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(54) **Display apparatus.**

(57) Display apparatus for displaying products such as icecream tubs (3) within an open-topped freezer (2), the apparatus comprising at least one channel (4A-4E) which, when installed within a freezer (2), is inclined with respect to the vertical and adapted to receive and support a plurality of the products (3) one resting upon another so that a side of the uppermost product, which may carry advertising material, is presented at an angle to the horizontal so the advertising material is clearly visible to a customer looking down into the freezer (2).

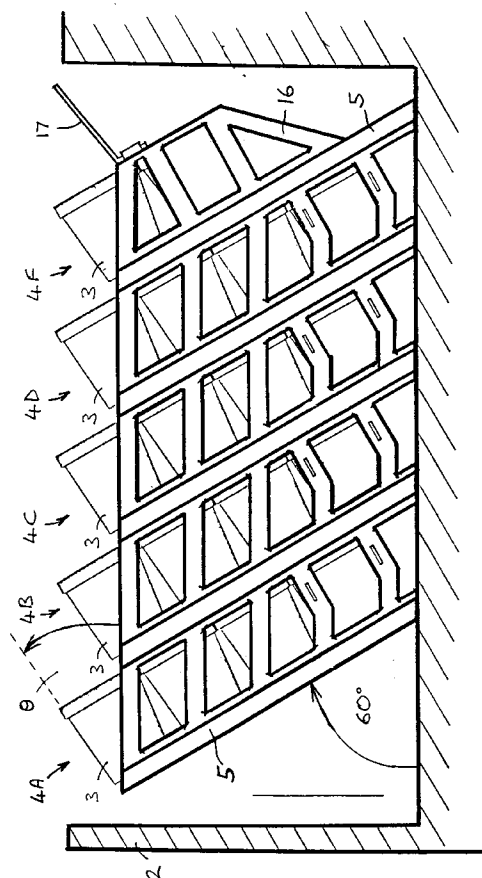


FIG. 3.

This invention relates to display apparatus for displaying products within a freezer, particular in open-topped freezers which customers look down into when selecting a product.

Open-topped chest freezers are commonly used in stoops and supermarkets for storing products which need to be kept cool or frozen and for displaying the products to customers. Products are typically stacked one upon another within time freezer so that the top of the uppermost product may be seen by a customer looking down into the freezer. Time disadvantage of such an arrangement is that only the information provided on the top or lid of the product is visible to the customer and as this is generally horizontal it is only clearly visible to a customer standing close to the freezer looking down at its contents. Products positioned at the far side of the freezer are also difficult to see.

According to a first aspect of the present invention, there is provided apparatus comprising at least one channel which, when installed within a freezer, is inclined with respect to the vertical and adapted to receive and support a plurality of products one resting upon another such that a side of the uppermost product is presented at an angle to time horizontal so as to be clearly visible to a customer looking down into the freezer.

According to a second aspect of the invention, there is provided a kit of parts for assembling apparatus as defined above or in any of the other claims of the specification.

Preferred and optional features of the invention with be apparent from the subsidiary claims of the specification.

The invention will now be further described, merely by way of example, with reference to the accompanying drawings, in which:

Figure 1 is a perspective view of a freezer using a first embodiment of the apparatus according to the invention to display products;

Figure 2 is a perspective view of a freezer using a second embodiment of the apparatus according to the invention to display products;

Figure 3 is a cross-sectional side view of the arrangement shown in Figure 1;

Figure 4 is a cross-sectional view corresponding to Figure 3 of a third embodiment of apparatus according to the invention installed within a freezer; and

Figures 5 and 6 are exploded perspective views taken from the direction A shown in Figure 1 showing components of the apparatus shown in the preceding Figures.

Figure 1 and 2 show apparatus 1 installed within an open-topped freezer 2 for displaying products 3 in the form of tubs, such as 500 ml tubs of icecream. As the Figures show, the tubs 3 are presented at an angle so the information printed on the side of the tub is

clearly visible to a customer and products at the far side of the freezer are equally visible to the customer.

As shown in Figure 3, the tubs 3 are supported within a plurality of channels 4A to 4E and rest one upon another within each channel. As the channels 4A-4E are inclined with respect to the vertical, the tubs are displayed with their sides inclined to the horizontal. Figure 4 shows a similar arrangement for use in a shallower freezer.

