Sept. 20, 1966 E. BLANCO 3,273,738

KNOCKDOWN CONTAINER CONSTRUCTION

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FIG. 1.

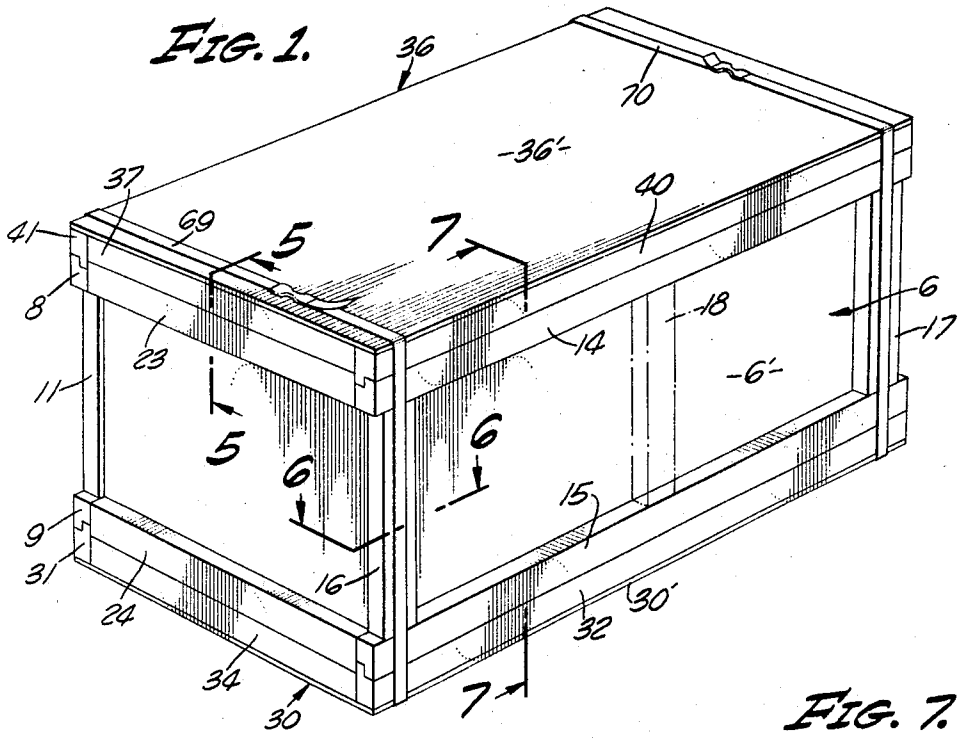


FIG. 7.

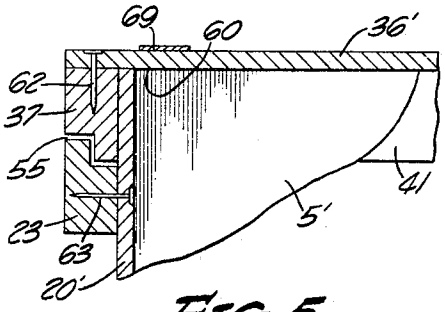
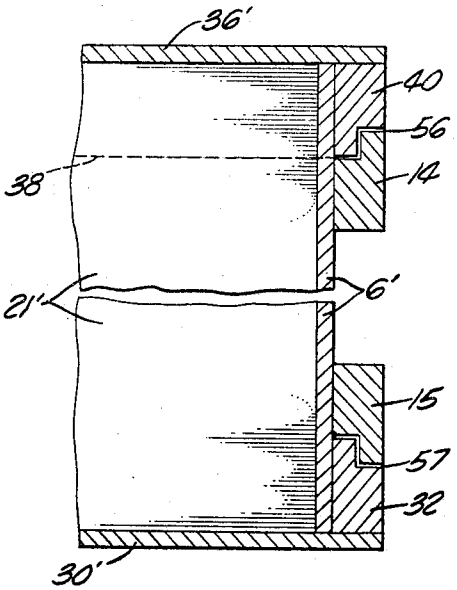


FIG. 5.



