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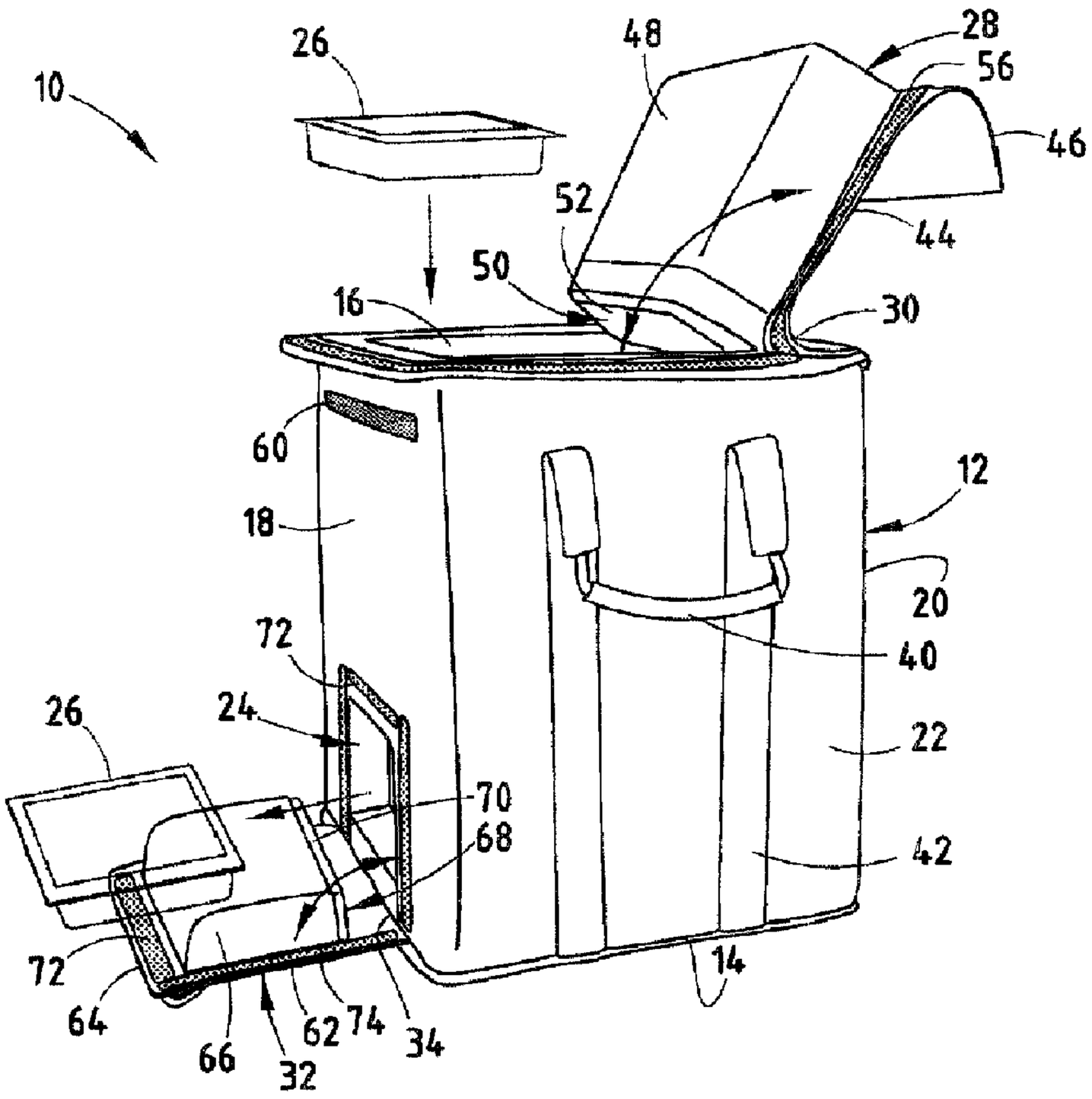

(57) Abrégé/Abstract:
A controlled temperature food carrier for carrying a plurality of meal trays includes an insulated housing constructed of flexible fabric and having a closed bottom, an open top and a front wall having an opening adjacent the bottom of the housing, wherein the

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(57) Abrégé(suite)/Abstract(continued):
opening is sized to preclude simultaneous removal of all of a plurality of meal containers, thereby limiting heat transfer from within the housing. The food carrier also including a lid constructed of a flexible fabric and operably connected with the housing by a living hinge between an open position and a closed position. The carrier further includes a door constructed of flexible fabric and operably connected with the housing by a living hinge and operable between an open position and a closed position.

FOOD CARRIER

ABSTRACT OF THE DISCLOSURE

A controlled temperature food carrier for carrying a plurality of meal trays includes an insulated housing constructed of flexible fabric and having a closed bottom, an open top and a front wall having an opening adjacent the bottom of the housing, wherein the opening is sized to preclude simultaneous removal of all of a plurality of meal containers, thereby limiting heat transfer from within the housing. The food carrier also including a lid constructed of a flexible fabric and operably connected with the housing by a living hinge between an open position and a closed position. The carrier further includes a door constructed of flexible fabric and operably connected with the housing by a living hinge and operable between an open position and a closed position.

FOOD CARRIER

BACKGROUND OF THE INVENTION

The present invention relates to a food carrier, and in particular to a food carrier for carrying a plurality of meal containers in a stacked orientation, and allowing for removal of the meal containers from a lower portion of the carrier.

Food carriers are used in a wide variety of applications, such as for carrying liquids and/or prepackaged foods. The food carriers typically include a top loading area, whereby meal containers or trays may be loaded within the food carrier, and a lower removal area from which the meal trays may be removed from within the food carrier.

Heretofore, food carriers have typically been constructed of a rigid, nondeformable material such as plastic or metal, and have significantly complicated designs. Specifically, the materials from which typical food carriers have been constructed are heavy and/or are prone to fracture and/or rupture if impacted or dropped. Most food carriers included housings constructed of multiple components that required assembly subsequent to fabrication of the individual parts. In addition, doors for previous food carriers were typically fastened via complicated hinge assemblies. Other designs allowed for "floating" doors/lids and provided no means of positive engagement. Further, no positive means for locking the doors in a closed position were provided to prevent the doors from accidentally opening and the associated meal trays from inadvertently falling out of the food carrier. Still further, previous food carrier designs were difficult to clean and maintain. Moreover, previous food carrier designs have included apertures located in a top wall thereof covered by a lid which required removal in order to load the meal trays therein. The removal of the lid to allow loading necessarily allowed significant amounts of heat to escape from within the housing each time additional meal containers were placed therein.

SUMMARY OF THE INVENTION

One aspect of the present invention is to provide a controlled temperature food carrier for carrying a plurality of meal containers that includes an insulated housing constructed of flexible fabric and having a closed bottom, an open top and a front wall having an opening adjacent the bottom of the housing, wherein the opening is sized to preclude simultaneous removal of all of a plurality of meal containers from within the housing, thereby limiting heat transfer from within the housing. The food carrier also includes a lid constructed of flexible fabric and operably connected with the housing via a

first living hinge movable between an open position, wherein the meal containers may be loaded into the housing via the top opening, and a closed position, wherein the lid covers the open top, thereby limiting heat transfer from within the housing. The food carrier further includes a door constructed of flexible fabric and operable connected with the housing by a second living hinge movable between an open position, wherein the meal containers may be removed from within the housing via the opening in the front wall, and a closed position, wherein the door covers the opening in the front wall, thereby limiting heat transfer from within the housing.

Another aspect of the present invention is to provide a controlled temperature food carrier for carrying a plurality of meal containers that includes an insulated housing having a closed bottom, an open top, a front wall having an opening adjacent the bottom of the housing, and a dividing partition, wherein the open top is sized to receive at least two side-by-side stacks of meal containers therethrough. The opening in the front wall is sized to allow removal of meal containers from either stack of meal containers and to preclude simultaneous removal of all of the meal containers, thereby limiting heat transfer from within the housing. The partition is adapted to extend beyond the side-by-side stacks of meal containers. The food carrier also includes a lid operably connected with the housing between an open position, wherein the meal containers may be loaded into the housing via the top opening, and a closed position, wherein the lid covers the top opening, thereby limiting heat transfer from within the housing. The food carrier further includes a door operably connected with the housing movable between an open position, wherein the meal containers may be removed from within the housing via the opening in the front wall, and a closed position, wherein the door covers the opening in the front wall, thereby limiting heat transfer from within the housing.

Still another aspect of the present invention is to provide a food carrier for carrying a plurality of meal containers that includes an insulated housing having a closed bottom, a closed top, and at least one side wall having a first opening proximate the top of the housing and a second opening proximate the bottom of the housing, wherein the first opening is sized to receive a meal container therethrough, and wherein the second opening is sized to allow removal of the meal container from within the housing and to preclude simultaneous removal of all of the meal containers from within the housing, thereby limiting heat transfer from within the housing. The food carrier also includes a first door operably connected with the housing and movable between an open position, wherein the

meal containers may be loaded into the housing via the first opening, and a closed position, wherein the first door covers the first opening, thereby limiting heat transfer from within the housing. The food carrier further includes a second door operably connected with the housing and movable between an opening position, wherein the meal containers may be removed from within the housing via the second opening, and a closed position, wherein the second door covers the second opening, thereby limiting heat transfer from within the housing.

Still yet another aspect of the present invention is to provide a food carrier for carrying a plurality of meal containers that includes an insulated housing having a closed bottom, a closed top, and at least one side wall having an opening proximate the top and bottom of the housing, wherein a first portion of the opening proximate the top of the housing is sized to receive a meal container therethrough, and wherein a second portion of the opening proximate the bottom of the housing is sized to allow removal of the meal container from within the housing. The food carrier also includes a door operably connected with the housing and having a first portion movable between an open position, wherein the meal containers may be loaded into the housing via the first portion of the opening, and a closed position, wherein the first portion of the door covers the first opening, thereby limiting heat transfer from within the housing, and a second portion movable between an open position, wherein the meal containers may be removed from within the housing via the second portion of the opening, and a closed position, wherein the second portion of the door covers the second opening, thereby limiting heat transfer from within the housing.

The present invention provides a controlled temperature food carrier for carrying a plurality of meal containers that is more durable, has a reduced manufacturing cost, includes an uncomplicated design that is economical to manufacture, is capable of a long operating life, and is particularly well adapted to the proposed use. In addition, the present inventive food carrier is easy to clean and maintain, and provides positive closure when in use.

These and other advantages of the invention will be further understood and appreciated by those skilled in the art by reference to the following written specification, claims and appended drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a perspective view of a food carrier embodying the present invention, with a lid and a door in an open position;

Fig. 2 is a cross-sectional front view of the food carrier;

Fig. 3 is a front elevational view of the food carrier with the lid and the door in a closed position;

Fig. 4 is a side elevational view of the food carrier;

Fig. 5 is a bottom plan view of the food carrier;

Fig. 6 is a top plan view of the food carrier with the lid and the door in an open position;

Fig. 7 is a perspective view of a first alternative embodiment of the food carrier;

Fig. 8 is a front elevational view of the first alternative embodiment of the food carrier;

Fig. 9 is a cross-sectional front view of the first alternative embodiment of the food carrier;

Fig. 10 is a perspective view of a second alternative embodiment food carrier with a first door and a second door in the open position;

Fig. 11 is a cross-section front view of the second alternative embodiment of the food carrier, taken along the line XI-XI, Fig. 13;

Fig. 12 is a front elevational view of the second alternative embodiment of the food carrier with the doors in a closed position;

Fig. 13 is a side elevational view of the second alternative embodiment of the food carrier;

Fig. 14 is a bottom plan view of the second alternative embodiment of the food carrier;

Fig. 15 is a perspective view of a third alternative embodiment of the food carrier;

Fig. 16 is a front elevational view of the third alternative embodiment of the food carrier;

Fig. 17 is a perspective view of a fourth alternative embodiment of the food carrier with a pair of doors in a closed position;

Fig. 18 is a perspective view of the fourth alternative embodiment of the food carrier of Fig. 8 with the doors in an open position; and

Fig. 19 is a perspective view of a fifth alternative embodiment of the food carrier with the doors in an open position.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

For purposes of description herein, the terms "upper," "lower," "right," "left," "rear," "front," "vertical," "horizontal," and derivatives thereof shall relate to the invention as oriented in Fig. 1. However, it is to be understood that the invention may assume various alternative orientations and step sequences, except where expressly specified to the contrary. It is also to be understood that the specific devices and processes illustrated in the attached drawings, and described in the following specification are exemplary embodiments of the inventive concepts defined in the appended claims. Hence, specific dimensions and other physical characteristics relating to the embodiments disclosed herein are not to be considered as limiting, unless the claims expressly state otherwise.