In the arrangements shown, the channels 4A to 4E are inclined at about 30 degrees to the vertical (or 60 degrees to the horizontal as shown). A typical tub 3 such as a 500 ml tub of icecream has a base of 75 mm diameter, a lid of 100 mm diameter and a height of 105 mm. This means that in the arrangement shown, the angle  $\theta$ , i.e. the angle at which the sides of the tubs are inclined to the horizontal, is about 37 degrees. This angle may vary depending upon the angle of the channels with respect to the vertical and the shape of the product being displayed but in order for the side of the product to be clearly visible to a customer looking down in to the freezer the angle should preferably be between 10 degrees and 50 degrees and most preferably between 30 degrees and 45 degrees.

As shown in Figures 5 and 6, the display apparatus comprises a number of components which fit together to form the channels 4. The three main components are a tray panel 5, side panels 6A and 6B and a base panel 7. The tray panels 5 are arranged substantially parallel to each other and are connected together by the side panels 6A and 6B at opposite edges thereof so as to define the channels between adjacent pairs of tray panels 5. To assemble each channel, lugs 8 on the side panels 6A and 6B are located in slots 9 on opposite edges of the tray panel 5 and secured thereto by sliding the side panel 6A and 6B upwards relative to the tray panel 5 (as shown by arrows B). The side panels 6A and 6B are then flexed apart slightly so lugs 10 on opposite ends of the base panel 7 can be fitted within slots 11 in the respective side panels 6A and 6B (as shown by arrows C). One side of the base panel 7 also fits within a long slot (not shown) provided in the bottom edge of the tray panel 5. The assembled unit is then fitted to another tray panel 5 by means of lugs 12 on the side panels 6A and 6B and lugs 13 on the base panel fitting into slots 14 and 15, respectively, on time tray panel 5 (as shown by arrows D).

As the apparatus is constructed in modular form, it can be assembled so as to provide the appropriate number of channels to fit within the freezer. With conventional freezers, which are typically about 70 cm wide, the apparatus will be constructed with 4 main channels 4A to 4D and an additional channel 4E (described below) as shown in Figure 1. Figure 2 shows an arrangement having a further main channel.

The additional channel 4E is formed by a section

16 which fits onto the final tray panel 5 (as shown by arrows E in Figure 6). The section 16 forms a channel 4E capable of receiving two tubs 3 (as shown in Figures 3 and 4) as opposed to the four tubs 3 mounted within each of the main channels 4A-4E as shown in Figure 3 (or three tubs 3 within each main channel as shown in Figure 4).

A header panel 17 for prominently displaying advertising material or product information may be fitted to the section 15 as shown by arrow F.

Each of the tray panels 5 is also provided with recesses 18 for labels or stickers giving information about the products held within the respective channels.

As best seen in Figures 1 to 4, the side panels 6A and 6B are in the form of parallelograms so that the tray panels 5 are inclined to the vertical. In addition, time base panels 7 are fitted to the side panels 6A and 6B so as to be substantially perpendicular to the tray panels 5, the combination of angles being such that the sides of the tubs 3 are displayed at an angle to the horizontal as described above.

Each of the tray panels is provided with ribs 19 which divide the channels into a plurality of chutes so that products in adjacent chutes are positioned side by side. The ribs 19 also help guide the products as they are slid into or out of the respective chute.

As the channels 4A - 4D are inclined to the horizontal, the section 16 is provided to utilise the space left between the rear of the freezer 2 and the rearmost tray panel 5. With the arrangement shown in Figure 2 comprising 5 main channels each being 4 tubs deep and having 3 chutes for displaying 3 tubs side by side and the additional channel being 2 tubs deep and displaying 3 tubs side by side, the apparatus is capable of holding up to 6B tubs. This compares favourably with a conventional arrangement in which tubs are stacked vertically on top of each other directly in the freezer which allow 72 tubs to be held within the same space.

As shown in Figure 6, there are two sets of slots in the side panels 6A and 6B to which the base panel 7 can be connected. In the arrangement shown in Figure 3, the base panel 7 is fitted to the lower set of slots so that four tubs can be supported in the channel one on the other as shown in Figure 2. However, if desired, the base panel can be fitted to the upper set of slots so that only three tubs can be supported on top of each other within the channel. Alternatively, shorter tray panels 5 and side panels 6A and 6B may be used as shown in Figure 4 for shallower freezers which can only accommodate an arrangement which is three tubs deep.

Each of the components described above (apart from the header panel 17) is provided with large holes or slots to allow free circulation of cold air within the freezer so the apparatus does not impair the refrigeration properties of the freezer and to minimise the

weight of the apparatus.

The components of the apparatus are preferably formed by injection moulding and, because of the low temperature environment in which it is used (e.g. down to minus 22 degrees Centigrade), are preferably formed of food grade, high impact polystyrene (HIPS) although other materials such as PPO and polycarbonates are also suitable.

