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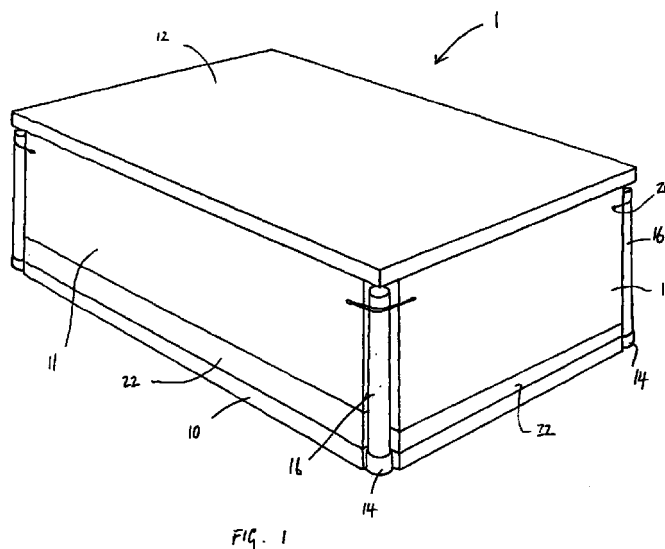
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(54) **Collapsible container**

(57) A collapsible container (1) has side panels (11) associated with a base panel (10) and movable between a collapsed condition in which the major faces of the panels are substantially parallel with the common plane and an assembled condition in which the panels (11) define a storage space. The container (1) is releasibly retained in the assembled condition by side support means (16) engaging adjacent side panels (11). The side support means (16) comprise upright members demountably secured to the base panel (10) and

received and retained in receptacle means (14) secured at or adjacent to the corners of the base panel (10). Preferably, the side panels (11) are pivotally mounted to the base panel (10) along horizontal pivot axes which are disposed on a plurality of horizontal planes to allow the major faces of the panels (11) to lie parallel to the common plane when the container (1) is in the collapsed condition.



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Description

[0001] This invention relates to a collapsible container such as a suitcase, a packing case, a shipping crate or a freight container.

[0002] Containers are required for a variety of purposes and, in many circumstances, such as moving possessions between houses or flats, it is necessary for the container to be sufficiently sturdy to protect the container contents from damage when it is moved or accidentally knocked. However, such a container is unlikely to be in constant use, and as a result it would be advantageous if it could be stored in a flat condition when it is not required.

[0003] The present invention therefore provides a collapsible container comprising side panels associated with a base panel and moveable between a collapsed condition in which the major faces of the panels are substantially parallel with a common plane, and an assembled condition in which the panels define a storage space wherein the container is releasably retained in the erect condition by side support means engaging adjacent side panels.

[0004] The side support means may comprise upright members demountably secured to the base panel. The upright members are preferably received and retained in receptacle means secured at or adjacent to the corners of the base panel.

[0005] The side panels may be pivotally mounted to the base panel along horizontal pivot axes. In a preferred embodiment the pivot axes are located in different horizontal planes to allow the major faces of the panels to lie parallel to the common plane when the container is in the collapsed condition. The side panels may be connected to adjacent edges of the base panel by hinges, or the panels could be formed as one piece with lines of weakness defining integral hinges.

[0006] The side support members may have laterally projecting abutment surfaces to limit the pivotal movement of the side panels away from a vertical position, thereby serving to retain the panels in the assembled condition.

[0007] Detent means may be provided on the external faces of the side panels to receive fastening means for restraining movement of the side panels away from a vertical position. The detent means are preferably disposed near adjacent edges of the side panels. A cover panel may be associated with a side panel to overlie the side panels in the assembled condition and thereby to close the container. The cover panel may be pivotally mounted to the relevant side panel. The panels may be formed from metal sheets such as aluminium or a plastics sheet material.