The reference numeral 10 (Fig. 1) generally designates a controlled temperature food carrier embodying the present invention. In the illustrated example, food carrier 10 includes a housing 12 constructed of a flexible fabric and having a closed bottom 14, an open top 16, a front wall 18, a back wall 20 and side walls 22. Front wall 18 includes an opening 24 located adjacent bottom 14 of housing 12. Opening 24 is sized to preclude simultaneous removal of all of a plurality of meal containers 26 from within housing 12, thereby limiting heat transfer from within housing 12. Food carrier 10 also includes a lid 28 constructed of a flexible fabric and operably connected with housing 12 by a living hinge 30. Lid 28 is movable between an open position as shown in Fig. 1, wherein meal containers 26 may be loaded into housing 12 via open top 16, and a closed position shown in Fig. 2, wherein lid 28 covers open top 16 of housing 12, thereby limiting heat transfer from within housing 12. Food carrier 10 further includes a door 32 constructed of flexible fabric hingedly connected with housing 12 by a living hinge 34. Door 32 is movable between an open position as shown in Fig. 1, wherein the meal containers 26 may be removed from within housing 12 via opening 24 within front wall 18 of housing 12, and a closed position as shown in Fig. 3, wherein door 32 covers opening 24 within front wall 18 of housing 12, thereby limiting heat transfer from within housing 12. Although in the illustrated example housing 12, lid 28 and door 32 are each constructed of a flexible fabric, other suitable materials may be utilized including cloth, woven mesh plastics, etc.

As best illustrated in Fig. 2, bottom 14, front wall 18, back wall 20 and side walls 22 are provided with a layer of insulation 36 therein. Housing 12 also includes a plastic coating 38 covering the interior surfaces of bottom 14, front wall 18, back wall 20 and side walls 22. As illustrated, coating 38 is constructed of a plastic material, however, other

materials providing easy cleaning of the interior of housing 12 may be substituted therefore.

Housing 12 also includes a pair of handles 40 (Fig. 4) extending outwardly from sidewalls 22. A pair of structural support straps 42 (Fig. 5) extend along sidewalls 22 and across bottom 14 of housing 12. As illustrated, handle 40 and support straps 42 are constructed of a single piece of a woven nylon webbing sewn to housing 12, however, multiple pieces of other materials suitable for such use may be substituted therefore and attached by any suitable means.

The lid 28 includes a panel section 44 that includes hinge 30 and an attachment flap 46. Hinge 30 extends rearwardly from panel section 44 and is sewn to top 16 of housing 12. Lid 28 further includes a centrally located, rectangularly-shaped envelope 48 attached to panel section 44 of lid 28 and defining an open end 50. A block of insulation 52 is inserted within open end 50 of envelope 48. In the illustrated example, the insulation block 52 has a rectangular shape that substantially matches the size of the opening within open top 16, thereby ensuring a snug fit of lid 28 within housing 12. Open end 50 of envelope 48 allows the insulation 52 to be easily replaced or removed for cleaning if soiled by the contents within meal containers 26, thereby insuring an antiseptic interior to housing 12. Lid 28 (Fig. 6) is held in the closed position via a plurality of hook-and-loop type fabric fasteners 54 that extend along side flaps 56 of lid 28 and along top 16 of housing 12. An additional hook-and-loop type fabric fastener 58 extends across attachment flap 46 of lid 28 and is connected with a mateable hook-and-loop type fabric fastener 60 extending across front wall 18 of housing 12 when lid 28 is in the closed position. Although in the illustrated example, the hook-and-loop type fabric fasteners 54, 58 and 60 are utilized to hold lid 28 in the closed position with housing 12, other suitable fasteners may be substituted therefore. Alternatively, hinge 30 of lid 28 may be fastened to top 16 of housing 12 via a hook-and-loop type fabric fastener, thereby allowing lid 28 to be completely removed from housing 12 to facilitate the loading of containers 26 therein.

The door 32 includes a panel section 62, an outwardly extending attachment flap 64, living hinge 34 and an attachment flap 64. Hinge 34 is an extension of panel section 62 and is sewn to front wall 18 of housing 12. Alternatively, a hook-and-loop type fabric connector (not shown) may be utilized to attach door 32 to housing 12, thereby allowing door 32 to be completely removed from housing 12. Door 32 further includes a centrally located, rectangularly-shaped envelope 66. Envelope 66 is sewn to panel section 62 of

door 32. Envelope 66 defines an open end 68 within which an insulation block 70 may be placed within envelope 66. Open end 68 of envelope 66 allows insulation block 70 to be replaced or removed for cleaning if soiled by the contents within containers 26, thereby ensuring an antiseptic interior to housing 12. A plurality of hook-and-loop type fabric fasteners 72 extend along a pair of side flaps 72 of panel section 62, across attachment flap 64, and about opening 24 in front wall 18 of housing 12. Although hook-and-loop type fabric fasteners are utilized to hold door 32 in the closed position, other suitable fasteners may be utilized. Door 32 further includes a flexible fabric handle 76 that facilitates movement of door 32 between the open and closed positions.

In operation, lid 28 is moved to the open position, thereby allowing the plurality of meal containers 26 to be placed within housing 12 via open top 16. Lid 28 is then moved to the closed position and secured in place via fasteners 54, 58 and 60. Individual meal containers 26 are removed via opening 24 within front wall 18 of housing 12 by moving door 32 to the open position. As illustrated, only a single meal container 26 may be removed from within housing 12 via opening 24 at a time, however, opening 24 may be enlarged depending on the particular use and/or size of the meal containers 26.

The reference numeral 10a (Fig. 7) generally designates a first alternative embodiment of the present invention. Since food carrier 10a is similar to the previously described food carrier 10, similar parts appearing in Figs. 7-9 and Figs. 1-6 respectively are represented by the same, corresponding reference numeral, except for the suffix "a" in the numerals of the latter. Food carrier 10a is similar in construction to food carrier 10 with the notable exceptions being that food carrier 10a is provided with a pair of doors 32a covering a pair of openings 24a located within front wall 18a of housing 12a, and that a dividing partition 78 (Fig. 8) is located within housing 12 and extends between front wall 18a and back wall 20a, and partially along the distance between lid 28a and bottom 14a, thereby providing a space 80 between bottom 14a and dividing partition 78. Space 80 allows for heat to evenly circulate within housing 12a. In use, two separate side-by-side stacks of meal containers 26a are placed within housing 12a on each side of dividing partition 78. Each stack of meal containers 26a may then be accessed and removed from within housing 12a via the associated opening 24a in front wall 18a of housing 12a. Each door 32a includes a handle 76a attached thereto facilitating the movement of door between the open and closed positions.

The reference numeral 10b (Fig. 10) generally designates a second alternative embodiment of the food carrier of the present invention. Since food carrier 10b is similar to the previously described food carrier 10, similar parts appearing in Figs. 11-14 and Figs. 1-6 respectively are represented by the same, corresponding reference numeral, except for the suffix "a" in the numerals of the latter. In the illustrated example, the housing 12b food carrier 10b is similar to the housing 10 of food carrier 10 with the most notable exception being that the top 100 of housing 12b is closed. Front wall 18b includes a first opening 102 located adjacent top 100 of housing 12b. The front opening 103 is sized to allow the passage of meal containers 26b therethrough and placement of meal carriers 26b into housing 12b. Food carrier 10b also includes a first door 104 constructed of a flexible fabric and operably connected with housing 12b by a living hinge 106. Door 104 is movable between an open position, as shown in Fig. 10, wherein meal containers 26b may be loaded into housing 12b via first opening 102, in a closed position, as shown in Fig. 12, wherein door 104 covers opening 102 of housing 12b, thereby limiting heat transfer from within housing 12b. Front wall 18b also includes a second opening 108 located adjacent bottom 14b of housing 12b. Opening 108 is sized to preclude simultaneous removal of all of the plurality of meal containers 26b located within housing 12b, thereby limiting heat transfer from within housing 12b. Food carrier 10b further includes a second door 110 constructed of a flexible fabric and hingedly connected with housing 12b by a living hinge 112. Door 110 is movable between an open position, as shown in Fig. 10, wherein the meal containers may be removed from within housing 12b via opening 108 within front wall 18b of housing 12b, and a closed position, as shown in Fig. 12, wherein door 110 covers opening 108 within front wall 18b of housing 12b, thereby limiting heat transfer from within housing 12b. Although in the illustrated example housing 12b, door 104 and door 110 are each preferably constructed of a flexible fabric, other suitable materials may be utilized including lightweight metals, hard plastics, cloths, woven mesh plastics, etc. As best illustrated in Fig. 11, the housing 12b is constructed similarly to housing 12 as described above.

The first door 104 further includes a flexible fabric handle 114 that facilitates movement of door of 104 between the open and closed positions. The first door 104 includes a paneled section 116 that includes hinge 106 and an attachment flap 118. Hinge 106 extends laterally across front wall 18b of housing 12b and is sewn thereto. The first door 104 further includes a centrally located, rectangularly-shaped envelope 120 attached

to panel section 116 and defining an open end 122. A block of insulation 124 is inserted within open end 122 of envelope 120. In the illustrated example, insulation block 124 has a rectangular shape that substantially matches the size of the first opening 102 within front wall 18b, thereby ensuring a snug fit of first door 104 with housing 12b. Open end 122 of envelope 120 allows insulation block 124 to be easily replaced or removed for cleaning if the interior of housing 12b is soiled by the contents within meal containers 26b, thereby ensuring an antiseptic interior to housing 12b. The door 104 is held in the closed position via a plurality of hook-and-loop type fabric fasteners 126 that extend along flap 118 of door 104. A plurality of cooperating hook-and-loop type fabric fasteners 128 are attached to front wall 18b and extend about the periphery of opening 102. Although in the illustrated example, the hook-and-loop type fabric fasteners 126 and 128 are utilized to hold door 104 in the closed position with housing 12b, other suitable fasteners may be substituted therefor. Alternatively, hinge 106 of door 104 may be fastened to housing 12b via a hook-and-loop type fabric fastener, thereby allowing door 104 to be completely removed from housing 12b to facilitate the loading of containers 26b therein.

The second door 110 includes a paneled section 130, an outwardly extending attachment flap 132, and a living hinge 112. The hinge 112 is an extension of panel section 130 and is sewn to front wall 18b of housing 12b. Alternatively, a hook-and-loop type fabric connector (not shown) may be utilized to attach door 110 to housing 12b, thereby allowing door 110 to be completely removed from housing 12b. Door 110 further includes a centrally located, rectangularly-shaped envelope 134 that is sewn to paneled section 130 of door 110 and defines an open end 136 within which an insulation block 138 may be placed within envelope 134. Open end 136 of envelope 134 allows insulation block 138 to be replaced or removed for cleaning if soiled by the contents within containers 26b, thereby ensuring an antiseptic interior to housing 12b. A plurality of hook-and-loop type fabric fasteners 140 extend along flap 132 of paneled section 130, and mate with a plurality of cooperating hook-and-loop type fabric fasteners 142 extending about opening 108 within front wall 18b. Although in the illustrated example, the hook-and-loop type fabric fasteners are utilized to hold door 110 in the closed position, other suitable fasteners may be utilized. Door 110 further includes a flexible fabric handle 144 that facilitates movement of door 110 between the open and closed positions.

Housing 12b also includes a pair of handles 146 extending outwardly from side walls 22b. A pair of structural support straps 148 (Fig. 14) extend along side walls 22b

and across bottom 14b of housing 12b. As illustrated, handles 146 and support straps 148 are constructed of a single piece of woven nylon webbing sewn to housing 12b, however, multiple pieces of other materials suitable for such use may be substituted therefore and attached by any suitable means.

In operation, door 104 is moved to the open position, thereby allowing the plurality of meal containers 26b to be placed within housing 12b via opening 102. Door 104 is then moved to the closed position and secured in place via fasteners 126 and 128. Individual meal containers 26b are removed via opening 108 within front wall 18b of housing 12b by moving door 110 to the open position. As illustrated, only a single meal container 26b may be removed from within housing 12b via opening 108 at a time, however, opening 108 may be enlarged depending on the particular use and/or size of meal containers 26b.

The reference numeral 10c (Fig. 15) generally designates another embodiment of the present invention. Since food carrier 10c is similar to the previously described food carrier 10b, similar parts appearing in Figs. 10-14 and Figs. 15 and 16 are represented by the same, corresponding reference numeral, except for the suffix "c" in the numerals of the latter. Food carrier 10c is similar in construction to food carrier 10c with the notable exception being that food carrier 10c includes a single front opening 150 extending from proximate top 100c to bottom 14c and providing access to the interior of housing 12c. A single door 152 constructed of flexible fabric is connected with housing 12c and includes a paneled section 154 and an attachment flap 156 extending about the periphery thereof. Door 152 is operably attached to housing 12c via a plurality of hook-and-loop type fabric fasteners 158 extending about flap 156 and a plurality of corresponding hook-and-loop type fabric fasteners 160 fixedly attached to front wall 18c of housing 12c and extending about the periphery of opening 150. Door 152 includes an upper portion 162 and a lower portion 164 operable to allow the loading and unloading of meal trays 26c from within housing 12c, respectively. Specifically, upper portion 162 is movable between an open position, as shown in Fig. 15, wherein meal containers 26c may be loaded into housing 12c via an upwardly located section of opening 150, and a closed position, as shown in Fig. 16, wherein upper portion 162 of door 164 covers the upper section of opening 150, thereby limiting heat transfer from within housing 12c. Lower portion 164 of door 152 is movable between an open position, as shown in Fig. 15, wherein meal containers 26c may be removed from within housing 12c via a lower section of opening 150, and a closed position, as shown in Fig. 16, wherein lower portion 164 of door 152 covers the lower

section of opening 150, thereby limiting heat transfer from within housing 12c. The movement of upper portion 162 and lower portion 164 of door 152 define a living hinge 166 therebetween. Although in the illustrated example, housing 12c and door 152 are each constructed of a flexible fabric, other suitable materials may be utilized including cloth, woven mesh plastics, rigid plastics, lightweight metals, etc.

