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(54) Folding collapsible storage box

(57) A folding collapsible storage box (10) is disclosed. A box body (20) has a top wall (30), a bottom wall (40), and preferably two side walls (50). Each wall is pivotally fixed to at least one other wall along each of two lateral edges (100) thereof. The bottom and top walls further preferably each include a transverse slot (110) formed in an inside surface thereof. A generally rectangular rod (120) is pivotally fixed along one side thereof to the top wall above the transverse slot (110) of the bottom wall, and another rectangular rod may be pivotally fixed along one side thereof of the bottom wall below the transverse slot of the top wall. As such, with the box in a collapsed configuration such that the walls are all nearly coplanar, the top wall may be lifted over the bottom wall such that the body achieves a box configuration. Each rectangular rod (120) may be then pivoted to engage the transverse slot of the opposing wall to maintain the box body in the box configuration. Optionally U-shaped and X-shaped inserts may be included.

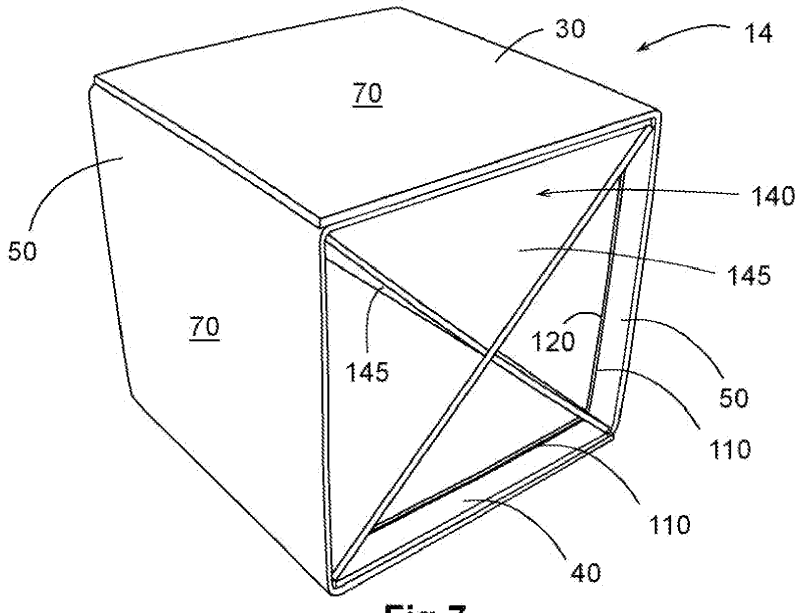

Fig 7

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Description

Field of the invention

[0001] This invention relates to storage boxes, and more particularly to a cubical box that is collapsible and assembles without requiring the use of tools.

Summary of the invention

[0002] The present device is a folding collapsible storage box. A box body has a top wall, a bottom wall, and at least two side walls. Each wall is pivotally fixed to at least one other wall along each of two lateral edges thereof. The bottom and top walls further preferablyeach include a transverse slot formed in an inside surface thereof.

[0003] At least one generally rectangular rod is pivotally fixed along one side thereof to the top wall above the transverse slot of the bottom wall. Likewise, another of the generally rectangular rods may be pivotally fixed along one side thereof to the bottom wall below the transverse slot of the top wall. As such, with the box in a collapsed configuration such that the walls are all nearly coplanar, the top wall may be lifted over the bottom wall such that the box body achieves a box configuration. Each rectangular rod may then be pivoted to engage the transverse slot of the opposing wall, and held therein by friction, to maintain the box body in the box configuration. Optionally, U-shaped and X-shaped inserts may be included.

Description of the drawings

[0004]

FIG. 1 is a front elevational view of the invention in a box configuration, the rear elevational view being a mirror image thereof;
FIG. 2 is a right-side elevational view of the invention in the box configuration, the leftside elevational view being a mirror image thereof;
FIG. 3 is a top plan view of the invention on the box configuration, the bottom plan view being a mirror image thereof;
FIG. 4 is a perspective view of the invention in the box configuration, illustrating a pair of rectangular rods in fully extended positions;
FIG. 5 is a perspective view of the invention in a partially collapsed configuration, illustrated with the pair of rectangular rods in a collapsed position;
FIG. 6 is a perspective view of the invention in a fully collapsed configuration;
FIG. 7 is a perspective view of the invention further including an X-shaped insert;
FIG. 8 is a perspective view of the invention further including a U-shaped insert;
FIG. 9 is a perspective view of the invention, illustrating an arched path of one of the rectangular rods between its fully extended and collapsed positions;
FIG. 10 is a cross-sectional view of the invention, taken generally along lines 10-10 of FIG. 9;
FIG. 11 is a front elevational view of one of the rectangular rods of the invention; and
FIG. 12 is a cross-sectional view of the invention, taken generally along lines 12-12 of FIG. 9.

