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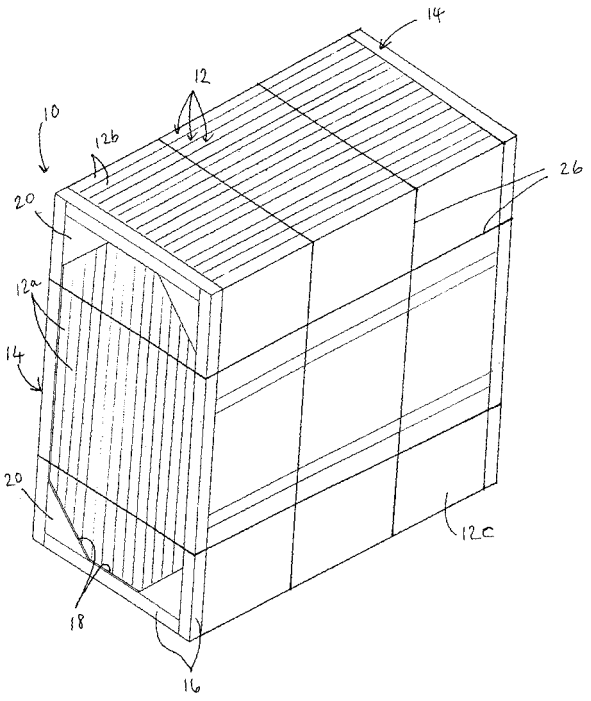
(54) Packaging

(57) A packaging 10 is suitable for a plurality of panel-type articles 12 substantially of equal size arranged such that corresponding edges 12a, 12b of the articles are substantially aligned with respect to each other. The packaging comprises a first rigid end-cap 14 placeable on and/or around the plurality of articles along first corresponding edges thereof and a second rigid end-cap 14 placeable on and/or around the plurality of articles along second corresponding edges thereof. The first and second edges of the articles are respectively contained within the first and second end-caps, and the end-caps together secure the articles therebetween. The articles are visible between the end-caps. The packaging also provides a means for transporting a stack of panels from a horizontal to a vertical position.

Fig. 1



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Description

[0001] The present invention relates to packaging and, in particular, to packaging for a plurality of panel-type articles substantially of equal size (e.g. fence panels).

[0002] After the manufacture of fence panels (for example), it is necessary to transport them to a vendor or purchaser. Generally, the panels are transported in batches. The panels ultimately may be sold in that batch by a vendor, or the batch may be split for individual sale. With large and/or heavy articles, it is clearly important for the packaging to be robust and protective for the articles in transit, although this puts a burden on the vendor receiving the articles to unpack the articles and present them for display and sale.

[0003] It is known to transport fence panels in box pallets or crates. Whilst such packaging is sturdy and protective, the person receiving the crate must spend time and effort to disassemble it in order to remove each of the panels transported therein. This may involve removing nails from the crate, which is time-consuming and laborious. The articles and the crate/pallet itself may also be unwieldy to manoeuvre.

[0004] It is also known to transport fence panels by simply nailing pieces of wood to the panels in order to keep them together during transport. Again, it is necessary to manually remove the nails in order to unpack the panels. This task can also be cumbersome, as often the panels are transported and delivered vertically, and the panels may become unstable as they are separated from each other. Simple strapping may also be used to transport batches of panels, to be cut away for unpacking. However, this will be less secure for transportation of the panels, as the strapping could snag on an obstruction and break, or simply break during transit and handling. Furthermore, the strapping may allow some relative movement between adjacent panels meaning the strapping could loosen and become insecure.

[0005] Even if these known methods are employed without incident, the fence panels tend to be transported vertically. Transportation of vertically packed panels has proved to be problematic (and may even be dangerous), due to the inherent instability of the panels in transit. That is, known packaging means and methods fail to package the panels together securely. Even if the panels are transported horizontally, i.e. stacked with respect to each other, the vendor is likely to want to display the surfaces of the panels to potential buyers, and so he has to manoeuvre the panels into a vertical position from the stacked horizontal position. This either requires hard, manual labour, or the use of expensive machinery to invert the panels.

[0006] The present invention has been devised with the foregoing in mind, and aims to overcome the shortfalls of known packaging systems.

[0007] According to a first aspect of the present invention, there is provided packaging as defined in claim 1. It is an advantage that the packaging is rigid and sturdy for transportation of the articles therein. Furthermore, the end-caps of the packaging allow viewing of the articles therebetween, enabling the packaged articles to be displayed as packed. The end-caps are also easily removable from the articles, and are re-useable. The packaging enables transportation and/or display of panel-type articles either horizontally (i.e. stacked) or vertically. The packaging is particularly useful for transporting panels vertically in a stable manner, as compared to known, inherently unstable, packaged panels. It is an advantage that the packaged articles may easily be moved from one orientation to another.