In the illustrated example, the door 152 includes an upwardly located, rectangularly-shaped upper envelope 170 attached to panel section 154 and defining an open end 172. A block of insulation 174 is inserted within open end 172 of envelope 170. In the illustrated example, insulation block 174 has a rectangular shape that substantially matches the size of the upper section of opening 150, thereby ensuring a snug fit of upper portion 162 of door 152 within opening 150. Lower portion 164 of door 152 includes a rectangularly-shaped envelope 174 defining an open end 176. A block of insulation 178 is inserted within open end 176 of envelope 174. In the illustrated example, insulation block 178 has a rectangular shape that substantially matches the size of the lower section of opening 150, thereby ensuring a snug fit of lower portion 164 of door 152 within opening 150. Open end 172 of envelope 170 and open end 176 of envelope 174 allows insulation blocks 174 and 178 to be easily replaced or removed for cleaning if soiled by the contents within meal containers 26c, thereby ensuring an antiseptic interior to housing 12c.

In operation, upper portion 162 of door 152 is moved to the open position, thereby allowing the plurality of meal containers to be placed within housing 12c via an upper section of opening 150. It should be noted that upper portion 162 of door 152 may be selectively opened to any required width thereby allowing a single or multiple meal containers to be simultaneous placed within housing 12c. Individual meal containers 26c are removed via the lower section of opening 150 by moving lower portion 164 of door 152 to the open position. As illustrated, only a single meal container 26c is removed from within housing 12c at a time, however, lower portion 164 of door 152 may be selectively opened to any desired width, thereby allowing for the simultaneous removal of multiple meal containers 26c from within housing 12c. While the illustrated example shows a particular embodiment of door 152, it should be noted that any door that may be selectively opened from a top loading portion and a bottom unloading portion may be substituted therefore.

The reference numeral 10d (Figs. 17 and 18) generally designates another embodiment of the present invention. Since food carrier 10d is similar to the previously

described food carrier 10c, similar parts appearing in Fig. 15 and Figs. 17 and 18 are represented by the same, corresponding reference numeral, except for the suffix "d" in the numerals of the latter. Food carrier 10d is similar in construction to food carrier 10c with the notable exception being that food carrier 10d is preferably constructed of a rigid material such as plastic, although other suitable materials may be substituted therefore. An insulated upper door 180 constructed of rigid plastic is operably attached to insulated housing 12d via a piano-type hinge 182 extending along an edge 184 thereof. Upper door 180 is movable between an open position, as shown in Fig. 17, wherein meal containers 26d (Fig. 18) may be loaded into housing 12d via an upwardly located section of opening 76d, and a closed position, as shown in Fig. 18, wherein upper door 180 covers the upper section of opening 76d, thereby limiting heat transfer from within housing 12d. An insulated lower door 186 constructed of rigid plastic is connected with housing 12d via hinge 182 extending along an edge 188 thereof. Lower door 186 is movable between an open position, as shown in Fig. 18, wherein meal containers 26d may be removed from within housing 12d via a lower section of opening 76d, and a closed position, as shown in Fig. 17, wherein lower door 186 covers the lower section of opening 76d, thereby limiting heat transfer from within housing 12d. The doors 180 and 186 are each constructed to provide an in-lay fit within housing 12d when in the closed position. Although in the illustrated example, housing 12d, upper door 180 and lower door 186 are each constructed of a rigid plastic, other suitable materials may be utilized including flexible fabric, cloth, woven mesh plastics, lightweight metals, etc.

In operation, upper door 180 is moved to the open position, thereby allowing the plurality of meal containers to be placed within housing 12d via an upper section of opening 76d. Individual meal containers 26d are removed via the lower section of opening 76d by moving lower door 186 to the open position. As illustrated, only a single meal container 26d is removed from within housing 12d at a time, however, lower door 186 may be constructed to any desired width, thereby allowing for the simultaneous removal of multiple meal containers from within housing 12d.

The reference numeral 10e (Fig. 19) generally designates another embodiment of the present invention. Since food carrier 10e is similar to the previously described food carrier 10d, similar parts appearing in Figs. 17 and 18 and Fig. 19 are represented by the same, corresponding reference numeral, except for the suffix "e" in the numerals of the latter. Food carrier 10e is similar in construction to food carrier 10d with the notable

exception being that the interior space of the food carrier 10e is divided into a first section 190 and a second section 192. An insulated first upper door 194 constructed of a rigid plastic is operably connected to a central beam 196 of the insulated housing 12e via a piano-type hinge 198 extending along an edge thereof. The first upper door 194 is movable between an open position, wherein the meal container 26d (Fig. 18) may be loaded into the housing 12e via an upwardly located section of the first portion of the opening 76e, and a closed position, wherein the first upper door 194 covers the upper section of the first portion of the opening 76e, thereby limiting heat transfer from within the housing 12e. An insulated first lower door 200 is constructed of a rigid plastic and is connected with the beam 196 of the housing 12e via a piano-type hinge 202 extending along an edge thereof. The first lower door 200 is movable between an open position, wherein the meal containers 26d (Fig. 18) may be removed from within the housing 12e via a lower section of the second portion 192 of the opening 76e, and a closed position, wherein the first lower door 200 covers the lower section of the second portion 192 of the opening 76e, thereby limiting heat transfer from within the housing 12e. An insulated second upper door 204 constructed of a rigid plastic is operably attached to an opposite side of the beam 196 from the first upper door 194 via a piano-type hinge 206. An insulated second lower door 208 is constructed of a rigid plastic and is connected with the beam 196 via a piano-type hinge 210 opposite the first lower door 200. The second upper door 204 and the second lower door 208 are operable similar to the first upper door 194 and the first lower door 200, respectively. Although in the illustrated example, the housing 12e, the upper doors 194 and 204, and the lower doors 200 and 208 are each constructed of a rigid plastic, other suitable materials may be utilized including flexible fabric, cloth, woven mesh plastics, lightweight metals, etc.

In operation, the upper doors 194 and 204 are moved to the open positions, thereby allowing a plurality of meal containers 26d to be placed within the first and second sections 190 and 192 of the interior of the housing 12e via an upper section of the opening 76e. Individual meal containers 26d are moved from within the first and second sections 190 and 192 of the interior of the housing 12e via the lower section of the opening 76e by moving the lower doors 200 and 208 to the open position. As illustrated, only a single meal container 26d is removed from within the first section 190 or the second section 192 at a time, however, the lower doors 200 and 208 may each be constructed to any desired

width, thereby allowing for simultaneous removal of multiple meal containers 26d from within the housing 12e.

The present invention provides a controlled temperature food carrier for carrying a plurality of meal containers that is more durable, has a reduced manufacturing cost, includes an uncomplicated design that is economical to manufacture, is capable of a long operating life, and is particularly well adapted to the proposed use. In addition, the present inventive food carrier is easy to clean and maintain, and provides positive closure when in use.

In the foregoing description, it will be readily appreciated by those skilled in the art that modifications may be made to the invention without departing from the concepts disclosed herein. Such modifications are to be considered as included in the following claims, unless these claims by their language expressly state otherwise.

CLAIMS:

1. A food carrier for carrying a plurality of meal containers, comprising:

an insulated housing having a closed bottom, a closed top, and at least one side wall having a first opening proximate the top of the housing and a second opening proximate the bottom of the housing, the first opening being sized to receive at least one meal container therethrough, the second opening being sized to allow removal of the meal containers from within the housing and to preclude simultaneous removal of all of the meal containers from within the housing, thereby limiting heat transfer from within the housing;

a first door operably connected with the housing, the first door movable between an open position, wherein the meal containers may be loaded into the housing via the first opening, and a closed position, wherein the first door covers the first opening, thereby limiting heat transfer from within the housing; and

a second door operably connected with the housing, the second door movable between an open position, wherein the meal containers may be removed from within the housing via the second opening, and a closed position, wherein the second door covers the second opening, thereby limiting heat transfer from within the housing.

2. The food carrier of claim 1, wherein the first and second openings are located within the same side wall.

3. The food carrier of claim 1, wherein the housing and the doors are each constructed of a flexible fabric.

4. The food carrier of claim 3, wherein the first and second doors are connected to the housing by living hinges.

5. The food carrier of claim 4, wherein the first and second doors are each held in the closed position by hook-and-loop type fabric fasteners.

6. The food carrier of claim 1, further including:

a pair of handles fixedly attached to the housing and juxtaposed across the housing, and wherin the handles are constructed of a flexible fabric.

7. The food carrier of claim 1, further including:

at least one structural supporting strap that is fixedly attached to and extends across the bottom of the housing.

8. The food carrier of claim 1, further including:

a pair of handles constructed of a flexible fabric and juxtaposed across the housing; and

at least one structural supporting strap that extends across the bottom of the housing, wherein the handles and the supporting strap are constructed as a single piece.

9. The food carrier of claim 1, wherein the housing is constructed of a rigid material.

10. The food carrier of claim 9, wherein the first and second doors are each constructed of a rigid material.

11. The food carrier of claim 10, wherein the first and second doors are connected to the housing by at least one piano-type hinge.

12. The food carrier of claim 11, wherein the first and second doors are configured to overlap when in the closed position.

13. The food carrier of claim 12, wherein the first door cannot be moved from the closed position to the open position without moving the second door from the closed position to the open position.

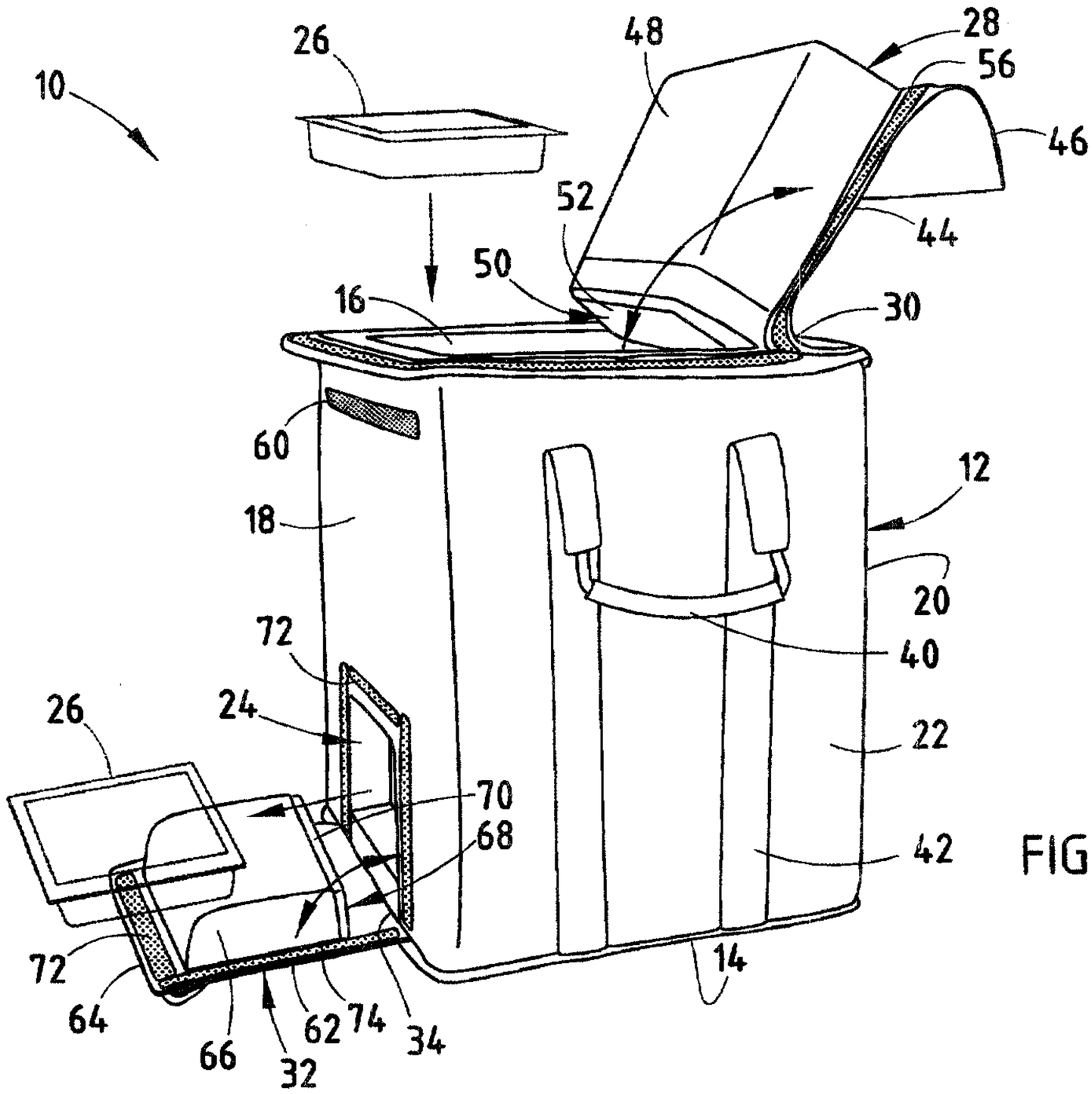
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FIG. 1