As the apparatus is constructed from substantially flat components as described above, it can be easily transported in kit-form and assembled at the point of use. As described above, the components are detachably connected together by simply locating lugs within the relevant slots. The lugs are also shaped so that after location within the relevant slot, a short sliding movement of the lug relative to the component providing the slot provides a friction fitting between the components so securing them together. Other quick-fit assembly methods may, however, be employed in place of that illustrated.

The apparatus described above enables products to be displayed more effectively within freezers and is particularly suitable for use with products with information provided on the sides thereof rather than the top or lid. The product can therefore be displayed to the customer in a more attractive manner and so that the product information and/or related advertising can be clearly seen by a customer looking down into the freezer. Products displayed at the rear of the freezer can also be seen as well as those nearer to the customer. The product is presented at an angle which maximises the visibility of the information provided on the side of the product and also allows easy access to the product. This aids selection by the customer and assists the retailer in merchandising the products.

The apparatus provides these advantages whilst still complying to technical specifications relating to refrigeration and the maximum 'load-line', i.e. the maximum height of the product relative to the top of the freezer, with only a very small loss of capacity.

Although the apparatus has been described with specific reference to products in the form of tubs, it will be appreciated that it is suitable for displaying other types of product which are capable of being received and supported within the channels in the manner described.

## Claims

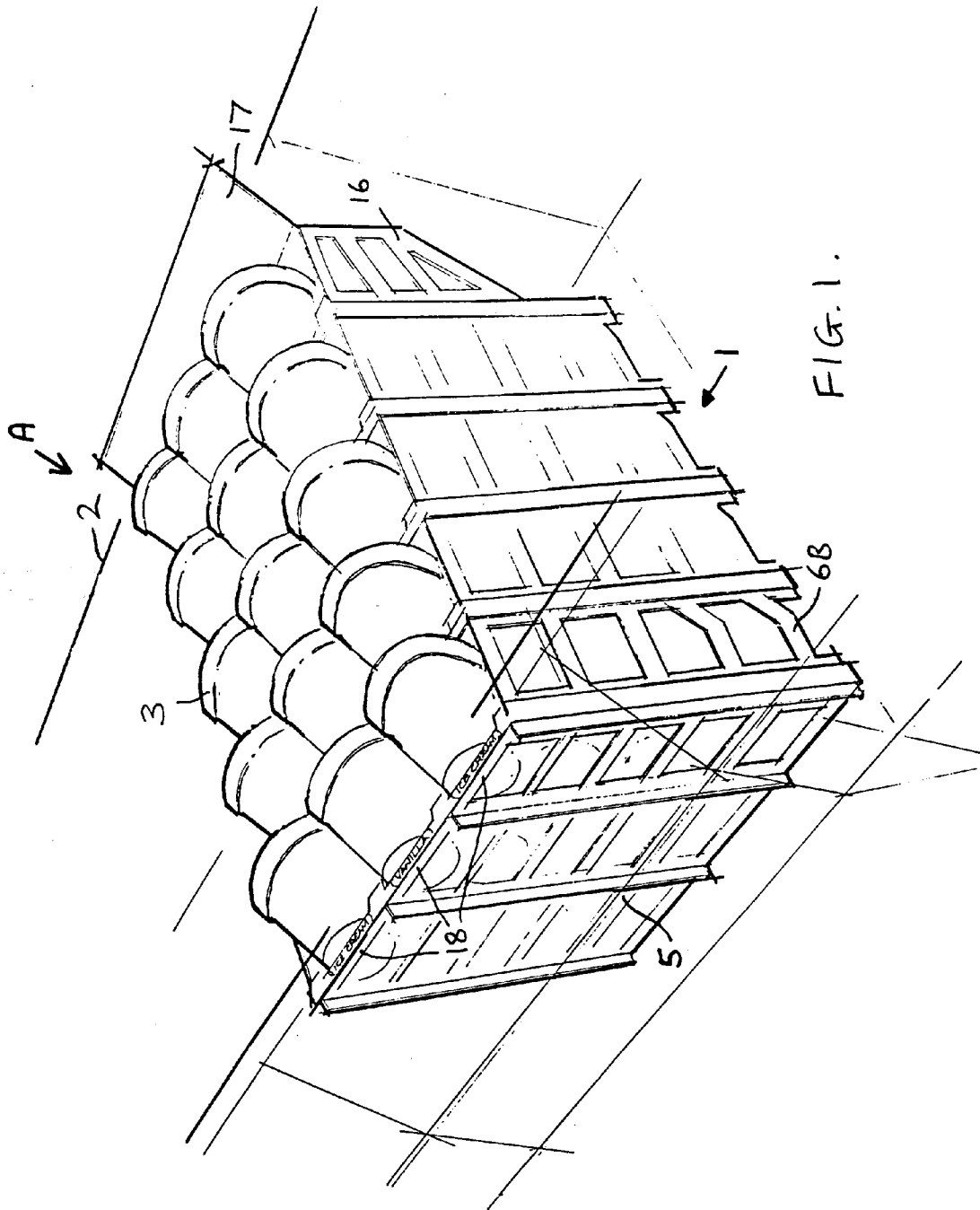
1. Display apparatus for displaying products within a freezer, the apparatus comprising at least one channel which, when installed within a freezer, is inclined with respect to the vertical and adapted to receive and support a plurality of products one resting upon another such that a side of the uppermost product is presented at an angle to the

