United States Patent

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[54] KNOCKDOWN CUBE STRUCTURE

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[52] **U.S. Cl.** .....**211/177,** 108/151, 312/257 R

[51] **Int. Cl.** **A47f 5/10**

[58] **Field of Search**.....211/177, 176, 148, 175, 183, 211/134; 108/60, 62, 91, 93, 151, 53; 312/257

[56] **References Cited**

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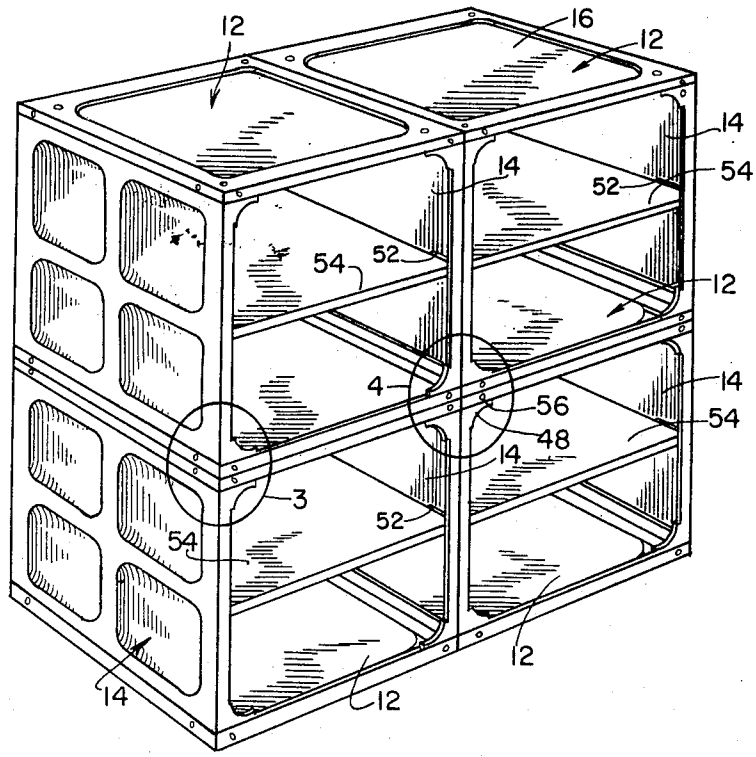
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[57] **ABSTRACT**

A knockdown cube member formed of a plastic material and comprising a top member and a bottom member, each integrally formed and being of identical construction, and a pair of side members being of identical construction, so that said top, bottom and side member may be readily assembled to form a cube and wherein said cube may be used either individually or to form a module which is readily connected to other similar cubes.

