Jan. 20, 1959 D. D. DOERR ET AL 2,869,750

CONTAINER

Filed Oct. 4, 1955 6 Sheets-Sheet 1

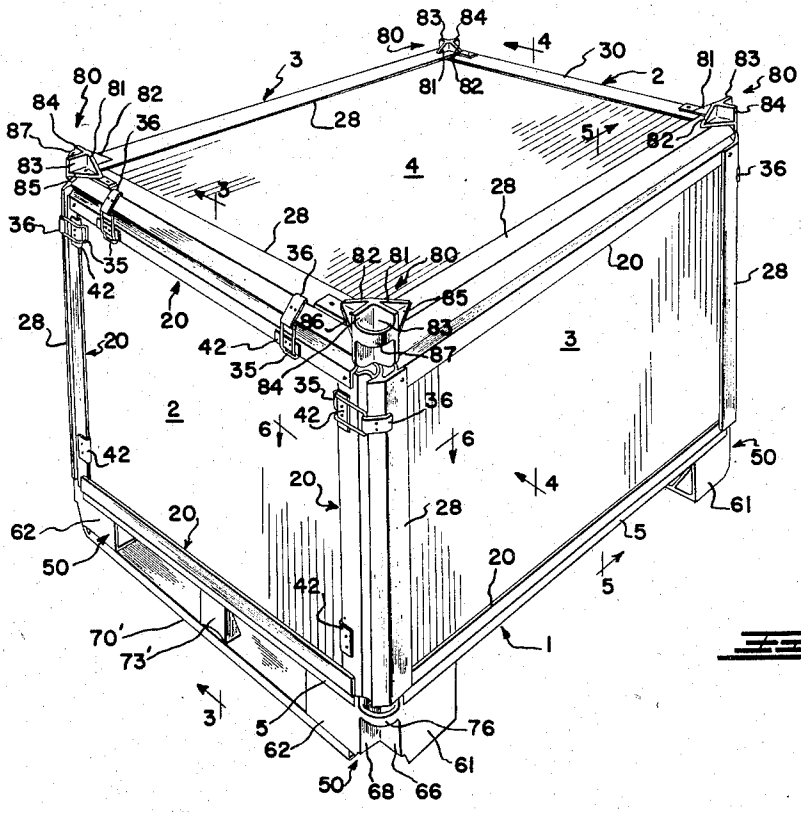


FIG. 1.

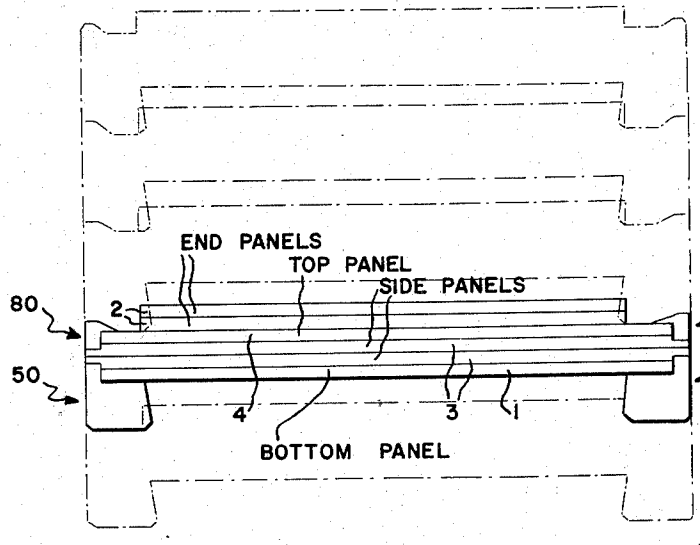


FIG. 2.

INVENTORS
DALE D. DOERR
WILLIAM H. GRIP

BY James E. Cooney
ATTORNEY

Jan. 20, 1959 D. D. DOERR ET AL 2,869,750

CONTAINER

Filed Oct. 4, 1955 6 Sheets-Sheet 2

FIG. 3.

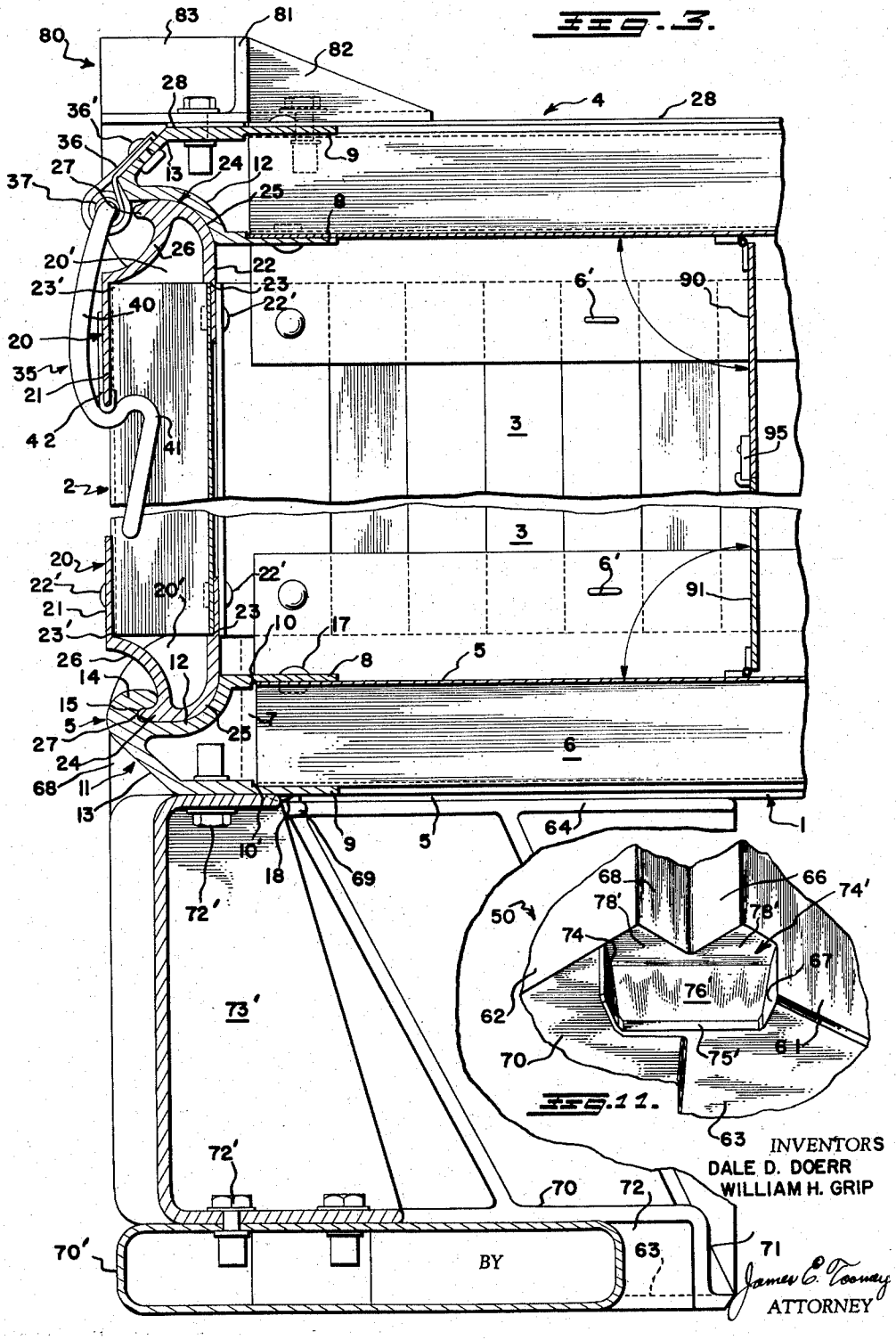


FIG. 11.