[0008] According to another aspect of the present invention there is provided a collapsible container comprising side panels pivotally mounted to a base panel along horizontal pivot axes and moveable between a collapsed condition in which the side panels overlie the

base panel, and an assembled condition in which the panels define a storage space, wherein the pivot axes are disposed on a plurality of horizontal planes so that the side panels lie parallel to the base panel in the collapsed condition.

[0009] The invention also provides a kit of parts for assembly of either of the collapsible containers described above.

[0010] A full understanding of the various aspects of the invention will be gained from the following detailed description of a preferred embodiment, given by way of example only, with reference to the accompanying drawings, in which:

Figure 1 is a perspective view of the preferred embodiment in an assembled condition;

Figure 2 is an end view of the container shown in Figure 1;

Figure 3 is a plan view of a base panel of the container of Figures 1 and 2;

Figures 4 and 5 are plan and side views of an embodiment of a component of the container shown in Figures 1 and 2; and

Figures 6, 7 and 8 show illustrative sketches of the container during various stages of assembly or disassembly.

[0011] The assembled container illustrated in Figure 1, generally designated 1, has metallic horizontal base and cover panels or sheets 10, 12 and four metallic side panels or sheets 11 defining a generally cuboidal container. The depth of the panels 10, 11, 12 is exaggerated in the drawing for ease of illustration.

[0012] Cylindrical tubules 14 are mounted in square corner recesses of the generally rectangular base panel 10 by mechanical fasteners such as screws or nails. Open upper ends of the tubules 14 are shaped and dimensioned to receive elongate tubes or stanchions 16 in close fitting engagement.

[0013] Pairs of abutments or tabs 18 project laterally from tubes 18. Each abutment 18 is orientated at right angles to its paired abutment. More than one pair of abutments 18 may be provided on each tube 16 provided the abutment pairs are mutually aligned. Preferably three pairs of abutments are provided on each tube. Catches or detents 20 are disposed on the external faces of the side panels 11 adjacent their lateral edges.

[0014] Upright edge portions 22 of the base panel, which may be formed separately from the base panel 10 and secured thereto, extend vertically upwards from the base panel along three of its lateral edges. The basal surfaces of the side panels associated with the edge portions are hinged to the upper ends of the edge portions 22 with the other side portion being hinged directly on the base panel. The vertical extent of the edge portions differs to ensure that the associated side panel can lie parallel to the base panel 10 without interfering with the other side planes. The combined height of each

edge portion and the associated side panel are equal to the height of the panel hinged directly to the base panel to ensure the upper edges of the side panel lie in the same horizontal plane when the container is in the assembled condition. A cover panel 12 is hinged to the upper edge of one of the side panels.

[0015] Castors or wheels 26 are disposed in the region of the corner recesses of the base panel to facilitate movement of the container in its collapsed or assembled condition.

[0016] With reference to Figures 6 to 8, the container is initially in its collapsed condition with the panels overlying one another. The tubes 16 are inserted into the tubules 14 adjacent the corners of the generally rectangular base panel 10. The tubes are received in close fitting engagement in the tubules but fasteners such as screws or a nut and bolt arrangement may be used to secure the tubes in position. The tubes project vertically upwards from the base panel. Two adjacent side panels 11a, 11b are pivoted into a generally vertical position. Movement of the side panels past the vertical is prevented by contact of the outer faces of the panels with the abutments 18 on the tubes 14. Elasticated straps or bands 24 are attached to neighbouring catches 20 on the external faces of the side panel 11a, 11b to restrain inward movement of the side panels. The remaining side panels 11c, 11d are fastened in the same manner and straps 24 are attached in the region of each of corner to hold the side panels in an upright position. The tubes terminate below the upper edges of the side panels, and the rectangular cover panel 12 is pivoted to rest upon side panels edges and to overlie the tubes. A further lock or catch may be provided to secure the cover panel in position. A handle or strap 28 may be attached to the assembled container. The container is collapsed by reversing the steps described above.