Detailed description of the preferred embodiment

[0005] FIGS. 1 and 4 illustrate a folding collapsible storage box 10. A box body 20 has a top all 30, a bottom wall 40, and at least two side walls 50. Each wall 30,40,50 has an nside surface 60, an outside surface 70, and at least a front edge 80, a rear edge 90, and opposing lateral edges 100. Each wall 30,40,50 is pivotally fixed to at least one other wall 30,40,50 along each of the two lateral edges 100 thereof.

[0006] The bottom wall 40 further includes a transverse slot 110 formed in the inside surface 60 thereof (FIGS. 4, 5, 7 & 8). Preferably each wall 30,40 is made from two layers 150 of corrugated material, such as corrugated paper or plastic. As such, the transverse slot 110 may be formed by cutting through just one of the layers 150 (FIGS. 10 & 12).

[0007] At least one generally rectangular, semi-rigid rod 120 (FIG. 12) is pivotally fixed along ne side 125 thereof to the top wall 30 above the transverse slot 110 of the bottom wall 40 (FIGS. 9 & 10). Likewise, another of the generally rectangular rods 120 may be pivotally fixed along one side 125 thereof to the bottom wall 40 below the transverse slot 110 of the top wall 30. Each side wall 50 may further include at least one of the transverse slots 110 formed in the inside surface 60 thereof. As such, with the box body 20 in the box configuration 14, each rectangular rod 120 engages one of the transverse slots 110 of each side wall 50 and each opposing top wall 30 or bottom wall 40 to further maintain the box body 20 in the box configuration 14. Preferably each rectangular rod 120 is formed from a semi-rigid metal rod or wire stock. Alternately, each rod is formed from a semi-rigid plastic material. In one embodiment of the invention (not shown), at least one of the rectangular rods 120 is C-shaped, terminating in two ends that are pivotally attached to one of the walls 30,40.

[0008] As such, with the box 10 in a collapsed configuration 12 (FIG. 6) such that the walls 0,40,50 are all nearly coplanar, the top wall 30 may be lifted over the bottom wall 40 uch that the box body 20 achieves a box configuration 14 (FIG. 4). Each rectangular rod 120 may then be pivoted to engage the transverse slot 110 of the opposing wall 30,40, and held therein by friction, to maintain the box body 20 in the box configuration 14 (FIG. 9). Preferably each wall 30,40,50 is substantially square, and preferably there are exactly two side walls 50 such that when in the box configuration 14, the box body forms a cube with two open sides.

[0009] Optionally, a U-shaped insert 130 having a horizontal shelf member 132 and a pair of downwardly-oriented legs 134 may be included (FIG. 8). As such, when the box body 20 is in the box configuration 14, the U-shaped insert 130 may be inserted therein such that the horizontal shelf member 132 sits substantially parallel to the top and bottom walls 30,40, forming two rectangular-shaped compartments. Each leg member 134 rests on the bottom wall 40 of the box body 20. Each U-shaped insert 130 is preferably, but not necessarily, made from the same material as each wall 30,40,50.

[0010] Further, an X-shaped insert 140 having a pair of cross-members 142 may be included (FIG. 7). As such, when the box body 20 is in the box configuration 14, the X-shaped insert 140 may be inserted therein such that each cross-member 142 traverses the box body 20 from opposing corners, forming four triangular-shaped compartments. Each cross-member 142 is preferably, but not necessarily, made from the same material as each wall 30,40,50, and is engaged with the other cross-member 142 with a mutually engaging slot (not shown).

[0011] While a particular form of the invention has been illustrated and described, it will be apparent that various modifications can be made without departing from the spirit and scope of the invention. For example, the walls may be made of alternate materials, such as paperboard, wood, plastic sheet material, or the like. Accordingly, it is not intended that the invention be limited, except as by the appended claims.

Claims

1. A folding collapsible storage box comprising:

a box body having a top wall, a bottom wall, and at least two side walls, each wall having inside and outside surfaces, and at least a front edge, a rear edge, and opposing lateral edges, each wall pivotally fixed to at least one other wall along each of the two lateral edges thereof, the bottom wall having at least one transverse slot formed in the inside surface thereof; and

at least one generally rectangular rod pivotally fixed along one side thereof to the top wall above the transverse slot of the bottom wall;

whereby with the box in a collapsed configuration such that the walls are all nearly coplanar, the top wall may be lifted over the bottom wall such that the box body achieves a box configuration, the rectangular rod then being pivoted downward to engage the transverse slot of the bottom wall to maintain the box body in the box configuration.