INVENTORS
DALE D. DOERR
WILLIAM H. GRIP

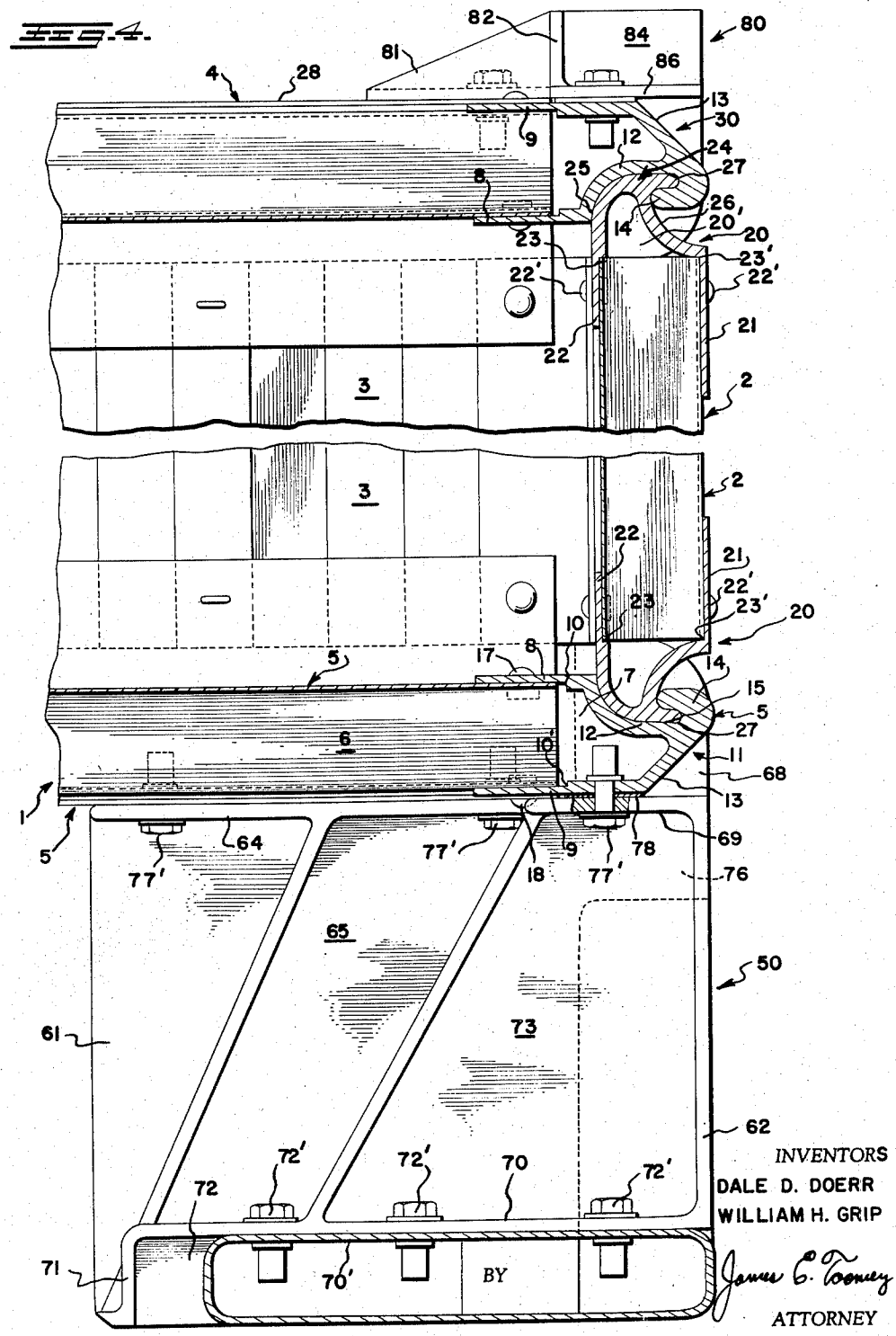
James E. Toomey
ATTORNEY

Jan. 20, 1959 D. D. DOERR ET AL 2,869,750

CONTAINER

Filed Oct. 4, 1955 6 Sheets-Sheet 3

FIG. 4.