[0017] Of course, the skilled man will appreciate that many modifications to the described embodiment are possible without departing from the spirit of the invention. For instance, although the panels are preferably formed from metal, they could be formed of plastics or any other suitable material. Also, the tubules 14 could project above the horizontal level of the base panel edge portions and the recesses in which the tubules are housed could be shaped to match the profile of the abutting tubule to give the base a continuous external profile.

[0018] The abutments could be positioned to abut the internal faces of the side panels and in such an embodiment the elasticated bands 24 cooperated with the catches 20 to restrain inward movement of the panels. Alternatively, the corner tubes could be provided without abutments, and the panel hinges configured to prevent movement of the panels past a vertical position. In a further modification abutments could be provided to contact the internal and external faces of the side panels, with the tubes being inserted into the tubules while the side panels are manually held in a vertical position.

[0019] If the height of the panels is less half than the length or width of the base it is apparent that opposed side panels will not interfere with each other when the container is in the collapsed condition so that opposed side panels could have their pivot axes in the same horizontal plane. Also, one or more of the side panels could be mounted directly to the base panel.

Claims

1. A collapsible container comprising side panels pivotally mounted to a base panel along horizontal pivot axes and movable between a collapsed condition in which the side panels overlie the base panel, and an assembled condition in which the panels define a storage space wherein the pivot axes are disposed on plurality of horizontal planes so that the side panels lie parallel to the base panel in the collapsed condition.
2. A collapsible container comprising side panels associated with a base panel and movable between a collapsed condition in which the major faces of the panels are substantially parallel with the common plane and an assembled condition in which the panels define a storage space wherein the container is releasibly retained in the assembled condition by side support means engaging adjacent side panels.
3. A collapsible container as claimed in claim 1, wherein the container is releasibly retained in the assembled condition by side support means engaging adjacent side panels.
4. A container as claimed in claim 2 or 3, wherein the side support means comprise upright members demountably secured to the base panel.
5. A container as claimed in claim 4, wherein the upright members are received and retained in receptacle means secured at or adjacent to the corners of the base panel.
6. A container as claimed in any one of claims 2 to 5, wherein the side panels are pivotably mounted to the base panel along horizontal pivot axes.
7. A container as claimed in claim 6, wherein pivot axes are disposed on a plurality of horizontal planes to allow the major faces of the panels to lie parallel to the common plane when the container is in the collapsed condition.
8. A container as claimed in claim 1, 6 or 7, wherein the panels are connected to the edges of the base panel by hinge means.

9. A container as claimed in claim 1, 6 or 7, wherein the panels are formed as one piece with lines of weakness defining integral hinge means.
10. A container as claimed in any one of the preceding claims, wherein the side support means have laterally projecting abutment surfaces to limit the pivotal movement of the side panels away from the vertical position, thereby serving to retain the panels in the assembled condition. 5 10
11. A container as claimed in any one of the preceding claims, wherein detent means are provided on the external faces of the side panels to receive fastening means for restraining movement of the side panels away from a vertical position. 15
12. A container as claimed in any one of the preceding claims, wherein a cover panel is associated with one of the side panels to overlie the side panels in assembled condition and thereby to close the container. 20
13. A container as claimed in any preceding claim wherein the panels are formed from metal or plastics sheet material. 25
14. A kit of parts for assembly of any one of the collapsible containers claimed in a preceding claim. 30