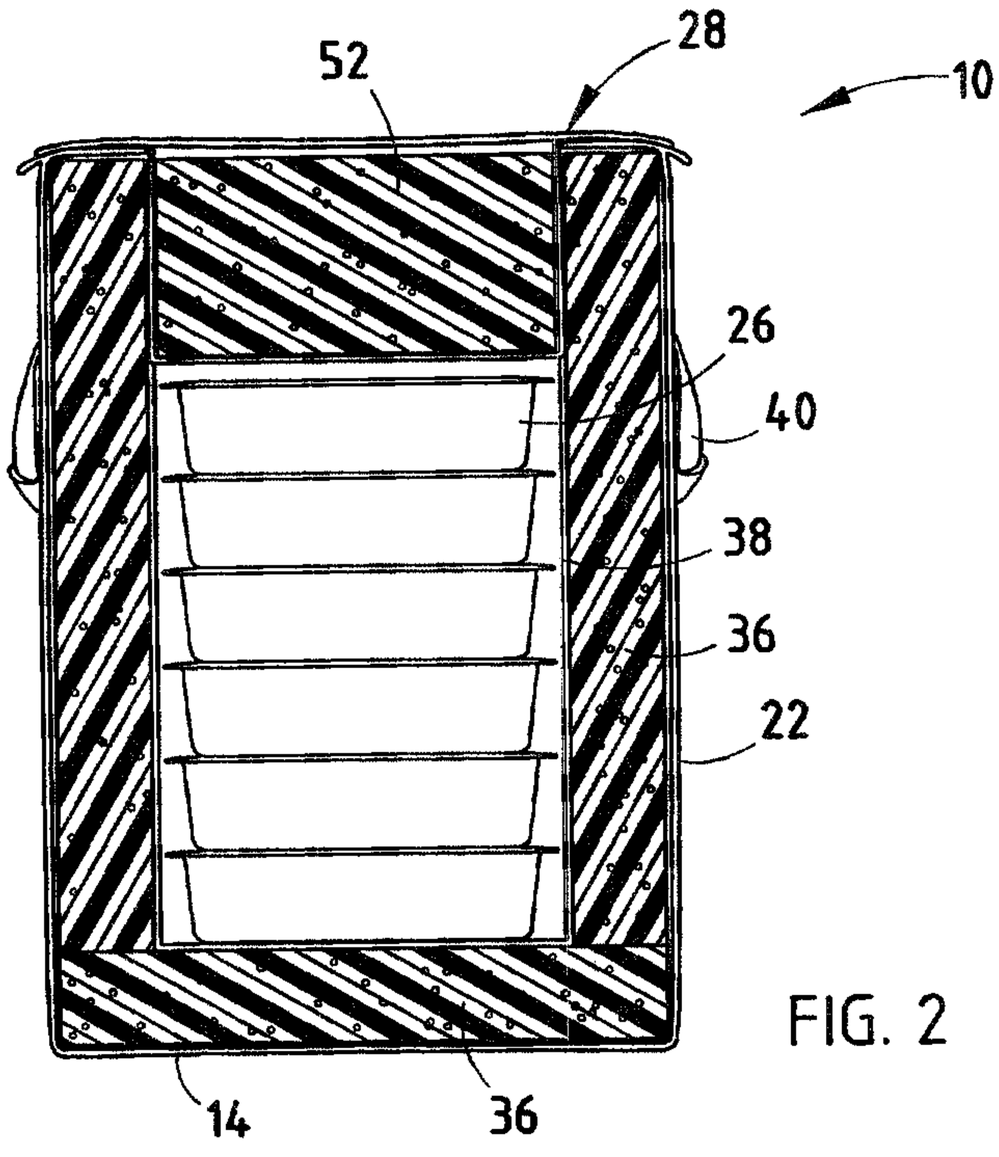
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FIG. 2

