

AUSTRALIA

633087 CONVENTION

Patents Act

APPLICATION FOR A STANDARD PATENT



SECTION 34(4)(a) DIRECTION SEE FOLIO 4
 NAME DIRECTED KNUD CLAUSEN and MURRAY ROBERT
 FITZSIMMONS, both of
 6/24 Savannah Street, Epsom, AUCKLAND, N.Z. ZEALAND

hereby applied for a patent in the name of the above-named persons

WALL PANEL SYSTEM

which is described in the accompanying complete specification.

Details of basic application(s):-
229095 NEW ZEALAND

12 May 1989

Address for Service:

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DATED this TENTH day of MAY 1990

PHILLIPS ORMONDE & FITZPATRICK
 Attorneys for:
 Event Management Limited

By:

David Fitzpatrick

Our Ref : 172915
 POF Code: 1607/116776

AUSTRALIA

Our ref: MD:3529

Patents Act

DECLARATION FOR A PATENT APPLICATION

In support of the : Convention

[Insert Convention/Non-convention]

application made by *EVENT MANAGEMENT LIMITED*

[Insert full name(s) of applicant(s)].

hereinafter called "applicant(s)", for a patent :

[Insert 'of addition' if applicable].

for an invention entitled : *WALL PANEL SYSTEM*

[Insert title of invention].

I/*We Murray Robert Fitzsimmons*, Managing Director, of 6/24 Savannah Street, Epsom, Auckland, New Zealand

[Insert full names and addresses of declarants. Where body corporate signatory must be fully authorized person ie. Director/President/Secretary].

do solemnly and sincerely declare as follows -

1. I am/~~We are~~ authorized to make this declaration on behalf of the applicant(s).
2. *KNUD CLAUSEN*, a Danish citizen, of 6/24 Savannah Street, Epsom, Auckland, New Zealand, is the actual inventor(s) of the invention and the facts upon which the applicant(s) is/~~are~~ entitled to make the application are as follows: Applicant is the Assignee of the said inventor(s)
3. The basic application(s) for patent or similar protection on which the applications is based is/~~are~~ identified by country, filing date, and basic applicant(s) as follows:

Country	:	New Zealand
Date	:	12 May 1989
Basic Applicant(s)	:	Event Management Limited
4. The basic applications(s) referred to in paragraph 3 hereof was/~~were~~ the first applications(s) made in a Convention country in respect of the invention the subject of the application.

Declared at :

Auckland New Zealand

Dated :

3rd / MAY / 1990

Murray Robert Fitzsimmons
Murray Robert Fitzsimmons

To: The Commissioner of Patents



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(19) AUSTRALIAN PATENT OFFICE (10) Acceptance No. 633087

(54) Title
WALL PANEL SYSTEM

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(56) Prior Art Documents
US 4674240
US 4607753
US 4450970

(57) Claim

1. A panel assembly including:
a plurality of elongate wall panels;
and a plurality of elongate support elements arranged in use transversely relative to said elongate wall panels;
wherein each said elongate support element includes a plurality of recesses, each said recess being undercut to provide an overhanging lip at the mouth of said recess;
and each said wall panel is comprised of sheet material folded to provide a first part of a channel along a first edge of said panel, a complementary second part of a channel parallel to said first part along a second edge opposite said first edge, and a raised face between said parts of channels;
said first part including two oppositely recurving portions in the general form of an S-bend in cross-section, a first said portion forming an overhanging hollow flange and the second said portion recurving behind the first to provide an undercut behind said first portion;
wherein an intermediate wall extends behind and substantially parallel to said raised face between said first and second recurving portions, and a rear face extends behind and substantially parallel to said raised face and said intermediate wall from said second recurving portion;
whereby a channel can be formed by the association of said first edge of one said panel with said second edge of a second said panel, said channel having an

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overhanging hollow flange formed by said first recurving portion;
wherein the dimensions of said parts of a channel and said recesses provide that, with a said panel extending transversely across a said support element, said first part of a channel can be fitted into a said recess and is moveable along said support element within said recess to an engaged position at which said first recurving portion passes around said overhanging lip of the recess, and said intermediate wall, said second recurving portion and said rear face underlie said overhanging lip of the recess, the longitudinal overlap between said overhanging lip and said intermediate wall acting to engage said first part of a channel in said recess;

further including means engageable to retain said first part of a channel in said engaged position, said means comprising a flange on said panel, engageable with a detent on said support element.

title: WALL PANEL SYSTEM

BACKGROUND OF THE INVENTION

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The present invention relates to the general field of shelf support systems, with particular application to wall cladding which provides a shelf support system.