INVENTORS
DALE D. DOERR
WILLIAM H. GRIP

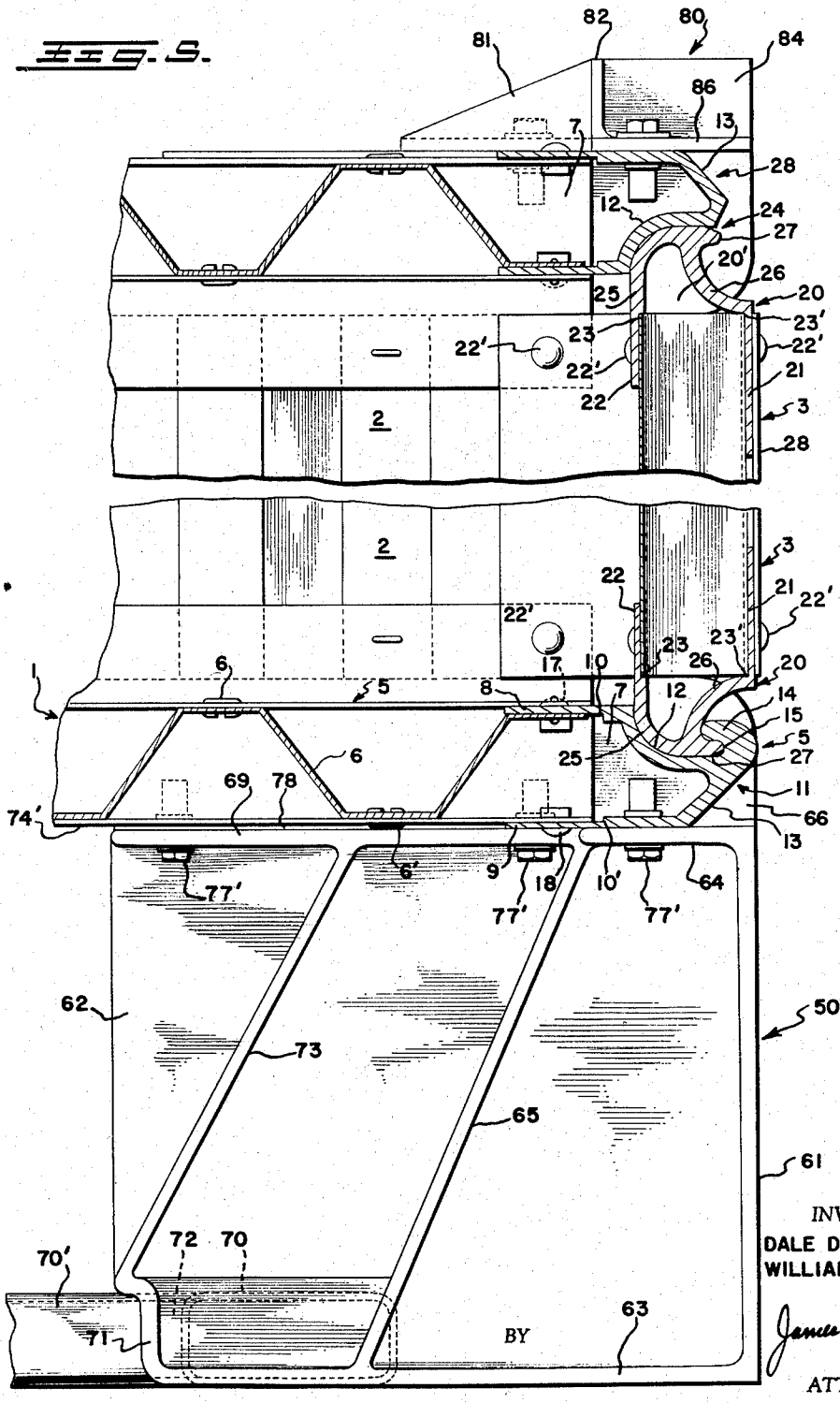
James C. Toomey
ATTORNEY

Jan. 20, 1959 D. D. DOERR ET AL 2,869,750

CONTAINER

Filed Oct. 4, 1955 6 Sheets-Sheet 4

FIG. 5.



INVENTORS
DALE D. DOERR
WILLIAM H. GRIP

James C. Tarney

ATTORNEY

Jan. 20, 1959 D. D. DOERR ET AL 2,869,750

CONTAINER

Filed Oct. 4, 1955 6 Sheets-Sheet 5

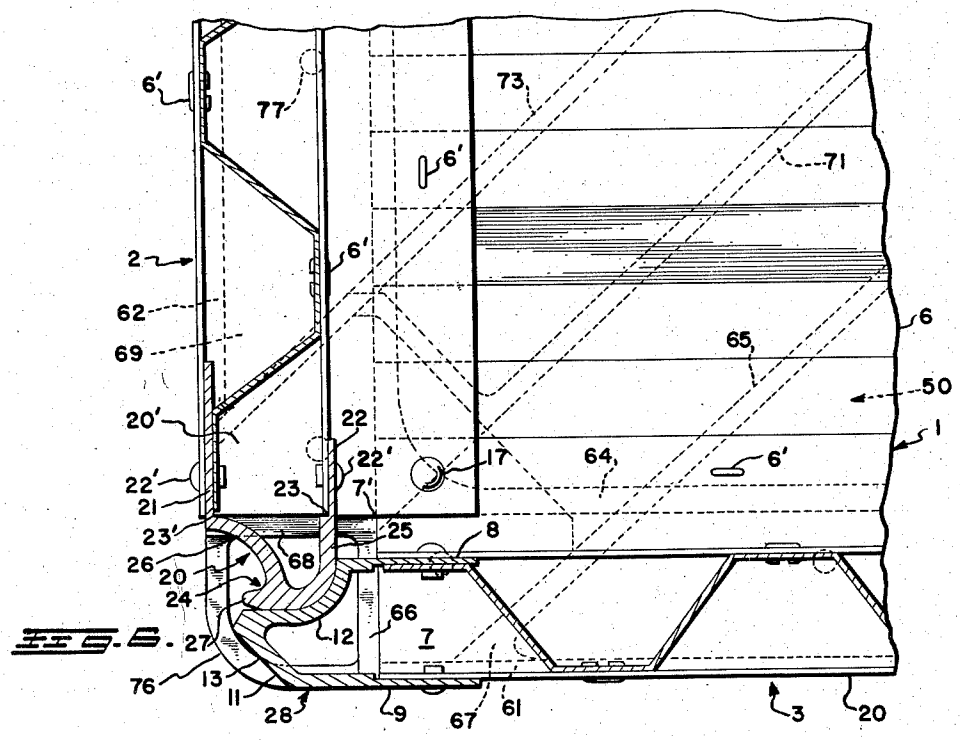


FIG. 6.

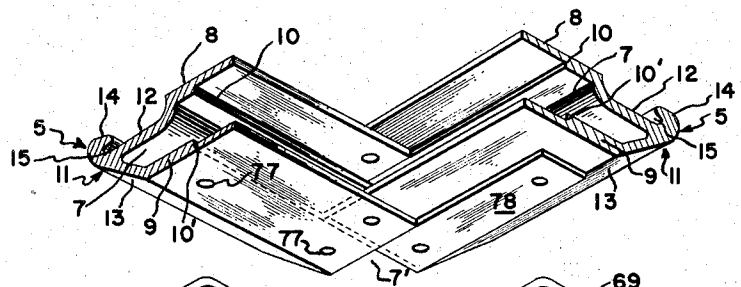
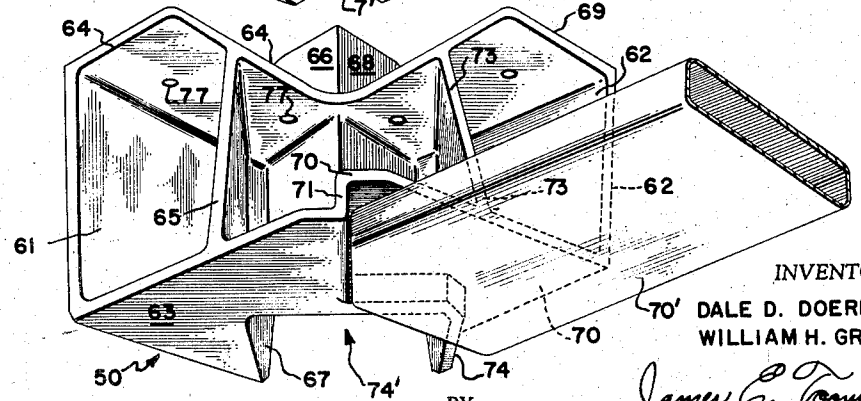


FIG. 7.



INVENTORS
DALE D. DOERR
WILLIAM H. GRIP

BY James C. Toomey

ATTORNEY

Jan. 20, 1959 D. D. DOERR ET AL 2,869,750

CONTAINER

Filed Oct. 4, 1955 6 Sheets-Sheet 6

FIG. 8.

