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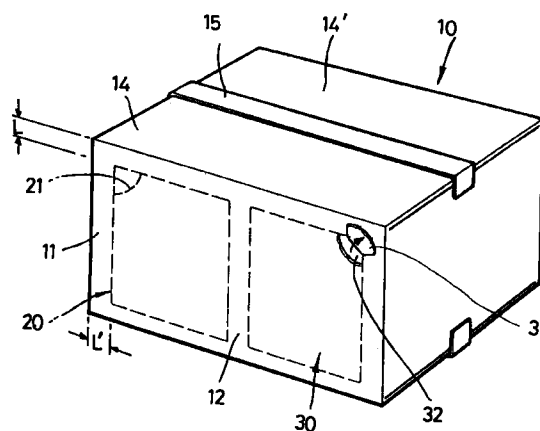
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(54) Packaging box

(57) A packaging box 10 provided with an opening 40 formed in a wall 11 of the box through which products can be removed. Preferably, a removable portion 30 defined by tear line 20 is provided on each side of supporting member 12 and a tab 31 is formed in a corner of each removable portion 30 by inclined tear line 21. Preferably the box is formed from a corrugated sheet material with the outside surface of the box being corrugated.

FIG.1



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Description

Field of the Invention

The present invention relates to a packaging box which allows products in the interior thereof to be displayed, and removed for sale without having to open the top of the box. This is particularly useful when a plurality of boxes are stacked on top of each other.

Discussion of the Prior Art

Figure 10A is a perspective view illustrating a conventional corrugated board used to make boxes which comprises first and second sheets 107 and 108 which are positioned on both sides of a corrugated sheet 105 and adhered thereto by means of an adhesive.

Figure 10B is an exploded view illustrating a conventional corrugated board box manufactured using the corrugated board shown in Figure 10A. A tab 114 is formed as a unitary part on the end portion of one side of a tetrahedral corrugated board 113. After the tab 114 is attached to another tetrahedral corrugated board 112 using an adhesive, the upper and lower panels 116 are folded together to thereby complete the formation of the corrugated board box.

Goods packaged in such boxes are contained and conveyed in them with the top flaps closed so they have to be opened and the goods removed for sale or display which is inconvenient particularly if a number of boxes are stacked on top of each other.

Moreover, to take the products out of the box and display them in an appropriate manner, e.g. using a display stand which has to be placed in the shop, incurs the additional installation cost of the display stand. Also, since the packaging boxes in which the products are contained cannot be all piled up within the shop, additional storage space is needed for them.

Conventional corrugated board from which boxes are made comprises a corrugated sheet sandwiched between an inside and outside plane sheet. However, the outer surface of the outside sheet has a weakness to any knocking force and is easily destroyed. Furthermore, because the outer surface of the outer sheet is smooth, when packaging boxes made from this board are lifted or conveyed or when a plurality of boxes are stacked on top of each other, they can slide off each other thereby making it very difficult to handle the boxes satisfactorily. In addition, in the case where a stack of boxes falls down, the products contained in them as well as the boxes themselves or even another product disposed around the boxes can be damaged.

Moreover, at the time of folding and forming a conventional packaging box which is tetrahedral in shape, adhesive has to be applied to the tab 114 but the adhesive generally has an irregular viscosity and pouring amount which can have a detrimental effect on the assembly of the box. Thus, in the case where a large

quantity of adhesive needs to be applied because the adhesive has a low degree of viscosity, the surface to which the end tab 114 is connected and any adjacent surface thereto can be accidentally connected to each other. Thus, when a consumer comes to use the box, it can be difficult to open even using an automatic machine. In the case where a projection is formed in the inside or outside of the tab 114 as thick as the tab and the products are automatically packed in the box, they can snag against this projection as they are pushed into the box. As a result, if this snagging problem occurs on one box or an automatic packaging production line, the whole production line can be effected and it may have to be stopped to sort out the problem which is time consuming, disruptive and costly.

A conventional corrugated board box is disclosed in US Patent No.4252236 and includes a coupling member in a cut-off state from the upper surface (cover plate) thereof through the wall portion of the front surface thereof. Since the edge portions in the corrugated board box are connected together in a cut-off state, when a number of boxes are stacked on top of each other, the coupled portions in the cut-off state may easily break down due to impact or pressure, and in the case of delivering the boxes, the coupled portions may be torn due to even slight impact.

Summary of the Invention

It is an object of the present invention to overcome or substantially reduce the above discussed problems.

The present invention provides a packaging box which is characterised by an opening portion formed on a front surface portion of the box through which products in the box can be removed.

Preferably, on both sides of the front surface portion, a cut-off portion is formed to be cut off by a cutting line, defined by a vertical supporting member disposed on the intermediate portion of the front surface, and on an edge of the one side of the cut-off portion, a cut-off protrusion disposed by forming an inclined cutting line.

In one embodiment, the supporting protrusion is formed by a folding groove provided on both sides of the supporting member.

The box can be made of a corrugated material having an outer reinforced corrugated sheet in which interval l and thickness t of the corrugations are half those of the corrugations formed in a conventional corrugated sheet.