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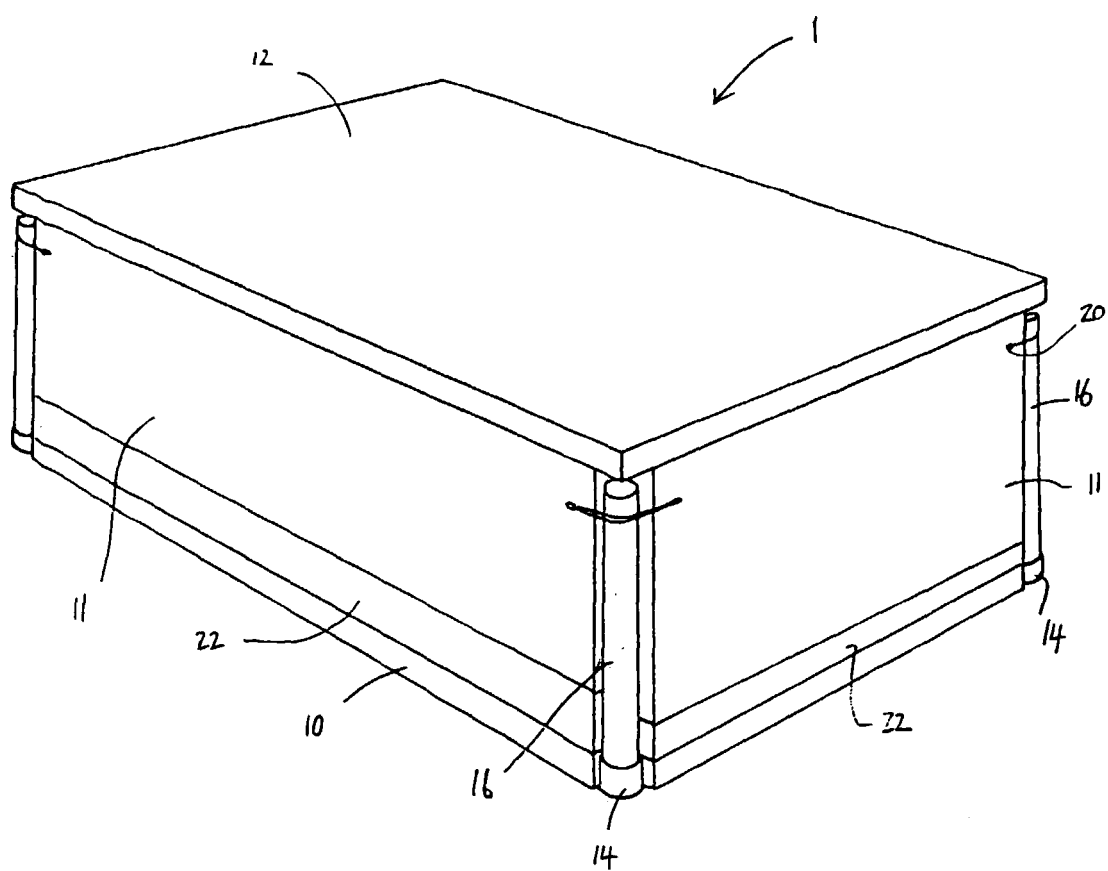