10 Claims, 7 Drawing Figures



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SHEET 1 OF 2

FIG. 2

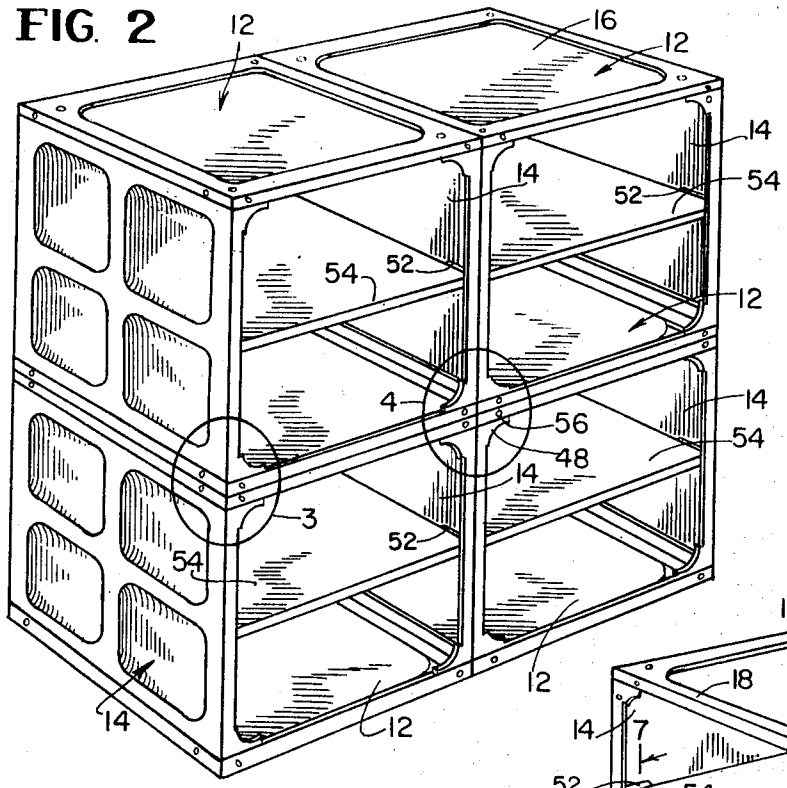


FIG. 1

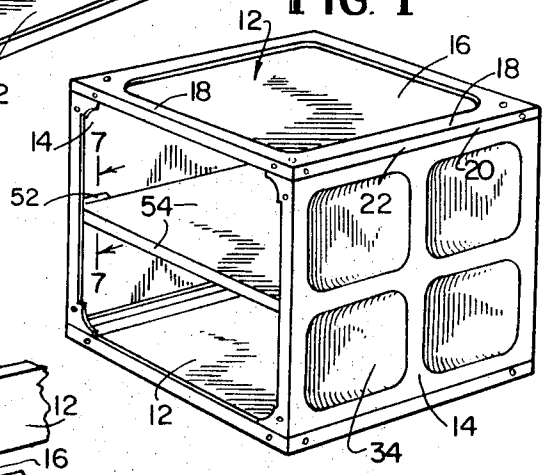
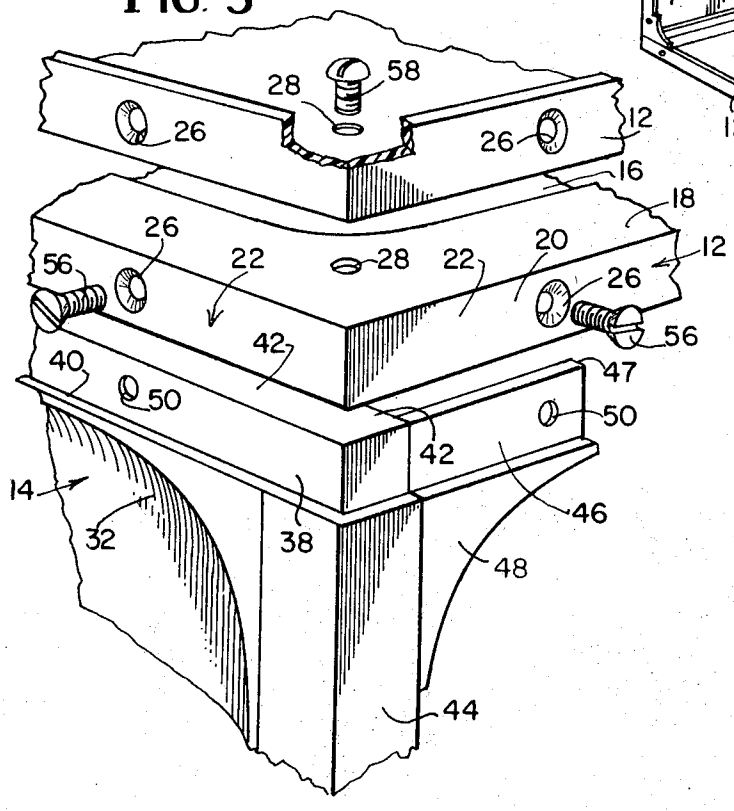