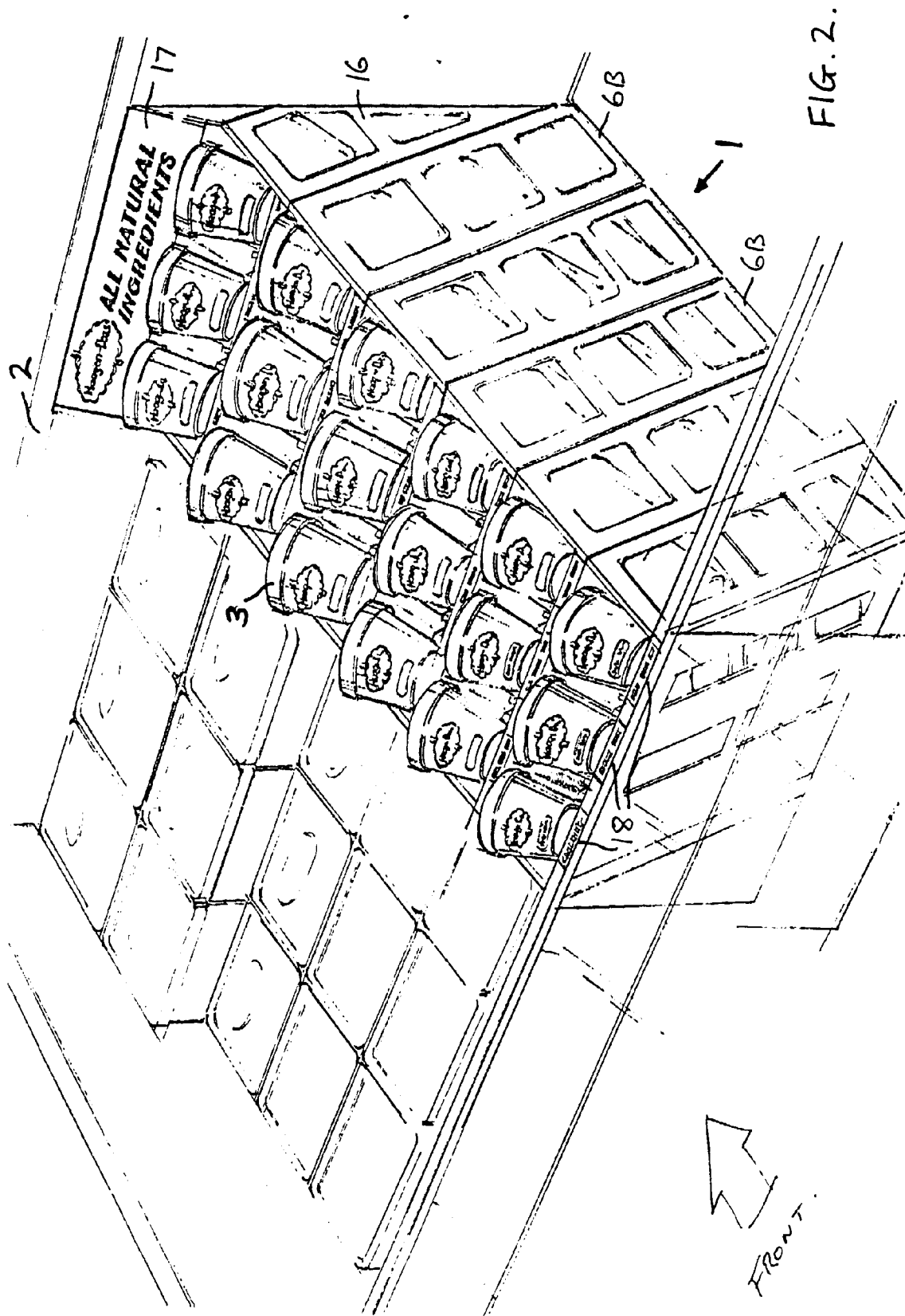
horizontal so as to be clearly visible to a customer looking down into the freezer.