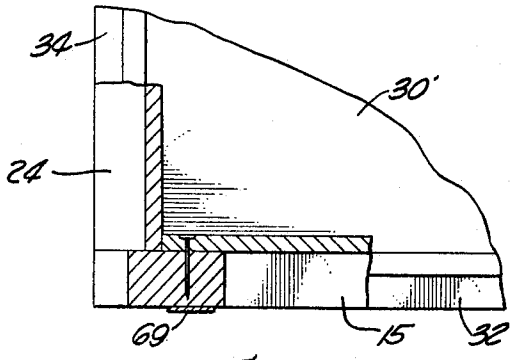


FIG. 6.

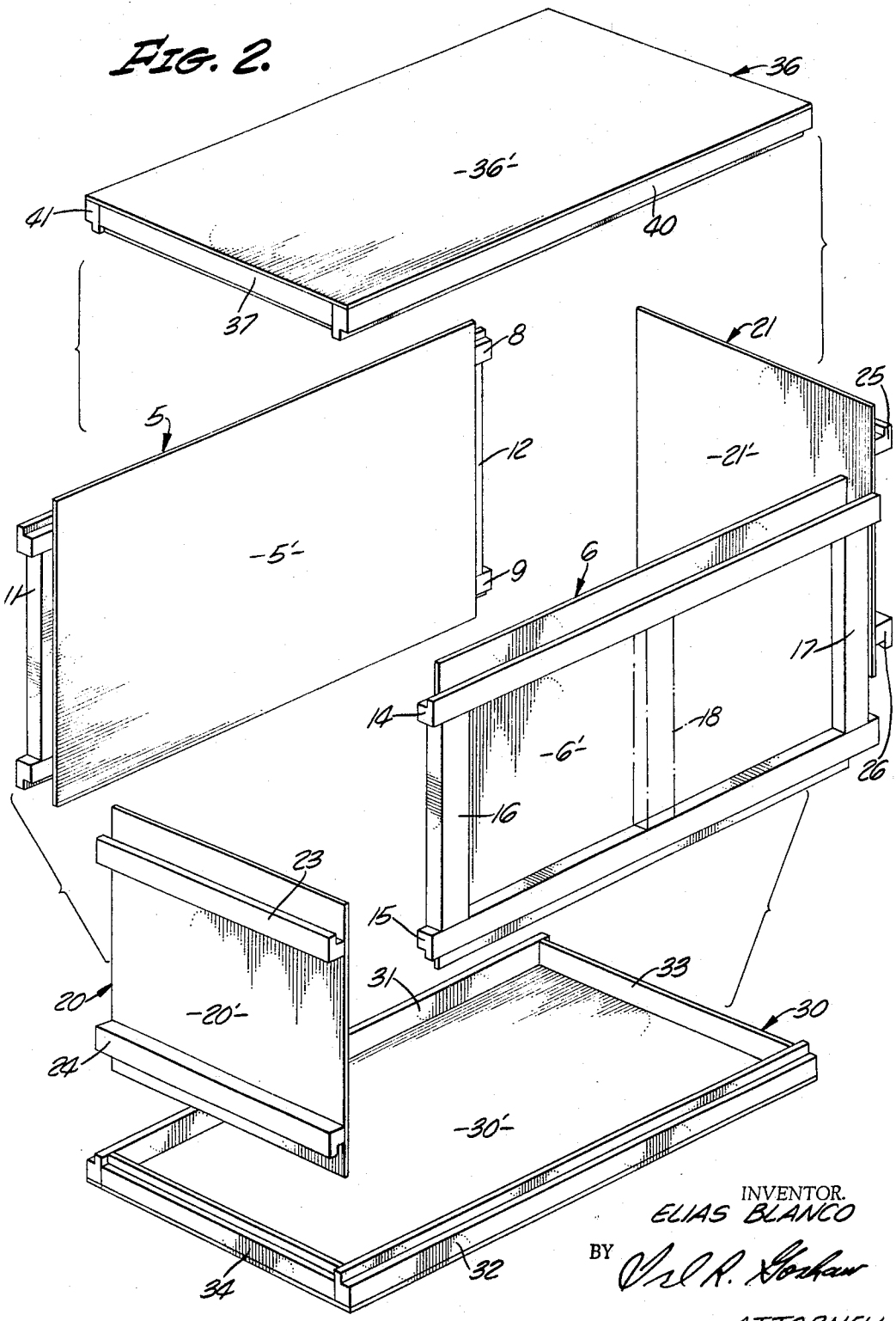
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FIG. 2.