Preferably, the outer surfaces of the box are formed by the outer reinforced corrugated sheet to provide a corrugated outer surface.

Preferably, the interval l and thickness t of the corrugations formed on said reinforced corrugated sheet are half those of the corrugations formed on a standard corrugated sheet installed between an inside plane sheet and an outside plane sheet.

In one embodiment, the corrugated sheet is formed

between the inside plane sheet and the outside plane sheet, and the reinforced corrugated sheet is formed on the inside plane sheet.

In another embodiment, a third plane sheet is provided between the inside plane sheet and the outside plane sheet, a corrugated sheet being fixedly inserted between the inside plane sheet and the third plane sheet and between the third plane sheet and the outside plane sheet, said corrugated sheets having the same interval and shape of corrugations.

In another embodiment, the reinforced corrugated sheet is formed on the outer surface of the inside plane sheet.

Brief description of the drawings

Other objects and aspects of the invention will become apparent from the following description of embodiments thereof, by way of example only, with reference to the accompanying drawings in which:

Figure 1 is a perspective view illustrating a box constructed according to a first embodiment of the present invention;

Figure 2 is a perspective view illustrating the box of Figure 1 in use;

Figure 3 is a front view illustrating several boxes of Figure 1 stacked on top of each other;

Figure 4A is a perspective view illustrating part of a box constructed according to a second embodiment of the present invention;

Figure 4B is a perspective view illustrating part of the box of Figure 4A;

Figure 4C is an enlarged plan sectional view illustrating the main parts of the box of Figure 4A;

Figure 5 is a front view illustrating a box constructed according to a third embodiment of the present invention;

Figure 6 is a perspective view illustrating one type of corrugated board for use in a box of the present invention;

Figure 7 is an enlarged plan sectional view illustrating the corrugated board of Figure 6;

Figure 8 is an enlarged plan sectional view illustrating another type of corrugated board;

Figure 9 is a perspective view illustrating how the corrugated board shown in Figures 6-8 can be used in a box of the present invention;

Figure 10A is a perspective view of a prior art corrugated board; and

Figure 10B is an exploded view illustrating a box made from the prior art corrugated board as shown in Figure 10A.

Detailed description of the preferred embodiments

Referring to Figures 1 to 3 there is shown a box 10 with two removable portions 30 formed by tear line 20

which can be of any shape (e.g. circular or square) separated by a supporting member 12 in the centre portion of the front panel 11 of the box 10. The upper and lower end portions and the outside end portion of each of the removable portions 30 are spaced apart at predetermined intervals (L and L'). A tab 31 is formed by an inclined tear line 21 in the corner of each of the removable portions 30, both ends of which meet up with the tear line 20.

Panels 14, 14' close the upper open end of the box 10 and they are sealed by means of an adhesive tape 15 after the products have been placed in the box.

In order to use the box just described, the tear line 21 formed in the front panel of the box 10 is first broken and the removable section 31 is then detached from the box 10 leaving an opening 32 in one corner of each of the removable portions 30.

The removable portion 30 can then be detached along the tear line 20 by the user first inserting a finger into the opening 32 and then removing the portion 30 to leave an opening portion 40 in the front panel 11 of the box 10 thereby displaying the products A in the interior of the box.

As shown in Figure 3, products A in the box 10 are still visible even when a plurality of boxes are stacked on top of each other. Furthermore, the products A within box 10 can still be taken out of the box through the opening 40 and vice versa even though its top panels 14, 14' are closed.

Since the opening 40 formed on the front panel 11 of the box 10 includes central supporting member 12, deformation of the opening 40 due to the stacking of a plurality of box on top of each other is avoided.

Figures 4A-4C show part of a box constructed according to a second embodiment of the present invention.

In the following description of the various other embodiments, the same reference numerals will be used as have been used for the same or similar parts in the first embodiment.

Referring now to Figures 4A to 4C, the removable portions 30 are formed by the tear line 20 on both sides of the front panel 11 of the box 10, and the tab 31 is formed by the inclined tear line 21 at one corner of one of the removable portions 30, in the same manner as the first embodiment. However, in this second embodiment, the width of the supporting member 12 is larger than that of the supporting member 12 of the first embodiment and has extended cutting lines 22 and 22' formed to a predetermined width L" on the inner sides of the upper and lower portions of the tear line 20. A fold line 50 extends on the inner side between the extended tear lines 22 and 22' and the supporting member 12. The fold line 50 and the tear line 20 allow supporting protrusions 13 to be formed to provide inside vertical reinforcing members 20'.

When the removable portions 30 are detached along the tear line 20, the supporting protrusions 13 will

be left still attached on the both sides of the supporting member 12. Each supporting protrusion 13 can then be folded towards the inner side of the box 10 about the fold line 50 so that the upper and lower ends thereof are positioned in the upper and lower ends of the opening 40 and thus firmly support the central section of the opening 40.