FIG. 3



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FIG. 4

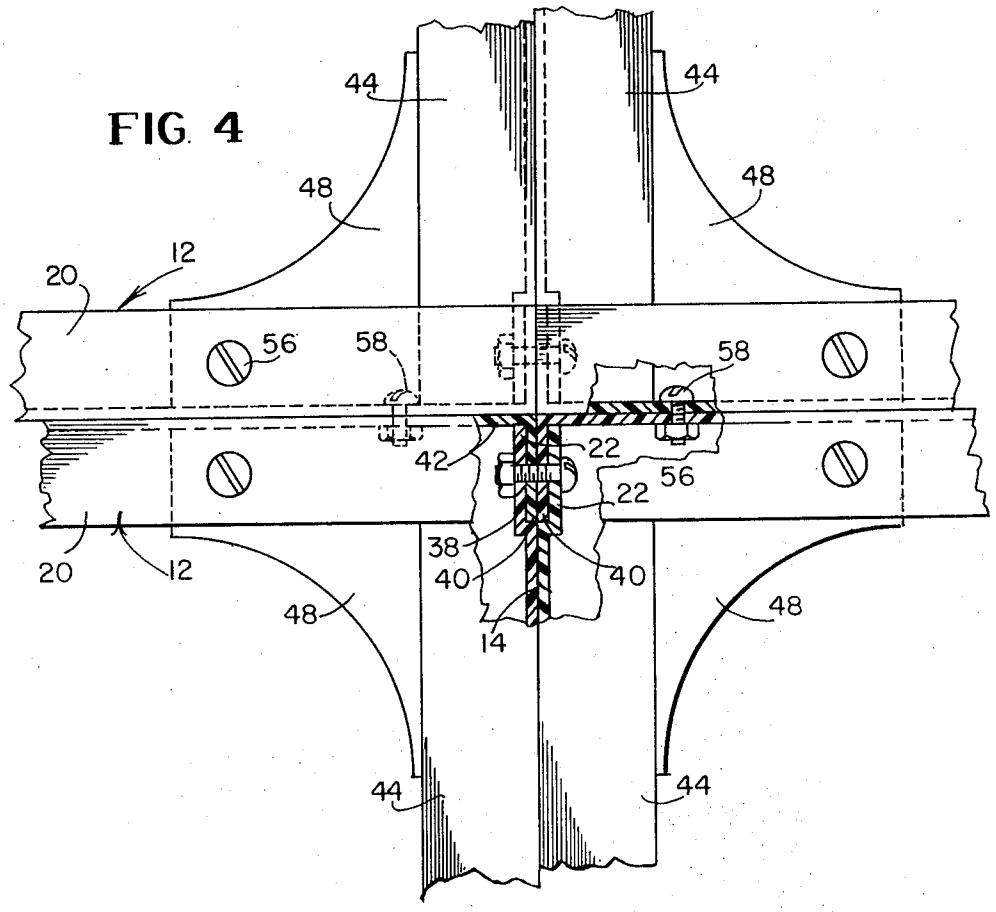


FIG. 5

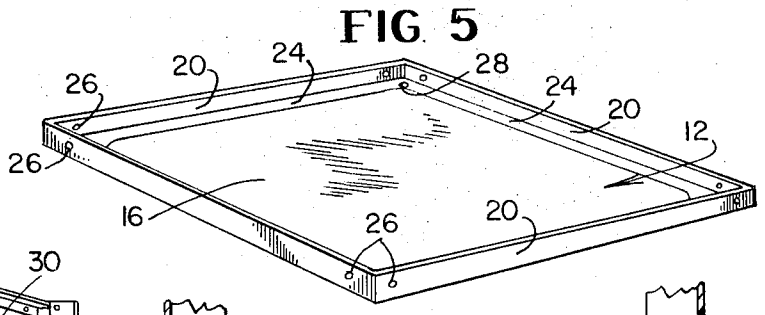
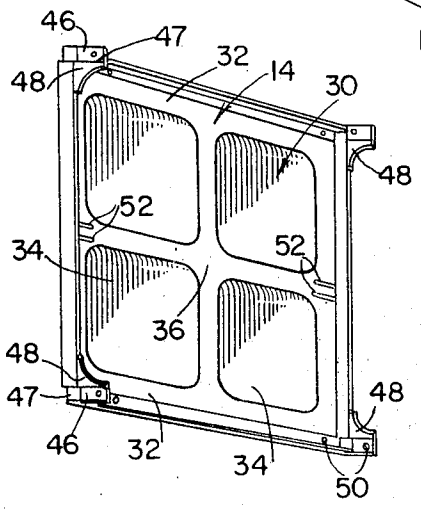