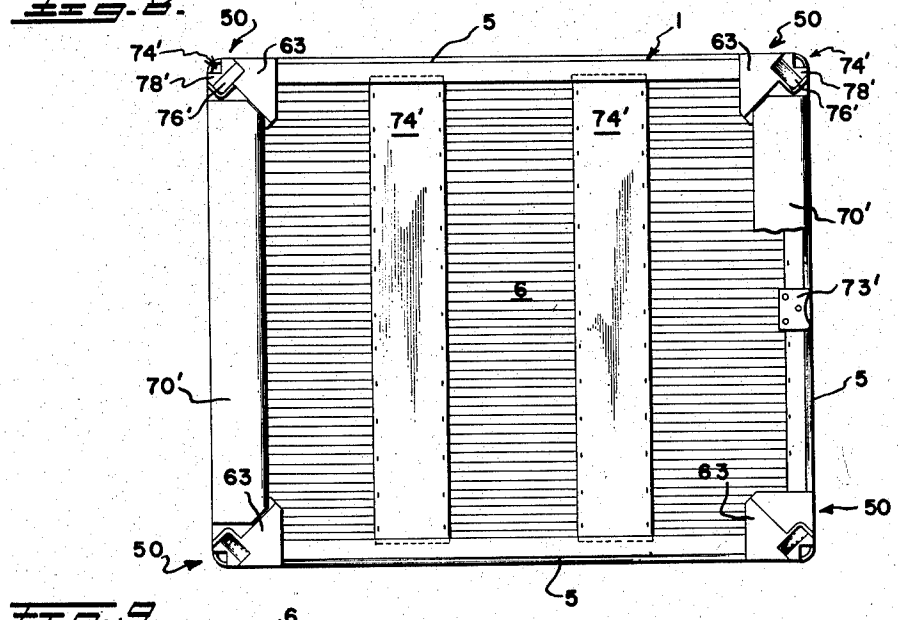
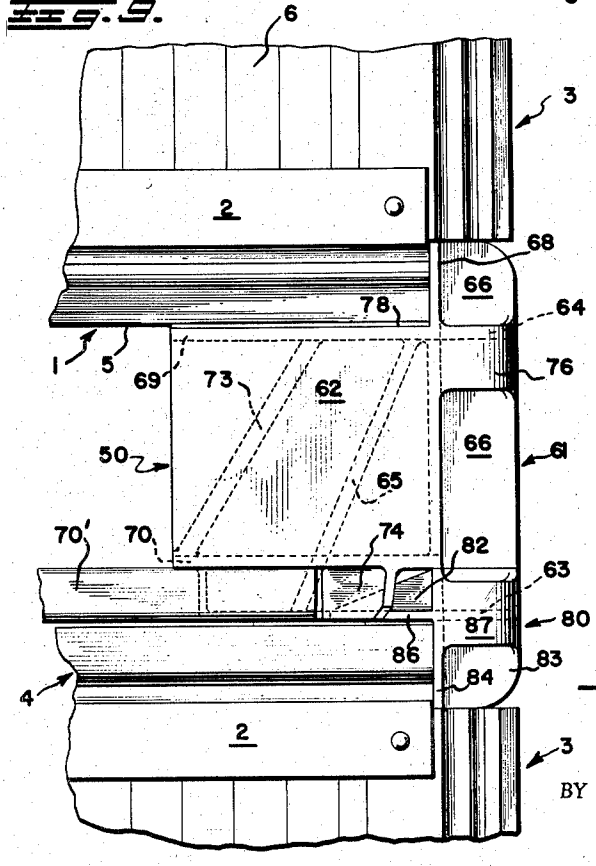


FIG. 9.



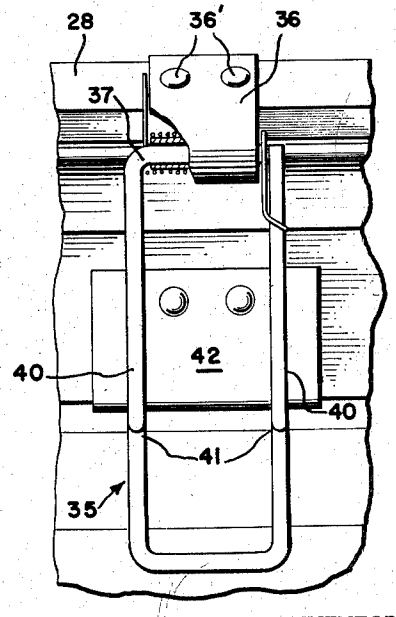


FIG. 10.

INVENTORS

DALE D. DOERR

WILLIAM H. GRIP

BY James E. Toomey

ATTORNEY

United States Patent Office 2,869,750
Patented Jan. 20, 1959

2,869,750

CONTAINER

Dale D. Doerr, Palos Park, and William H. Grip, Chicago, Ill., assignors to Kaiser Aluminum & Chemical Corporation, Oakland, Calif., a corporation of Delaware

Application October 4, 1955, Serial No. 538,411

9 Claims. (Cl. 220—4)

This invention relates to cargo shipping containers. More particularly, it is concerned with providing a novel knock-down shipping container of extremely rugged construction wherein novel means are provided for easily and securely locking together the various components thereof and for stacking the containers one upon the other. Novel means adapting the containers for transport by endless conveyors and the like are also provided. The novel shipping container of the instant invention constitutes an improvement over the cargo shipping container disclosed in application Serial No. 457,639, filed September 22, 1954, Donald L. Richter inventor.

Various shipping containers of the collapsible or knockdown type have been proposed in the past. These containers, however, have not been completely satisfactory for various reasons. One of the principal reasons is the fact that these containers had to be made of strong and extremely heavy weight materials, such as steel, so that the containers would be capable of withstanding the abuse to which they were ordinarily subjected. When heavy weight construction materials are used, the weight of the container itself is also increased and this in turn leads to difficulty in handling, as well as a reduction in the pay load which can be safely carried when the containers are transported by truck, railway cars, etc.

Furthermore, even though the containers proposed in the past were made in such a manner that they could be knocked down and disassembled for return shipment while occupying a minimum amount of shipping space, the construction did not lend itself to ease of assembly and dismantling. This factor tends to add to shipping costs because of the time and labor involved in packing and unpacking the goods carried by the containers. In addition, the containers were ordinarily so constructed that special tools were needed to assemble or disassemble the various elements thereof. It was also not usually possible in the case of these containers to remove only the top or either of two sides of the container to gain access to the interior of the container without disturbing or removing the other parts of the container. This in turn added to the difficulties in loading and unloading and required a large amount of work space during such operations. When the containers were stacked one upon the other, it was virtually impossible to gain access to the lowermost container without disturbing those resting on the same. Difficulties were also experienced in satisfactorily stacking and handling the containers by a fork lift truck as well as by endless conveyors and the like.

Accordingly, it is a primary object of this invention to provide a novel knock-down container which, because of its construction and the particular arrangement of its respective parts, is very rugged even when made of lightweight metals, such as aluminum, magnesium, and the various alloys thereof.

It is a further object of this invention to provide a novel knockdown container which can be easily assembled or dismantled in a minimum amount of space and without the need of special tools.

A further object of this invention is to provide a novel knockdown container, the top of which, or either one of two sides individually or any combination of top and sides can be removed without disturbing or dismantling the rest of the container body, thereby providing easy access to the interior of the container.

It is another object of this invention to provide a novel knockdown container wherein the sides, ends, bottom and top thereof are provided with novel cam hinge means whereby they can be quickly drawn together in a releasably, but securely locked condition when the container is being assembled.

A further object of this invention is to provide a novel container with novel stacking means which not only enable the container to be easily stacked with similar containers, but also serve as restraining means or shear tie means for the sides and ends of the container.

It is another object of this invention to provide a collapsible cargo container provided with novel skid and stacking means whereby the container can be easily and conveniently handled by a fork lift truck, endless conveyors, or other container handling equipment.

It is another object of this invention to provide a novel knockdown container provided with means whereby the container can be securely and conveniently lashed to the deck or floor of a truck, railroad car, or airplane, or to a similar container during stacking or shipment of the same.