FIG. 1

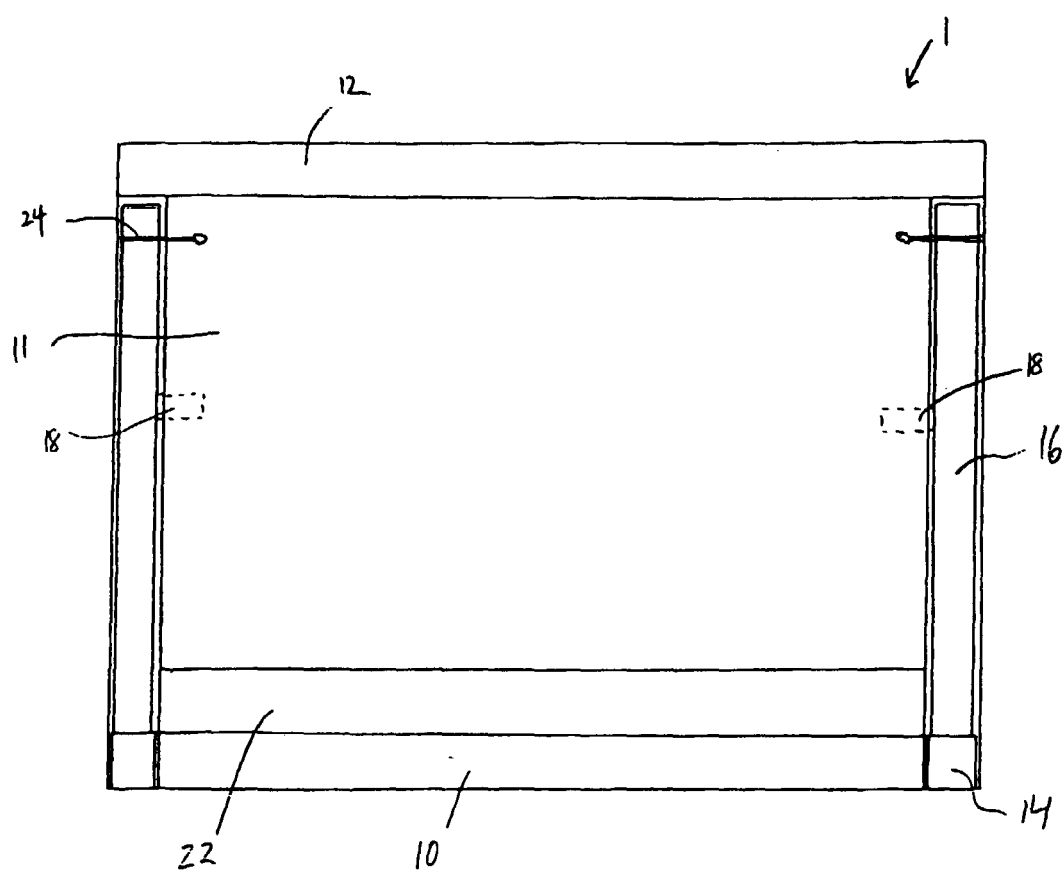


FIG 2