Figure 5 is a front view illustrating a box constructed according to a third embodiment of the present invention in which the removable portions 30 are formed by the tear line 20 on both sides of the front panel 11 in the same manner as the above. However, the width of the upper portion of the supporting member 12' disposed centrally in the opening 40 of the box body 10 is smaller than the width of the lower portion thereof. This configuration means that any load applied to the upper end portion of the supporting member 12' is dispersed as it reaches the lower end portion thereof, thereby helping to reinforce and support the opening 40.

In the first to third embodiments of the present invention, the removable portions 30 are formed on the front panel 11, but it will be understood that they can be in any one or more of the front, side or back panels. Preferably, the removable portions 30 are rectangular in shape, but they can be any suitable shape, for example, diamond, circular, etc.

Figures 6 and 7 show the corrugated board which may be used to make a box of the present invention and comprises a corrugated sheet 70 sandwiched between an inside plane sheet 61 and an outside plane sheet 62, and a reinforced corrugated sheet 80 attached to the outer surface of the inside plane sheet 61.

The distance l and thickness t of the corrugations 66 in the reinforced corrugated sheet 80 are half the distance l' and thickness t' of the corrugations 65 in the corrugated sheet 70.

Figure 8 shows another corrugated board which may be used to make a box of the present invention and comprises a third plane sheet 63 positioned between the inside plane sheet 61 and the outside plane sheet 62, corrugated sheets 70 being respectively sandwiched between the inside plane sheet 61 and the third plane sheet 63 and between the third plane sheet 63 and the outside plane sheet 62. The corrugated sheets 70 have the same interval and shape of corrugations. A reinforced corrugated sheet 80 is attached to the outer surface of the inside plane sheet 61.

The distance l and thickness t of the corrugations 66 in the reinforced corrugated sheet 80 are half the distance l' and thickness t' of the corrugations 65 in the corrugated sheet 70.

The corrugated board shown in Figures 6 to 8 can be used to make a tetrahedral box as shown in Figure 9 which has no end tab corresponding to the tab 114 in the prior art box shown in Figure 10b. Adhesive tape is attached on the outer or inner sides of the tetrahedral shaped blank to form the box 90. Since the whole outer surface of the box 90 is formed by the reinforced corru-

gated sheet 80, the friction coefficient of the outer surface of the box 90 is increased. Accordingly, when the box 90 is lifted and delivered, or when a plurality of boxes are stacked, on top of each other the risk of the boxes sliding off each other is reduced.

Furthermore, since the surface of the reinforced corrugated sheet 80 constituting the outer surface of the box 90 is smooth prior to corrugation and the outer surface of the formed box 90 is corrugated, any printed character or picture on the outer surface of the box 90 will be three-dimensional thereby giving the box a sophisticated appearance.

Because the outer surface of the box 90 is corrugated, the contact area with other objects is decreased. Furthermore, the corrugated outer surface of the box 90 provides the box with a cushioning effect which will absorb external impacts so its shock absorbing qualities are drastically improved and damage to products in the box can be substantially prevented.

It will be appreciated from the foregoing description that it is possible to remove the contents of a box without having to remove the adhesive tape keeping the top panels closed as the removable portions 30 in the front panels can be simply detached to freely display the products in the box. Furthermore, the same applies in a stack of boxes as there is no need to remove a box from the stack to enable the contents to be displayed. With the box of the invention, products can be displayed in their packaged state within a box, without the need for any additional showcase. Also, the need for extra storage space such as a warehouse for storing the boxes is greatly reduced. Additionally, since the box is utilized as the showcase for the products therein including the packaging and the storage, usage purposes of the box can be greatly diversified.

When the packaging box is made from a corrugated board as shown in Figures 6 to 8, the whole outer surface of the box body will be corrugated so the friction coefficient of the outer surface of the box body is increased. Accordingly, when the box is lifted and delivered, or when a plurality of boxes are stacked on top of each other, the boxes will not slide on each other.

When a box of the invention is manufactured, adhesive tape rather than glue is used in its assembly as it does not have an end tab (as in the prior art) on the centre portion of the end of one side among the four sides of the packaging. As there is no end tab, insertion or removal of products from the box cannot be impaired in any way e.g. by the end tab which is a considerable advantage in an automatic packaging process.

Moreover, the packaging box according to the present invention enables a reduction in warehousing costs for storing the boxes as well as a cost saving as additional showcases are not needed.

When the packaging box has a corrugated outer surface it has the following advantages:

a) the delivery or stacking of the boxes can be eas-

ily executed;

b) the appearance of the box can be sophisticated;
and

c) printed characters or pictures on the reinforced
corrugated sheet will appear to be three-dimen- 5
sional.

