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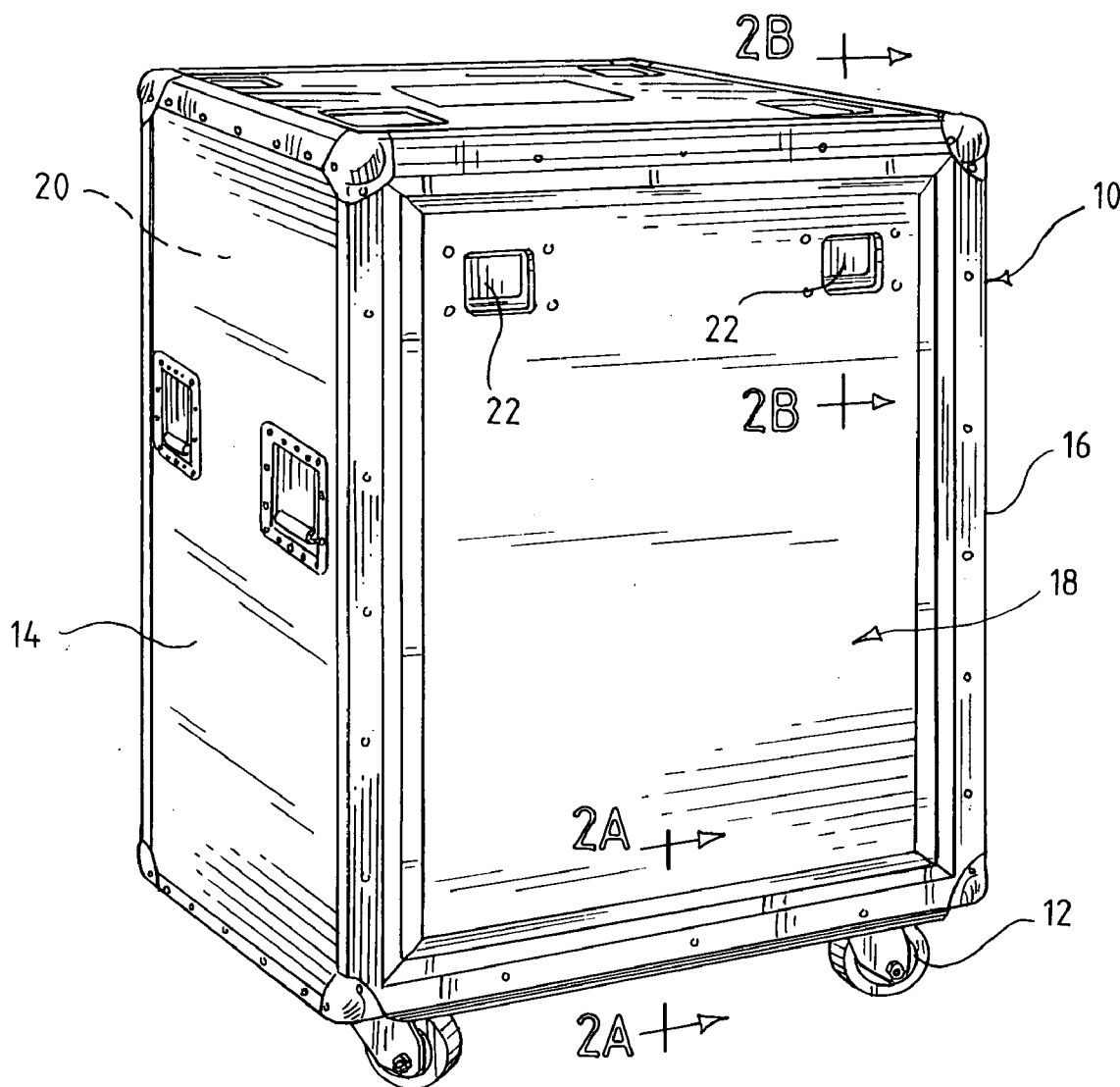
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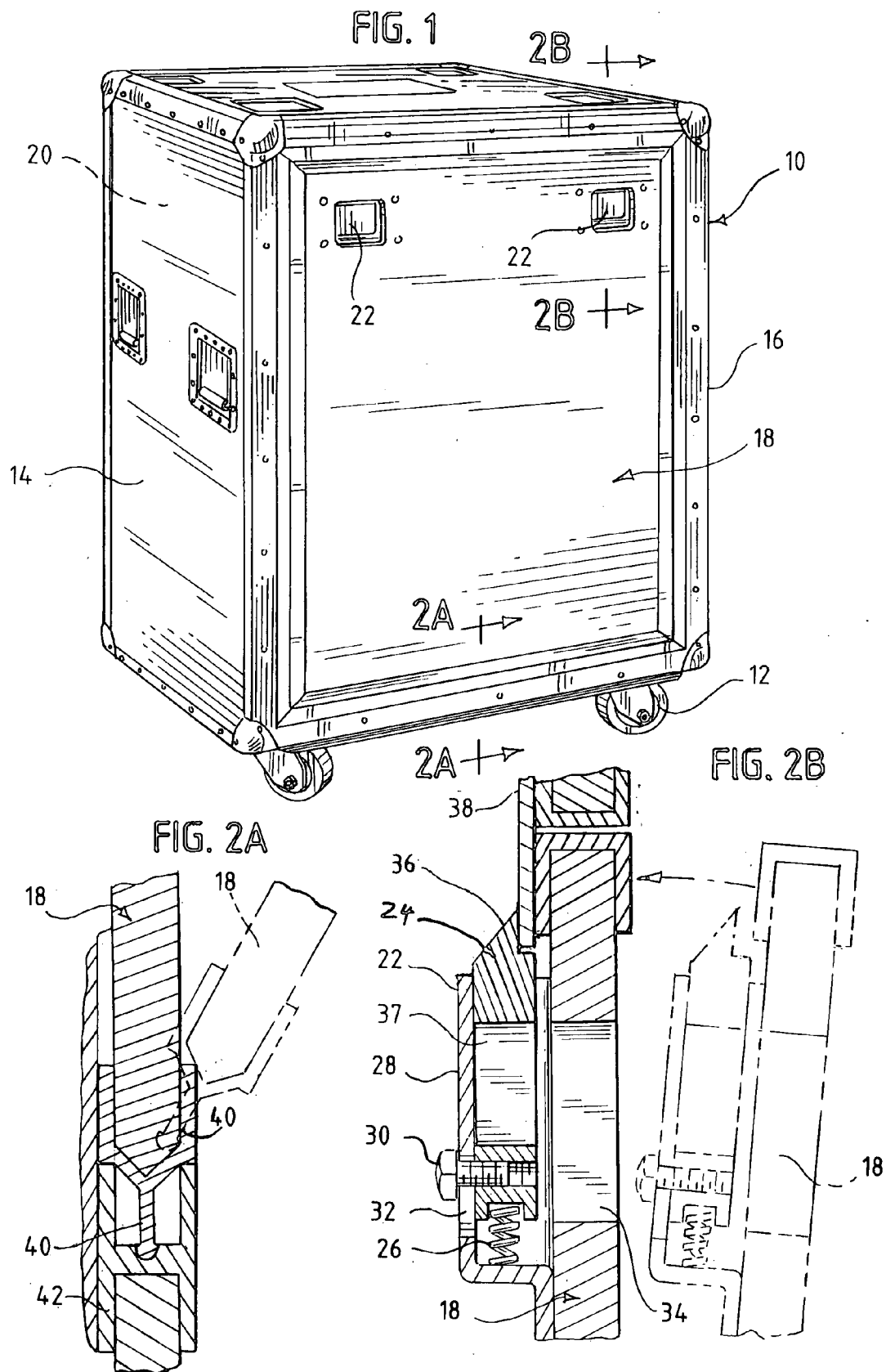
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(21) **Appl. No.: 10/769,026**(22) **Filed: Jan. 29, 2004**(57) **ABSTRACT**