A further object of this invention is to provide a novel knockdown container having eyelet means associated therewith whereby the container can be readily affixed to the shroud lines of a parachute in the event the container is to be dropped by parachute from a moving airplane.

It is another object of this invention to provide a novel collapsible container, the interior of which can be compartmentalized quickly and conveniently.

It is another object of this invention to provide a novel knockdown container provided with novel skid means or support means whereby the container can be conveniently carried or transported by an endless conveyor or the like.

These and other objects of the instant invention are accomplished by providing a novel knockdown cargo container having bottom, top, side and end members. Novel cam hinge means are employed for releasably securing the bottom edges of the end and side members to the outer peripheral portions of the bottom member intermediate the corners thereof. Novel means are further provided along the vertical edges of the side and end members for removably nesting adjacent vertical edges of the several end and side members within each other. Further novel cam hinge means are also provided along one marginal edge of the top member so that the top member can releasably engage the upper edge of one of the end members. Upstanding novel cleat elements are secured to the top member at the corners thereof and additional lower cleat elements are dependingly attached to the bottom member. These lower cleat elements are in vertical alignment with the upstanding cleat members and are engageable therewith when one container is stacked upon another. In addition, novel skid members which interfit with the bottom cleat members are also employed on at least two ends of the container whereby the container can be carried by an endless conveyor without at the same time interfering with the otherwise normal stacking operations that might be involved in stacking one container upon the other. Secondary skid members may also be employed. These secondary skid members may be affixed to the bottom member intermediate the first mentioned skid members.

In an advantageous embodiment of the invention, it is contemplated that suitable means may also be provided

for dividing the interior of the container into a plurality of compartments, and in a further advantageous embodiment of the invention, the cleat members on the top and bottom members of the container may also be further provided with suitable eyelets or the like.

These and other objects of the instant invention will become more apparent by reference to the following detailed description when taken in conjunction with the appended drawings, wherein:

Fig. 1 is an elevational perspective view of the novel knockdown container of the instant invention;

Fig. 2 is an elevational view, partially diagrammatic, showing one or more containers in a collapsed condition, with the various panels thereof being stacked one upon the other and with the individual containers being stacked one upon the other;

Fig. 3 is a broken sectional view through the front end of the container shown in Fig. 1 when taken along lines 3—3 thereof and with parts broken away for the sake of clarity;

Fig. 4 is a broken sectional view through the back end of the container shown in Fig. 1 when taken along lines 4—4 thereof and with parts broken away for the sake of clarity;

Fig. 5 is a broken sectional view taken through one side of the container shown in Fig. 1 when taken along lines 5—5 thereof;

Fig. 6 is a vertical sectional view taken through a corner of the container shown in Fig. 1 when taken along the lines 6—6 thereof and with parts removed for the sake of clarity;

Fig. 7 is an exploded perspective view of the end portions of two of the frame members used to make up the bottom panel of the container and shows the arrangement for connecting the frame members together and to a bottom cleat;

Fig. 8 is a bottom plan view with parts broken away of the container;

Fig. 9 is a fragmentary view of the corner portion of two nested containers and discloses the manner in which one container may be conveniently stacked upon another by use of the novel cleat and skid members of the instant invention;

Fig. 10 is a plan view partially broken away of a releasable clip member which may be used for securing adjacent panel sections of the container together; and

Fig. 11 is a perspective view of a portion of a bottom corner cleat member.

By further reference to the drawings wherein the same reference numerals have been applied to identical parts, the novel knockdown container of the instant invention is generally comprised of a bottom panel section or member 1; a pair of end panel sections or members 2; a pair of side panel sections or members 3. In the preferred embodiment of the invention each panel section is generally comprised of a frame made up of four aluminum extrusions to be more fully described hereinafter, suitably tied together, and a corrugated sheet also of aluminum, mounted with channels in the extrusions.

More particularly, the bottom panel section 1 is comprised of four framing members 5, each of which is of similar configuration in cross-section. When framing members 5, which may be advantageously made in the form of extrusions, are secured together at their ends, they form a suitable framework for a corrugated sheet 6, which together with the frame members 5 completes the bottom panel section 1. Each of the extruded frame members 5 is so formed that it is provided with an inwardly directed open channel portion 7 defined by inside and outside flanges 8 and 9, respectively.

The inside portions of flanges 8 and 9 are also advantageously provided with shoulder portions 10 and 10', the functions of which will be described hereinafter. As indicated particularly in Figs. 4 and 5, flanges 8 and 9 are joined by an integral web portion 11. Web portion 11 includes a converging inside curved wall 12 and the angular outside wall 13. Web 11 is further provided with an inwardly directed J-shaped hook portion 14. J-shaped portion 14 is separated from wall 12 by a recess or cam groove 15. As particularly indicated in Figs. 6 and 7, the several frame members 5 making up the frame for the bottom panel section 1 are secured together in the following manner. The one extremity of one frame member 5 is partially overlapped with the adjacent extremity of another frame member 5 in such a way that an angular recess 7' is provided at the point where the outer peripheries of the two members would ordinarily intersect. Thus, as indicated in Figs. 6 and 7 the flange 9 of one frame member 5 is partially overlapped by the flange 9 of the adjacent frame member, while the flange 8 of the first mentioned panel member is partially overlapped by the flange 8 of the adjacent panel member. The two adjacent frame members 5 are then slid together in overlapping engagement until the flange 9 of one frame member abuts the shoulder 10' of the adjacent frame member and the flange 8 on the second mentioned frame member abuts the shoulder portion 10 on the adjacent frame member. Thereafter the top or inside flange 8 at the ends of adjacent frame members 5 are secured together through the medium of a bolt or rivet 17 and the bottom or outside flanges 9 are secured together by a bolt or rivet 18. After the several frame members making up the bottom section are secured together in the manner described above, the margins of the corrugated sheet 6 are then disposed within the open channel 7 of the several frame members and stapled by staples 6' or otherwise secured to the flanges 8 and 9 of the several frame members as indicated particularly in Figs. 5 and 6.

Each end panel section 2 is comprised of four similarly shaped frames 20 which may be advantageously made in the form of aluminum extrusions. Each of the frames 20 in turn is comprised of a channel 20' defined by a long outside flange 21 and a short inside flange 22. Inside flange 22 is further provided with a shoulder portion 23 and outside flange 21 with a shoulder portion 23'. Flanges 21 and 22 in turn are joined together by a suitable web portion 24 formed integrally therewith. Web portion 24 includes the curved inside wall element 25 and curved outside wall element 26. Web 24 is also provided with a lip portion 27. In making up the suitable framework consisting of the frame members 20 for each of the end panel sections 2 it is contemplated that frame members 20 be secured together generally in the same fashion as the frame members 5 for the bottom panel section 1. Thus, the individual frame members 20 adjacent their ends would be partially overlapped and slid together in such a fashion that the flange 22 on one frame member would overlap and be slid along the flange 22 on an adjacent frame member until the flange 22 of the one member engages the shoulder portion 23 on the flange 22 of the adjacent frame member, and flange 21 on the second frame member 20 engages the shoulder portion 23' on the first frame member 20. Thereafter, the frame members would be secured together by suitable bolts 22' thrust through the flanges 21 and 22 at their points of overlap. After the several frame members 20 have been secured together in the manner indicated, the outer margins of the corrugated sheets 6, preferably of aluminum, is disposed within the channels 20' of the several frame members 20 and secured to the flange portions 22 and 21 of the several frame members 20 by means of staples 6' or any other suitable fastening means well known in the art. Each of the side panel sections 3, as particularly indicated in Figs. 5 and 6, is comprised of a top and bottom frame member 20, previously described, connected together by two spaced vertical frame members 28. As indicated particularly in Figs. 5 and 6, frame members 28 are substantially identical to frame members 5 except that they lack the J-shaped element 14 on the web portion 11. When the adjacent ends of frame members 28 and 20,

as indicated in Figs. 3, 4 and 6, are secured together in a partially overlapped condition, a corrugated sheet 6 is disposed within the channel openings 7 and 20' of the frame members 28 and 20, respectively, and secured to the inside and outside flanges of the several members in the same manner as corrugated sheet 6 for the end and bottom panel sections.