Claims

1. A packaging box **characterised by** at least one 10
removable section formed in a side wall of the box
to provide an opening through which products can
be inserted or removed therefrom.
2. A box as claimed in claim 1 characterised in that a 15
removable section is provided on either side of a
support portion, a removable tab being formed in a
corner of each removable section.
3. A box as claimed in claim 1 or claim 2 characterised 20
in that a fold line is provided adjacent the support
portion to enable a support member to be formed
by folding the support portion about said fold line.
4. A box as claimed in any preceding claim character- 25
ised in that the box is formed from a blank with four
sides and end portions with no end tab thereon, the
box being formed using adhesive tape.
5. A box as claimed in any preceding claim character- 30
ised in that the outer surface of the box is corru-
gated.
6. A box as claimed in claim 5 characterised in that the 35
box is made from a corrugated sheet material com-
prising a first corrugated layer sandwiched between
first and second plane sheets with a second corru-
gated layer applied to the outer surface of one of
said plane sheets, the interval/phase of the corru-
gations of said second corrugated layer being half 40
that of the corrugation of the first corrugated layer.
7. A box as claimed in claim 6 characterised in that a 45
third corrugated layer is sandwiched between a
third plane sheet and the other of said plane sheets,
the pitch of the corrugations of said third corrugated
layer being the same as that of the first corrugated
layer.
8. A box as claimed in claim 6 or claim 7 characterised 50
in that the second corrugated layer provides the
outer surface of the box.

