim 15, wherein the top of the first modular container comprises an interengagement feature configured to engage a complimentary interengagement feature of the second modular container.

20. The modular storage container system of claim 15, wherein the base assembly further comprises a motion sensor configured to control the operation of the accessory.

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