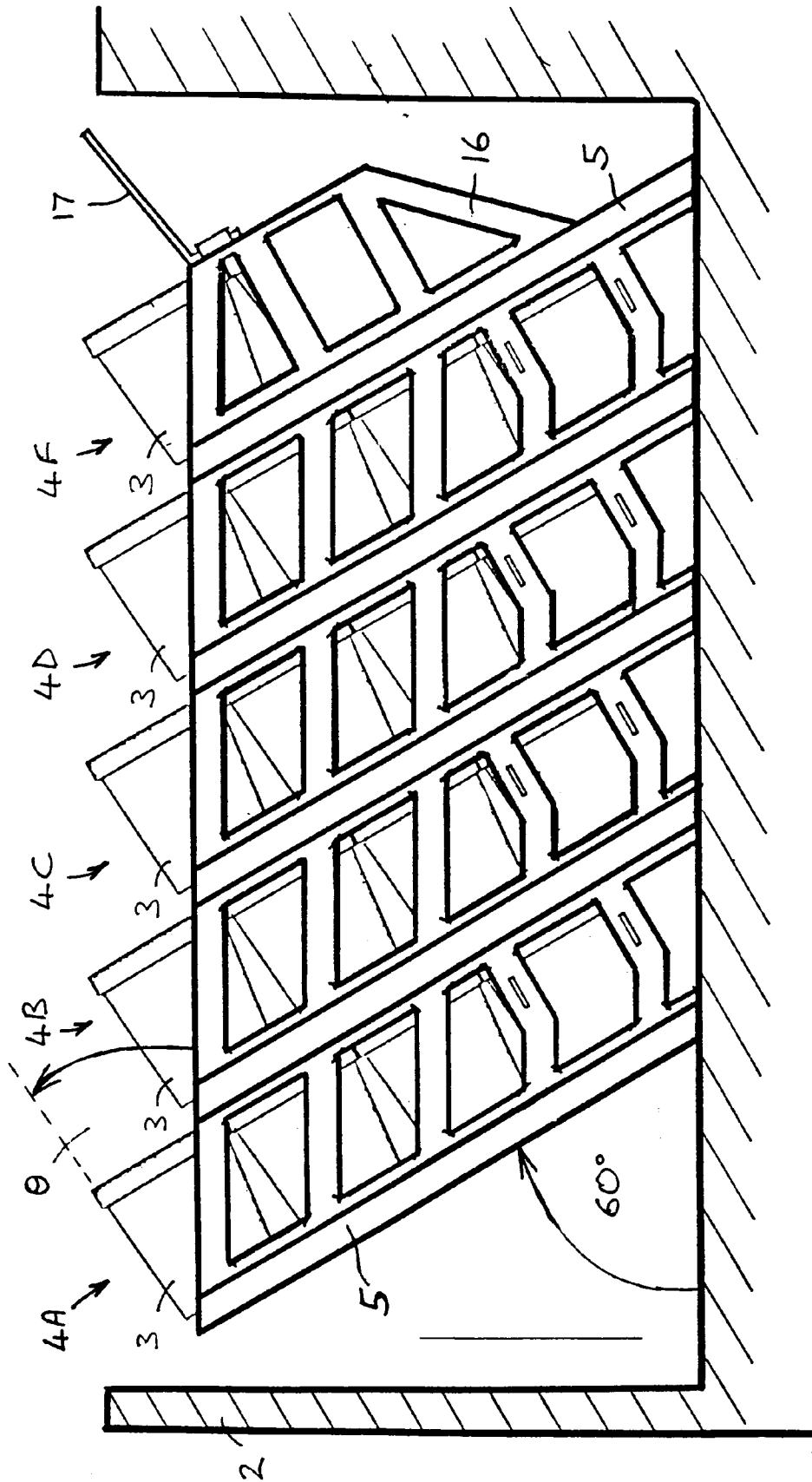
2. Display apparatus as claimed in claim 1 arranged such that, in use, a side of the uppermost product is presented at an angle to the horizontal within the range 10 to 50 degrees, and preferably in the range 30 to 45 degrees. 5
3. Display apparatus as claimed in claim 2 arranged such that, when installed in a freezer, the said at least one channel is inclined with respect to the vertical at an angle within the range 20 to 40 degrees. 10
4. Display apparatus as claimed in any of claims 1, 2 or 3 comprising a plurality of tray panels arranged substantially parallel to each other and connected together by side panels at opposite edges thereof so as to define a channel for receiving products between each adjacent pair of tray panels. 15 20
5. Display apparatus as claimed in claim 4 in which the side panels are shaped and connect with the tray panels so as to form channels having the form of a parallelogram when viewed from the side. 25
6. Display apparatus as claimed in claim 4 or 5 comprising a base panel for fitting within each channel such that the plane of the base panel is substantially perpendicular to the plane of the tray panels. 30
7. Display apparatus as claimed in any of claims 4, 5 or 6 in which the said at least one channel comprises a plurality of chutes each adapted to receive and support a plurality of products one resting upon another such that products in adjacent chutes are positioned side by side. 35 40
8. Display apparatus as claimed in claim 7 in which adjacent chutes are separated from each other by ribs provided on the respective tray panel, which ribs also serve to guide products as they are slid into or out of the respective chute. 45
9. Display apparatus as claimed in any of claims 4 to 8 in which the panels may be detachably connected together, e.g. by mutually engaging lugs and slots. 50
10. Display apparatus as claimed in any of claims 4 to 9 in which holes and/or slots are provided in the panels to allow free circulation of air about the apparatus when installed within a freezer. 55
11. Display apparatus as claimed in any of claims 4