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FIG.1

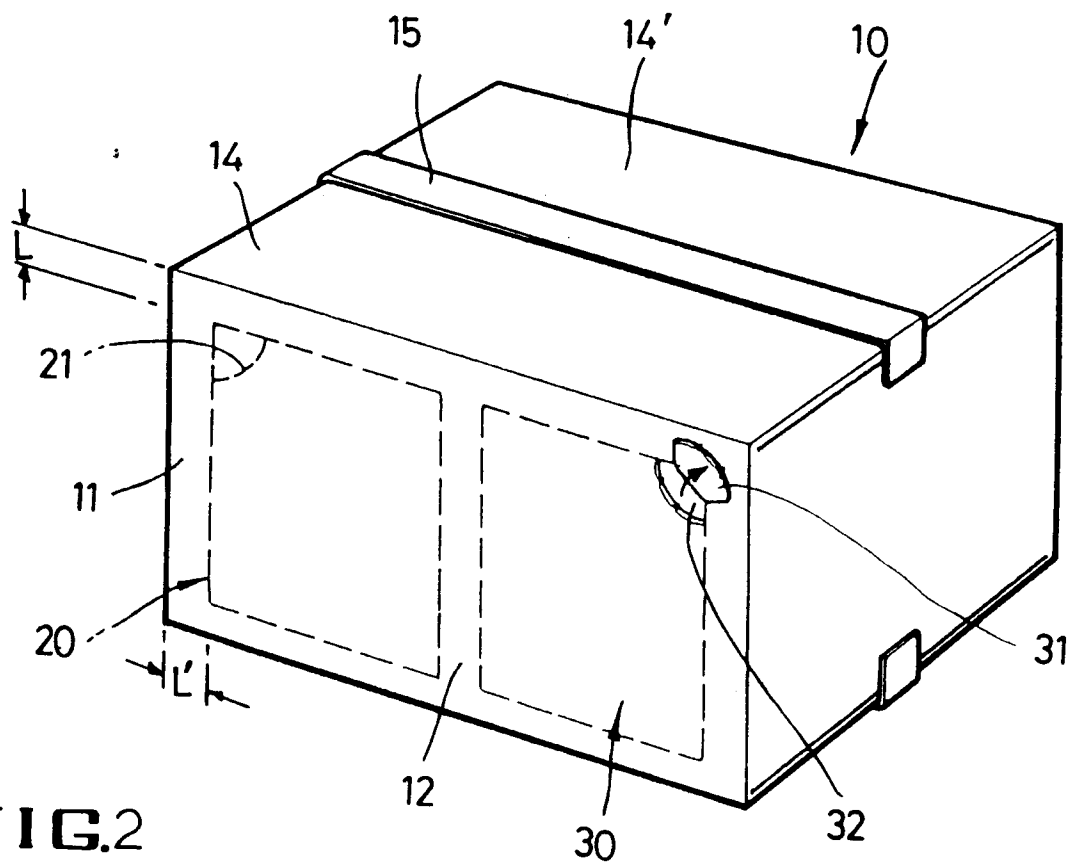


FIG.2

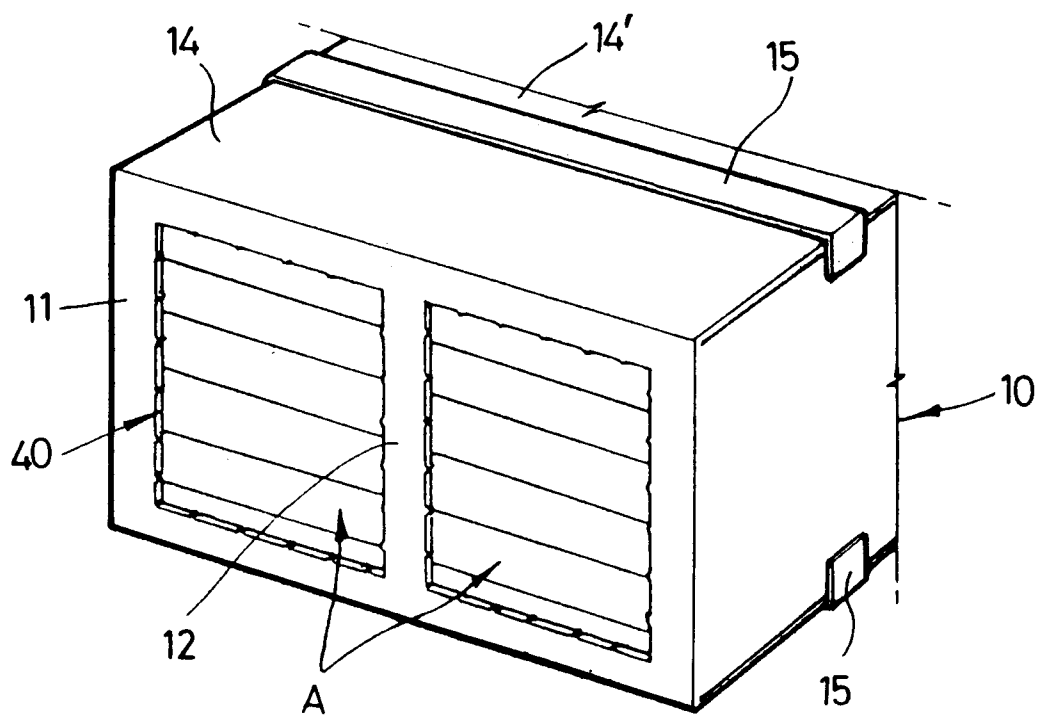


FIG.3