[0008] The packaging may be used to contain any items that are reasonably flat, for example, building materials such as fence panels, wooden boards, tiles etc., as well as smaller items such as CDs, DVDs etc. For square or rectangular articles, the end-caps are placeable on and/or around opposite edges of the square or rectangular articles, to effectively contain the articles therebetween.

[0009] Preferably, the end-caps are removable from the plurality of articles. It is an advantage that no additional tools are needed to effect removal. The end-caps may also be re-used.

[0010] In an embodiment, each end-cap contacts at least a portion of the outermost surface of the outermost article of the plurality and at least a portion of an edge of each of the articles of said plurality. In a preferred embodiment, each end-cap is a frame having an aperture allowing viewing of the edges of the plurality of articles contained therein. Since the surfaces of the outermost articles are visible between the first and second end-caps, and the edges of the articles are visible through the end-cap frames, the articles are visible even when packaged which is convenient for persons buying/selling the articles.

[0011] Additional containment features may be provided between and joined to the edges of the frame. The containment features may comprise any one or more of corner fillets spanning the distance between adjacent sides of the frame in one or more corners thereof; and bracing extending between adjacent and/or opposite sides and/or corners of said frame. The containment features advantageously add strength to the end-cap frames and ensure that the articles are securely packaged therein. Preferably the containment features are fabricated from the same material as said end-caps. This facilitates manufacture and minimises costs. The containment features may conveniently be formed from off cuts from the manufacturing of the frame or otherwise. The containment features may be integrally formed with the end-caps. The end caps and/or containment features may be fabricated from any suitable rigid material, such as metal (e.g. steel), wood or plastic.

[0012] In an embodiment, the packaging further comprises securing means for securing the end-caps in position around the plurality of articles. The securing means may comprise means extending around both end caps

and the articles therebetween. Preferably, the securing means comprise banding and/or strapping. It is an advantage that strapping is inexpensive and easy to apply to the packaging, and can be cut away easily when needed. Guide means may be provided on one or both end caps for retaining the securing means in place with respect to the end caps. The guide means may comprise one or more lugs for maintaining the securing means in position.

[0013] According to a second aspect of the present invention, there is provided a method of packaging a plurality of panel-type articles substantially of equal size as defined in claim 16.

[0014] It is an advantage that the articles can easily and quickly be packaged together, and that the packaged articles are securely contained in the packaging.

[0015] According to a third aspect of the present invention, there is provided a method of transporting a plurality of panel-type articles as defined in claim 17.

[0016] Advantageously, the method allows packaging of a stack of panel-type articles that can easily be reoriented e.g. for unloading from the packaging or for display of the packaged articles.

[0017] Embodiments of the invention will now be described with reference to the following drawings, wherein:

Figure 1 shows an isometric view of packaging in use to package a plurality of panel-type articles;

Figures 2a and 2b show front and rear isometric views of one embodiment of an end-cap, and Figures 2c and 2d show front and rear isometric views of an alternative embodiment of an end-cap; and

Figures 3a-3d show front views of various end-cap configurations.

[0018] Referring to Figure 1, packaging 10 is shown in use to package a plurality of panel-type articles 12. In the embodiment shown, the articles 12 are fence panels, although it will be appreciated that any flat articles of substantially the same size and shape may be packaged according to embodiments of the present invention.

[0019] The packaging 10 comprises two end-caps 14. The panels 12 are packaged such that each end-cap 14 accommodates opposite edges 12a of the plurality of panels 12. Providing end-caps 14 at these edges 12a of the panels 12 retains the panels 12 in their mutually aligned relationship as shown in Figure 1, and contains the panels therebetween. In the embodiment shown, rectangular-shaped panels 12 are packaged with rectangular-shaped end-caps 14 installed on opposite edges thereof, but it will be appreciated that flat articles of any shape could be packaged using two or more correspondingly shaped end-caps in order to secure the articles 12 in their respective positions relative to each other.

[0020] In the embodiment shown, the end-cap 14 comprises an L-shaped frame 16 that contacts the edges 12a of the panels 12 and the adjacent edges 12b of the panels 12 orthogonal thereto.

Figures 2a and 2b show front and rear views of an end-cap 14, and Figure 2b clearly shows the surfaces of the frame 16 against which the fence panel edges 12a, 12b abut in use. The plurality of panels 12 are thus secured together at opposite ends via the end-caps 14, leaving the surface 12c of the outermost panel 12 visible.