A carrying case for large, fragile equipment, which comprises: a carrying case body having sidewalls, at least one of the sidewalls comprising a first door which is completely separable from the case body, and which may be latched to the carrying case body. The case body has opposed, interior walls adjacent to the latched door, and at least one groove is formed in each of the opposed interior walls, to removably receive and hold a separated first door at least partially within the carrying case body.





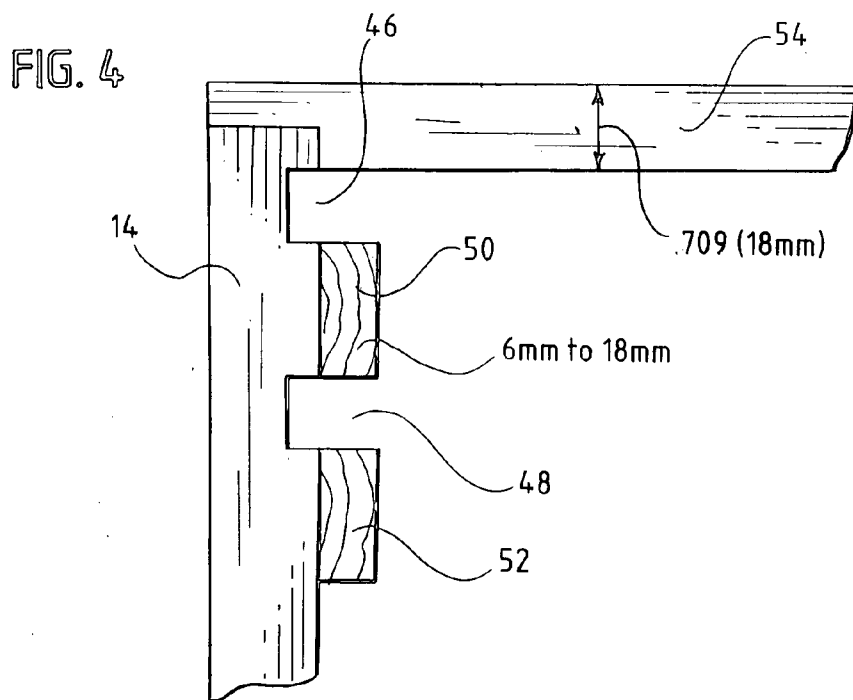
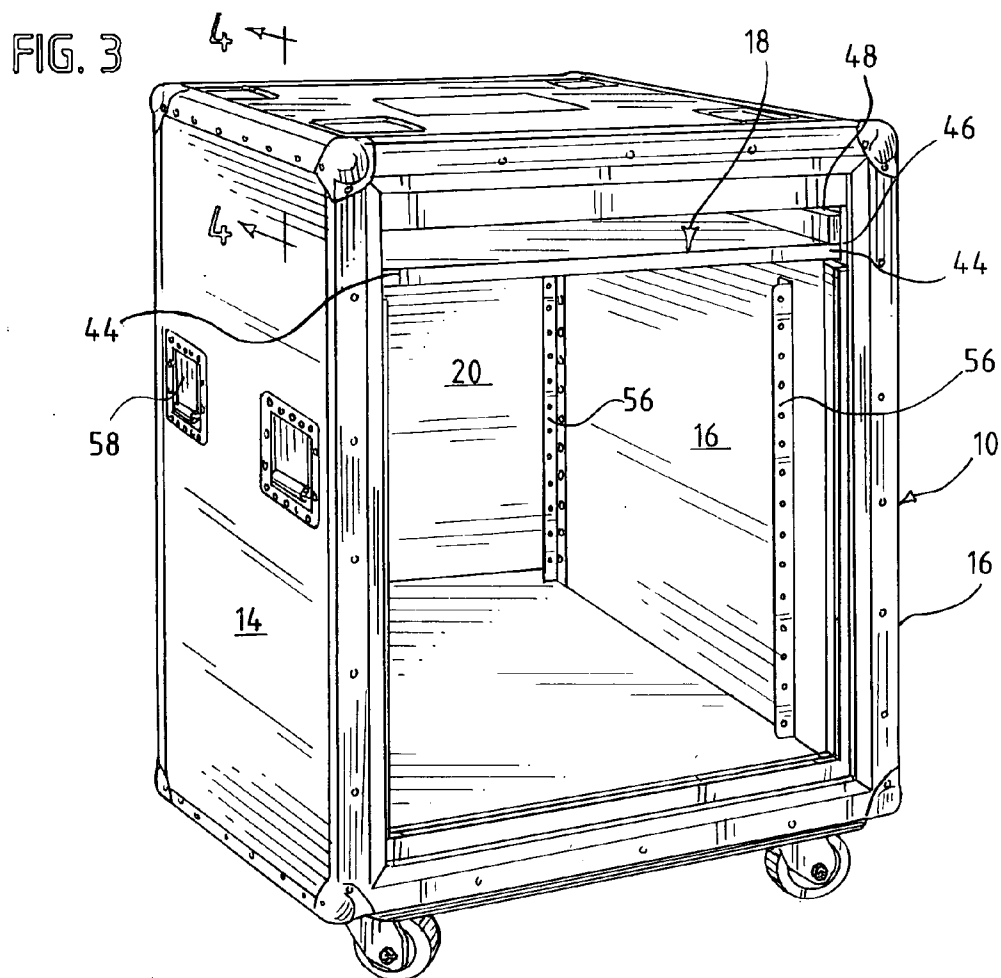