The top panel section 4 of the collapsible container of the instant invention is constructed in the following manner. The back end thereof, as indicated particularly in Fig. 4, is provided with a frame member 30 similar in construction to the frame member 5 previously described. The frame member for the front end of the top 4 consists of a frame member 28 also previously described. As particularly indicated in Figs. 1 and 5, frame members 28 are also used as the side frame members for the top panel section 4. When the several frame members 30 and 28 have been secured together in the same manner as the frame sections 5 described above for the bottom panel section 1, a suitable framework will be provided within which a corrugated sheet may be inserted in the manner previously described in connection with the assemblage of the bottom, end and side panel sections.

In order to assemble the container all that is necessary is to insert the lip portion 27 on the lowermost channel member 20 of each of the side panel sections 3 within the recess 15 provided by the J-shaped portion 14 in the channel frame member 5 of the bottom panel section. Thereafter, by pivoting the side panel sections 3 inwardly, the lip 27 will be cam hinged and be removably but securely seated within the recess 15 of the bottom frame members 5. The end panel sections 2 in turn are cam hinged to the bottom panel section in a similar fashion. It is also to be noted that each recess 15 is of such a configuration that a small amount of open space will exist therein at all times to allow for proper pivoting and freedom of movement of the lip 27 therein.

As the ends and side panel sections are assembled it will be noted by reference to Fig. 6 that the vertical edges of adjacent side and end panel sections 2 and 3 will advantageously nest one within the other. This occurs, for example, as the curved inner wall 25 of the frame member 20 on an end panel section abuts the curved wall portion 12 on the frame member 20 of an adjacent side panel section 3.

For the purposes of removably locking the side panel sections to the end panel sections, it is contemplated that several suitable retaining clips 35 be employed. Only four such clips are needed although more may be employed, if desired. Each of these clips is pivotally anchored by a strap 36 to a vertical frame member 28 for the side panel sections 3. One end of the strap 36 is anchored by means of the rivets or pins 36' to the frame member 28, while the other end is first looped over the free end 37 of the clip 35. A helical spring detent 37 is also secured to the free end of the clip 35 as indicated particularly in Fig. 10. The elongated side elements 40 of the clip member are advantageously provided with an offset portion 41. Thus, when the retaining clip is pivoted inwardly, offset portion 41 will pass over and frictionally engage the outside flange 21 on one of the vertical frame members 20 for the end panel sections and securely anchor a side panel section 3 to the adjacent end panel section 2. If desired, wear plates 42, as indicated particularly in Figs. 1 and 10, may be secured about the outside flange 21 of the frame member 20 at its point of contact with the clip 35.

It will be noted by referring to Figs. 3 and 10, that the offset portion 41 on the upper part of the retaining clip 35 will advantageously nest and recede within one of the valleys in the corrugated sheet 6 for an end panel section so that it will not project outwardly where it might come into contact with some external object to become loosened and allow disengagement of the side and end panel sections. When in a knockdown condition, the retaining clip 35 may also be advantageously recessed within one of the corrugations of the side panel section 3. After the retaining clips at the four corners of the collapsible container have been placed in locking position, the top panel section 4 may then be secured to the container. In order to secure the top panel section 4 to the ends and side panel sections, it is only necessary, as indicated in Figs. 3 and 4, to cam hinge the lip 27 on the top frame section 20 for the back end panel section 2 within the recessed portion 15 on the web 11 of the rear frame element 30 of the top panel section 4. Thereafter, by pivoting the top panel section or lip 4 downwardly or inwardly, the container top panel section will be set in place. It will be noted that when the top panel section is in place, the curved inner wall portions 12 of the front, end and side frame members 28 of top panel section 4 will abut and freely nest with the curved inner walls 25 on the top horizontal frame members 20 of the front end panel section 2 and the side panel sections 3. In order to securely lock the top panel section 4 in place, one or more retaining clips and strips 35 and 36, both of which have been previously described, may be employed.

The side and end members 2 can engage and support the peripheral edge of the bottom member 1 performing as a supporting beam along its bottom member edge between the bottom corner cleat, since the weight of the cargo which rests on the corrugated sheet 6 of the bottom 1 is transferred to the extrusions 5.

In an advantageous embodiment of the invention, it is also contemplated that suitable means be provided for stacking or nesting the containers one upon the other. For this purpose it is contemplated that suitable bottom cleats 50 be secured in a depending fashion to the bottom panel section 1 at the four corners thereof.

These bottom cleats, which may be made in the form of an aluminum casting, are each roughly V-shaped in top plan view. Each of the cleats 50 is provided with angularly disposed and intersecting outside legs 61 and 62. Outside leg 61 is disposed upon an inwardly directed base member 63, while the top of leg 61 is connected to an inwardly directed supporting flange 64. Disposed between base member 63 and the top flange 64 is an angularly disposed supporting web member 65, web member 65 in turn being disposed at an angle with respect to leg 61. Web 65 also tapers downwardly and inwardly from the flange 64 to the base member 63.

The end of leg 61 which is most closely adjacent to the leg 62 terminates in an inwardly directed wall element 66 and the upper part of wall element 66 extends beyond the top surface of the flange 64.

Coterminus with wall 66 is another wall 68 and generally similar in extent and configuration to wall 66. Wall 68 in turn extends above a top flange 69 connected to the upper extremity of the outside leg 62. The bottom extremity of leg 62 is connected to an inwardly directed base member 70 which is offset with respect to the base member 63 and is connected thereto by means of the web portion 71 as indicated particularly in Fig. 7. By offsetting the base member 70 with respect to the base member 63 a recess 72 is provided between the two base elements. An angular web member 73 connects flange 69 with the base member 70. Extending below in a depending fashion from the base member 70 in substantial vertical alignment with the web member 73 is a foot member 74, as clearly indicated in Figs. 7, 9 and 11.