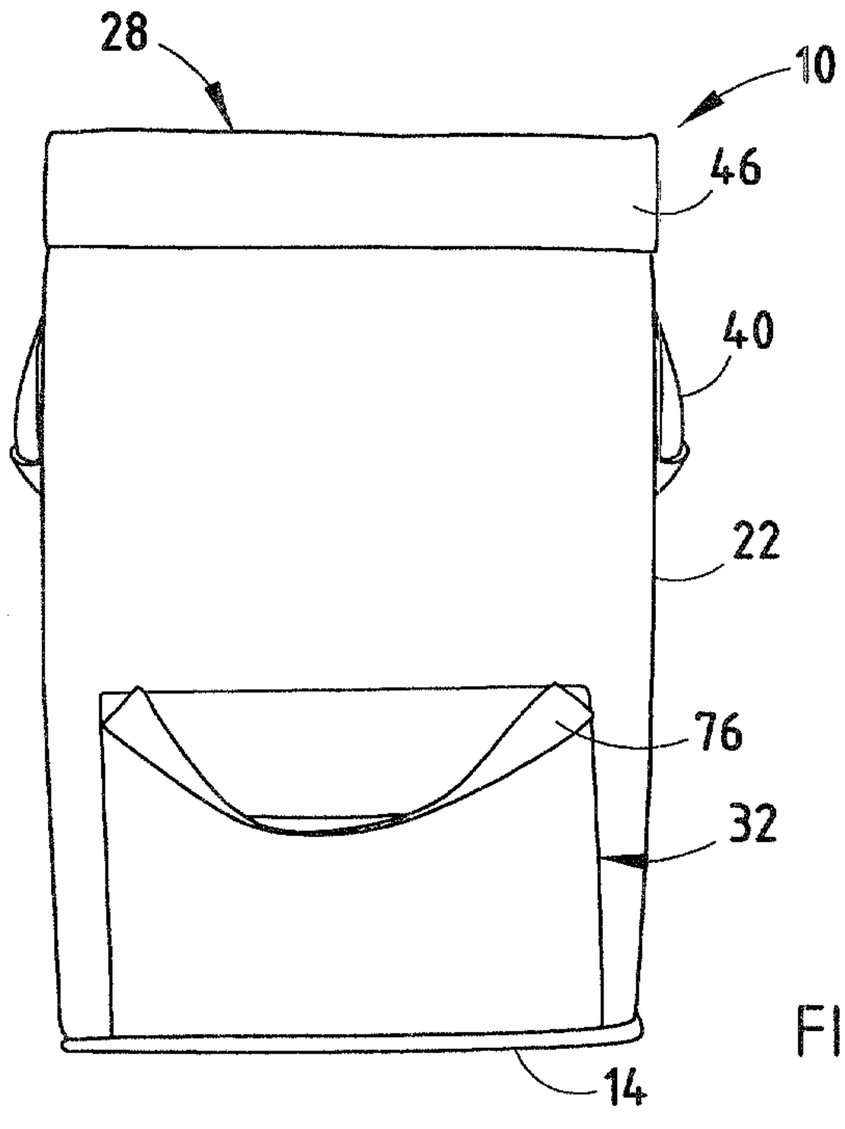


FIG. 3

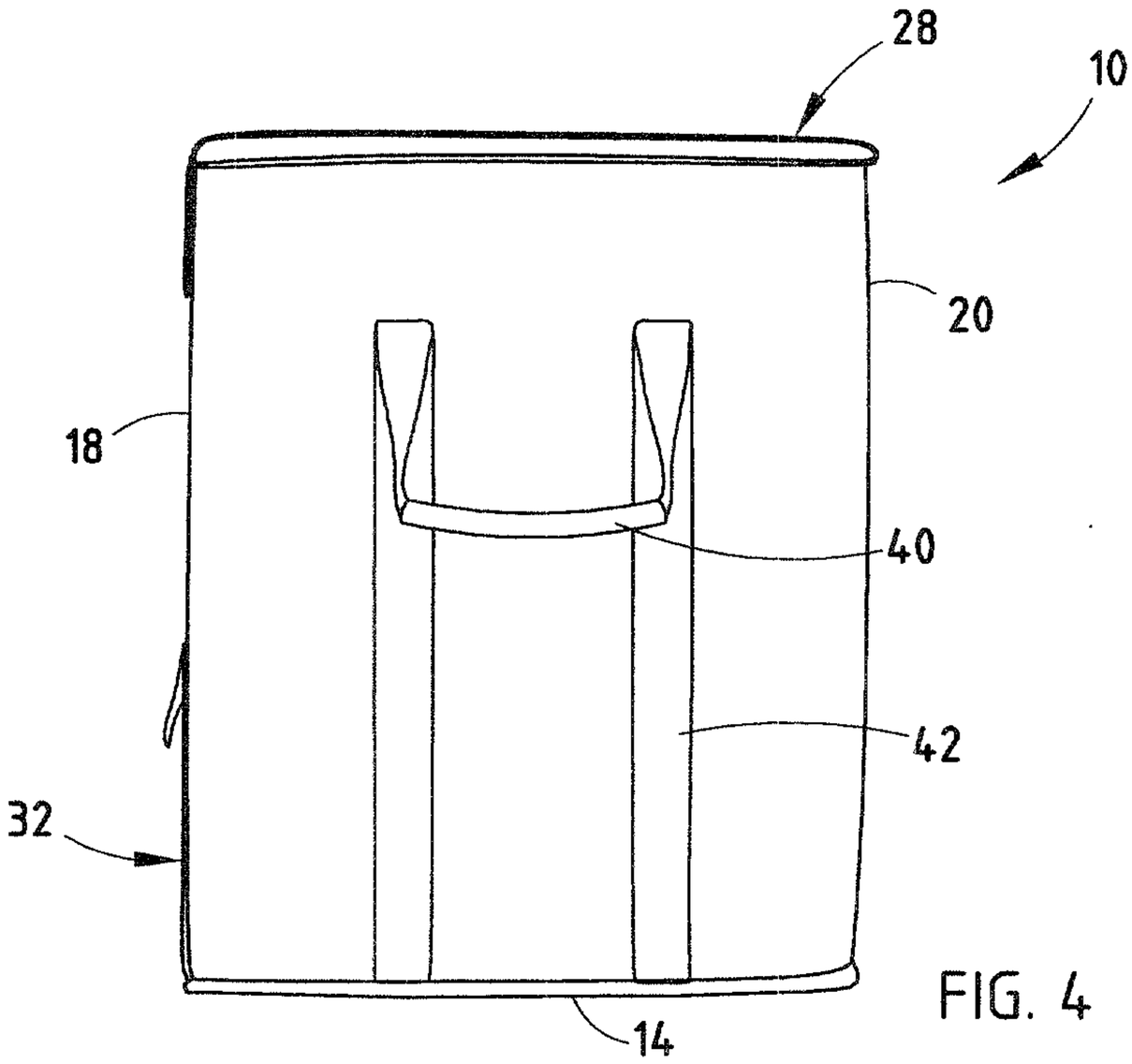


FIG. 4

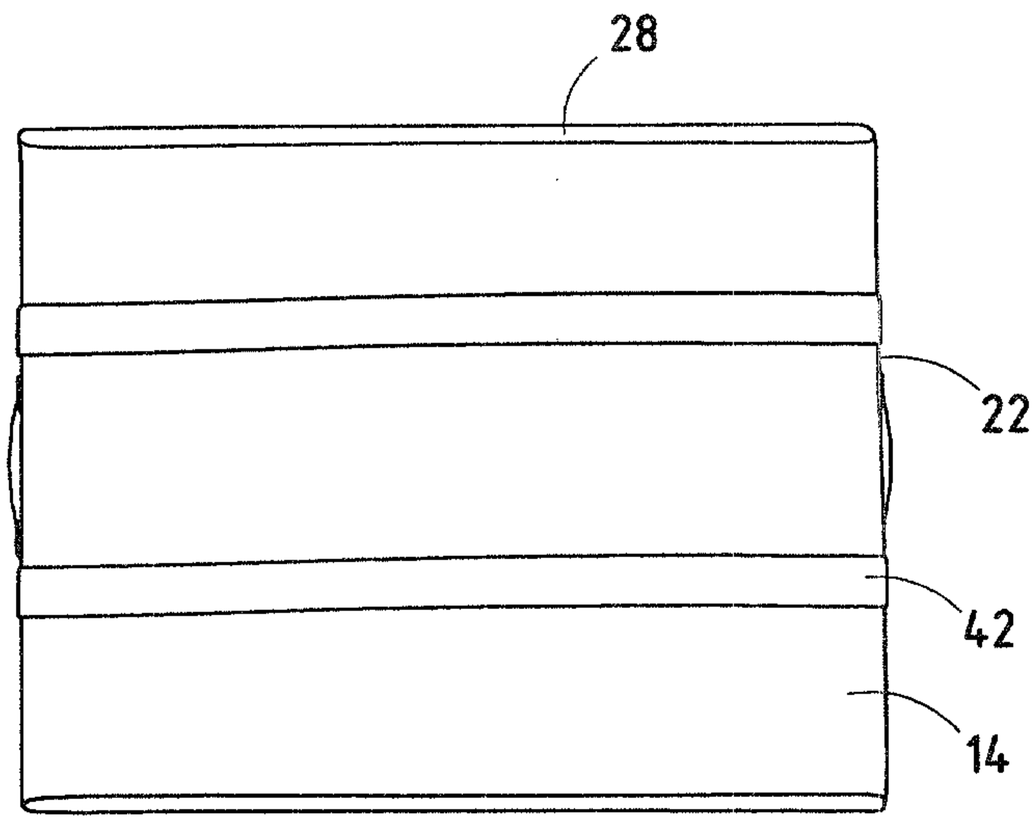
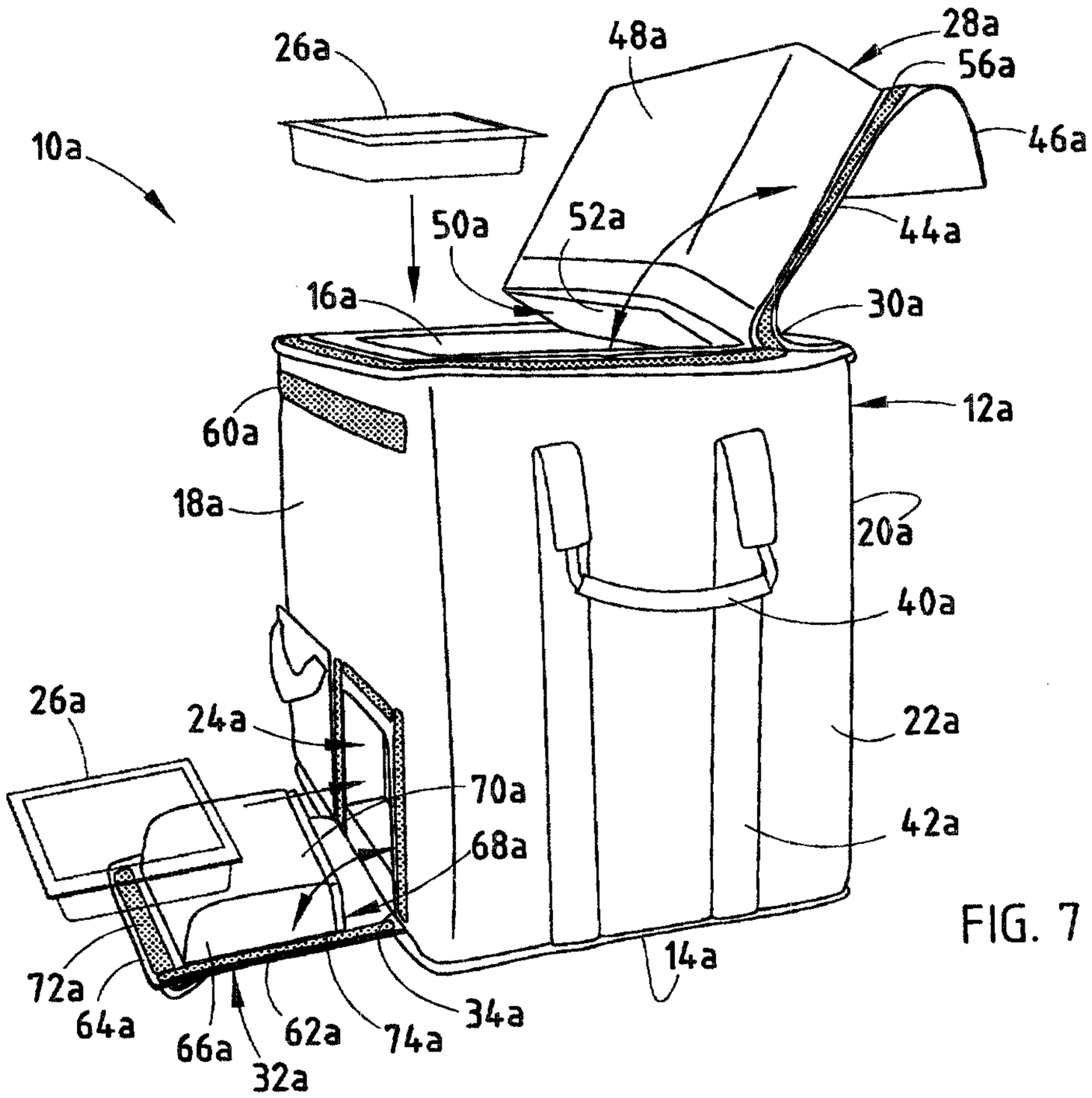


FIG. 5

FIG. 6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50a
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16a
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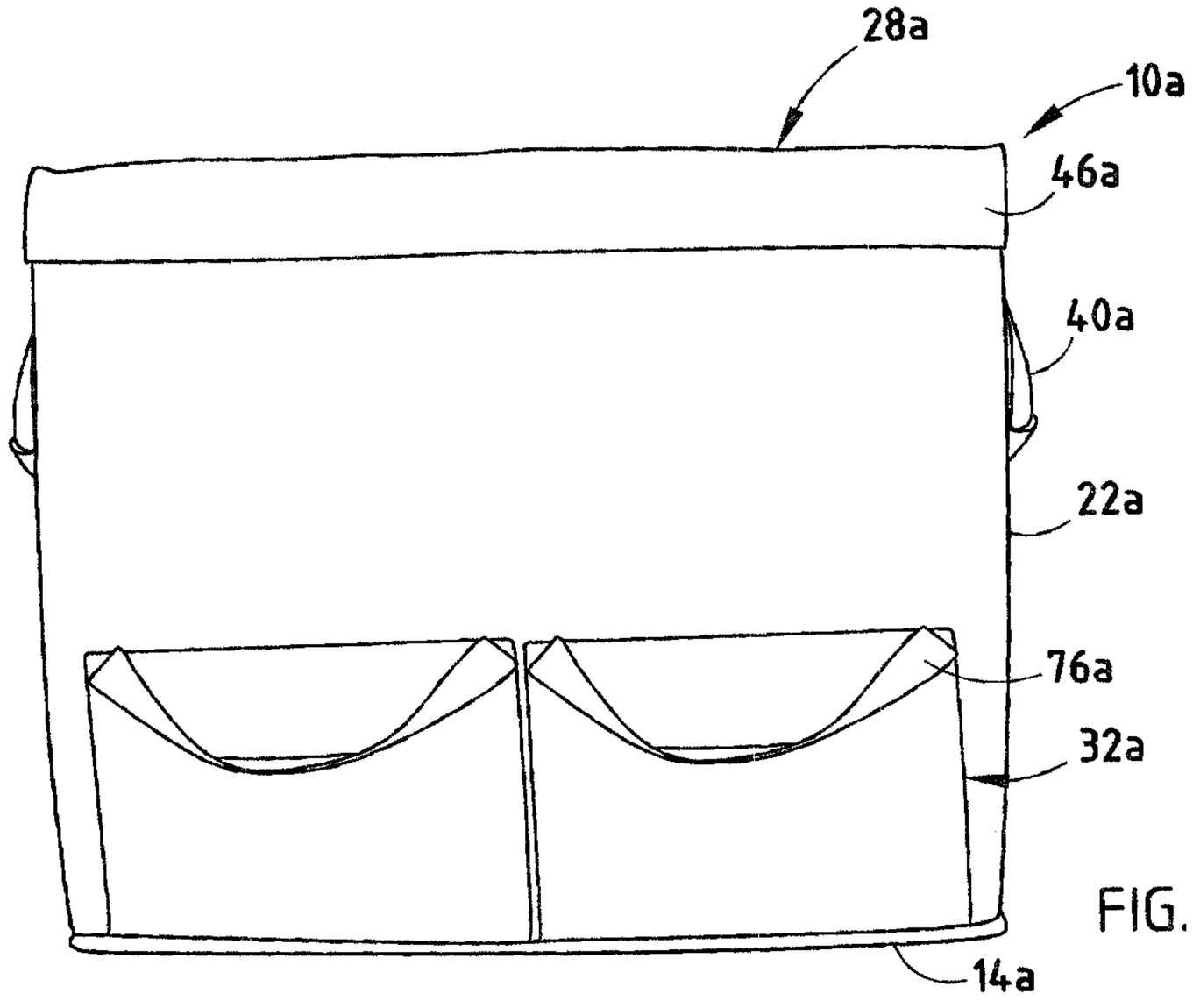
66a
62a
74a
34a
32a
14a

FIG. 7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40a
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FIG. 8