FIG. 5

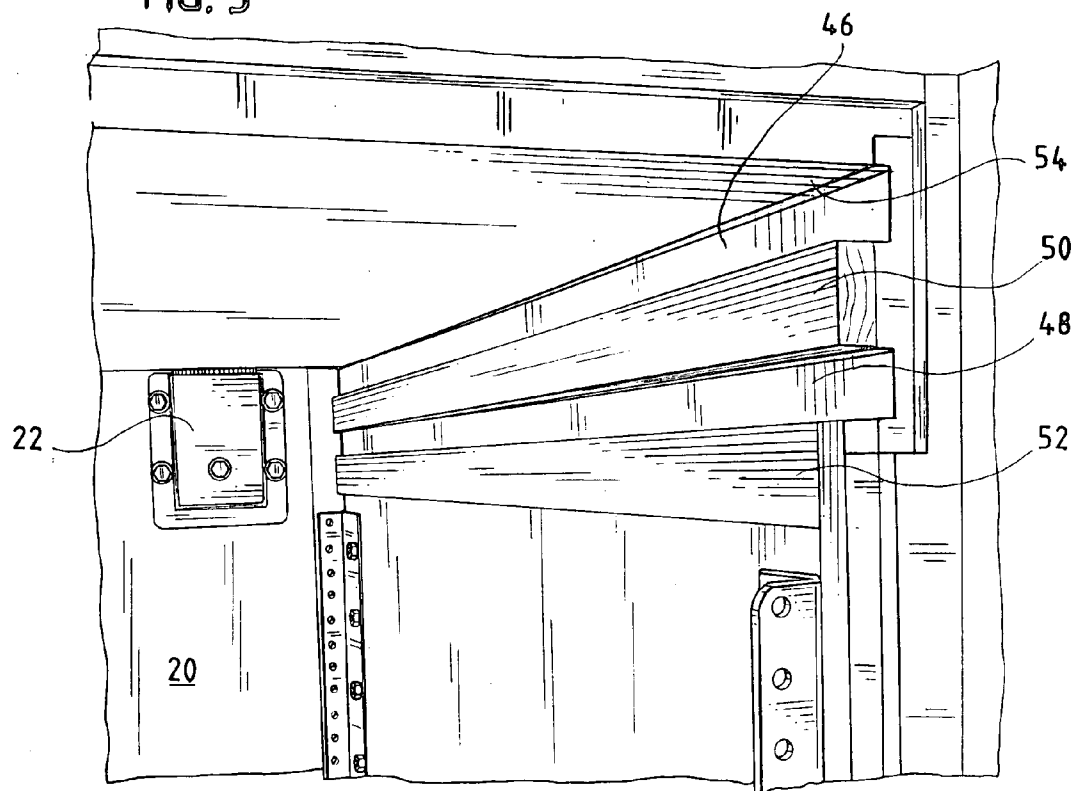
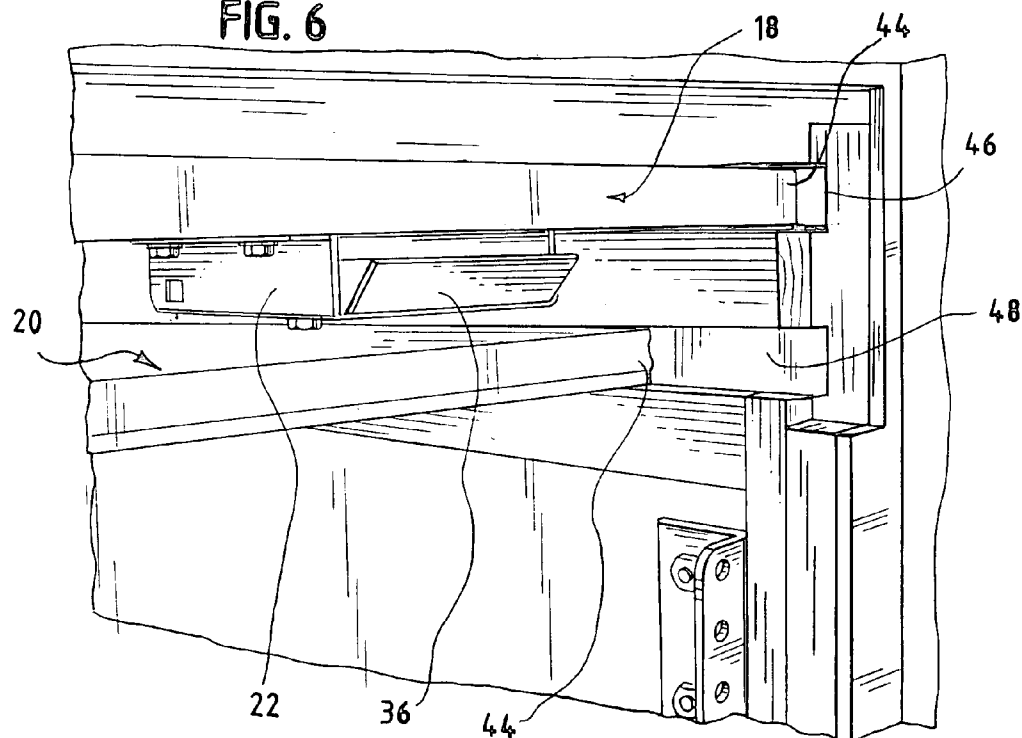