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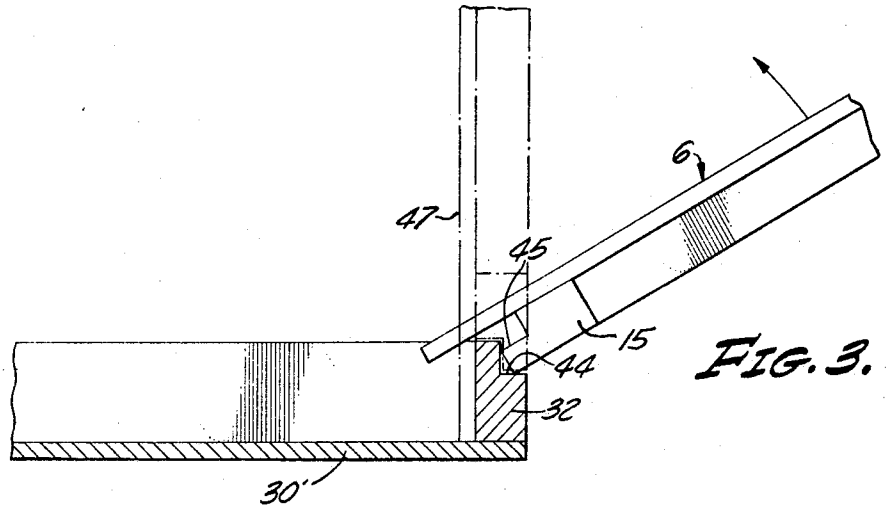


FIG. 3.

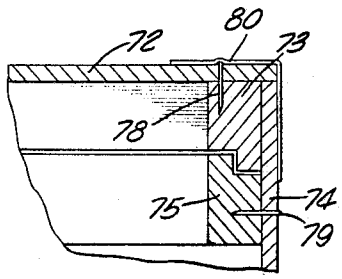


FIG. 8.

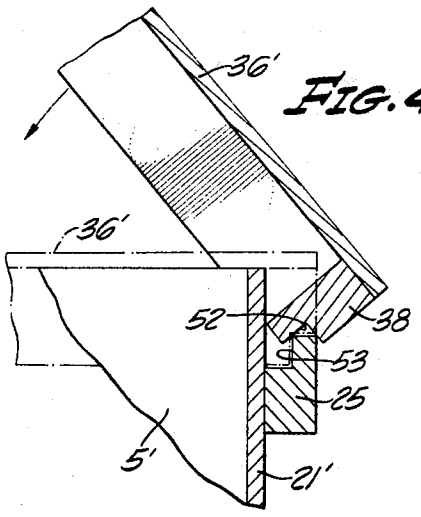


FIG. 4.

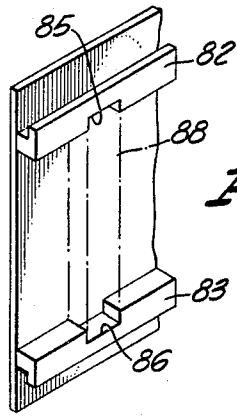


FIG. 9.

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3,273,738

KNOCKDOWN CONTAINER CONSTRUCTION

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Filed Nov. 23, 1964, Ser. No. 413,030
2 Claims. (Cl. 217—12)

This invention relates to a container construction and particularly to container structures which may be rapidly assembled and disassembled.

In Patent No. 2,596,320, of May 13, 1952, there is disclosed and claimed a container structure of a type which utilizes corner spindles and multiple panels of certain types of construction. The present invention is an improved construction of this general type and one which may have either a smooth interior, a smooth exterior, or a combination thereof.

Two primary components, panels and longitudinally rabbeted cleats, form the basic sub-assemblies or sections, the basic sub-assemblies or sections, when assembled, forming the basic container structure. Spacer cleats, suitable hardware, and fasteners may be used in particular adaptations of the basic container structure. For applications, such as intra-plant use, the basic container structure, independent of fasteners, is transportable and withstands stacking to the extent of its rated load capacity.

The cleats have the same general type of notch or groove, such as a rabbet, which may be cut or formed during the processing operation of the cleats. In this manner, the cleat components are economically produced. The particular attachment of the cleats to the panel walls permits lightweight and inexpensive materials to be used.