2. The folding collapsible storage box of claim 1 wherein the top wall further includes at least one transverse slot formed in the inside surface thereof, and wherein at least one of the generally rectangular rods is pivotally fixed proximate one side thereof to the bottom wall below the transverse slot of the top wall, whereby with the box body in the box configuration the rectangular rod of the bottom wall may be pivoted to engage the transverse slot of the top wall.

3. The folding collapsible storage box of claim 1 wherein each side wall further includes at least one transverse slot formed in the inside surface thereof, whereby with the box body in the box configuration each rectangular rod engages one of the transverse slots of each side wall to further maintain the box body in the box configuration.

4. The folding collapsible storage box of claim 1 wherein each wall is made from at least one layer of corrugated paper.

5. The folding collapsible storage box of claim 1 wherein each wall is made from at least one layer of corrugated plastic.

6. The folding collapsible storage box of claim 1 further including a U-shaped insert having a horizontal shelf member and a pair of downward oriented leg members, such that when the box body is in the box configuration, the U-shaped insert may be inserted therein such that the horizontal shelf member sits substantially parallel to the top and bottom walls, the leg members each resting on the bottom wall.

7. The folding collapsible storage box of claim 1 further including an X-shaped insert having a pair of cross-members, such that when the box body is in the box configuration, the X-shaped insert may be inserted therein such that each cross-member traverses the box body from opposing corners.