FIG. 6



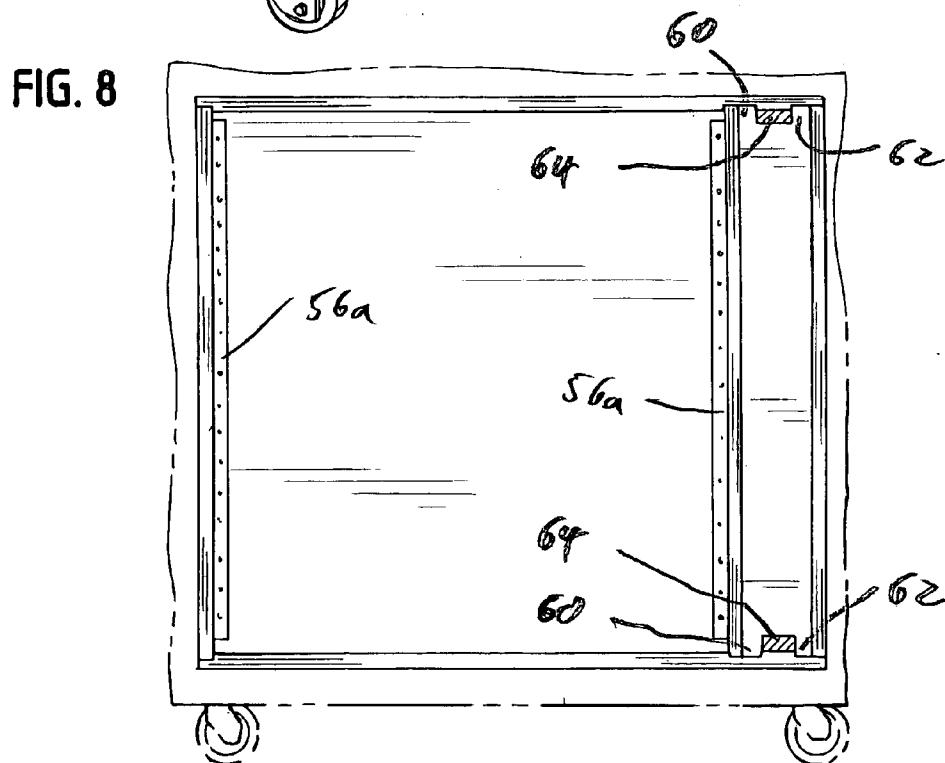