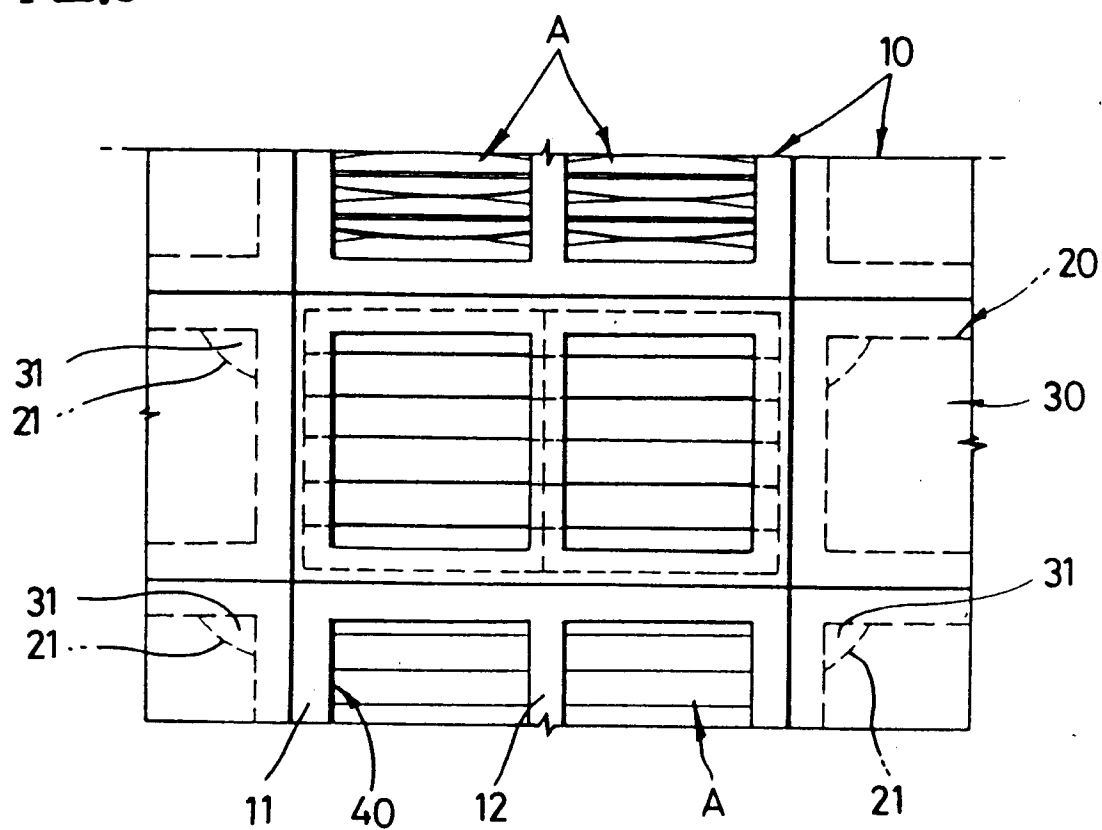


FIG.4a

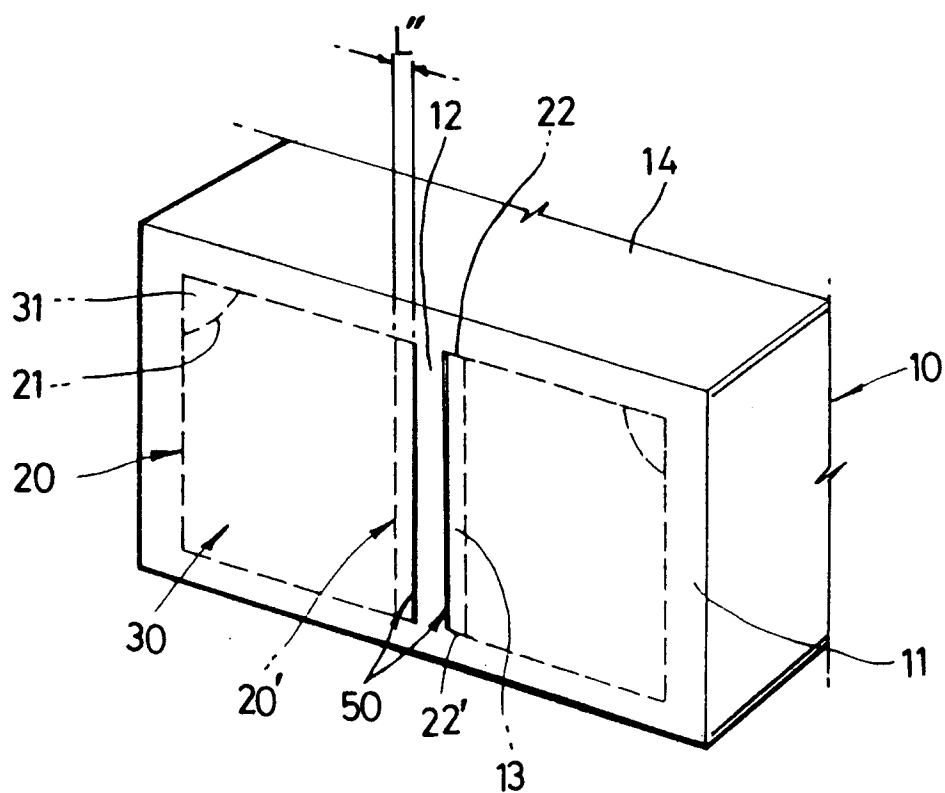


FIG.4b

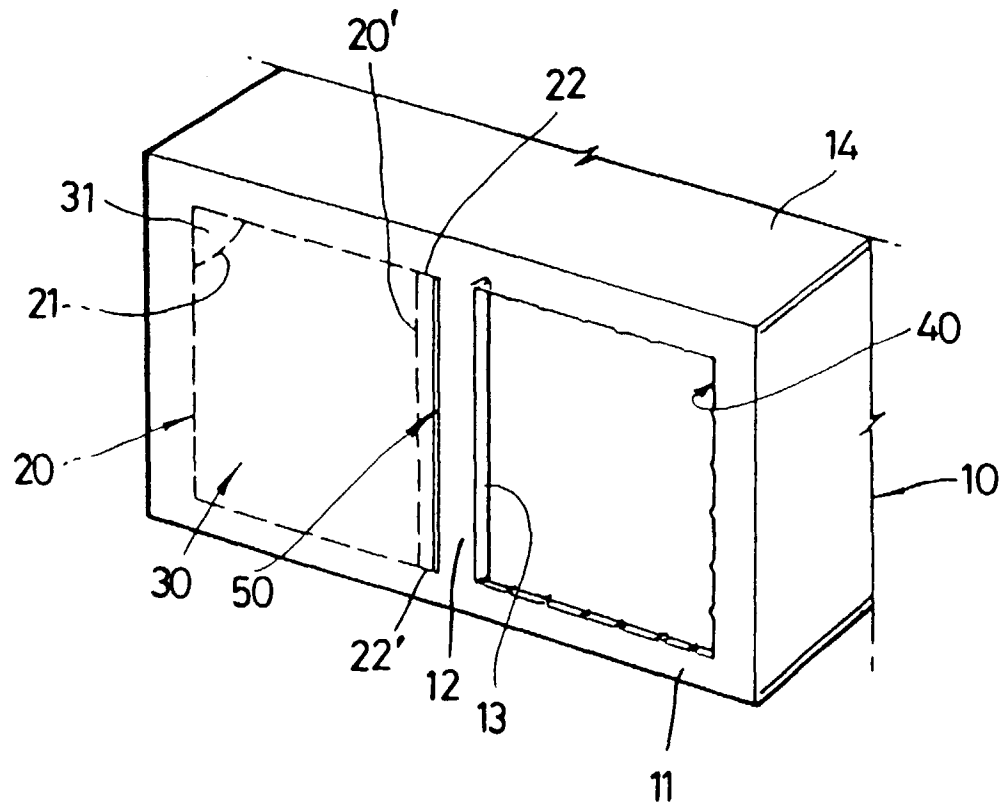


FIG.4c

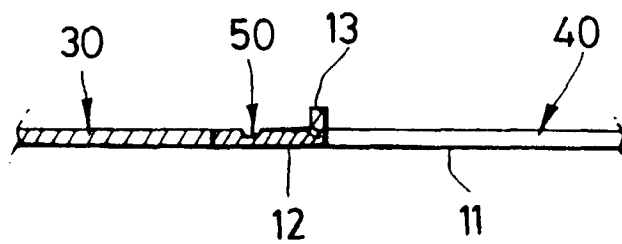