FIG. 6



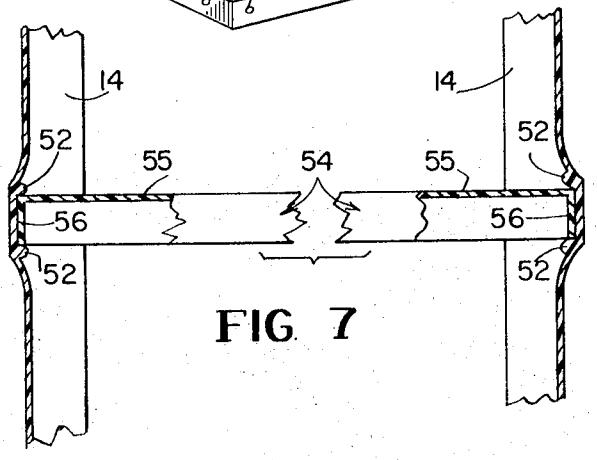


FIG. 7

KNOCKDOWN CUBE STRUCTURE

BRIEF SUMMARY OF THE INVENTION

One of the objects of this invention is to provide a knockdown cube formed of sections, each of which may be integrally molded of a plastic material and may be readily connected to form a single cube which serves as a compartment, and also may be connected to other identically constructed cubes to form an article of furniture or the like with a plurality of compartments. Such cubes may be used as modules to form shelving, bookcases, cabinets, and the like.

Another object of this invention is to provide a cube-like structure formed of an identical top and bottom, each integrally molded of a plastic material, and a pair of identical side members each integrally formed of a plastic material, so constructed that said parts may be shipped in a knockdown condition and may be readily interfitted and assembled to form a single cube or may be connected to other similarly constructed cubes to form an article of furniture having a plurality of compartments.

Another object of this invention is to provide a unit formed of four sections of plastic material with each pair of sections being identical so that the sections may be readily assembled to form a unit for storing and displaying objects and wherein same may be inexpensively produced, requiring the minimum number of dies used for the plastic molding of said sections.

Other objects will become apparent as this description progresses.

BRIEF DESCRIPTION OF THE DRAWINGS

In the drawings:

FIG. 1 is a perspective view of a single assembled cube unit.

FIG. 2 is a perspective view of a plurality of cube units connected to form an article of furniture such as a shelving unit or cabinet.

FIG. 3 is a fragmentary exploded view taken at one of the corners indicated by the circle 3 in FIG. 2, showing a corner of the side member, a corner of the top member and a corner of the bottom member in a position where one cube unit would be positioned over another to be connected thereto.

FIG. 4 is a view partly in section taken at the corners, showing the joining of four cube units as indicated by the circle 4 in FIG. 2.

FIG. 5 is a perspective view taken from the inside of the member which forms both the bottom and top of the cube unit.

FIG. 6 is a perspective view taken from the inside of the member which forms both of the opposite sides of the cube, and

FIG. 7 is a sectional view taken on lines 7—7 of FIG. 1.