[0021] Referring again to Figure 1, the frame 16 of the embodiment shown has an opening 18 through which the edges 12a of the plurality of panels are visible. Additional containment structures may be provided in order to strengthen the end caps 14 to ensure proper retention of the panels 12 thereby. Figure 1 shows fillets 20 provided at each corner of the frame opening 18, bridging the gap between adjacent sides of the frame 16. A front view of this arrangement is shown in Figure 3a. It will be appreciated that other ways of improving the containment of the panels 12 can be used with the same effect, and a few examples are shown in Figures 3b-3d. In Figure 3b, just two corner fillets 20 are employed. In an alternative embodiment, corner fillets 20 could be provided at opposite corners of the frame opening 18, or one or three fillets could be used. In Figure 3c, X-shaped cross bracing 22 extends from each of the four corners of the frame opening 18, crossing in the centre thereof. This arrangement is also shown in Figures 2c and 2d. Figure 3d shows V-shaped cross-bracing 24, extending from the top corner of the frame opening to the middle of the opposite side of the opening, and back to the bottom corner on the original side of the opening 18. It is readily apparent that the size, shape, orientation and number of the containment structures may be varied and that other configurations are possible that still fall within the scope of embodiments of the present invention. In an alternative embodiment (not shown), the end-caps 14 could be constructed without the aperture 18 - that is, they could present a continuous surface to contain the edges of the panels 12.

[0022] Whilst the end-caps 14 may be configured to tightly fit around the ends 12a of the panels 12, additional means may also be provided in order to secure the end-caps 14 to the panels 12. Referring again to Figure 1, strapping or banding 26 is looped around each end-cap 14 and the intermediate panels 12 to secure them together. Strapping/banding 26 may also/instead be provided in either direction orthogonal thereto (i.e. across the faces 12c of the outermost panels 12 around the plurality of panels and/or across the end-caps 14 and along the direction of the edges 12b of the panels 12. This is a convenient way of securely packaging the panels 12 as the strapping 26 can easily be cut away to release the panels, but other means may also be used. For example, one or more strips of material e.g. wood (not shown) could be affixed (e.g. nailed) to the edges 12b of the panels so as to affix some or all of the panels 12 to the strip(s).

[0023] In order to retain the strapping/banding 26 in place around the panels, lugs may be provided on the

frame 16, to guide or retain the strapping 26 in position. Figures 2a and 2b show one possible configuration, where two lugs 28a, 28b are provided at two positions along the length of one side of the frame 16. The lugs 28 are positioned on the part of the L-shaped frame 16 that is parallel to the face 12c of the panel 12. When the strapping 26 is wrapped around the panels 12, it is guided through the lugs 28a, 28b, which maintain it in this position in order to ensure that the strapping 26 does not become misaligned during transport/handling, which could increase the chance of loss of containment of the panels. Clearly any number of lugs 28 could be provided at any number of positions along the frame edge, to help prevent slippage of the strapping 26. For example, a single lug 28c could be provided at one ore more positions along a frame edge, to support strapping wrapped around the panels above it, as shown in Figures 2c and 2d. Instead of lugs 28, loops could be provided, the strapping 26 being threadable therethrough.

[0024] The lugs 28 also perform another function. Since the end-caps 14 are re-useable, they can be stacked together for storage and/or transport from distributor to vendor etc. The lugs 28 facilitate stacking of the end-caps 14, as one end-cap 14 will effectively sit within and between the lugs 28 of another.

[0025] Additional protective members (not shown) could also be strapped to the panels using the strapping 26, to protect that edge/surface of the panels 12 for placement on the ground or other surface. Alternatively, the end-caps 14 could be provided with protuberances (not shown) extending from the perimeter of the frame 16 beyond an edge/surface of the panels, for contacting the ground to prevent direct contact of the edge/surface of the panel contacting the ground.

[0026] In use, a plurality of panels 12 are aligned with respect to each other so that their flat surfaces are adjacent to each other. It is convenient to stack the panels 12 flat on the ground or other surface prior to packaging. The end caps 14 can then be positioned at opposite ends 12a of the stack of panels 12, to clamp the panels 12 therebetween. Due to the L-shape of the end-cap frame 16, the edges 12a of the panels 12 are enclosed and secured within the frame 16.

In order to provide additional security, the strapping or banding 26 may be applied around the sides of the panels 12 and/or end-caps 14 to secure them together. The packaged panels 12 can then be loaded onto a vehicle for transportation to their destination. The horizontal orientation of the packaged panels 12 may be preserved for transportation, or the package may be inverted or rotated so that the panels 12 are oriented vertically (e.g. as shown in Figure 1). It is sometimes desirable to transport panels vertically, as it provides for better tessellation within the transporting vehicle without having to pile up horizontally oriented panels, but until now it has been problematic achieving this in a safe and reliable manner. Unlike known packaging means/method, which have not reliably secured the fence panels together during transit, the packaging 10 of embodiments of the present invention provides for stable and secure transportation of packaged panels, even when the panels are transported vertically.