FIG.5

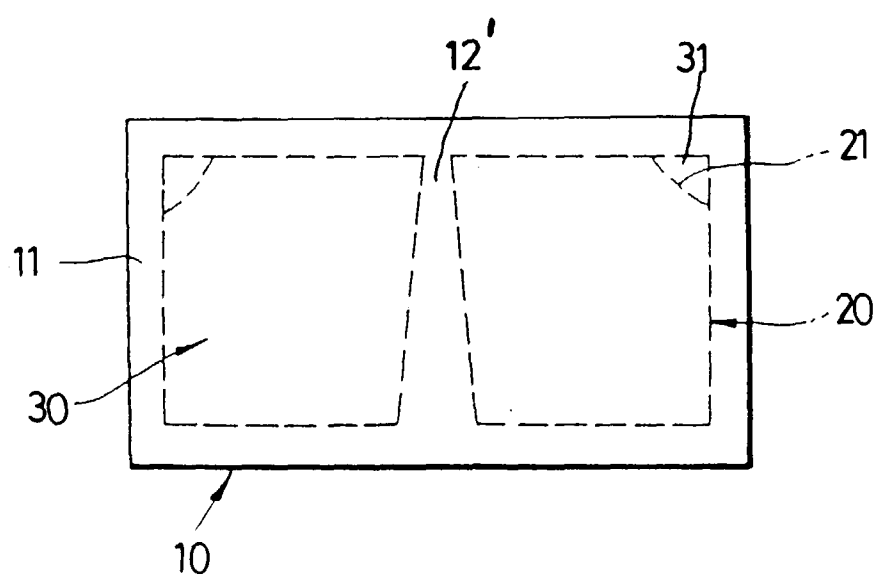


FIG.6

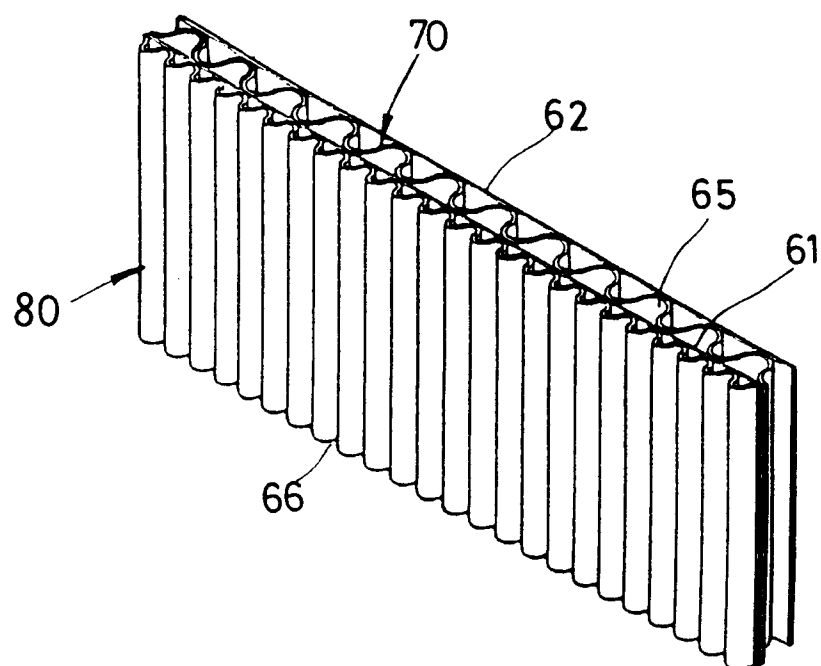


FIG.7

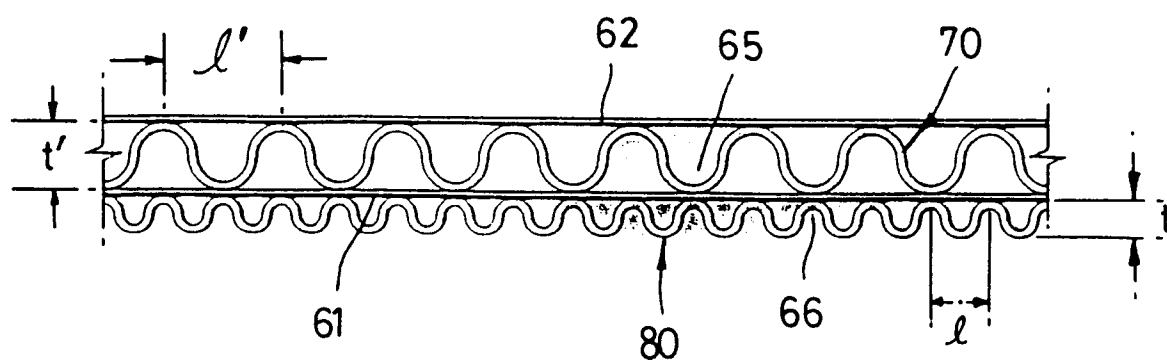


FIG.8