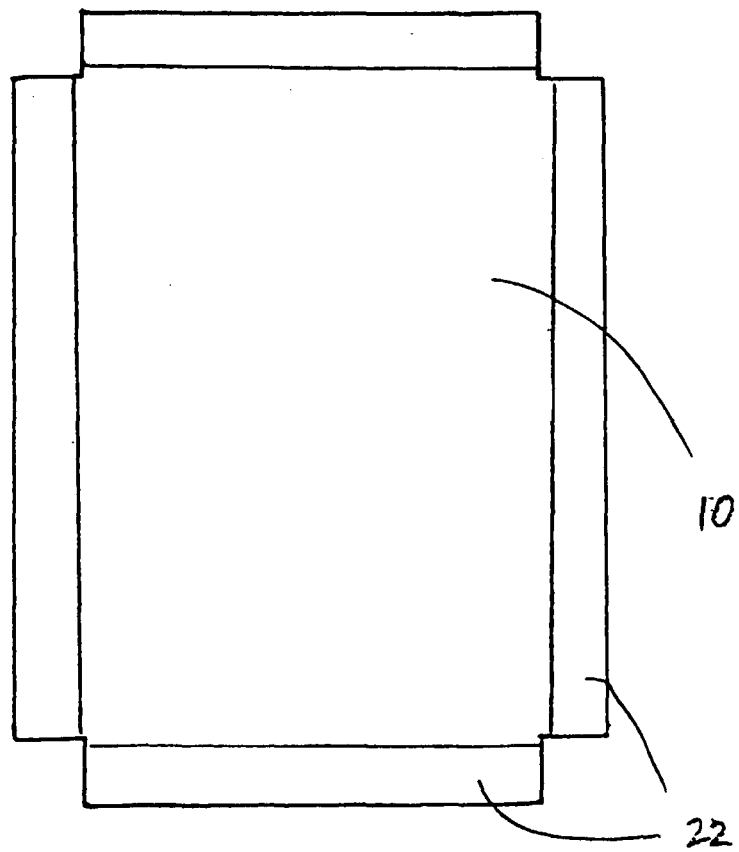


FIG 3

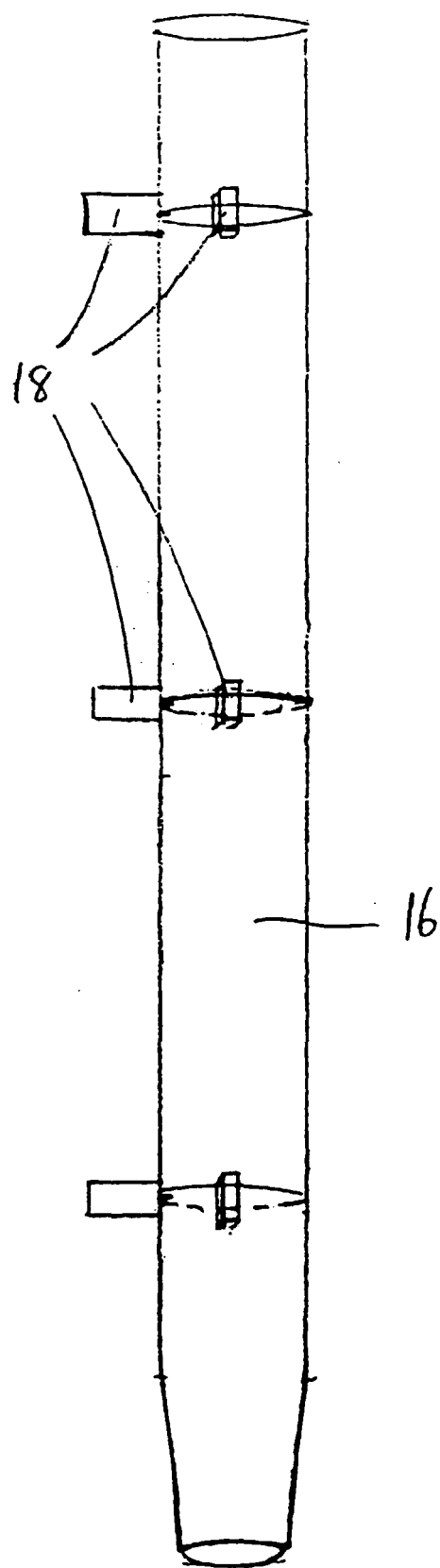