As best shown in FIG. 1, the individual cube unit is generally indicated by the numeral 10 and same is formed of four sections which form the top, bottom and sides of the unit. The sections which form the top and bottom of the unit are indicated by the numeral 12 and are best shown in FIG. 5. Both of said sections are of identical construction and each section is integrally molded of a plastic material from the same die. The sections forming the sides of the unit are indicated by the numeral 14 and are best shown in FIG. 6. Both said side sections are of identical construction and are each integrally molded of a plastic material from the same die. Thus, in essence, the unit is formed of four sections, with each pair of sections being identical so that in the formation of said unit only two dies are necessary to form the essential components of said unit. These sections 12 and 14 are so constructed that they may be shipped in knockdown condition, thus occupying a minimum of space in a package container and for shipment. The unit may be readily assembled by interlocking the sections, as will be more fully explained hereafter.

While the four sections 12 and 14 form a single cube unit, as shown in FIG. 1, other similar cube units may be formed by other similar sections and each cube unit 10 is connected to other cube units 10 to form an article of furniture, as best shown in FIG. 2. Four cube units are shown connected in FIG. 2. Other shaped articles of furniture may be formed by varying the arrangement of the cube units. Each cube unit 10 therefore forms a module which may be used separately or with other like modules for forming a larger assembled unit.

Since the sections 12 forming the top and bottom of the unit are identical, only one will be described in detail, it being understood that the other is similarly constructed. The section 12 is integrally molded of plastic material and comprises a flat wall surface 16 of square configuration bounded by an outside raised continuous border 18 which extends completely around the wall surface 16. The wall surface is therefore offset inwardly of the plane of the border 18. Extending inwardly at right angles to said border 18 is a continuous flange 20 which forms the four narrow vertical walls 22 extending around the section 12. When viewed from the inside, as in FIG. 5, it will be seen that a continuous channel or recess 24 is formed completely around and adjacent but inwardly of the vertical walls 22, the said channel or recess being the opposite face of the raised border 18. The channel or recess 24, as will be explained in the assembly of the units serves to receive the flanges of the side sections 14, as best seen in FIG. 4. The flange 20 of section 12 is provided with a pair of spaced openings 26 adjacent each of the corners of the section and the horizontal border 18 has an opening 28 adjacent each of the corners of the border. As heretofore stated, both the top and bottom sections 12 are of identical construction and may be used interchangeably.

The two sections 14 forming the sides of the unit 10 are each integrally molded of plastic material and are of identical construction, hence, only one will be described in detail. The section 14 comprises a wall 30 which has a continuous flat border 32 extending around the wall 30, with four square-shaped inwardly extending or recessed surfaces 34 which when viewed from the outside extend inwardly of the border surface. A cross-shaped surface 36 is integrally formed in said wall and said cross-shaped surface divides said square-shaped recessed wall portions 34. Extending outwardly along the top and bottom border surface 32 are flat vertically extending border edges 38 which are offset inwardly of the plane of the border surface 32 and provide a shoulder 40 extending along the top and bottom of side section 14. Extending inwardly at right angles to each of the opposite vertical border edges 38 is an inwardly extending horizontal flange 42. Since the top and bottom of side section 14 are identical, either may be used to form the top or bottom when section 14 is assembled to sections 12.

Extending inwardly along the front and rear of side section 14 are vertically inwardly extending flanges 44 also at right angles to the border edges. At each of the corners of the border edge 38 there is an inwardly extending right angled vertical extension 46 providing a shoulder 47 which coincides with shoulder 40. Also extending inwardly of the vertical flanges 44 is a curved corner bracing extension 48. The border edges 38 and extension 46 of the side section 14 are each formed with an opening 50 adjacent each of the corners which are in alinement with the openings 26 of the top and bottom sections 12.

The inside wall of each side section 14 (FIGS. 6 and 7) is provided adjacent the front and rear thereof with a pair of spaced inwardly extending ribs 52, which ribs form channels for receiving a shelf, generally designated by the numeral 54, which shelf comprises a horizontal wall 55 having a downwardly extending continuous flange 56 extending at right angles to the horizontal wall. The shelf is generally square-shaped in plan and when the unit is assembled the shelf 54 is positioned to fit between the spaced ribs 52 of the side sections 14. When the sections are connected the shelf will be firmly supported on the ribs and no other fastening means is needed to support the shelf. If it is not desired to utilize the shelf it may be omitted and the inwardly extending narrow ribs forming the shelf support do not interfere with or impair the appearance of the unit.