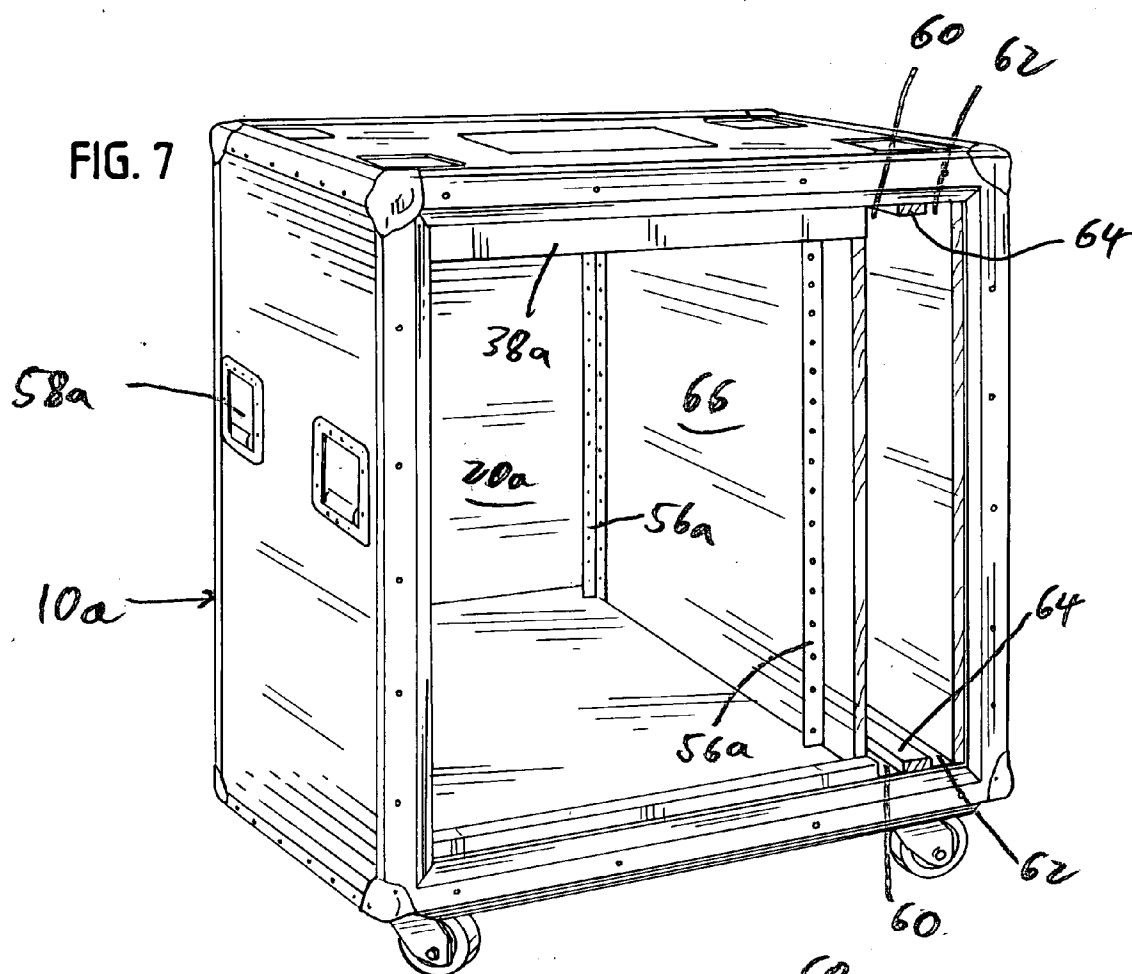
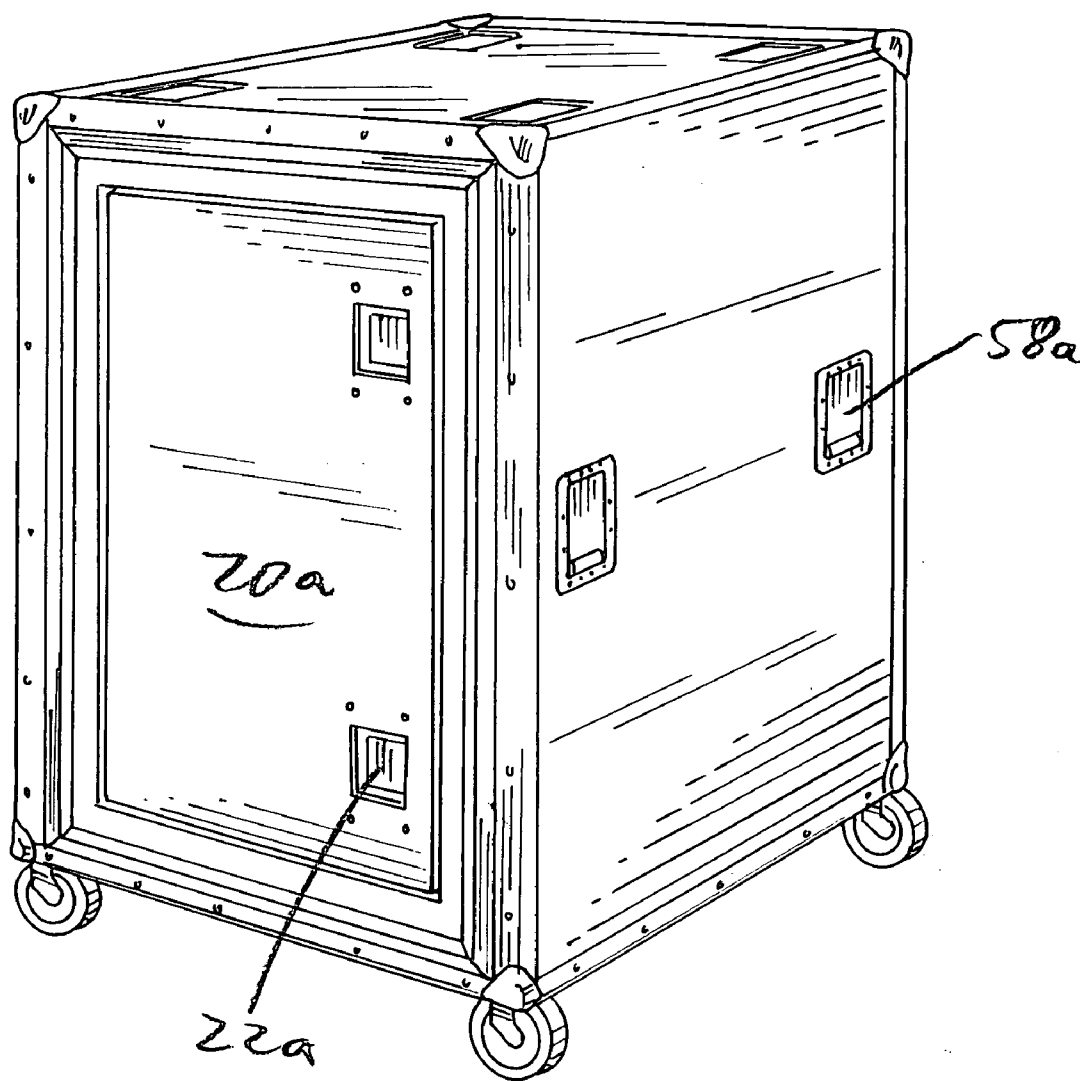