As indicated particularly in Fig. 11, foot member 74 constitutes a side wall for the corner recess or pocket 74' in the cleat 50. Wall 67 projects inwardly at a transverse angle to leg 61 and forms the other side wall for pocket 74'. Pocket 74' also includes the inside wall 75', an upwardly and outwardly inclined surface 76', and the upper wall segment 78' which merge with the walls 66 and 68. A suitable eyelet 76 is also advantageously provided and this eyelet is adapted to bridge the two

walls 66 and 68 adjacent the upper portions thereof. The top flanges 64 and 69 are each provided with suitable apertures 77, which apertures are adapted to register with similar apertures in two angularly disposed and locked frame sections 5, to the bottom panel section 1 as indicated in Fig. 7. When these apertures have been placed in registry and suitable bolts or rivet members 77' are inserted therethrough, the bottom cleat will be secured to the bottom panel section 1.

Due to the particular overlapping relationship described above of each of the individual frame sections 5 for the bottom panel section 1 adjacent the four corners of the container as indicated in Fig. 7 it will usually be necessary to insert or lodge a shim member 78 between the flange 9 on one of the frame sections 5 for the bottom panel section 2 and the top flange 64 or 69 on the bottom cleat member in order to obtain a proper flush fit between a bottom cleat and a bottom panel section 2.

In an advantageous embodiment of the invention it will also be noted that the cleat member is secured to the bottom panel section 1 in such a fashion that the upstanding wall elements 66 and 68 of the several feet 61 and 62 which project upwardly for a substantial distance above the flanges 69 and 64 of the cleat member will be in abutting relationship with the terminal end portions of each of the frame members 5 of the bottom panel section as these wall portions 66 and 68 are inserted in the angular recess 7' and pocket 74' in a cleat member 50 at the corner of the bottom panel section. The cleat member thus not only helps to fill in the space between these two members at this point, but also serves as an angle bracket preventing angular displacement of adjacent frame sections 5 with respect to another. In effect, the bottom cleat therefore rigidifies the bottom panel section 2 formed by the individual frame members 5 and provides a shear tie between the individual frame members.

It will also be observed that the upper portions of walls 66 and 68 on each of the cleat members also projects upwardly a sufficient distance so that one of the walls 68 or 66 will abut the lower frame section 20 on an end panel section 2 while the other abuts the lower frame section 20 on a side panel section 3. This arrangement is possible because of the manner in which the adjacent frame sections 20 for an end panel section and adjacent frame sections 20 and 28 for the side panel section are partially overlapped and secured together as heretofore described. When wall 66 or 68 of cleats 50 are so located, however, they do not interfere with the normal pivotal movement or securing of the side and end panel sections 3 and 2 to the bottom panel section 1. These cleats further rigidify the container during its assembly and use by blocking the bottom panel member 1, the side panel member 3 and end panel members 2 against relative translation or displacement with respect to each other.

In an advantageous embodiment of the invention, it will be noted that suitable skid members, which may be in the form of extruded tube members 70' are disposed along at least two panel sections of the container such as along the front and end panel sections 2. The opposite extremities of each tubular skid member 70' is received within the recess 72 formed in the opposing cleat members 50. The upper portion of the tubes at their extremities is then secured to the bottom base 70 at the bottom of the leg 62 of a cleat member 50 by bolt means 72'. If desired, intermediate cleat members 73', as indicated particularly in Figs. 1, 8 and 3, may also be used as additional support and rigidifying mediums, these intermediate cleat members being secured to an extruded frame section 5 for the bottom panel 1 and in turn to the tubular member 70' by suitable bolt means 72'. In addition to the use of the outside skid members 70' attachable directly to the cleat members 50, it is also contemplated in an advantageous embodiment of the invention, that additional skid members 74', as indicated particularly in Fig. 8, may also be used. These latter skid members 74' may be in the form of aluminum sheet metal strips of the proper thickness. They are directly attachable to the corrugations 6 on the bottom panel section 1 and to the extruded frame members 5 of the bottom panel section 1. By the use of both inside and outside skid members, it is possible to convey the pallet on endless conveyors of different widths by simply straddling the conveyor by means of either the inside skid members 74' or the outside skid members 70'.

Each of the four corners of the top panel section 4 is advantageously provided with upstanding top cleats 80. These top cleats, which may be made in the form of aluminum castings, are roughly X-shaped in top plan view. They are provided with interior vertical walls 81 and 82 and exterior vertical walls 83 and 84. A horizontal web portion 85 connects vertical walls 81 and 83 while horizontal web portion 86 connects vertical walls 82 and 84. A suitable eyelet 87 is employed to bridge the vertical walls 83 and 84. By particular reference to Figs. 1, 4 and 5 it will be noted that vertical walls 84 and 83 of top cleats 80 extend downwardly well below the bottom extremities of the frame members 28 and 30 for the top panel section 4. Thus, walls 83 and 84 are in abutting relationship with the terminal end portions of adjacent frame members 28 and 30, or 28 and 28 for the top panel sections 4 at the point where they are joined and partially overlapped. They are also inserted in the gap or angular opening which occurs between the frame members 28 and 30 due to the partial overlapping of the frame member as previously discussed. In addition, during assemblage of the container due to the large overhang of walls 83 and 84, these walls will also fit within the angular recesses occurring in the corners of the end and side panel sections 2 and 3 at the points where the respective frame members 20 on the end panel sections 2 and 20 and 28 on the side panel sections 3 are partially overlapped and joined. Thus, the vertical walls 84 and 83 of the top cleats serve as an antidisplacement bracket for two adjacent frame members making up the top panel section 4 as well as an antidisplacement bracket for the end and side panel sections 2 and 3 without at the same time interfering with the normal pivotal movement of either the end, side or top panel sections during assemblage or disassemblage of the container. If desired, the exposed outside sharp corners of walls 83 and 84 may be cut away and the top and bottom exposed parts of walls 84 and 83 slightly curved. This will obviate any possibility of damage to these walls during use of the container. The horizontal walls 85 and 86 are adapted to be secured to the individual frame sections 28 and/or 30 by means of bolts or the like.

It is to be further observed that vertical inside walls 82 and 81 taper downwardly and inwardly. They thus provide inclined surfaces which are adapted to be engaged by the similarly inclined wall portions 76' intermediate the walls 74 and 67 of the pocket 74' in each of the bottom cleat members 50 when the containers are disposed one upon the other. This type of contact between the top and bottom cleat members provides for firm and rigid engagement between the two containers at all four corners of the containers. Displacement between two containers in any one direction is also effectively prevented. When the containers are nested or stacked one upon the other, sufficient space will be left between them due to the length of the bottom cleats 50 for the forks of a fork lift truck to be inserted. In all instances, sufficient space is provided between the bottom panel 2 and the top of the skids whereby the forks of a fork lift truck may be inserted.

In addition, by recessing the opposite extremities of the tubular skid members 70' within the recesses 72 provided in two opposing cleat members, any interference between proper alignment and resting of a top cleat member within a bottom cleat member will be obviated.

It is also to be noted that because of the manner in

which the bottom cleat members are adapted to receive the tubular member 70' that each of the cleat members are not made in substantially identically the same fashion in that the leg portions 61 and 62 and groove 72 in two of the cleat members will be reversed with respect to the other two cleat members. In other words, as indicated in Fig. 7 for example, in two cleat members the stepped recessed portion 72 will occur on the left-hand side of the cleat as viewed in Fig. 1 instead of on the right-hand side.