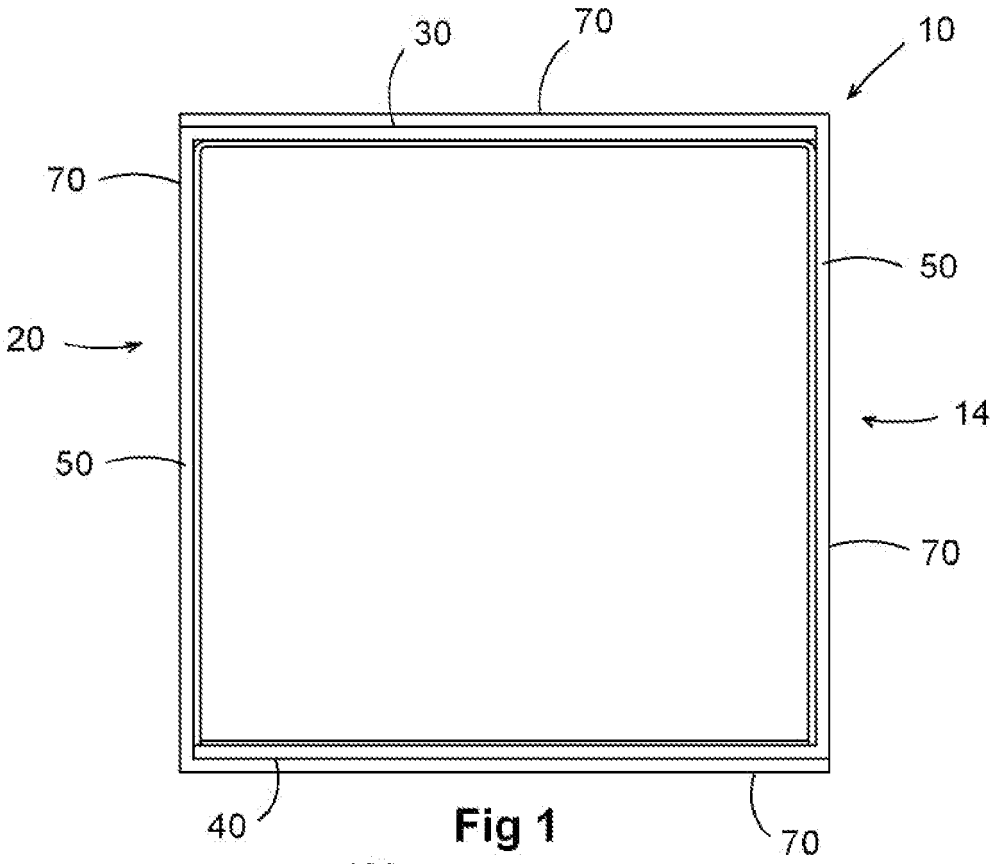

Fig 1

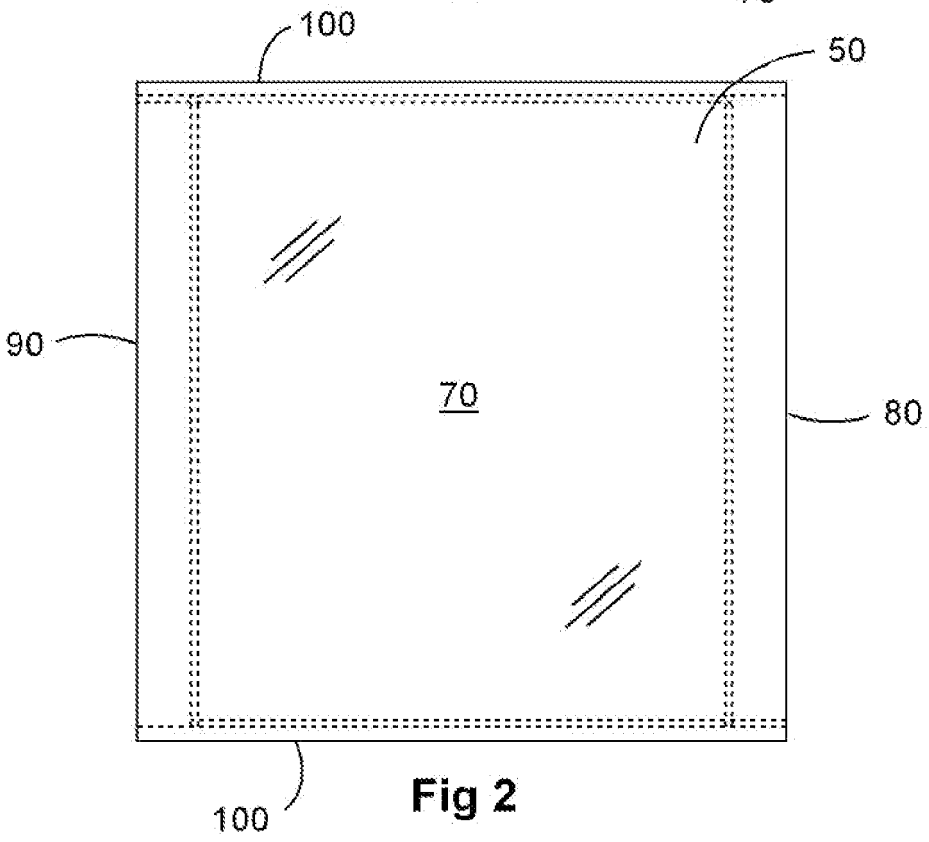

Fig 2

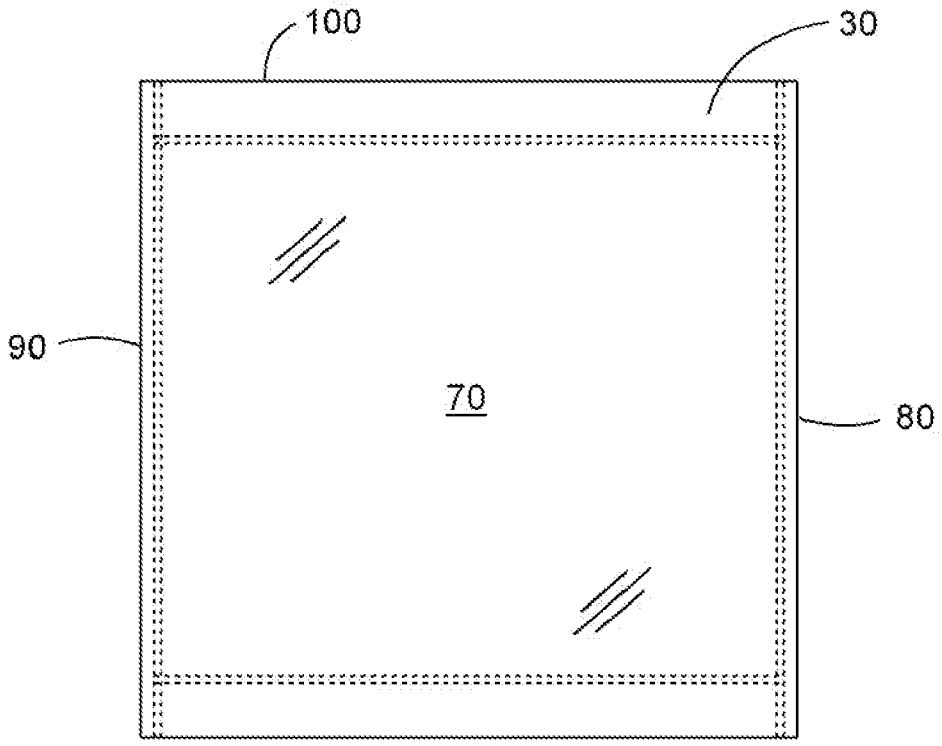