FIG. 9



## CARRYING CASE

### BACKGROUND OF THE INVENTION

[0001] Carrying cases known as custom flight cases are provided for the storage and transport of mostly electronic equipment, for example, equipment used by traveling shows such as music or drama entertainment groups, sales people who produce exhibits at trade shows, rental equipment companies, and the like.

[0002] These flight cases are basically like large trunks that were used in the early years, particularly with railroad and sea travel, being generally large, rigid transport cases.

[0003] Typically, the flight cases of the prior art open at the sides, top or bottom. Rack style cases typically have doors that completely separate from the flight case, with such a door being provided often on both sides of the flight case, for ease of installing large electronic equipment or other large, fragile items in the flight case.

[0004] Typically, the rack style flight cases have a foam inner lining with an internal wood rack. Angle iron rack members having screw holes can be attached to the internal wood rack, so that the electronic equipment or other contents may then be bolted into tight securance by temporary attachment with the angle iron or other metal rails carried by the wood rack.

[0005] A common problem with these large rack style flight cases is that they are often heavy and numerous, in order to provide the necessary equipment for a large concert, for example. Also, the doors, which are often called "lids" even though they are side opening, separate from the flight cases. Storing these often large and heavy lids while using the rack type cases at a show can create a substantial amount of clutter and disorganization. In addition, doors for an individual flight case become commingled with other flight case doors, which can result in confusion when it is time to reattach lids to their respective flight cases.

[0006] As an attempt to solve this problem, the Clair Brothers Company offers a "rack" (i.e. a case) where the side opening door or "lid" is secured to the rest of the case, and slides vertically into the case on rails, to get it out of the way after opening, so that it is never removed from the case, and cannot get lost or commingled with other lids or side doors. This type of design is also used by other manufacturers.

[0007] However, such a sliding side door requires a special track mechanism and an internal metal rack and shock system. Furthermore, such a door storage mechanism and internal metal rack may add significantly to the cost of the carrying or flight case.

### DESCRIPTION OF THE INVENTION

[0008] In accordance with this invention, a conventional carrying case of the general type described above has a door that is completely separable from the case body. By this invention, the door may be carried within the carrying case for storage while the case is not in transit, with little increase in cost of manufacture of the carrying case, when compared with conventional manufacturing costs.

[0009] Specifically, the carrying case in accordance with this invention has a body with side walls, at least one of the side walls comprising a first door which is completely

separable from the carrying case body, and which may be latched to the carrying case body. The carrying case body has opposed, interior walls which are adjacent to the latched door. At least one horizontal, inwardly facing groove is formed in each of the opposed, interior walls (opposed side walls and/or top and bottom walls), proportioned to removably receive and hold the first door in a horizontal (or vertical) position at least partially within the carrying case body. Thus, one or two removable doors may be horizontally (or vertically) stored inside of the carrying case body while the case is not in transit, that is, during the concert, play, trade show, etc., while greatly reducing the risk of mislaying the doors among a multitude of carrying cases and doors. Thus, each carrying case which uses this invention is ready for reloading without the need to search for the doors, and without the doors providing an untidy clutter. This design also opens and closes faster and easier than a conventional, removable lid rack case.

[0010] While the horizontally or vertically spaced grooves may be positioned anywhere inside of the carrying case, including locations near the bottom thereof, in the embodiment shown in **FIG. 3** they are positioned near the top of the opposed, interior walls. Other figures show the doors stored vertically in grooves in the top and bottom of the internal wood rack.