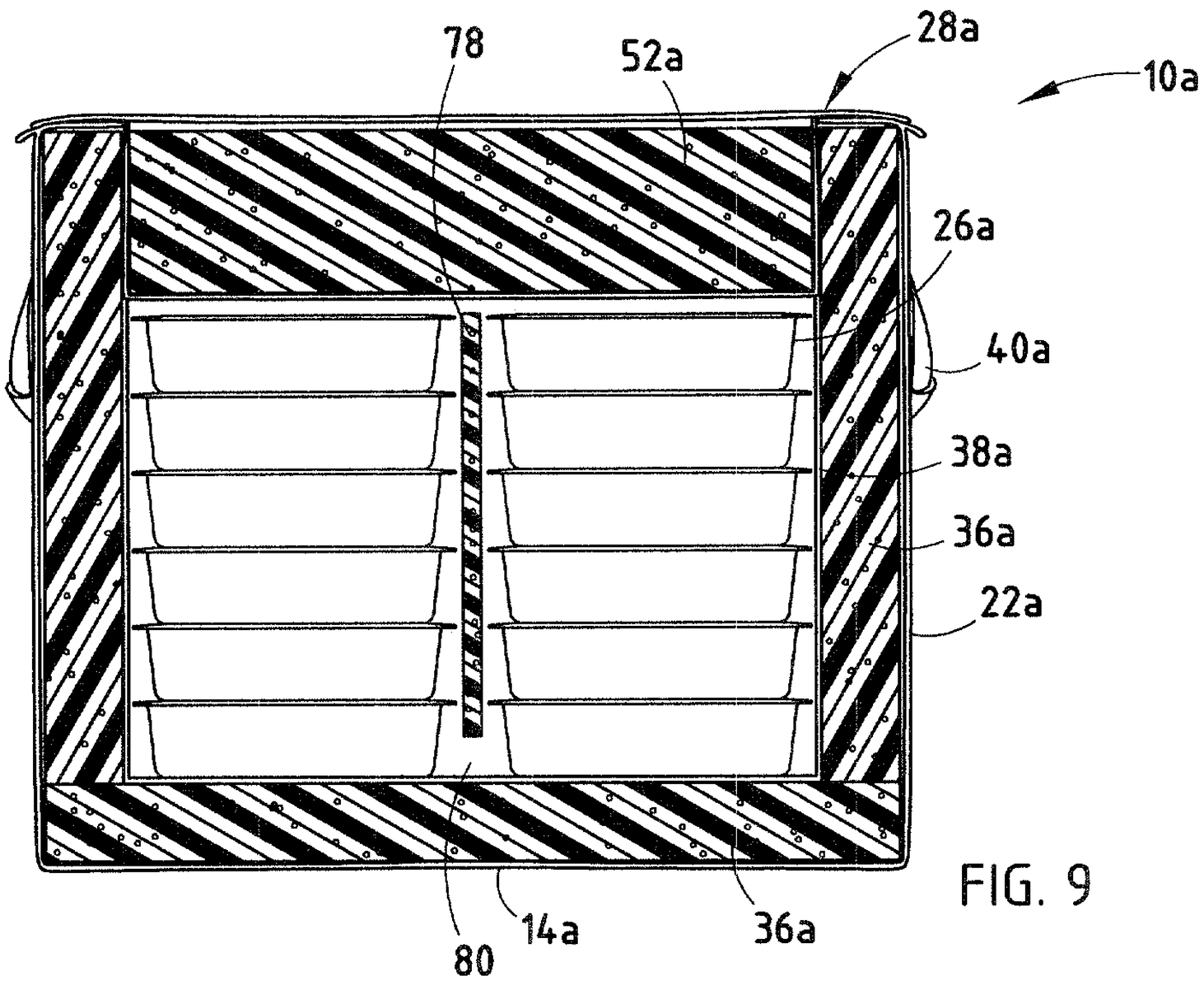


FIG. 9

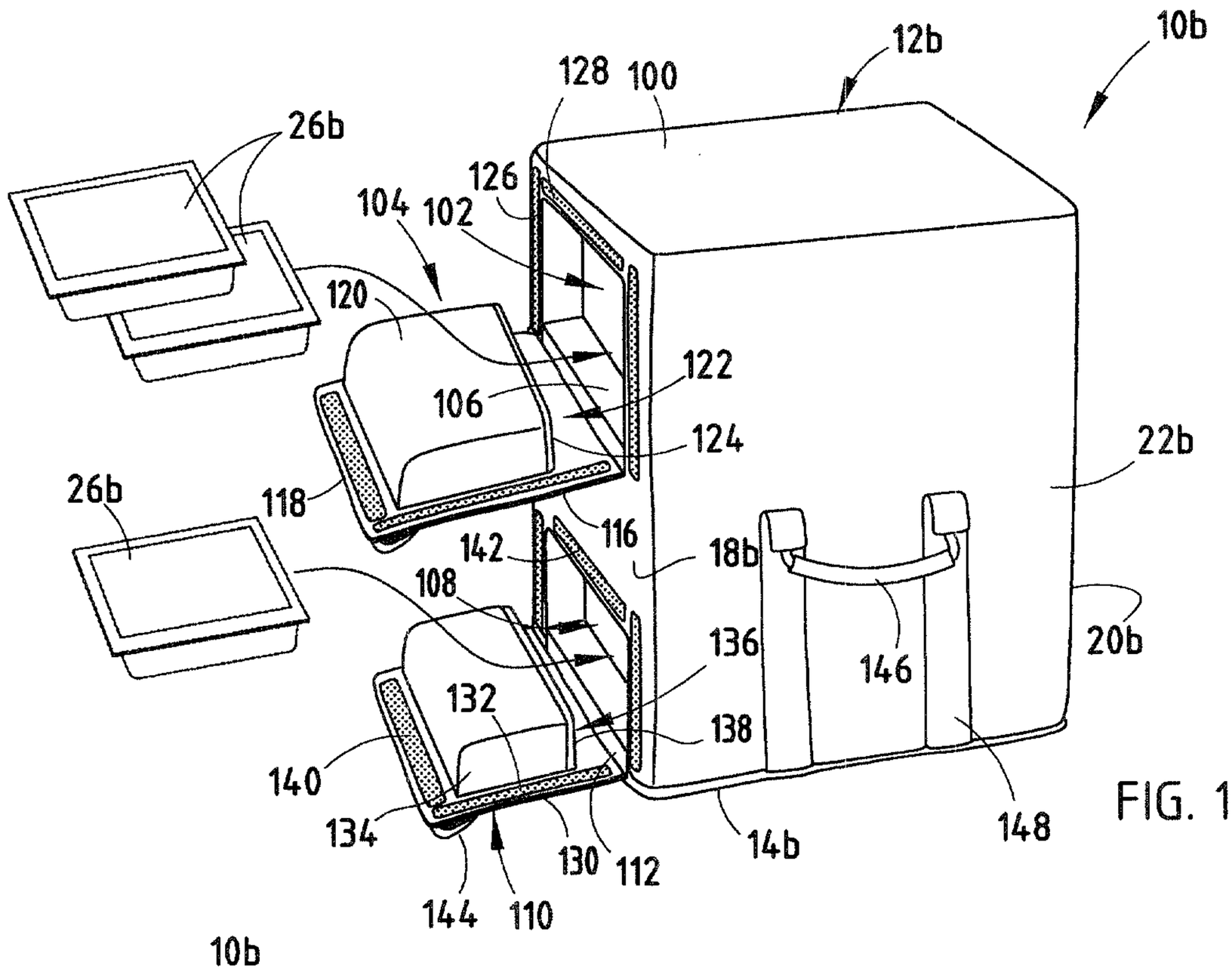


FIG. 10

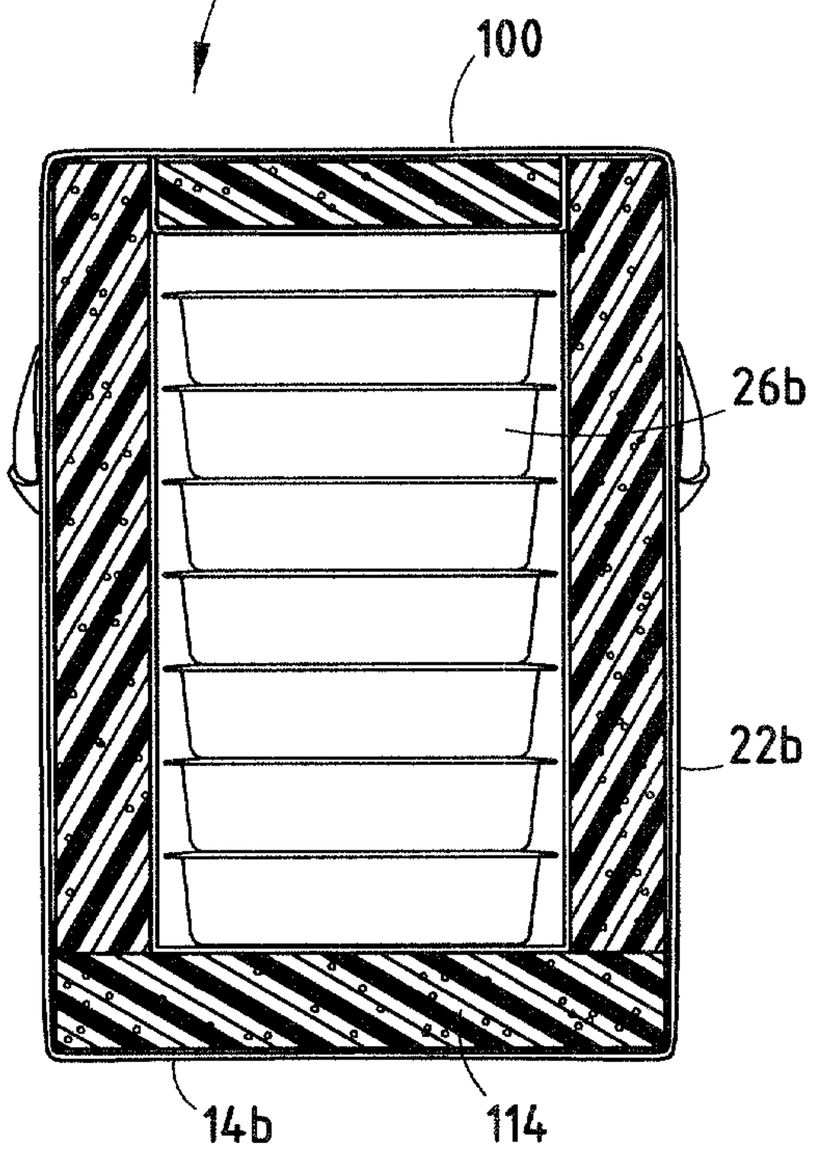


FIG. 11

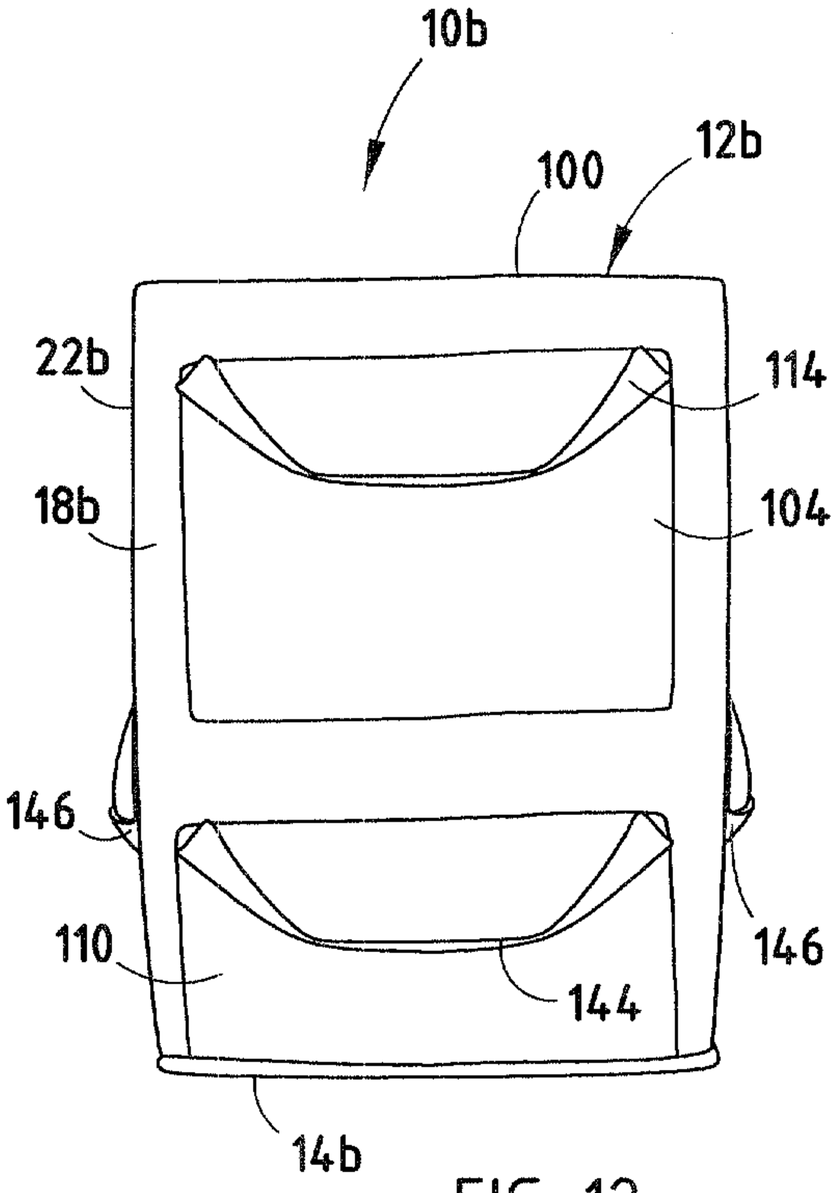
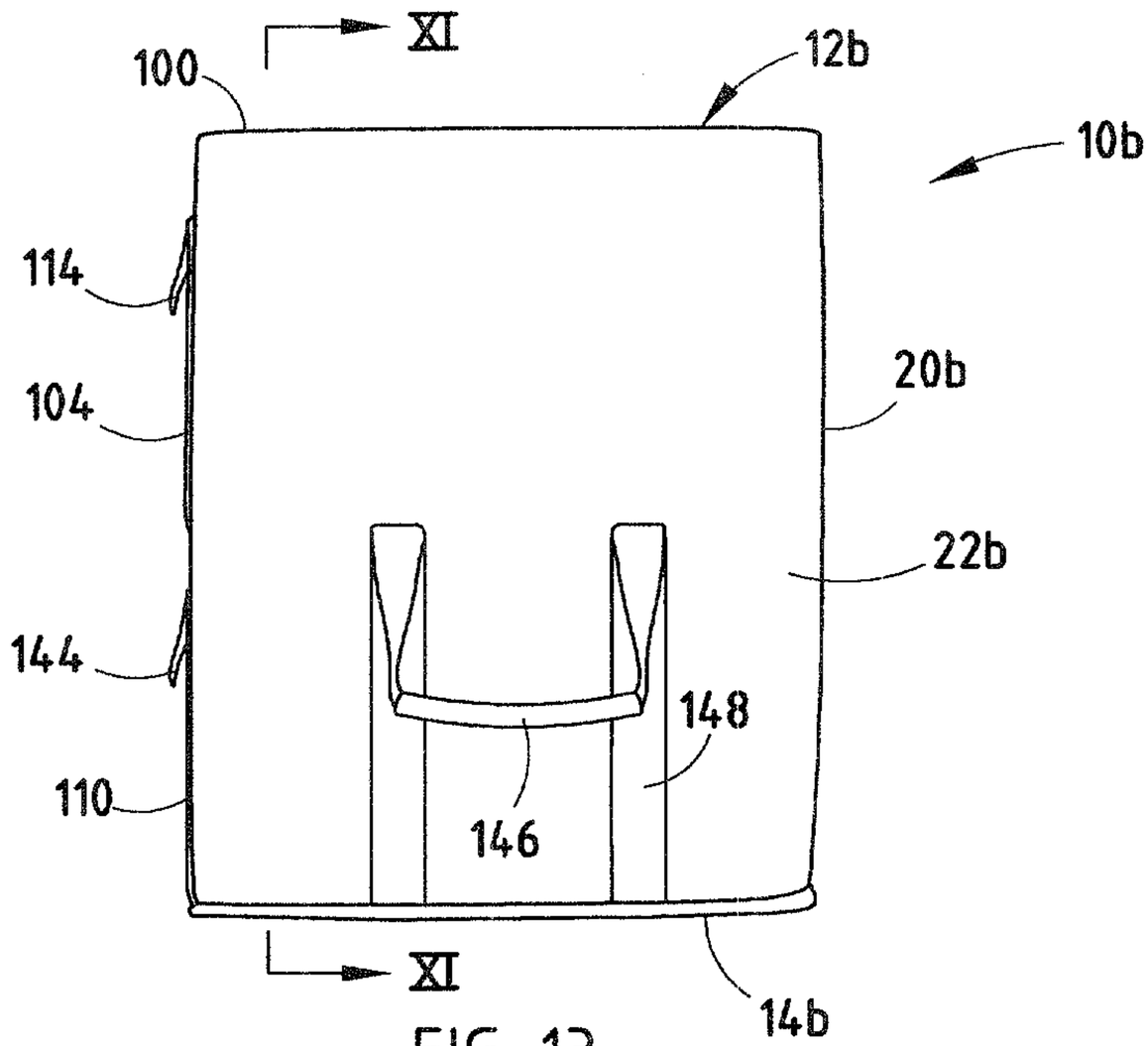


FIG. 12


XI
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22b
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XI
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FIG. 13