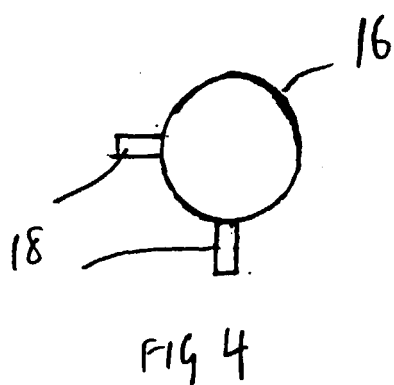
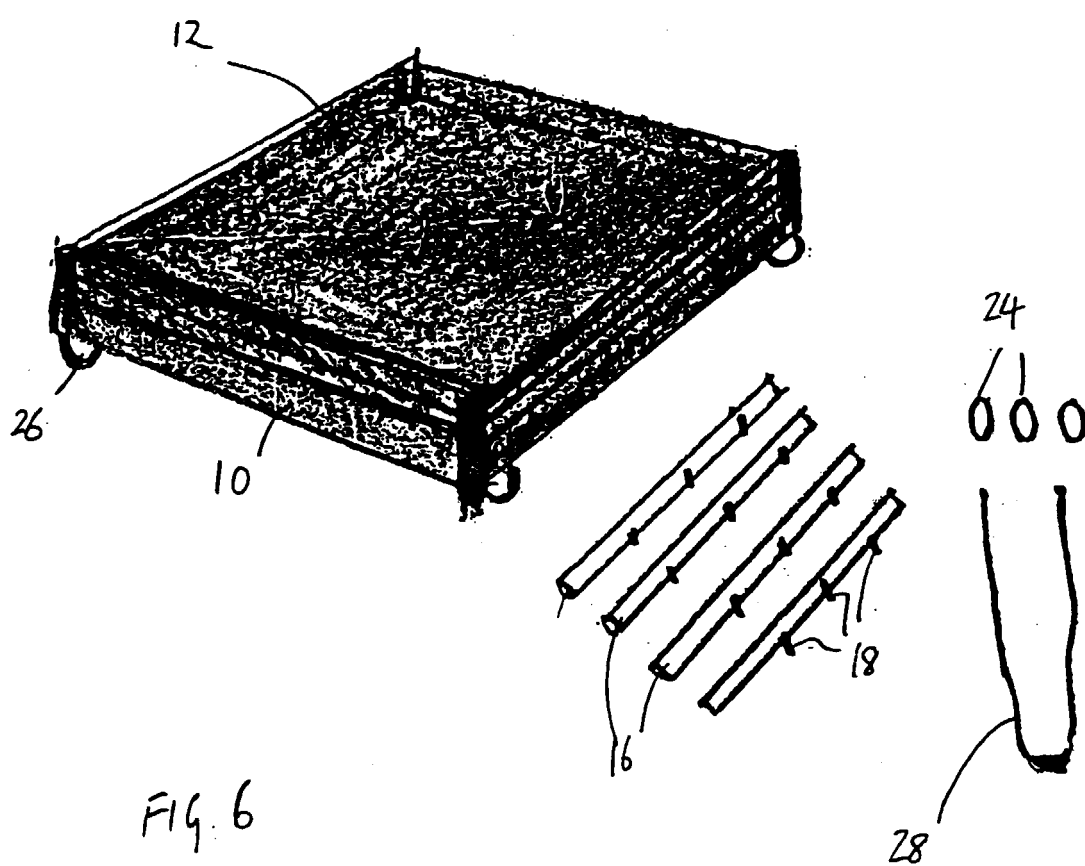