The principal object of the invention, therefore, is to facilitate the assembling and disassembling of containers, such as boxes, crates, and the like.

Another object of the invention is to provide an improved container which is reusable.

A further object of the invention is to provide an improved container which has high structural strength, is easily assembled and disassembled, and which may be economically manufactured.

A better understanding of this invention may be had from the following detailed description when read in connection with the accompanying drawings, in which:

FIG. 1 is a perspective view of a container embodying the invention;

FIG. 2 is an exploded view of the container shown in FIG. 1;

FIGS. 3 and 4 are views showing the method of assembly of the container;

FIG. 5 is a view of the corner detail taken along the line 5—5 of FIG. 1;

FIG. 6 is a view of a corner detail of the container taken along the line 6—6 of FIG. 1;

FIG. 7 is a cross-sectional view taken along the line 7—7 of FIG. 1;

FIG. 8 is a view of a corner detail similar to FIG. 5 of a modification of the container; and

FIG. 9 is a perspective view of a modification of the connection between spacers and cleats.

Referring, now, to the drawings in which the same numeral identifies the same element, a six-sided or six-section container consists of two side sections **5** and **6**, section **5** having a wall portion **5'** and a rectangular frame made up of two cleats **8** and **9**, and two interconnecting spacers **11** and **12**. Section **6** has a frame made up of a wall portion **6'** and cleats **14** and **15** and spacers **16** and **17**. A third spacer **18** shown in phantom lines may be used when required. End sections **20** and **21** for the container have respective wall portions **20'** and **21'** and cleats **23** and **24** and cleats **25** and **26**. Spacers, not shown, similar to spacer **18** may also be used on the end sections.

A bottom section **30** has a wall portion **30'** and a rectangular frame made up of two pairs of cleats **31–32** and **33–34**. A top section **36** has a wall portion **36'** and two pairs of cleats attached thereto, such as cleats **37–38** and **40–41**. The side sections **5** and **6** are identical, the end sections **20** and **21** are identical, and the bottom section **30** and top section **36** are identical, except that the bottom section may have skids attached thereto.

One of the main features of this container construction resides in the type of cleats used and their attached positions with respect to the edge portions of the section walls. For instance, the side sections **5** and **6** have their respective cleats **8–9** and **14–15** positioned a certain distance from the edges of their walls with the rectangular grooves or rabbets therein facing the walls. This arrangement of the cleats and walls is also found in the end sections **20–21**. Here again, the rabbets face the walls. However, the bottom section **30** and top section **36** have cleats entirely surrounding their walls and substantially flush with the edges of the walls, while the grooves of the cleats are facing outwardly from the surface of the walls. This specific arrangement of the walls, frame members, and cleats of the sections permits the particularly rapid assembly of the container as illustrated in FIGS. 3 and 4.

Referring, now, to FIGS. 3 and 4, the bottom section wall **30'** is shown with its cleat **32** and its rabbet **44**. Shown in full lines is side section **6** with its cleat **15** and its inwardly facing rabbet **45**. Thus, to assemble the side section **6** to the bottom section **31**, the side section is simply rotated to the vertical position **47**. Similarly, the side section **5** is assembled by rotating its cleat **9** into the cleat **31** of the bottom section **30** so that the container now has a bottom and side sections. The end sections were previously rotated in position on cleats **33** and **34** as just described for the side sections. That is, the end section **20** is attached to the bottom section **30** by interlocking cleat **24** of section **20** with cleat **34** of the bottom section. The end section **6** is attached to bottom section **30** by interlocking cleats **26** and **33**. The assembly of the end, side and bottom sections positions the surfaces of the edge portions of the walls **20'** and **21'** of end sections **20** and **21** in substantial engagement with the edges of the walls **5'** and **6'** of side sections **5** and **6**. The edges of the walls of the end sections substantially contact one surface of the spacers. (See FIG. 6).

To complete the structure, reference is made to FIG. 4 showing end section wall **21'** with its cleat **25** and top section wall **36'** with its cleat **38** in partial assembly. When completely assembled, the groove or rabbet **52** of cleat **38** will be accommodated in rabbet **53** of cleat **25**. When the top panel is in its final position, the other cleats will be similarly interlocked to provide the structure shown in FIG. 1. It is realized that the top section positioning may be varied, such as starting with a side panel.