to 10 in which the panels are formed of a plastics material, e.g. high impact polystyrene, by means of an injection moulding process.

12. Display apparatus as claimed in any preceding claims comprising a display panel for prominently displaying information about the product being displayed.
13. A kit of parts for assembling apparatus as defined by any of claims 1 to 12.







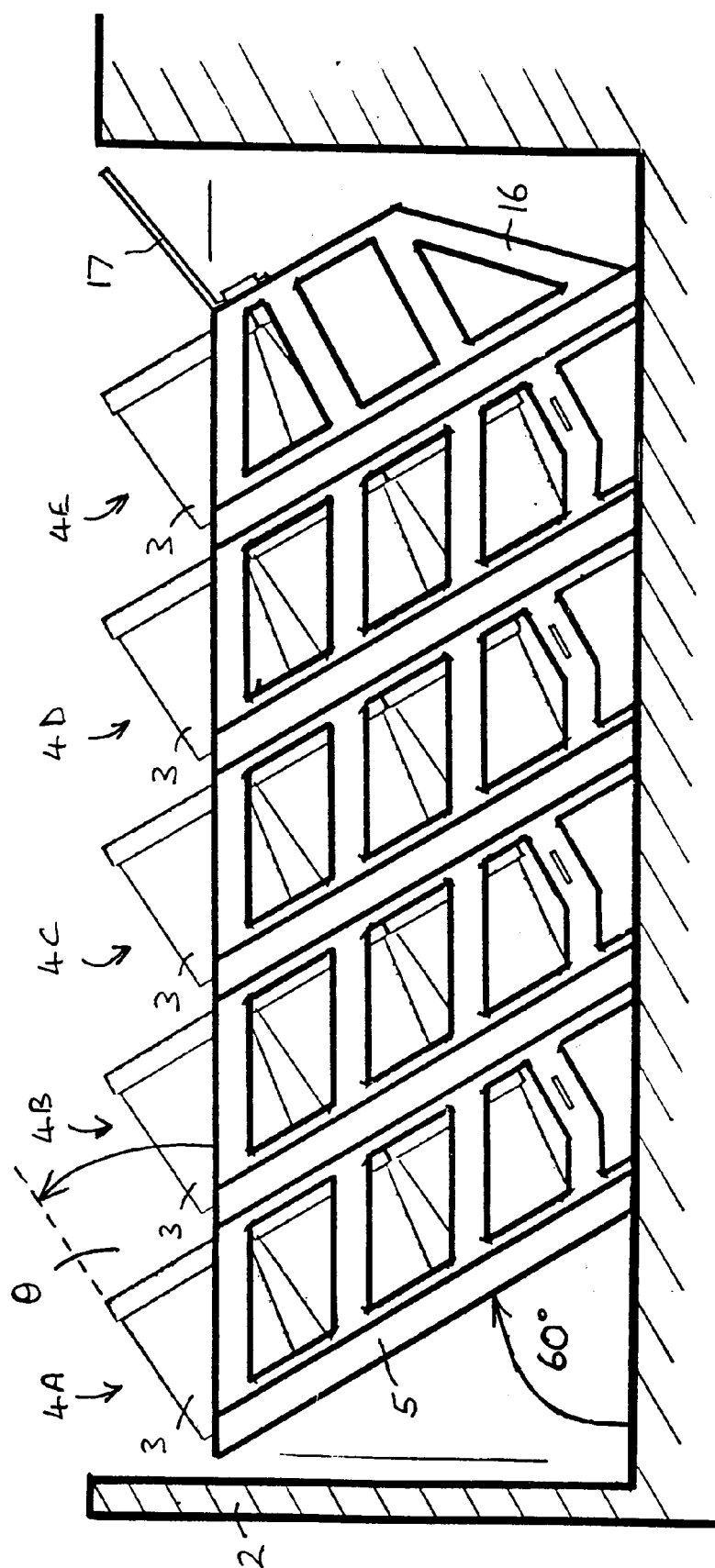