100
30
90
70
80

Fig 3

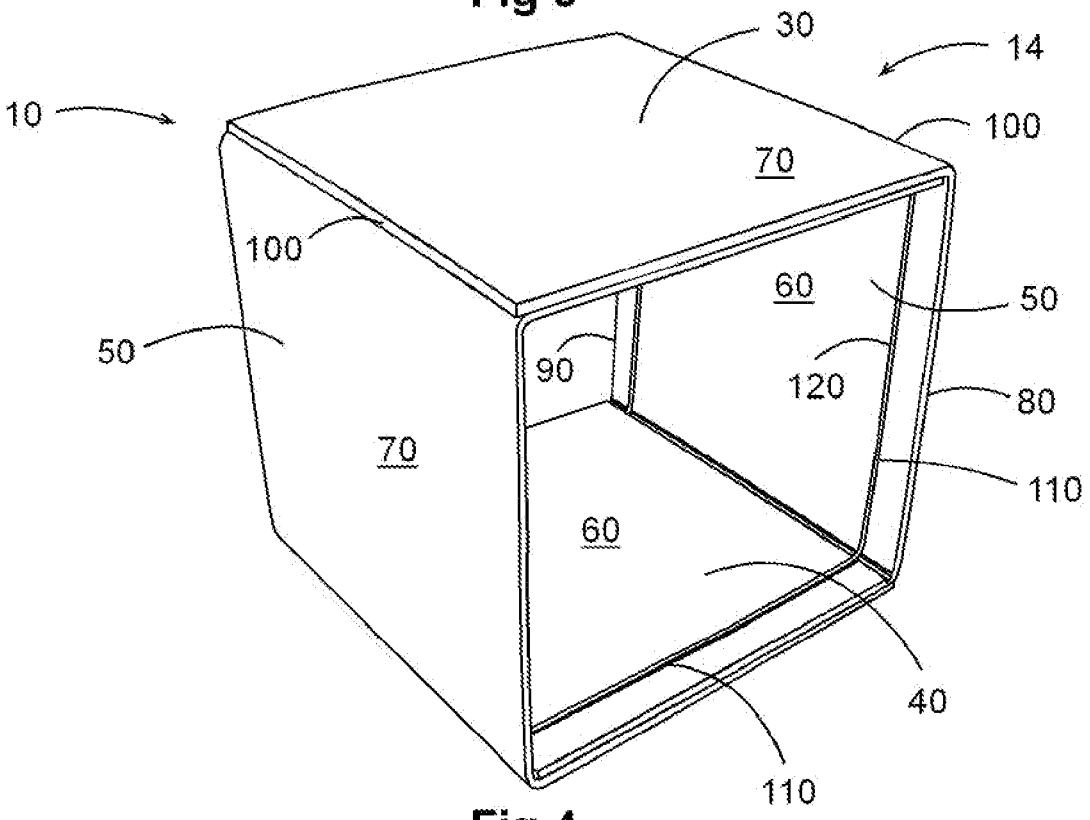
30
14
10
100
70
100
60
50
50
90
120
80
70
110
60
40
110