[0011] In some embodiments, a pair of the horizontal grooves are positioned near the top of each of the opposed, inner walls. A side wall, opposite to the first door in its closed position, comprises a second door, which is also completely separable from the carrying case body, and which may be latched to it. The second door may also thus be received and held in grooves in each of the remaining opposed, interior walls, so both of the side doors may be horizontally or vertically stored in this manner.

[0012] The carrying case of this invention may have an internal rack of generally conventional design, to which the contents of the carrying case may be temporarily secured. Specifically, the carrying case may have a foam interior wall, and an internal wood frame rack to which metal rack rails may be attached. The rack rails define holes through which bolts may project, so that the various items carried in the carrying case may be securely bolted into rigid, immovable position before the case is closed up for shipment.

[0013] Thus, typically large, fragile units of equipment may be reliably secured and transported in a carrying case of this invention, in which the opened side door or doors may be horizontally or vertically stored by sliding into the carrying case interior, with edges of the doors positioned in horizontal or vertical grooves defined on opposed walls of the carrying case. A pair of opposed side doors for the carrying case may be stored in this manner. By this invention, the carrying cases which have the above-described advantage may still have standard widths, and can be manufactured without a significant cost increase because of the modification.

### DESCRIPTION OF THE DRAWINGS

[0014] Referring to the drawings, **FIG. 1** is a perspective view of the flight or carrying case of this invention.

[0015] **FIG. 2A** is a sectional view taken along line 2A-2A of **FIG. 1**.

[0016] FIG. 2B is a sectional view taken along line 2B-2B of FIG. 1.

[0017] FIG. 3 is a perspective view of the carrying case of FIG. 1, showing how one of its side doors have been removed and horizontally placed within the carrying case.

[0018] FIG. 4 is an enlarged, sectional view of the wood frame portion of the carrying case, taken along line 4-4 of FIG. 3.

[0019] FIG. 5 is a fragmentary, perspective view showing an upper corner of the interior of the carrying case of FIG. 1, with a side door removed.

[0020] FIG. 6 is a fragmentary, perspective view of the same upper corner shown in FIG. 5, with the two opposed doors of the carrying case removed from their normal, closing position, and then horizontally inserted into the interior of the carrying case.

[0021] FIG. 7 is a perspective view of another embodiment of the carrying case of this invention, with one door removed, and showing a vertical, internal storage area for the doors.

[0022] FIG. 8 is a vertical sectional view of the inner frame of the carrying case, with the exterior container shown in broken lines.

[0023] FIG. 9 is a perspective view of the carrying case of FIGS. 7 and 8, showing a closed door.

#### DESCRIPTION OF SPECIFIC EMBODIMENTS

[0024] Referring to FIGS. 1-6, a carrying case 10 is shown, comprising a rectangular, box-like container mounted on casters 12. Container 10 may have a 24 inch standard width, as is customary, or it may preferably be of any other width, although the particular dimensions of the carrying case are not critical to the invention.

[0025] The carrying case has a body comprising respective, opposed side walls 14, 16, with other side walls further comprising removable doors 18, 20 (FIGS. 1 and 3). Each door 18, 20 may be latched to the carrying case body by latches 22, and may be completely removable therefrom. The structure of door 18 is shown in particular detail, and the same structure may be utilized for door 20.

[0026] Specifically, door 18 is shown to have pair of conventional latches 22, which are shown in cross section in FIG. 2B. Latches 22 are attached to door 18. A movable latch member 24, which is biased upwardly by spring 26, is held in sliding relation to latch plate 28 by screw 30, which reciprocates up and down in slot 32. Outer latch aperture 34 permits the user's hand to enter inner latch aperture 37, to depress latch 24 out of its engagement with metal door strip 38, to permit the removal of door 18.

[0027] Then, for relatching the door in place, door 18, shown in phantom lines of FIG. 2B, is forcefully closed, causing latch 24 to be forced downwardly by the engagement of angled face 36 with metal strip 38, and then to snap back upwardly into the position shown in full lines of FIG. 2B in latched position.

[0028] At the bottom of door 18, the door carries a projecting flange 40 (FIG. 2A), which fits into slot 42, rather in the manner of a tongue and groove arrangement, to secure door 18 at the bottom.

[0029] Door 20, shown in FIG. 3, may be of identical design, and may be releasably attached in its opposing side wall position in similar manner.

[0030] Door 18, separated and positioned within carrying case 10 in an upper, horizontal position, is shown in FIG. 3. To accomplish this, the side edges 44 of door 18 reside in the respective horizontal grooves that are defined at the top of the interior of carrying case 10 in this particular embodiment. Specifically, as shown in FIGS. 4 and 5, respective grooves 46 and 48 are formed horizontal and parallel to each other, such grooves being present in each side of carrying case 10. Thus, as shown in FIG. 6, the respective, separated doors 18, 20 may be horizontally positioned in grooves 46, 48 with respective side edges 44 occupying the grooves. The situation on the other side of each of FIGS. 5 and 6 is substantially identical to that shown, so that the respective doors 18, 20 may be removed by manipulating their latches 22 to open them, and then placing them horizontally in the respective grooves 46, 48 for storage, after the contents of the carrying cases have been removed.

[0031] Grooves 46, 48 may be defined typically by upper bar 50, which is in vertically spaced relation with lower bar 52 to define lower groove 48. Top interior frame portion 54 then cooperates with parallel upper bar 50 to define horizontal groove 46.