[0027] When unloading the packaged panels 12 at their destination, the panels 12 may be kept in the same orientation that they had during transport, or it may be changed to suit the needs of the person receiving the panels 12. It is convenient for vendors who will sell the panels 12 on to be able to receive the panels 12 in an upright (vertical position) and to then place the packaged panels 12 in position ready for sale. The strapping 26 may be easily cut off at any time, and the end-caps 14 can simply be pulled away from the batch of panels 12 at a convenient time. The packaging 10 advantageously allows the panels to remain packaged whilst the product to be sold (the panels 12) is clearly visible within the packaging 10. Such a system thus provides a means of transporting panels 12 from a stacked horizontal position to a vertical position for transport and/or display purposes.

[0028] The end-caps 14 are thus not only easily placeable on the panels ends 12a, and easily removable therefrom, but they are also re-usable. Furthermore, there is no need for any tools when removing/installing the end-caps, as compared with opening a crateful of panels, for example.

[0029] Additionally, the end-caps 14 take up little space in storage when not in use, and can easily be transferred from supplier to customer when not being used in packaging items. The end-caps 14 are preferably fabricated from metal, e.g. steel. However, it will be appreciated that they may be constructed from any suitable rigid material, e.g. plastics material, wood/wooden materials etc. The additional containment structures (fillets 20, bracing 22, 24) may also be constructed of any suitable material, although it is preferable that they too are rigid. It is convenient to manufacture the end-caps 14 and fillets 20/bracing 22, 24 from the same material, and the containment structures may be integrally formed with the end-caps 14. Although the relative dimensions of the sides and edges of the frames 16 is shown consistently within Figures 1-3d, it will be appreciated that the depth of the L-shaped frame could be varied whilst still achieving containment. It will also be appreciated that it is not essential for the frame 16 to comprise four sides to contact the edges 12b and surfaces 12c of the panels 12. Frame supports could simply be provided on opposite sides of the end-cap 14, for example.

[0030] It will be appreciated that whilst embodiments of the invention have been described in connection with the packaging of building/construction materials such as fence panels, tiles, wooden boards and the like other uses are also contemplated. Embodiments of the invention lend themselves to the packing of a plurality of any articles that are reasonably flat and of substantially the same size. For example, CDs, DVD, books, shelving, doors etc. could all be packaged using the principles described hereinbefore. The dimensions and scale of the

items to be transported is irrelevant.

Claims

1. Packaging for a plurality of panel-type articles substantially of equal size arranged such that corresponding edges of said articles are substantially aligned with respect to each other, said packaging comprising a first rigid end-cap placeable on and/or around said plurality of articles along first corresponding edges thereof and a second rigid end-cap placeable on and/or around said plurality of articles along second corresponding edges thereof, wherein said first and second edges of said articles are respectively contained within said first and second end-caps, and said end-caps together secure said articles therebetween.

2. The packaging of claim 1, wherein said end-caps are placeable on and/or around opposite edges of a plurality of square or rectangular panel-type articles.

3. The packaging of claim 1 or claim 2, wherein each end-cap contacts at least a portion of the outermost surface of the outermost article of the plurality and at least a portion of an edge of each of said articles of said plurality.

4. The packaging of claim 3, wherein said end-cap is a frame having an aperture allowing viewing of the edges of said plurality of articles contained therein.

5. The packaging of claim 4, further comprising additional containment features between and joined to the edges of said frame.

6. The packaging of claim 5, wherein said containment features comprise any one or more of:

   corner fillets spanning the distance between adjacent sides of the frame in one or more corners thereof; and
   bracing extending between adjacent and/or opposite sides and/or corners of said frame.

7. The packaging of claim 5 or claim 6, wherein said containment features are fabricated from the same material as said end-caps.

8. The packaging of claim 7, wherein said containment features are integrally formed with said end-caps.

9. The packaging of any preceding claim, further comprising securing means for securing said end-caps in position around said plurality of articles.

10. The packaging of claim 9, wherein said securing means comprise means extending around both end caps and the articles therebetween.

11. The packaging of claim 10, wherein said securing means comprise banding and/or strapping.

12. The packaging of any of claims 9 to 11, further comprising guide means provided on one or both end caps for retaining the securing means in place with respect to said end caps.

13. The packaging of claim 12, wherein said guide means comprise one or more lugs for maintaining the securing means in position.