Fig 4

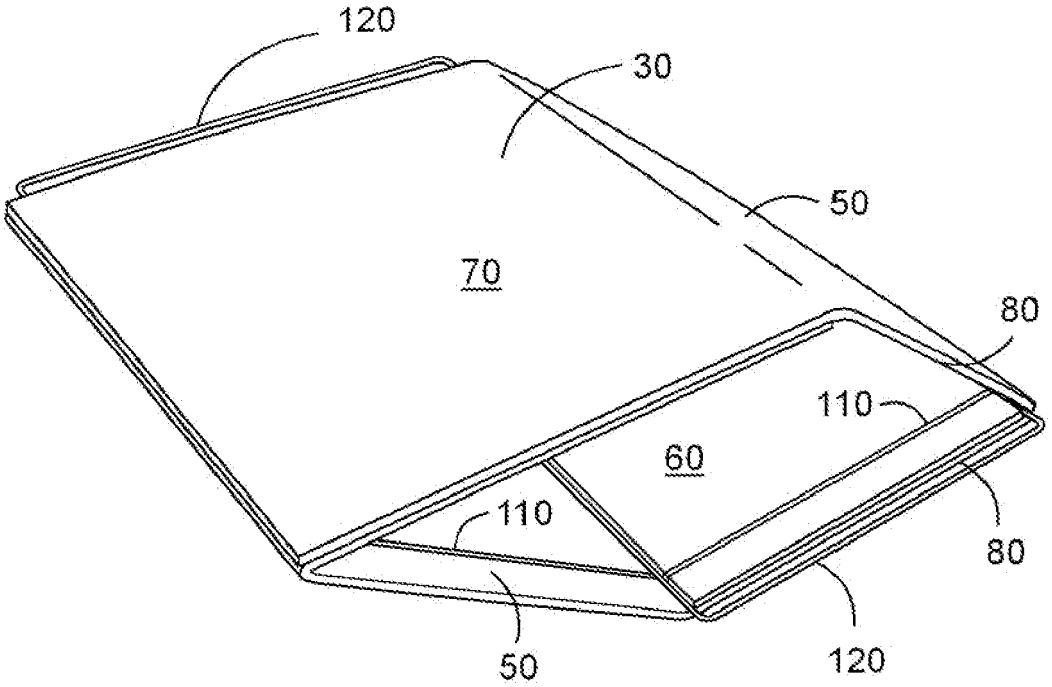

Fig 5

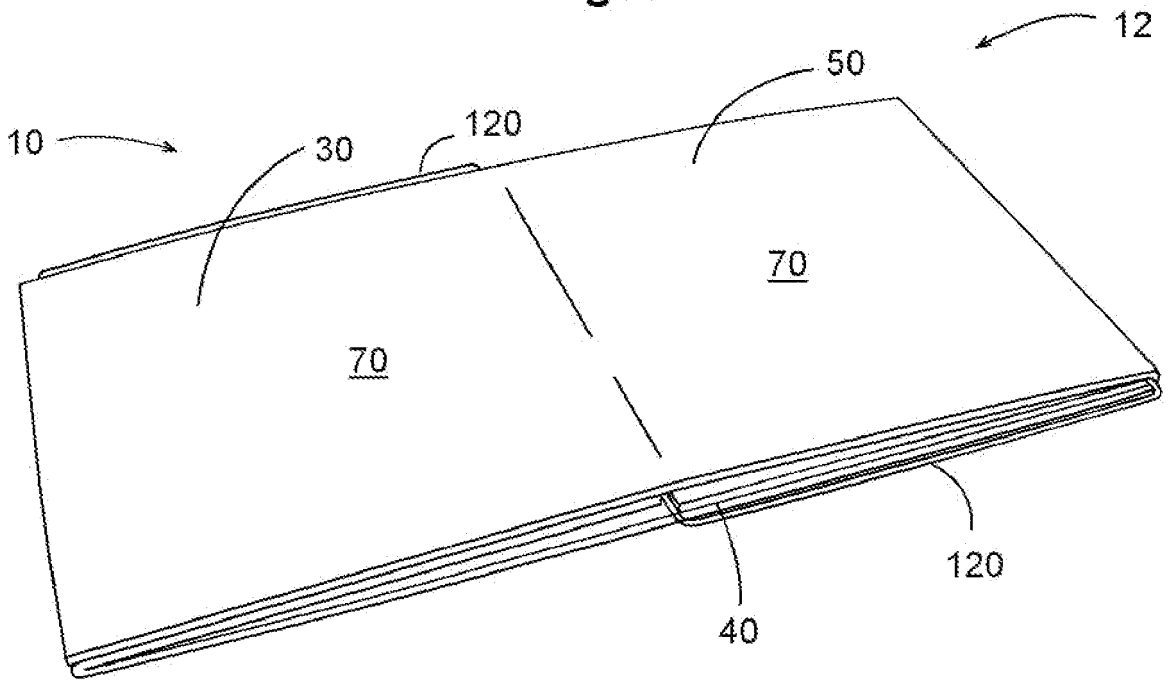

Fig 6

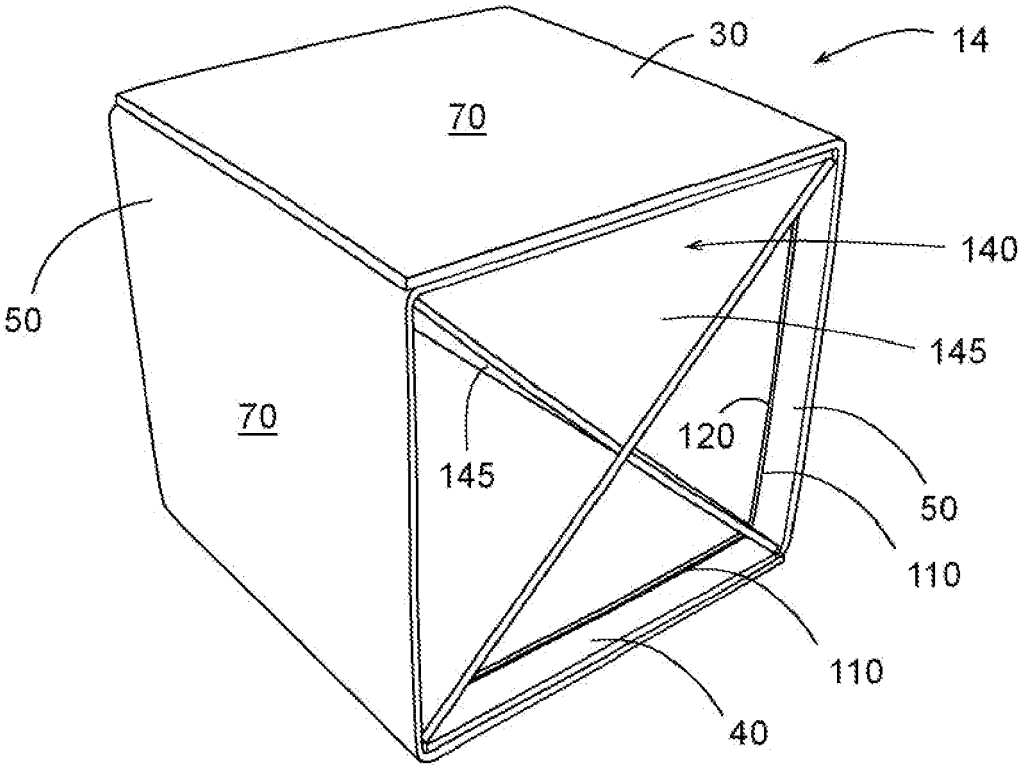
30
14
70
140
50
145
70
120
145
50
110
110
40