[0032] As shown in FIG. 4, the thickness of the top interior frame portion 54 of carrying case 10 may be about 0.7 inch in thickness, while the horizontal thickness of groove-defining wooden bars 50, 52 may be about 6-18 mm. Of course, plastic or other materials, such as fiberglass, may substitute for the wood.

[0033] The rest of the internal structure of carrying case 10 with its interior frame may be generally conventional, with the interior walls carrying apertured metal vertical strips 56 adjacent to each of the four corners, so that large electronic equipment and the like can be secured by bolts to the strips, with several equipment units being transported in the same carrying case, being stacked together, but firmly secured so that they are not damaged in transit.

[0034] Side walls 14 have conventional lifting and carrying handles 58, as shown.

[0035] Referring to FIGS. 7-8, a similar carrying case 10a is provided, being similar to the previous embodiment, except as otherwise described herein. In this embodiment, the separable doors 18a, 20a may be of the design of the previous doors, and may be stored in a vertical manner in the respective vertically arranged slot pairs 60, 62, which may be defined by a pair of vertically arranged central ribs 64, which are attached to the inner frame of container 10a. Thus, the respective doors 18a, 20a may be vertically stored in the respective slots 60, 62 in a manner similar to the horizontal door storage of the previous embodiment. Carrying case 10a may also have an interior vertical wall 66 of plywood or the like, to carrying two of the four apertured metal vertical strips 56a, to which large electronic equipment and the like can be secured by bolts, as in the previous embodiment. The other two vertical strips 56a are in the left side corners of carrying case 10a, one of which is visible in FIG. 8. The respective doors have latches similar to the previous embodiment, each of which can latch against a separate vertical strip 38a. As in the previous embodiment, carrying



case **10a** may have conventional lifting and carrying handles **58a** on opposed sides thereof.

[0036] **FIG. 9** shows the closed container, with door **20a** carrying a pair of latches **22a** of design and function similar to the previous embodiment.

[0037] Thus, a carrying case is provided for the storage and transport of typically large electronic equipment and other items as desired, in which the removable doors may be vertically or horizontally stored in the carrying case when it is not in transit.

[0038] The above has been offered for illustrative purposes only, and is not intended to limit the scope of the invention of this application, which is as defined in the claims below.

That which is claimed is:

1. A carrying case for large, fragile equipment, which comprises:

a carrying case body having side walls, at least one of said side walls comprising a first door which is completely separable from the carrying case body, and which may be latched to the carrying case body; the carrying case body having opposed, interior walls adjacent to said latched first door; at least one inwardly facing groove formed in each of said opposed, interior walls, to removably receive and hold said first door in a position at least partially within said carrying case body.

2. The carrying case of claim 1 in which said opposed, interior walls are vertical, and said grooves are horizontally spaced.

3. The carrying case of claim 2 in which said grooves are positioned near the top of said opposed, interior walls.

4. The carrying case of claim 2 in which a pair of said horizontal grooves are positioned in each of said opposed, interior walls, and a side wall, opposed to said first door, comprises a second door which is also completely separable from the carrying case body, and which may be latched thereto, said second door also being capable of being received and held in at least one of said pair of grooves in each of said opposed, interior walls.

5. The carrying case of claim 4 which has an internal rack to which contents of said carrying case may be temporarily secured.

6. The carrying case of claim 4 in which said doors each are horizontally held within said carrying case body while engaging said grooves.

7. The carrying case of claim 4 in which said horizontal grooves are positioned near the top of said opposed, interior walls.

8. The carrying case of claim 1 in which said first door is horizontally held within said carrying case body while engaging said grooves.

9. The carrying case of claim 2 which has an internal rack comprising perforated rails to which contents of said carrying case may be temporarily secured.

10. The carrying case of claim 9 in which said internal perforated rails are spaced below said horizontal grooves.

11. The carrying case of claim 5 in which said internal rack is spaced below said horizontal grooves.

12. The carrying case of claim 1 in which said opposed, interior walls are horizontal, and said grooves are vertically spaced.

13. The carrying case of claim 12 in which a pair of said grooves are positioned in each of said opposed, interior walls, and a side wall, opposed to said first door, comprises a second door which is also completely separable from the carrying case body and which may be latched thereto, said second door being also capable of being received and held in at least one of said grooves in each of said opposed, interior walls.

14. The carrying case of claim 13 which has an internal rack to which contents of said carrying case may be temporarily secured.

15. The carrying case of claim 1 in which said first door is vertically held within said case.

16. A carrying case for large, fragile equipment, which comprises:

a carrying case body having side walls, at least one of said side walls comprising a first door which is completely separable from the carrying case body, and which may be latched to the carrying case body;

the carrying case body having opposed, interior walls adjacent to said latched first door; at least one horizontal, inwardly facing groove formed in each of said opposed, interior walls, to removably receive and hold said first door in a horizontal position at least partly within said carrying case body, said opposed, interior walls being vertical, and said grooves being horizontal, and further comprising an internal rack to which contents of said carrying case may be temporarily secured.

17. The carrying case of claim 1 in which a pair of said horizontal grooves are positioned in each of said opposed, interior walls, and a side wall, opposed to said door, comprises a second door which is also completely separable from the carrying case body, and which may be latched thereto, said second door also being capable of being received and held in at least one of said pair of horizontal grooves in each of said opposed, interior walls.

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