14. A method of packaging a plurality of panel-type articles substantially of equal size, the method comprising arranging said plurality of articles such that corresponding edges of said articles are substantially aligned with respect to each other, placing a first rigid end-cap on/around said plurality of articles along first corresponding edges thereof and placing a second rigid end-cap placeable on and/or around said plurality of articles along second corresponding edges thereof so as to contain the first and second edges of said articles respectively within said first and second end-caps and to secure said articles therebetween.

15. A method of transporting a plurality of panel-type articles substantially of equal size from a stacked horizontal position in which said articles are arranged such that corresponding edges of said articles are substantially aligned with respect to each other to a position in which each article of said plurality is substantially vertical, the method comprising placing a first rigid end-cap on/around said plurality of articles along first corresponding edges thereof and placing a second rigid end-cap placeable on and/or around said plurality of articles along second corresponding edges thereof so as to contain said first and second edges of said articles respectively within said first and second end-caps and to secure said articles therebetween, and rotating said packaged plurality of articles substantially 90 degrees so that each of said plurality of articles is substantially vertical.

Fig. 1

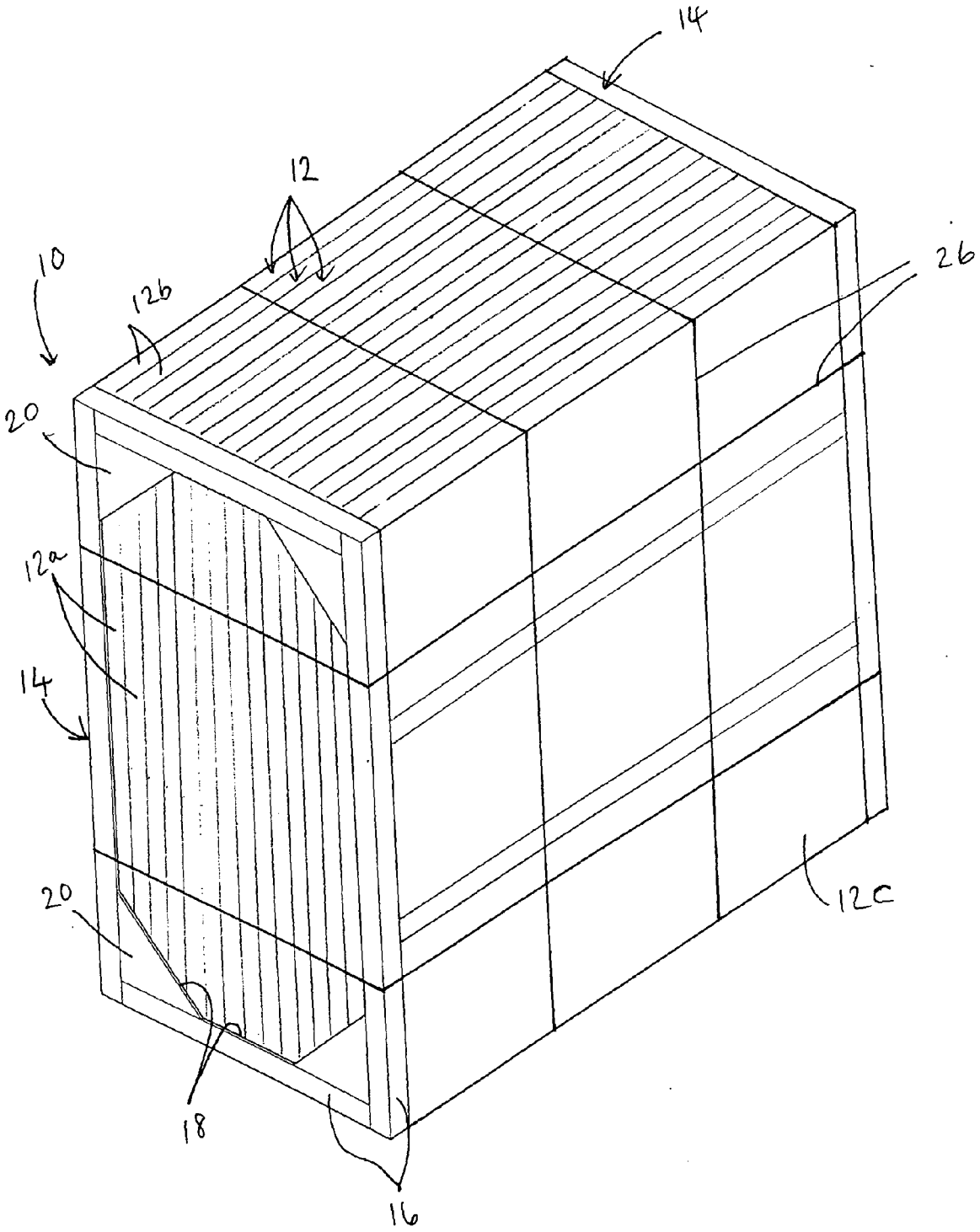