FIG 5



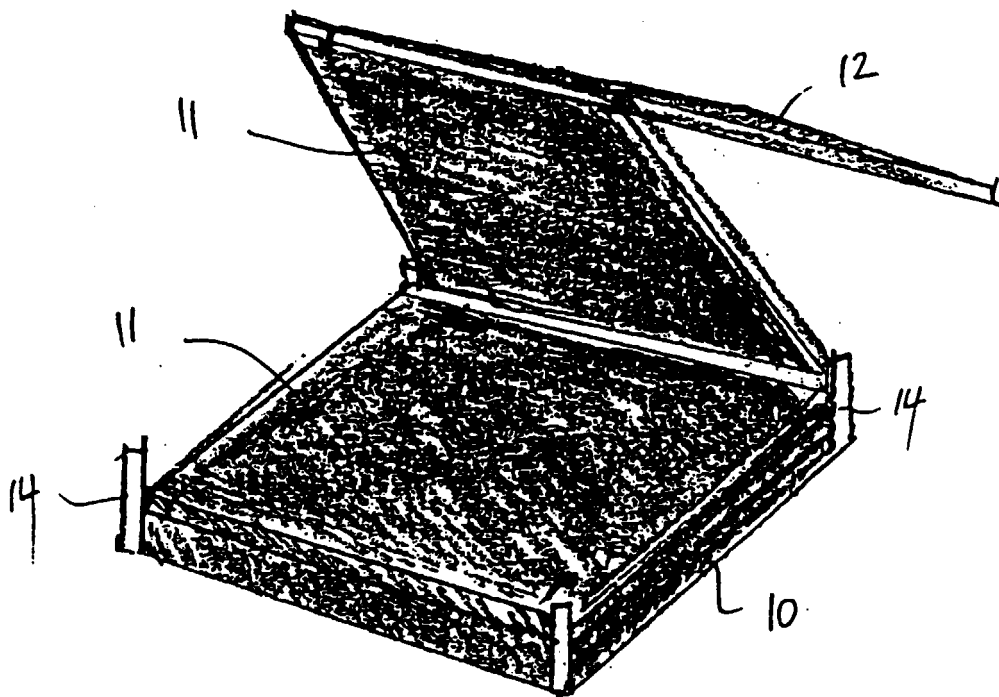


Fig 7

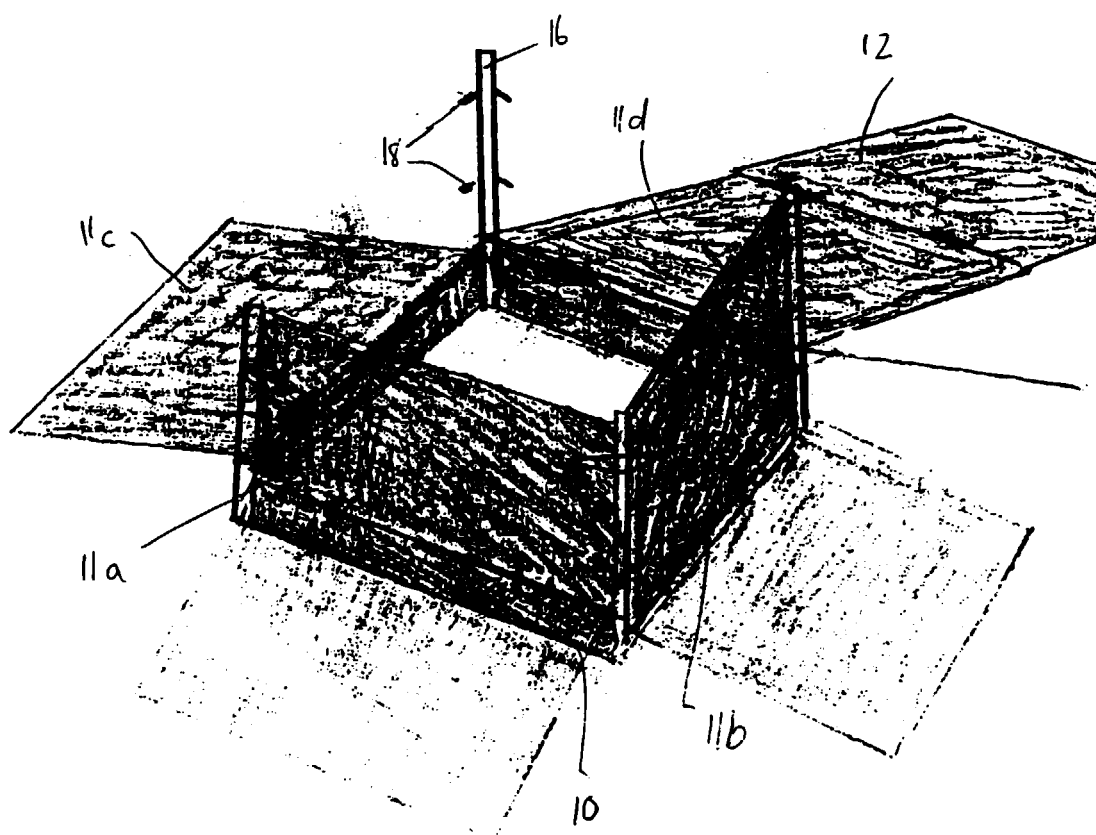


Fig. 8



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EUROPEAN SEARCH REPORT

Application Number
EP 00 30 0994

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.C1.7)
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The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (Int.C1.7)
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Place of search	Date of completion of the search	Examiner	
THE HAGUE	31 May 2000	Vollering, J	
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**ANNEX TO THE EUROPEAN SEARCH REPORT
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EP 00 30 0994

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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