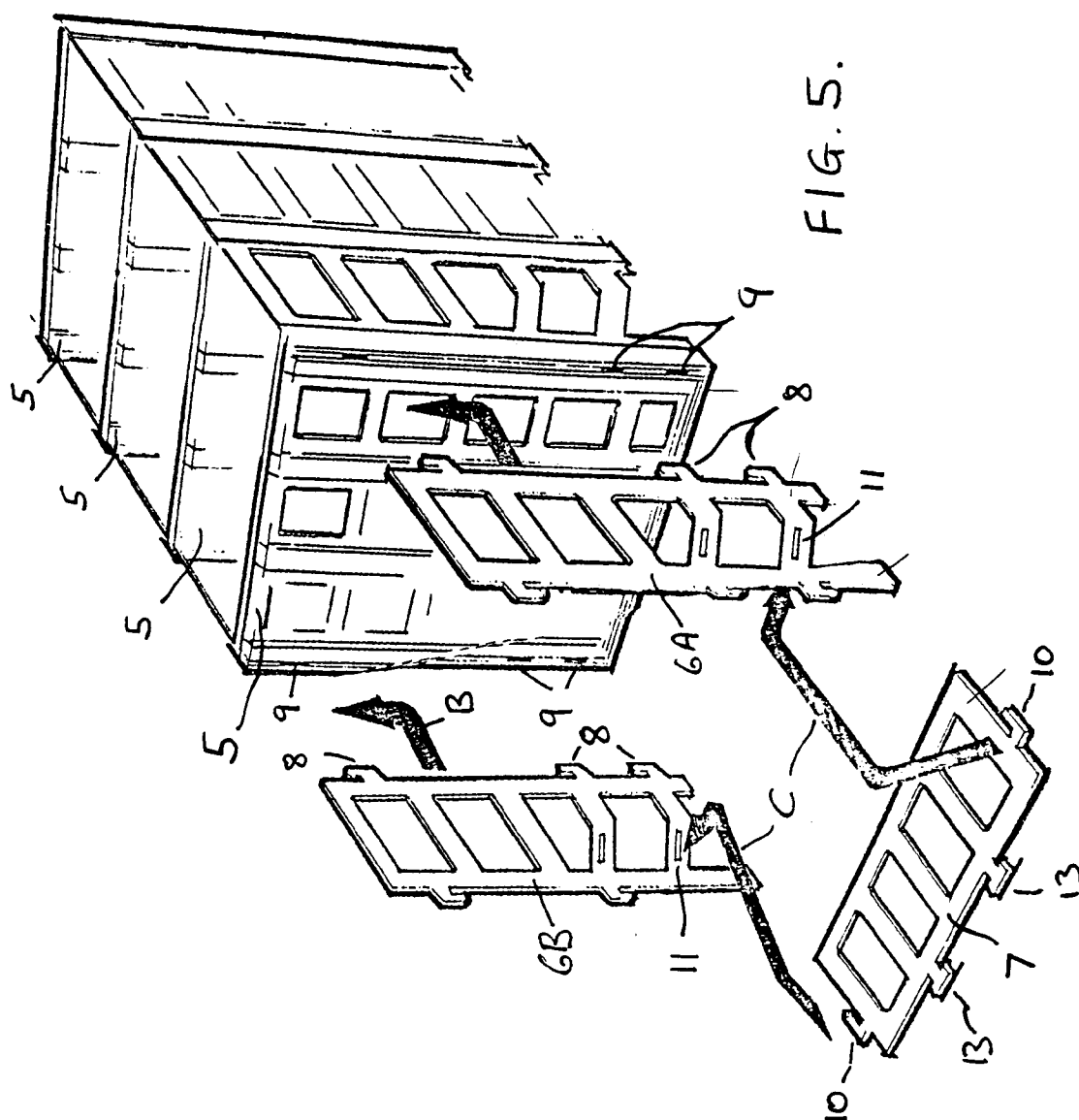
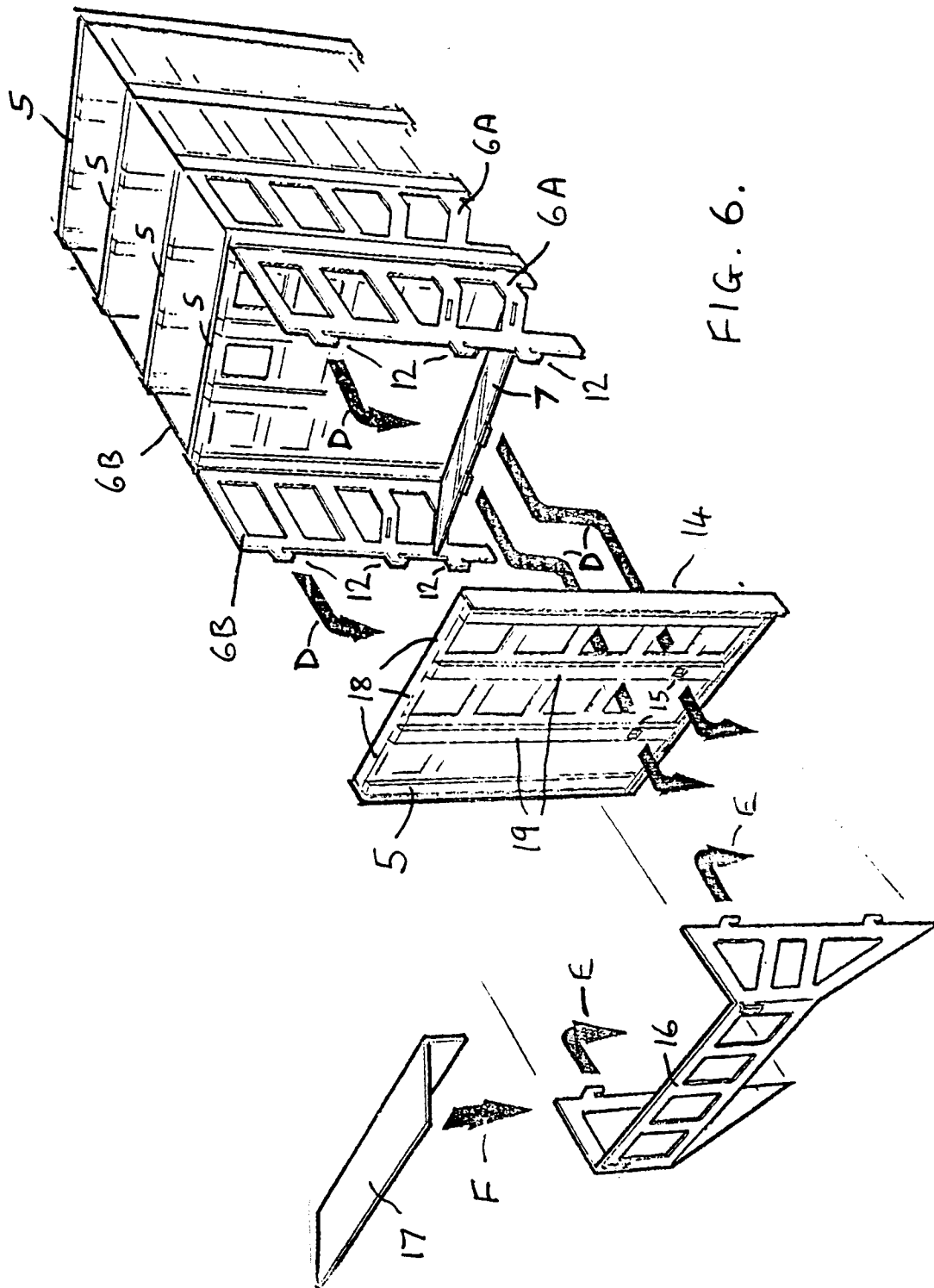


FIG. 4.









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# EUROPEAN SEARCH REPORT

Application Number

EP 92 30 4583

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
Y	US-A-4 941 327 (MILES) * abstract; figures 1,2 * ---	1-3	A47F3/04 A47F7/28 A47F3/14
Y	GB-A-1 088 684 (LIBBERTON) * column 1, line 24 - line 44; figures 1,2 * ---	1-3	
A	US-A-2 635 744 (BARTON) * column 1, line 36 - column 3, line 36; figure 2 * ---	1	
A	US-A-3 872 976 (MOORE ET AL.) * abstract; figure 1 * ---	4	
A	US-A-1 862 395 (FRICK) -----		
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			A47F F25D B65D B65G
Place of search THE HAGUE		Date of completion of the search 21 AUGUST 1992	Examiner DE GROOT R. K.
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