Fig. 2a

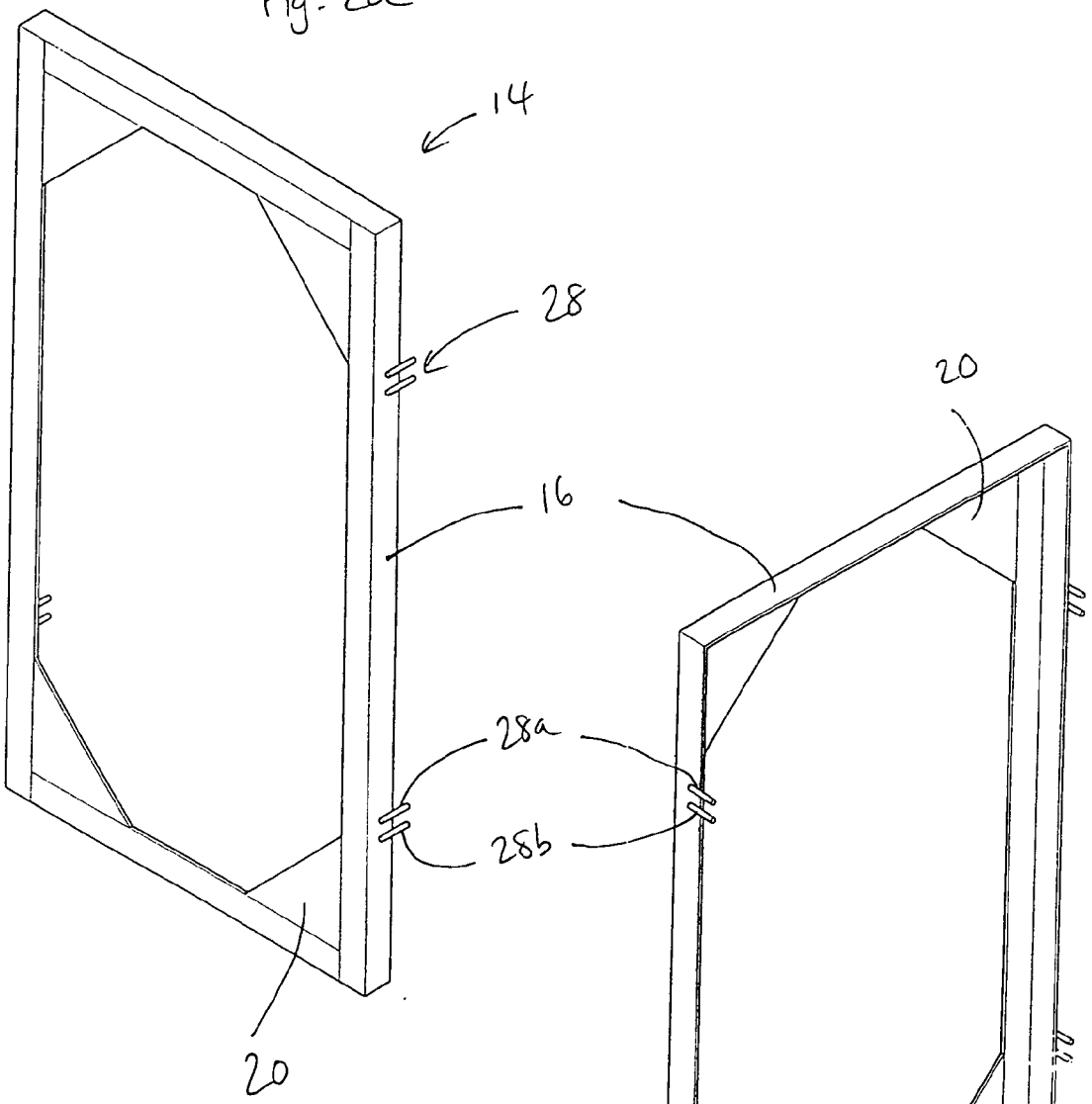

Fig. 2b

Fig. 2c

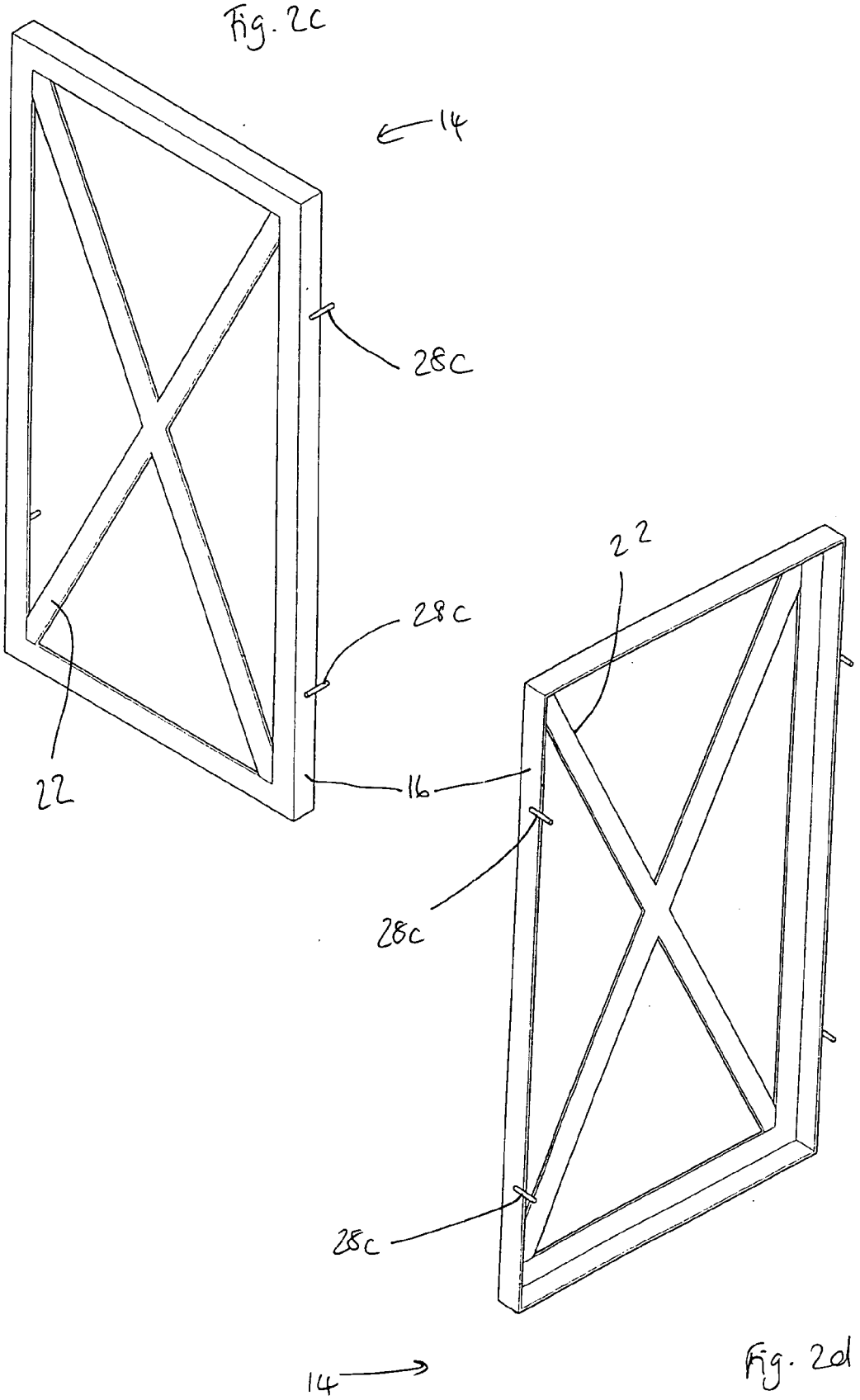

Fig. 2d

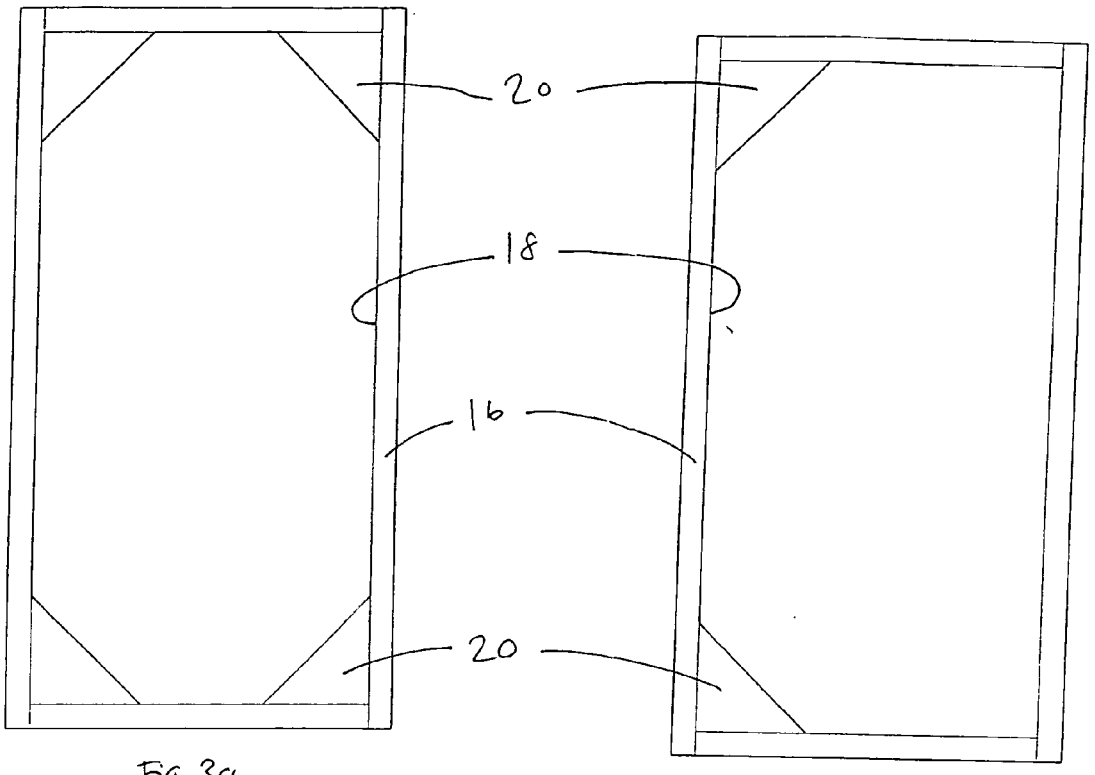

Fig. 3a

Fig. 3b

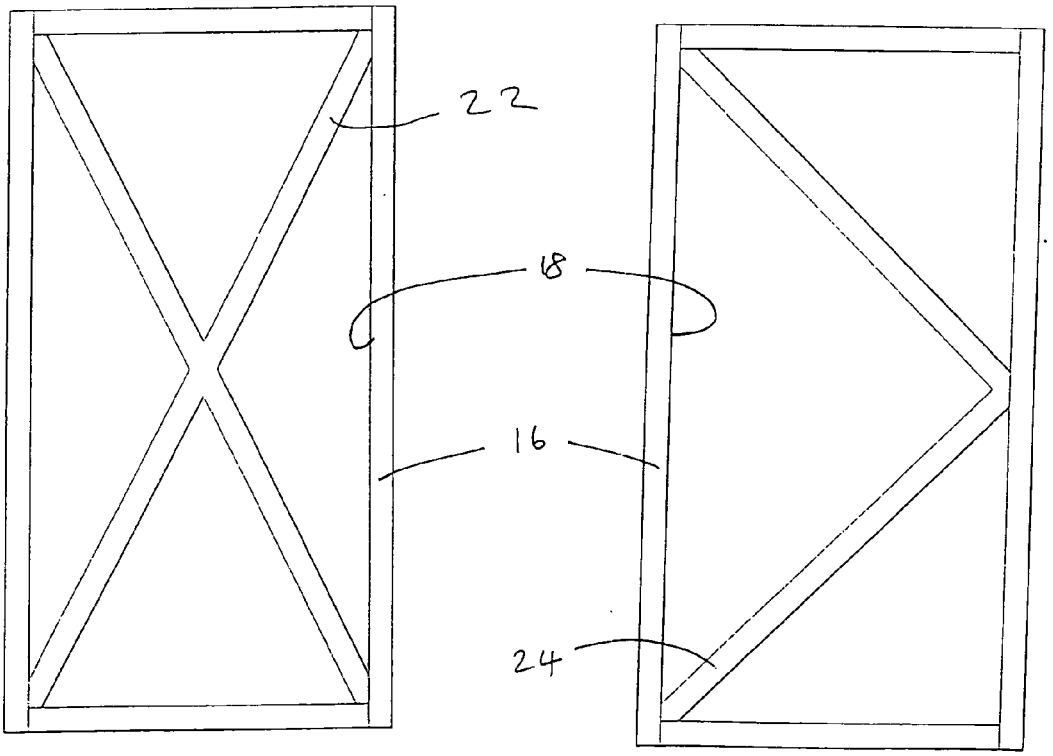

Fig. 3c

Fig. 3d

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EUROPEAN SEARCH REPORT

Application Number
EP 08 25 2887

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	13 January 2009	Lämmel, Gunnar

CATEGORY OF CITED DOCUMENTS

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