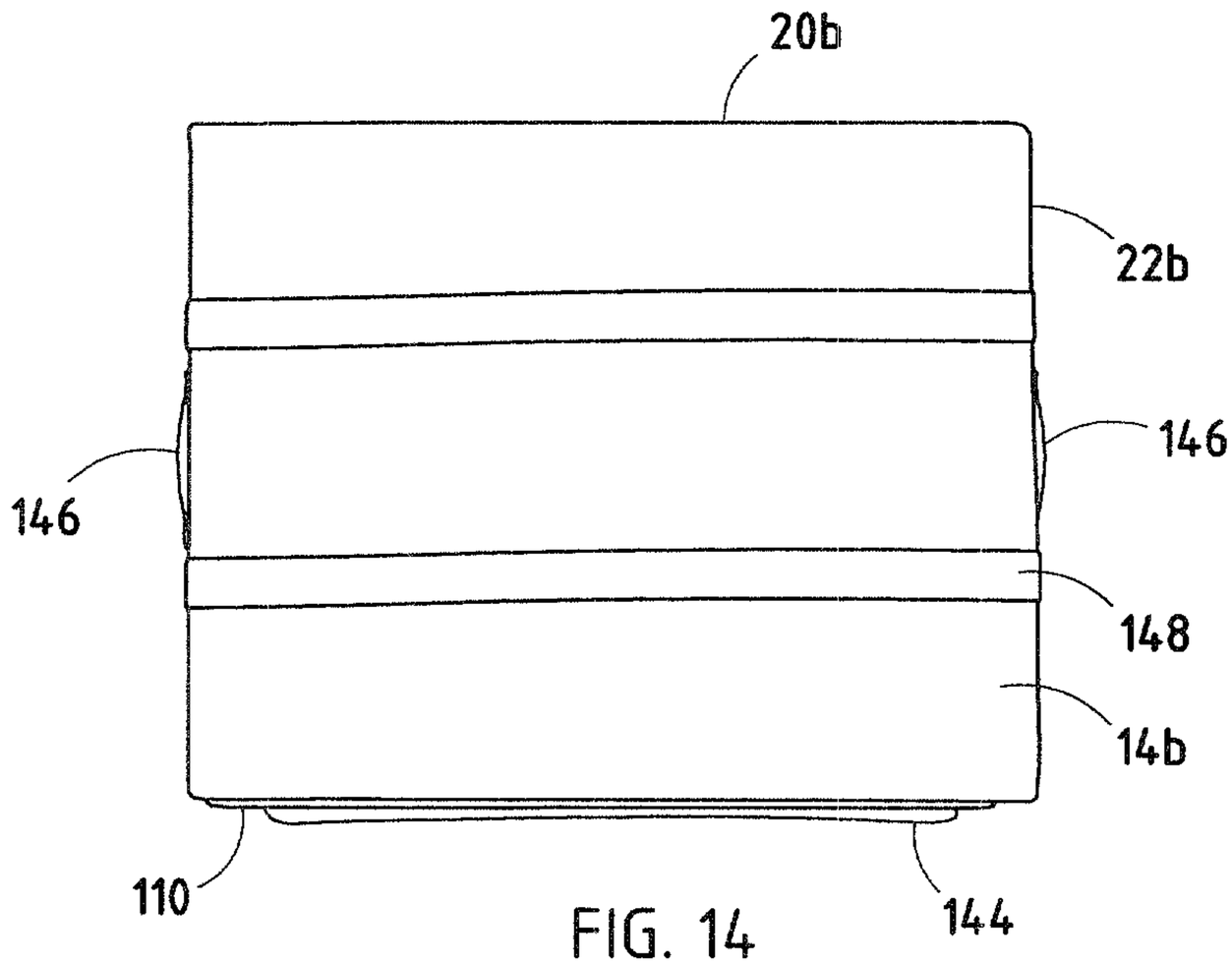
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FIG. 14

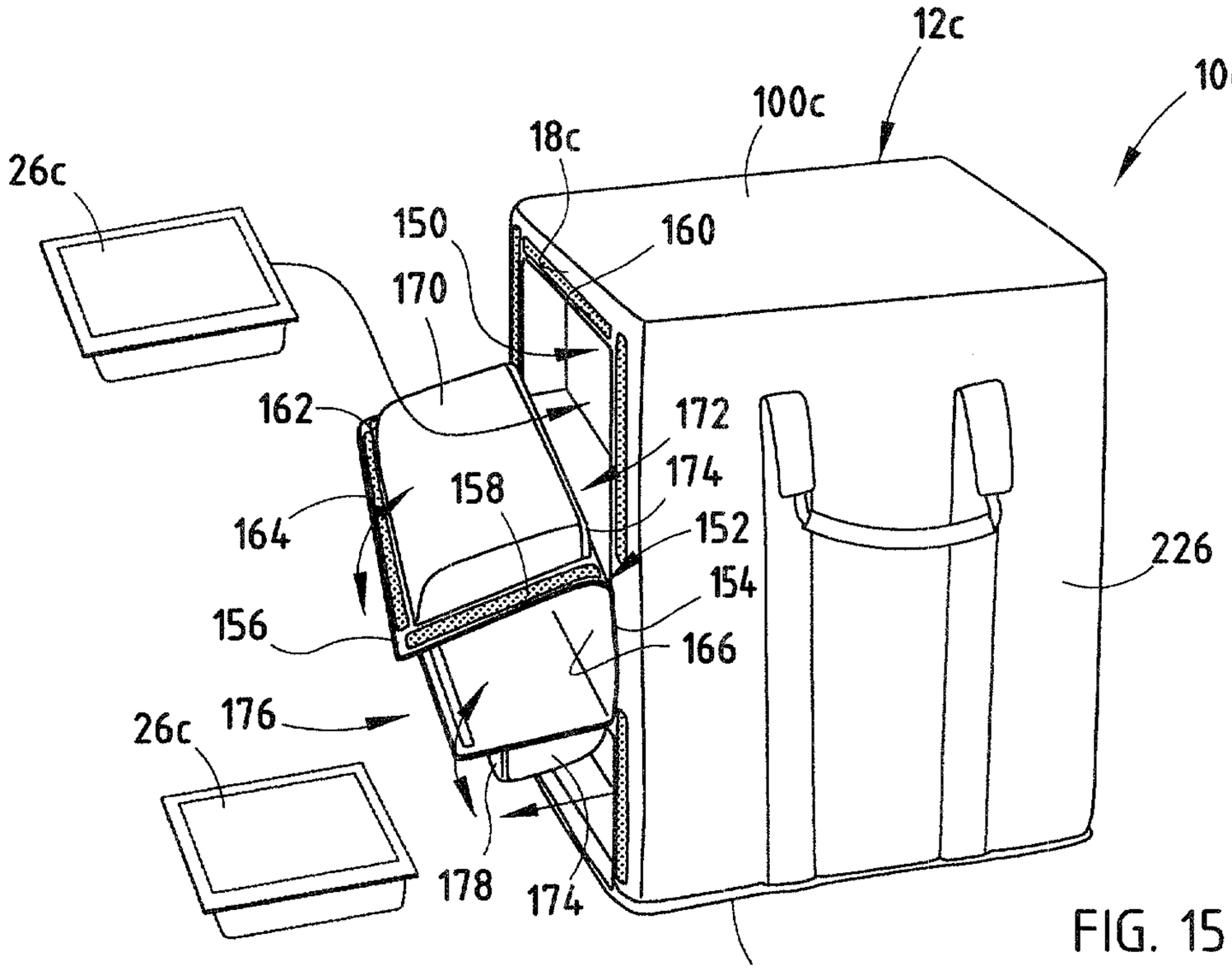
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FIG. 15

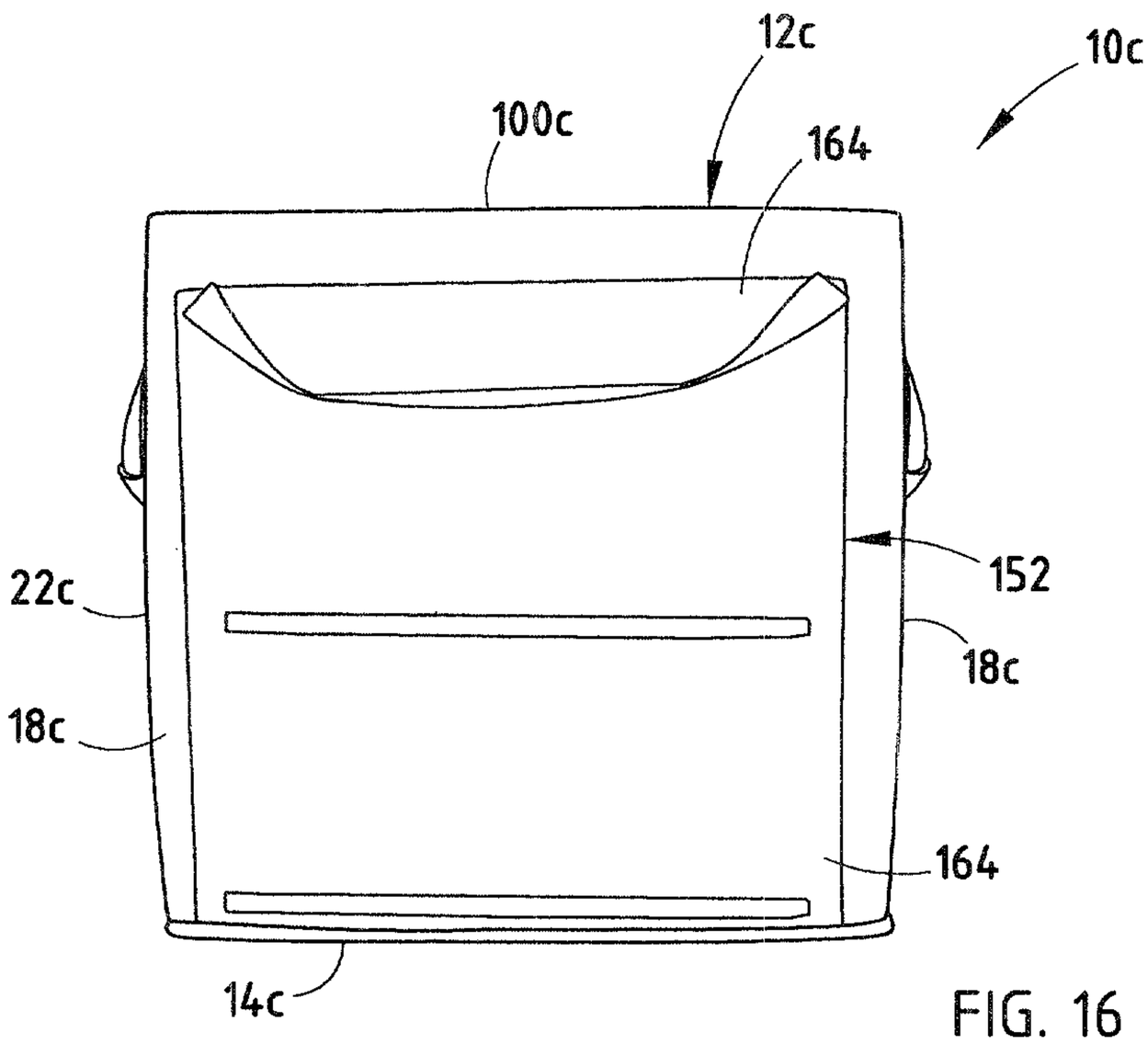
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FIG. 16

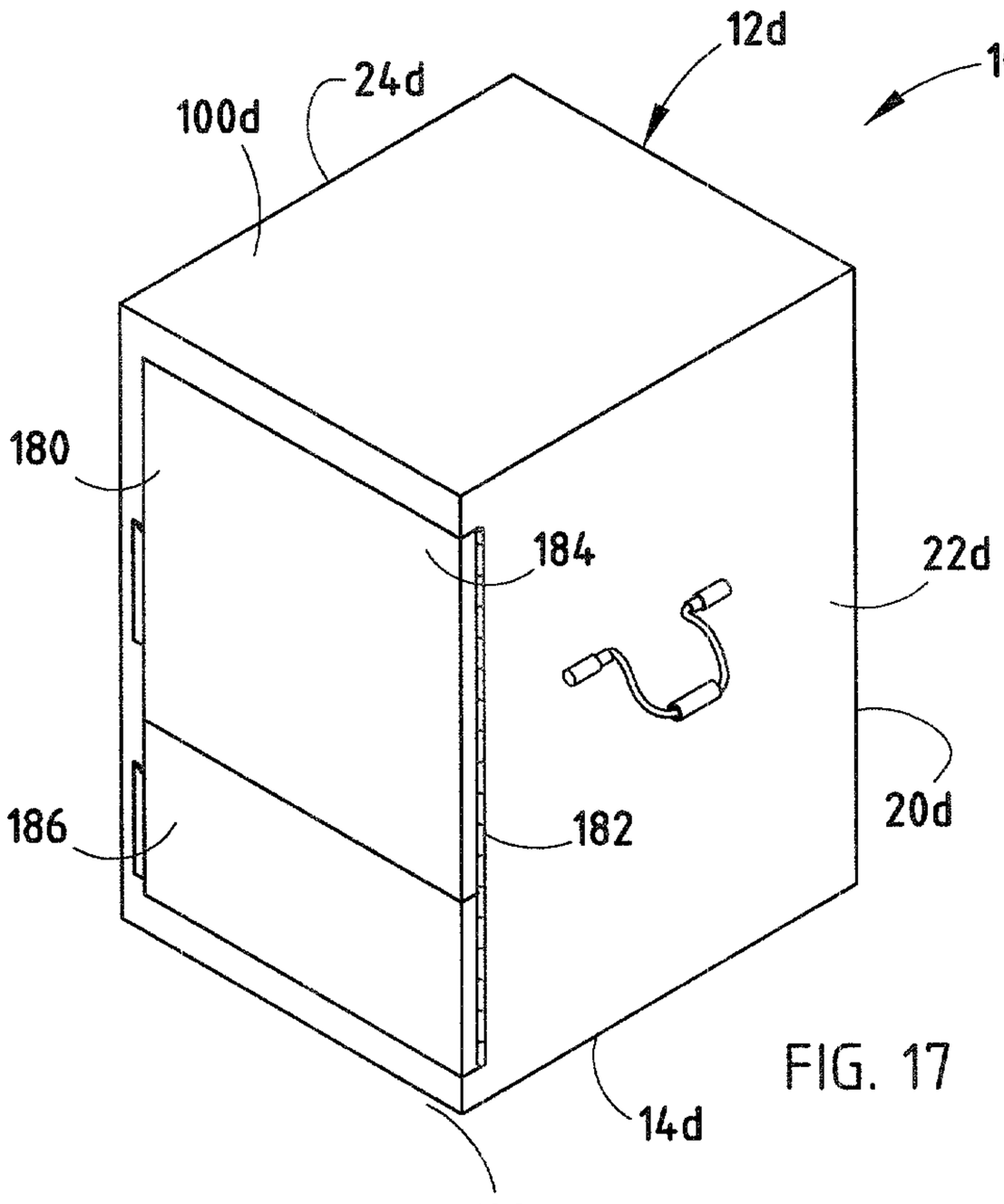
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FIG. 17