To provide a particularly tight and smooth interior, a slight clearance between the cleats, as shown at **55** in FIG. 5 and at **56** and **57** in FIG. 7, is provided so that the inner surface **60** of wall **36'** of top section **36** is in firm contact with the edge of wall **20'** of section **20**. This utilizes the walls of the sections for structural support. If, however, it is desired to use the framework for structural support, clearances between the walls are provided and the clearance between the cleats, such as **56** and **57**, are eliminated.

The cleats and walls of the sections may be attached to one another in any suitable manner, such as an adhesive, staples, or nails, as shown at **62** and **63** in FIG. 5. To maintain the sections in position when once assembled, suitable means, such as straps **69** and **70**, may surround the container. The spacers **16** and **17** of side

section 6 and spacers 11 and 12 of side section 5 are contacted by the straps. (See FIGS. 5 and 6.)

As previously mentioned, the container may also have a smooth exterior by reversing the position of the cleats on the walls of the sections as shown in FIG. 8, wherein a wall 72 of a top section has a cleat 73 and a wall 74 of a side section has a cleat 75 fastened together by nails 78 and 79, respectively. In this construction, the walls of the sections are on the outside of the spacers and cleats to provide a container with a smooth exterior and an interior framework. The sections may be held together in any suitable manner, FIG. 8 showing adhesive tape 80 for this purpose.

Referring, now, to FIG. 9, cleats 82 and 83 are shown with notches or recesses 85 and 86 cut therein to accommodate the ends of a spacer 88. In this manner, additional structural strength is provided. The notches 85 and 86 could be extended to the ends of the cleats while intermediate spacers and notches may be added.

From the above description, it will be noted that all the grooves or rabbets are such that they can be milled or planed identically, which simplifies the forming of the cleats. The rabbets of the side and end sections face the surfaces of the walls of these sections, while the rabbets in the cleats of the bottom and top sections extend outwardly from their walls so that the side and end sections may be rapidly interlocked and when locked provide a particularly sturdy construction. It is realized that although reference has been made to side, end, bottom and top sections, these sections may be interchangeable in both positions and sizes.

I claim:

1. A rectangular container adapted to be rapidly assembled and disassembled comprising a first pair of substantially identical sections including walls and a frame for each wall on one side thereof, certain walls having at least two parallel spacers and two parallel cleats at right angles to said spacers, said cleats being spaced from the edges of the walls of said side sections and having continuous rabbets therein, a second pair of substantially identical sections including walls and a pair of identical cleats on one side of each wall of said sections and spaced from the edges of the walls of said end sections and having continuous rabbets therein, and a third pair of substantially identical sections, each of said third pair of sections having walls and two pairs of parallel cleats on one side of said walls at the edge portions of said walls, each of said cleats having continuous rabbets therein, rabbets being provided in said cleats of said first and second pairs of sections facing toward the interior of said container, and the rabbets in said third pair of sections facing away from the interior of said container, said opposing rabbets being adapted to interlock when said container is assembled.

2. A container adapted to be rapidly assembled and disassembled comprising two substantially identical side sections, two substantially identical end sections, two substantially bottom and top sections, a pair of parallel cleats attached adjacent the edge portions of each of said side and end sections, each of said cleats having continuous longitudinal rabbets therein facing toward the wall of each respective side and end section to which said cleats are attached, and two pairs of parallel cleats surrounding each of said bottom and top sections substantially at the edges thereof, said cleats having continuous longitudinal rabbets therein and facing away from the wall of each respective bottom and top section to which said cleats are attached and adapted to interlock with said first mentioned rabbets in said cleats of said side and end sections, the rabbet in one of said cleats of each side section interlocking with a rabbet in a cleat of said bottom section, and the other rabbet of said side sections interlocking with the rabbet in a cleat of said top section, the rabbet in one of said cleats of said end sections interlocking with the rabbet in a cleat of said bottom section, and the other rabbet in a cleat of said end sections interlocking with the rabbet in a cleat of said top section, the edges of the walls of said side and end sections adjacent said cleats extending beyond said cleats to permit the edges of the walls of said side and end sections to contact the surfaces of the walls of said bottom and top sections to provide a smooth surface interior for said container, the walls of said sections being utilized for structural strength, the edge of the walls of said side and end sections being spaced from one another.

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