In assemblying the unit **10**, the sections **12** forming the top and bottom are inverted with respect to each other. The section **12** forming the bottom is positioned as in FIG. **5**, with the flange **20** extending upwardly. The side sections **14** are positioned therein so that the border edge **38** thereof is positioned inside and adjacent the flange **22**, with the bottom horizontal flange **42** of the side section **14** resting within the channel or recess **24** of the bottom section **12**. The horizontal shoulder **40** will rest on the top of flange **22** of the bottom section **12** and the right angled vertical extension **46** will be positioned inside of and adjacent the flange **22** of the bottom section, with the shoulder **47** engaging the top of flange **22**. The holes **26** will be alined with the holes **50** and fastening screws **56** are passed through the alined openings and are secured by suitable nuts (not shown).

The other section **12** forming the top of the unit is similarly applied and secured to the top of the side sections **14**, with the top section **12** inverted from that shown in FIG. **5**. Thus, the four sections joined together as described form a single unit, as shown in FIG. **1**.

When it is desired to join two or more units, as shown in FIG. **2**, in superposed relation, this may be readily done by positioning another like constructed unit **10** on the top section **12** and connecting the two by passing a threaded fastening member **58** through the alined openings **28** and locking them together by a nut. Thus, similar units may be positioned one on top of the other to the extent desired. If it is desired to mount another unit adjacent to the side, the adjacent unit is connected by means of passing a longer threaded bolt, like **56**, through the respective pairs of alined openings **26** and **50** and locking them together with a nut.

Each unit forms a separate compartment. While four units have been shown connected in FIG. **2**, it will be understood that the number of units can be multiplied either vertically or laterally by adding as may units as desired. They may be used either with or without the shelves **54**.

What is claimed is:

1. A knockdown unit formed of a plurality of sections comprising a top section and a bottom section and a pair of side sections, each said section integrally formed of a plastic material, said top and bottom sections each being of identical construction and said pair of side sections each being of identical construction, said top and bottom sections each having a wall surface and flanges extending inwardly at right angles to said wall surfaces, said side sections each having a wall surface and top and bottom horizontal flanges extending at right angles to said wall surface, the top and bottom horizontal flanges of said side sections adapted to engage the top and bottom sections, and means for interlocking said sections to form a single unit.

2. A structure as set forth in claim **1** in which the side sections have inwardly extending extensions adapted to be positioned contiguous to certain of the flanges of the top and bottom sections, said extensions and said certain flanges having alined openings, and fastening means passing through said openings to secure said sections together.

3. A structure as set forth in claim **2** in which the extensions have a shoulder which is in engagement with the outer edge of the flange which it engages.

4. A structure as set forth in claim **2** in which said extensions are integrally formed with said side sections and said side extensions are connected to corner bracing means formed integrally with said side sections.

5. A structure as set forth in claim **1** in which each side section is provided with inwardly extending means which support a shelf.

6. A structure as set forth in claim **1** in which the top and bottom sections have channels to receive the top and bottom horizontal flanges of said side sections and said side sections have corner members engaging the flanges of said top and bottom sections.

7. A structure as set forth in claim **1** in which a plurality of similarly constructed units are secured together by fastening means.

8. A structure as set forth in claim **1** in which a plurality of similarly constructed units are secured together by fastening elements passing through alined openings in adjacent side sections.

9. A structure as set forth in claim **1** in which a plurality of units are positioned one on top of the other in superimposed position, with said units being secured together by fastening elements passing through alined openings.

10. A structure as set forth in claim **1** in which the side sections have top and bottom shoulders which engage the top and bottom flanges of the top and bottom sections and in which the side sections have top and bottom border surfaces positioned contiguous to the flanges in said top and bottom sections.

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