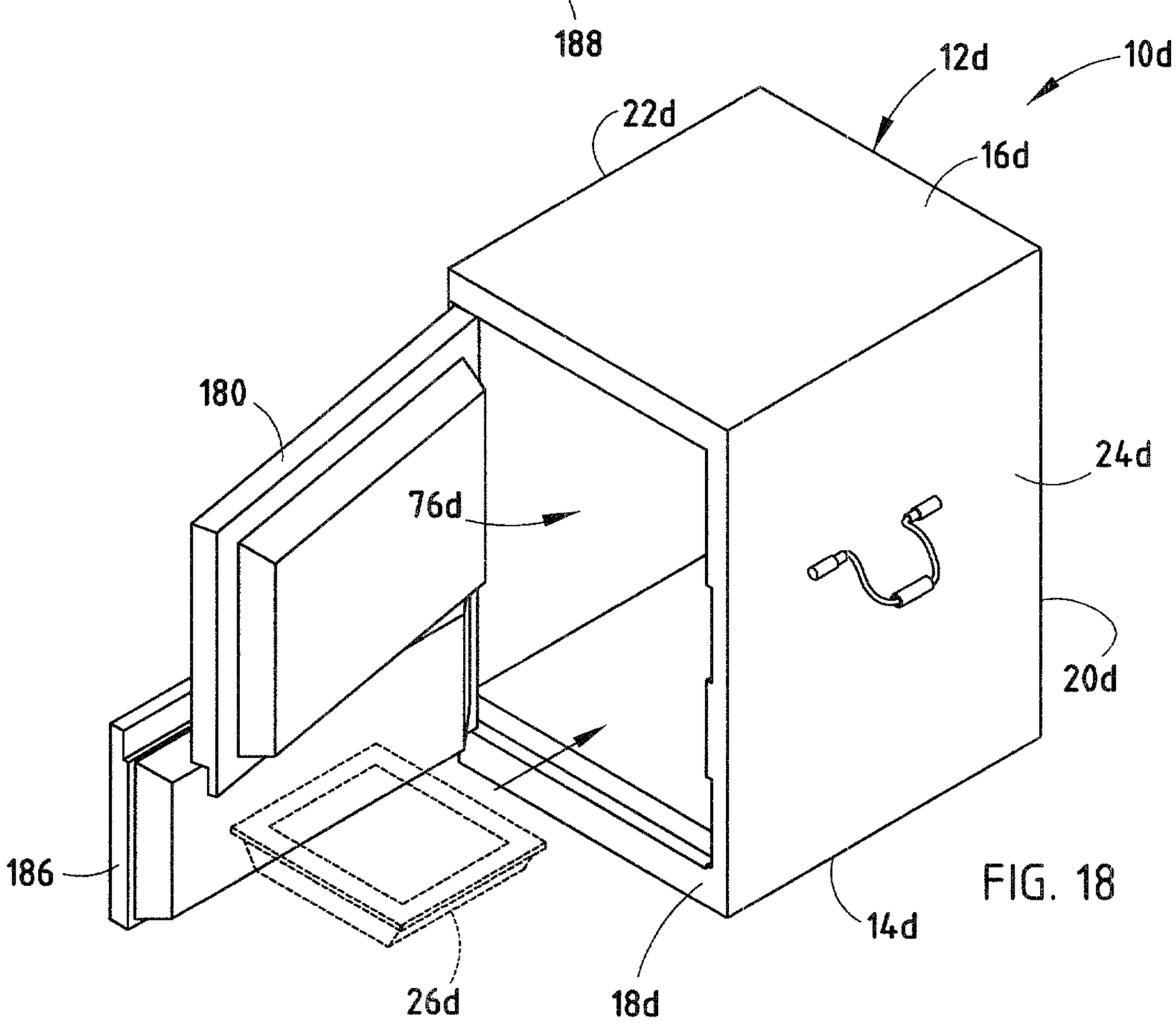
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FIG. 18

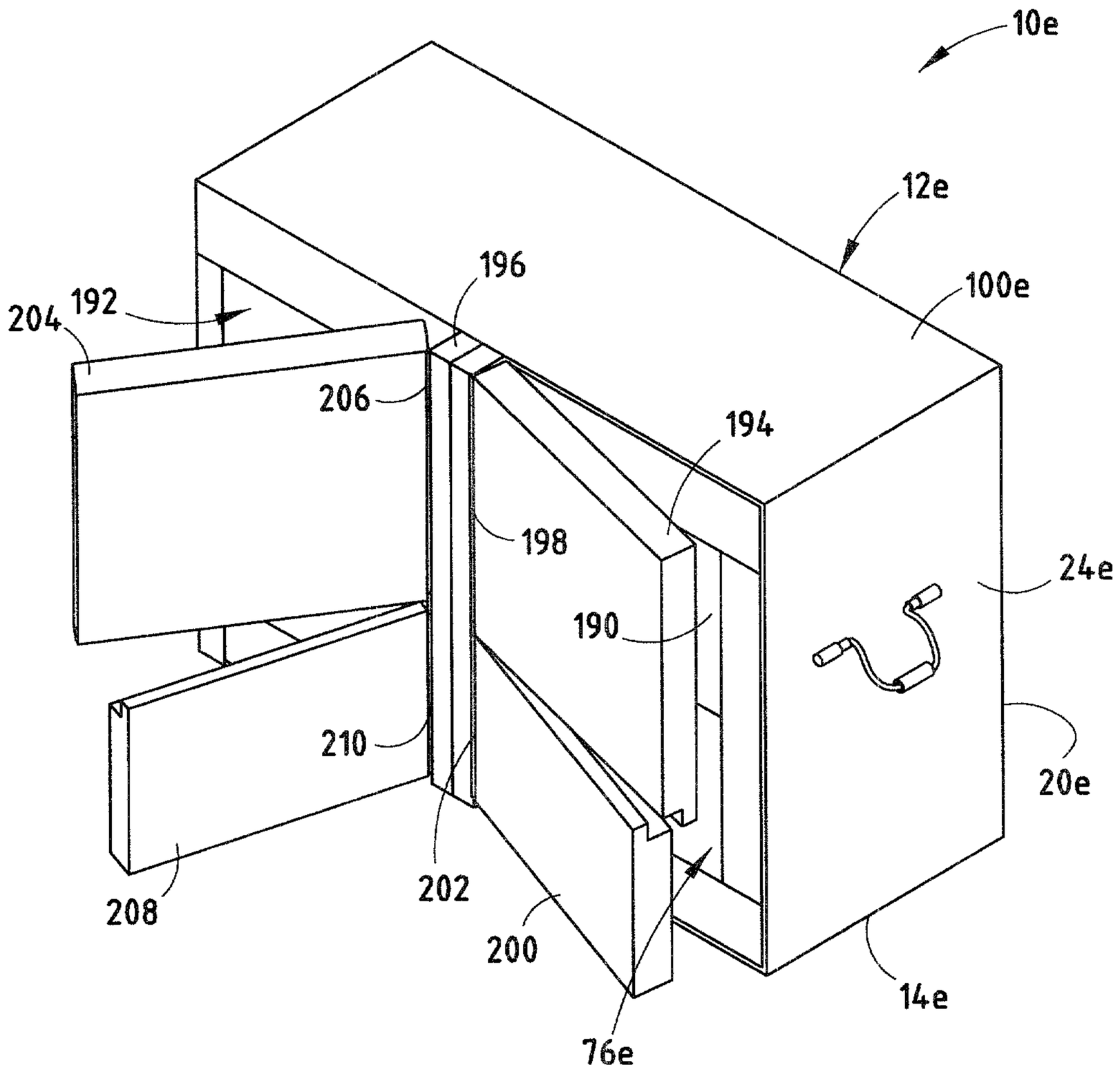
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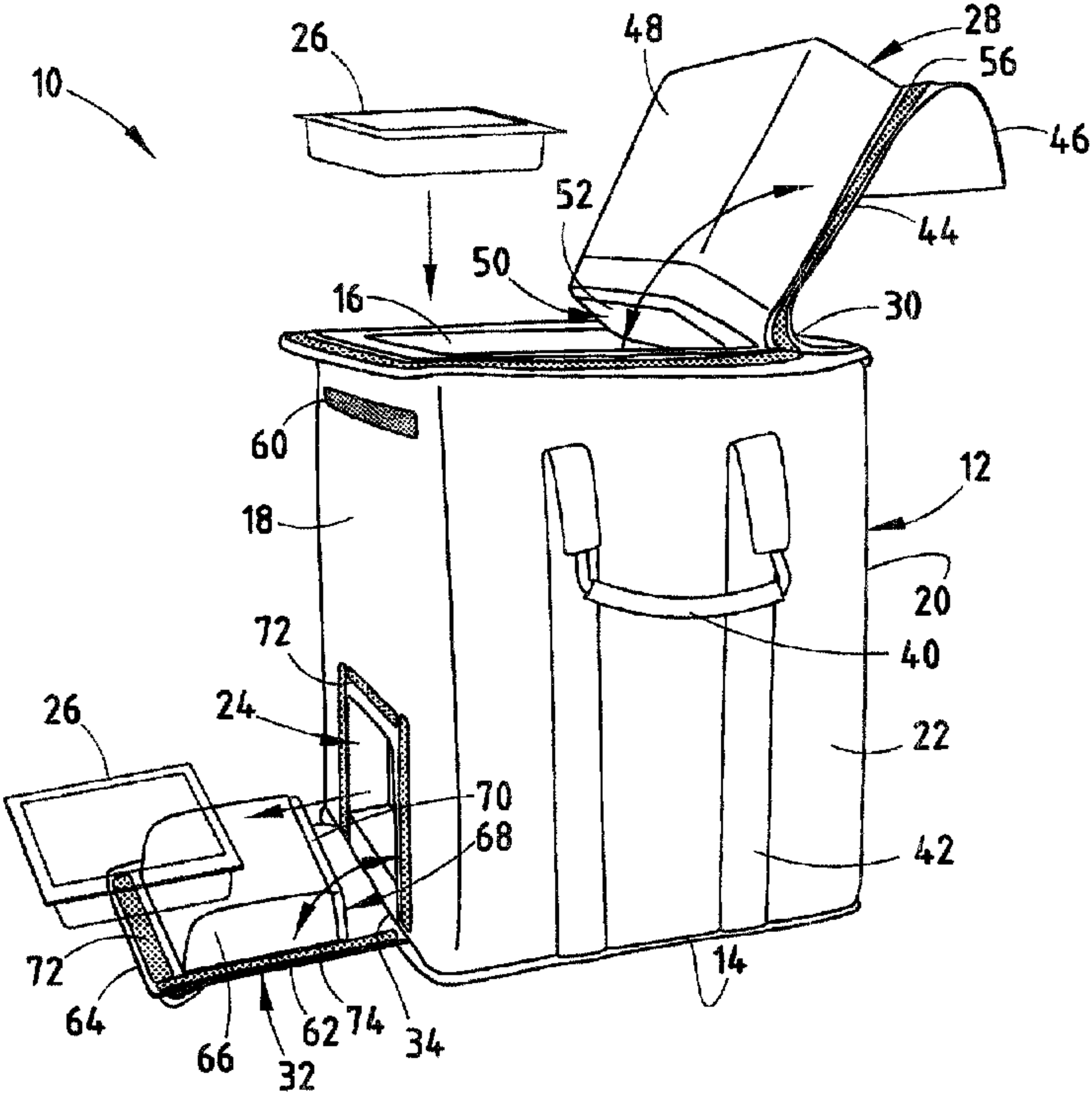
FIG. 19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