Fig 7

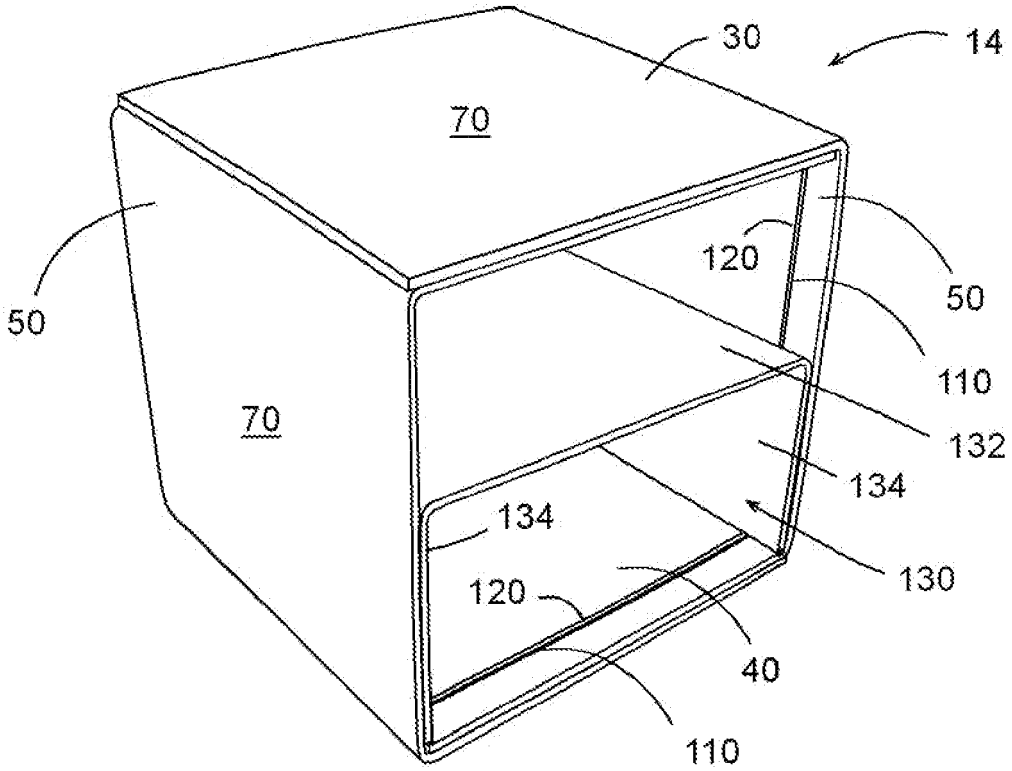
30
14
70
120
50
50
110
70
132
134
134
130
120
40
110