It is also a noteworthy feature in the container of the instant invention that it is possible to remove individually either a side section or wall or even two side walls simultaneously without seriously disturbing the remaining parts of the container and bringing about its collapse. This can also be done when the container stands alone or is stacked above or below another container. As a result, easy access is had to the contents of the container at all times. If desired, suitable means may also be provided for dividing the interior of the container when assembled into a series of compartments. For this purpose, suitable plate members 90 and 91 may be employed. As indicated in Fig. 3, plate 90 may be pivotally attached in a suitable fashion to the topmost panel section 4 and plate 91 may be pivotally attached to the bottom panel section 1. When these plates are pivoted inwardly they may be locked together with suitable hook means 95.

From the foregoing description it will be obvious that a novel collapsible container having numerous noteworthy features has been provided by the instant invention, which features are not present in prior art containers of this type. The inherent rigidity and strength afforded by the particular assemblage of the several parts thereof provides for extreme ruggedness and allows all parts thereof to be made from aluminum or other lightweight metals. The container can be assembled or dismantled in a minimum amount of time without tools of any kind. It is provided with means, such as eyelets 87 on the top cleats 80 and eyelets 76 in the bottom cleats 50, whereby the containers may be secured to hoisting hooks, parachutes, shroud lines or deck lashing lines. When the containers are stacked one upon the other, ropes or wires may be run through these eyelets and the containers lashed together. Furthermore, the top and bottom cleats are located in substantial vertical alignment with each other and do not protrude outwardly beyond the peripheral edges of the side and end panel sections where they could be contacted by a foreign object and become seriously damaged or fractured.

The rugged construction of the container, and particularly the corner portions thereof, enables the container to withstand admirably well the abuse and rough handling normally encountered during the life of the same. Accessibility to the contents of the container from many points without completely knocking the container down has also been provided for. In addition, one or more of these containers can be readily transported in a knock-down condition by simply stacking them one upon the other as indicated in Fig. 2.

An advantageous embodiment of the invention has been herein disclosed and described. It is obvious that various changes and modifications may be made therein without departing from the spirit and scope thereof as defined by the appended claims, wherein what is claimed is:

1. In a cargo container, the combination of bottom, side, end and top members, cam hinge means on the marginal edges of said bottom member intermediate the corners thereof and providing a space at the point of intersection of adjacent marginal edges, cleat elements mounted within the spaces so formed and secured to the bottom member, each of said cleat elements comprising a member having a plurality of downwardly opening individual pockets, cooperating cam hinge means on the bottom marginal edges of the side and end members releasably engaging the cam hinge means on the marginal edges of the bottom member, means releasably nesting together the adjacent vertical edges of contiguous side and end members in vertical planes coextensive with the top of the said cleat elements, cam means releasably and pivotally securing one marginal edge of the top member to the upper marginal edge of an end member, clip means affixed to the outside surface of said side, end, and top members releasably securing said side and end members together and said top member to an end member, cleat elements secured to the top member adjacent the four corners thereof, each of said last mentioned cleat elements being located in vertical alignment with the contiguous nested side and end members and the cleat element located therebelow, whereby each of said bottom cleat elements can receive in one of said plurality of individual pockets the top cleat element of a similar container when one container is stacked on the other, and skid members affixed to the bottom cleat elements at opposed ends of the container, the ends of said skid members being received in the other of said plurality of downwardly opening pockets in each of said bottom cleat elements such that the bottom surfaces of said skid members are located in substantially the same plane as the bottom surfaces of the cleat elements affixed to said bottom member.

2. The combination defined in claim 1, including secondary skid members affixed to the undersurface of said bottom member intermediate said first mentioned skid members.

3. The combination defined in claim 1, including eyelet means on said cleat elements.

4. The combination defined in claim 1, including means dividing the interior of the container into a plurality of compartments.

5. In a cargo container of the type described, the combination of bottom, top, side and end members, means removably locking adjacent side and end members together, means removably locking said top member to an end member, upstanding cleat elements mounted within recessed portions of the top member at the corners thereof and secured thereto, portions of said cleat elements extending downwardly past the top member and in between the corner portions of adjacent end and side members, lower cleat elements, each of which has a plurality of downwardly opening pockets dependingly mounted within recessed corner portions of said bottom member and secured to said bottom member, said lower cleat elements also being in vertical alignment with the upstanding cleat elements secured to said top member, said lower cleat elements being further provided with upstanding wall portions projecting upwardly beyond portions of said bottom member and between portions of adjacent side and end members, skid members secured to said lower cleat elements along opposing ends of said container, each of said skid members having its ends disposed in one of said plurality of downwardly opening pockets included in said lower cleat elements such that the lower surface of said skid members are in substantially the same plane as the bottom surfaces of the lower cleat elements.

6. In a cargo carrier of the type described, the combination of bottom, top, side and end walls, means removably locking said bottom wall to said side and end walls intermediate the corners of the container, means removably locking adjacent side and end walls together, means removably locking said top wall to an end wall, upstanding cleat elements mounted within recessed portions of the top wall at the four corners thereof and secured thereto, lower cleat elements secured to said bottom wall, said lower cleat elements also being in vertical alignment with the upstanding cleat elements on said top wall, portions of said last mentioned cleat elements projecting upwardly beyond said bottom wall and into recessed corner portions of adjacent end and side walls, said upstanding cleat elements having inside portions

tapered downwardly and inwardly and said lower cleat elements having recessed pockets including corresponding downwardly and inwardly tapered portions for engagement therewith when the container is arranged in stacked relationship with respect to a similar container, and skid members secured in additional pockets provided in said lower cleat elements along opposing ends of said container, the lower surface of said skid members being located in substantially the same plane as the bottom surface of the said lower cleat elements.

7. In a knock-down container of the type described including top, bottom, side and end panels removably interconnected to define a closed receptacle and cleat means carried on said top panel adjacent to and within the exterior marginal corners defined by the intersection of said side and end panels, cleat means affixed to said bottom panel and having a plurality of pockets provided therein, certain of which are adapted to cooperate with said first mentioned cleat means to facilitate stacking of similar containers one on top of the other, the improvement comprising skid means attached to said last mentioned cleat means, said skid means being comprised of parallel tube-like members having terminal ends, said terminal ends being inserted within other pockets provided in said last cleat means such that the bottom surfaces of said skid and said cleat means are in a common horizontal plane and easy stacking of similar containers may be effected.

8. A knock-down container structure as defined in claim 7, wherein said bottom cleat means comprises a plurality of castings, each of which includes upstanding means adapted to engage the edges of a side and end panel at the corners defined by the intersection of two such panels.

9. In a knock-down container including a plurality of removably assembled side, end, top and bottom panels, said top panel including cleat means disposed at the corners thereof, the improvement comprising a plurality of cleat members affixed to said bottom panel at the corners thereof and adapted to cooperate with said cleat means on the top panel of a similar container to facilitate stacking of such similar containers, each of said cleat members comprising a casting having angularly disposed, diverging and spaced parallel flanges and vertically disposed angularly intersecting walls, the uppermost of said flanges being in a common plane, the lowermost of said flanges being offset vertically with respect to one another to define a recess, skid means comprising elongated tube-like elements having flat surfaces connected with said bottom cleat members, the ends of each of said tube-like elements being disposed in said recess in each of said castings, the lowermost surface of each skid being coplanar with respect to the lowermost of said offset flanges.

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