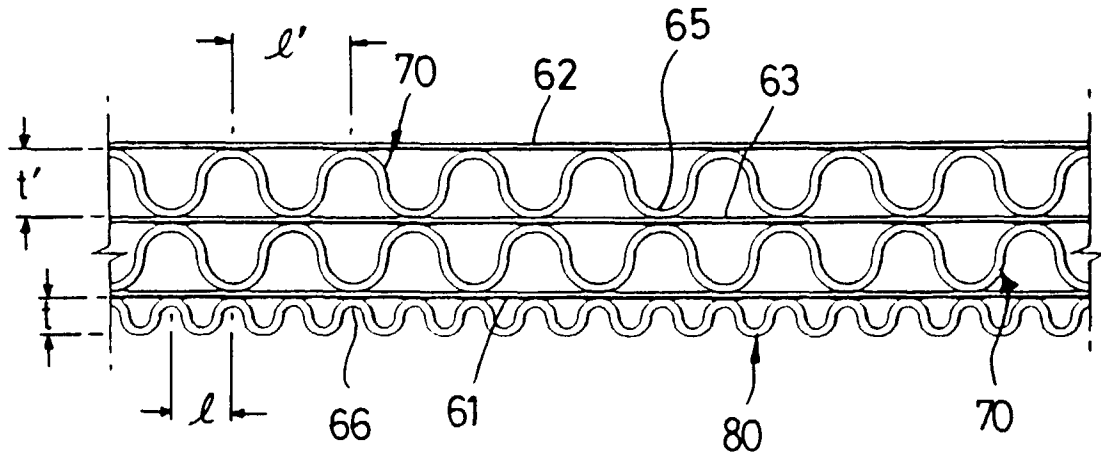


FIG.9

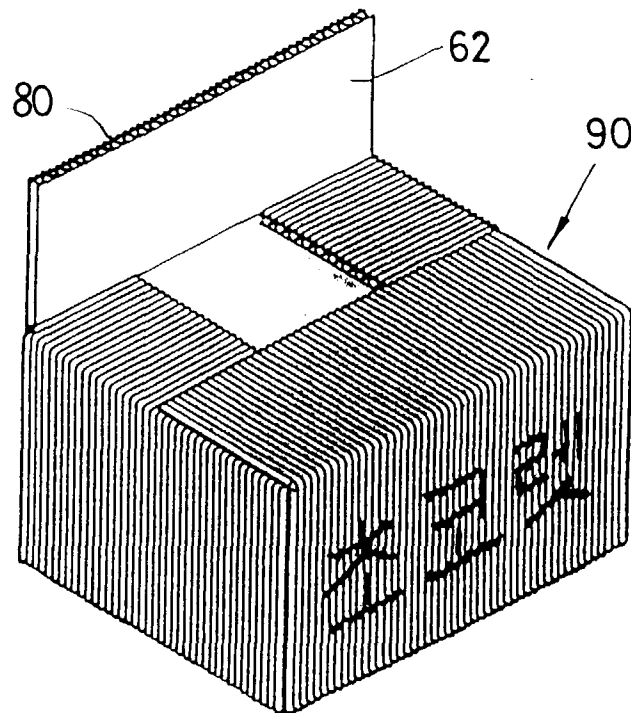


FIG.10a (PRIOR ART)

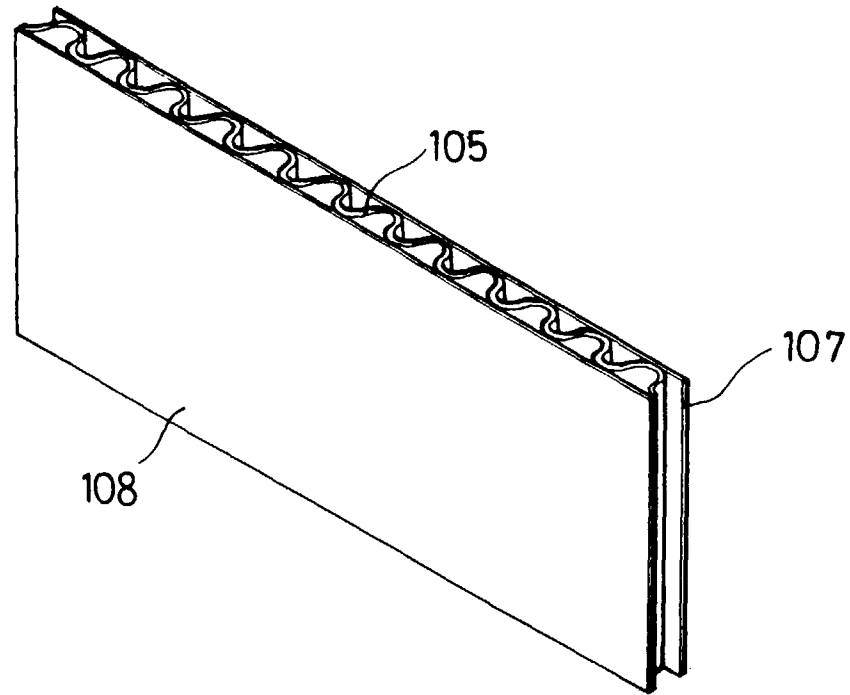


FIG.10b (PRIOR ART)