Fig 8

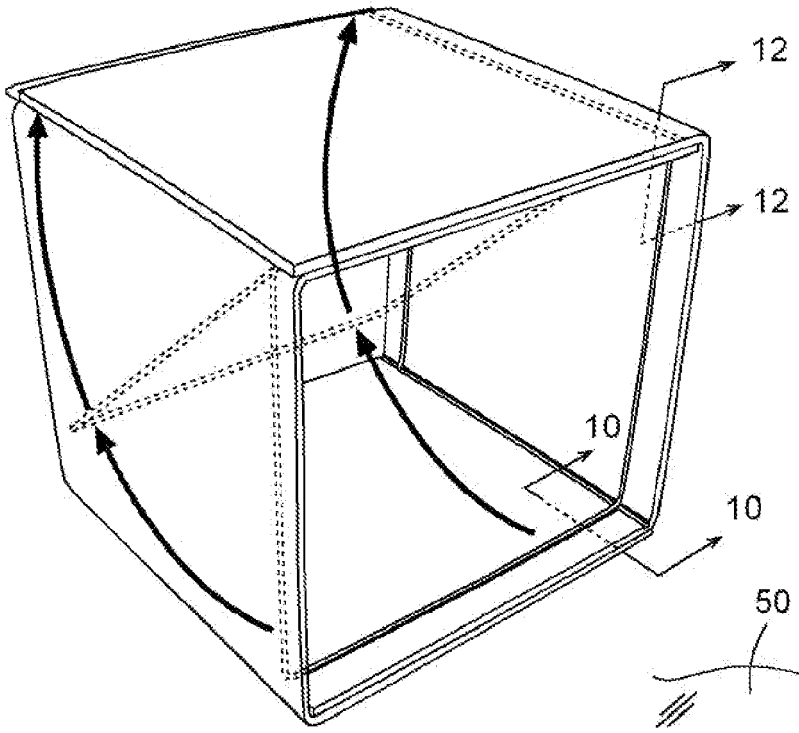

Fig 9

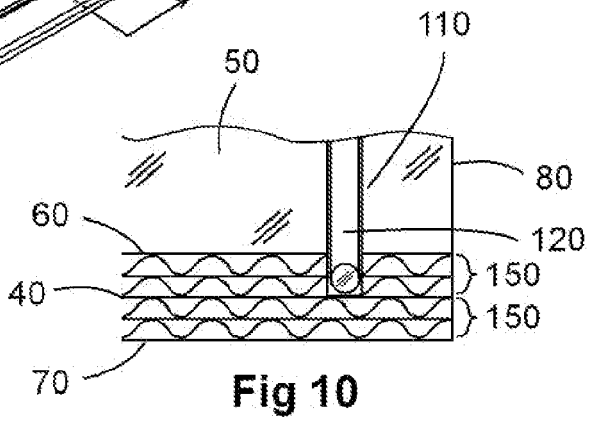

Fig 10

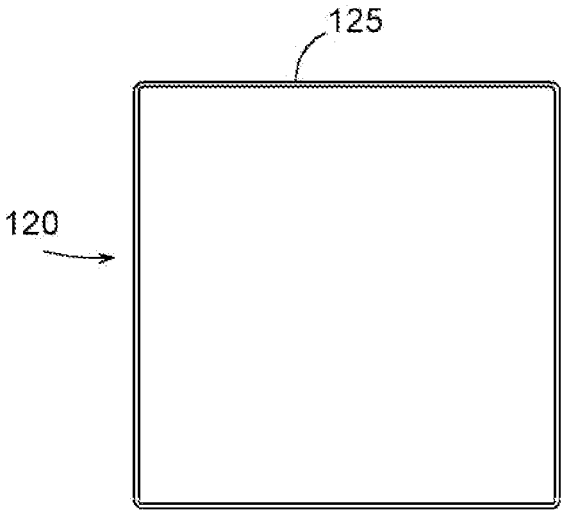

Fig 11

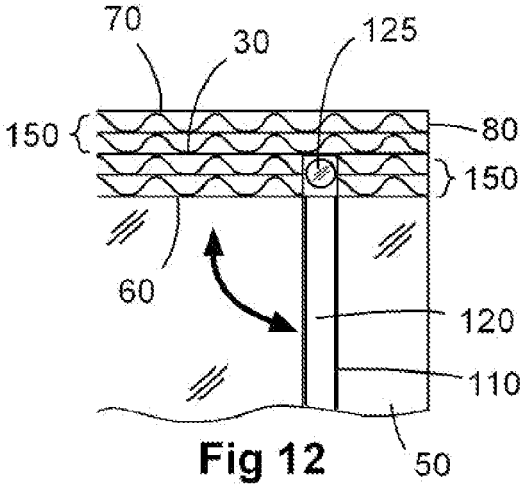

Fig 12

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EUROPEAN SEARCH REPORT

Application Number
EP 08 15 9610

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	US 2007/051720 A1 (CHEN HENRY [TW]) 8 March 2007 (2007-03-08) * paragraphs [0029] - [0031]; figures 5,6 * -----	1-7	INV. B65D5/36 B65D6/16

TECHNICAL FIELDS SEARCHED (IPC)

B65D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	29 October 2008	Cazacu, Corneliu

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 08 15 9610

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29-10-2008

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2007051720 A1	08-03-2007	NONE	

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82