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Hitherto it has been known to provide wall panel systems which comprise a number of large square or rectangular panels, which are joined at the edges by vertical retaining strips, these retaining strips including a vertical channel or the like into which a shelf bracket can be affixed at any desired height. A problem is often encountered with such systems in that the shelf brackets must be in some way held at a particular position in the channel and be prevented from sliding down it, while still being adjustable as required. Furthermore, installation of such a system can present a number of difficulties. The spacing of the retaining strips is fairly rigidly prescribed by the width of the wall panels, and this spacing may be found inappropriate to a particular wall, taking into account the spacing between corners, and features such as pillars, windows or wall sockets. The two or more shelf brackets supporting any particular shelf must be positioned at the same height in the channel, and this may be difficult or time consuming to achieve. The spacing between channels may be inappropriate to the desired lengths of shelf, and while this problem is less likely to occur if the system uses narrower wall panels, and consequently increases the number of channels available, this solution increases the work required to install the system.

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As illustrated by US Patent No. 4,674,240 - M.A.Strausheim 1987, it has been known to go partway towards overcoming these problems with the use of an extruded plastic panel having horizontal channels therein, which are flanged and shaped to retain shelving brackets in normal use. Such a system is however relatively expensive, and is more difficult to install on a wall surface than systems hitherto available. The span of the panel between adjacent channels is very limited, unless the plastic is thickened or otherwise braced in the intermediate zones, and the overall width of each panel is limited by the extrusion process. Furthermore in the system illustrated, a number of panels must be fitted together on "stiffener strips", which must then be attached by undisclosed means to a wall surface. The interconnected panels therefore in practice must be formed into a single large sheet, which presents many of the same installation

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difficulties as the panels described above.

SUMMARY OF THE INVENTION

5 It is an object of the present invention to go at least partway towards providing a novel and improved wall panel and shelf support system, or at least to provide the public with a useful choice.

According to the present invention, there is provided a panel assembly including:

10 a plurality of elongate wall panels;
and a plurality of elongate support elements arranged in use transversely relative to said elongate wall panels;

15 wherein each said elongate support element includes a plurality of recesses, each said recess being undercut to provide an overhanging lip at the mouth of said recess;

20 and each said wall panel is comprised of sheet material folded to provide a first part of a channel along a first edge of said panel, a complementary second part of a channel parallel to said first part along a second edge opposite said first edge, and a raised face between said parts of channels;

25 said first part including two oppositely recurving portions in the general form of an S-bend in cross-section, a first said portion forming an overhanging hollow flange and the second said portion recurving behind the first to provide an undercut behind said first portion;

30 wherein an intermediate wall extends behind and substantially parallel to said raised face between said first and second recurving portions, and a rear face extends behind and substantially parallel to said raised face and said intermediate wall from said second recurving portion;

35 whereby a channel can be formed by the association of said first edge of one said panel with said second edge of a second said panel, said channel having an overhanging hollow flange formed by said first recurving portion;

wherein the dimensions of said parts of a channel and said recesses provide that, with a said panel extending transversely across a said support element, said



first part of a channel can be fitted into a said recess and is moveable along said support element within said recess to an engaged position at which said first recurving portion passes around said overhanging lip of the recess, and said intermediate wall, said second recurving portion and said rear face underlie said overhanging lip of the recess, the longitudinal overlap between said overhanging lip and said intermediate wall acting to engage said first part of a channel in said recess;

further including means engageable to retain said first part of a channel in said engaged position, said means comprising a flange on said panel, engageable with a detent on said support element.

Preferably the elongate panels are formed from metal.

These and other aspects of the present invention will be made apparent in the following description of a preferred embodiment, given by way of example only.



BRIEF DESCRIPTION OF THE DRAWINGS

- 5 Figure 1: shows in perspective view a preferred panel support element of the present invention
- Figure 2: shows a section of a preferred panel in perspective view.
- 10 Figure 3: schematically illustrates preferred panels in conjunction with a support element and shelf brackets, in side view and cross section.
- Figure 4: shows in perspective view a second panel and a second panel support element of the present invention.

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DESCRIPTION OF THE PREFERRED EMBODIMENT

20 As shown in Figures 1 to 3, the present invention in its preferred form provides a system of interconnecting wall panels 10, which provide means for attaching shelf brackets at any of a range of desired heights, and also at substantially any desired horizontal spacing.

25 As shown in Figure 1, the present invention provides a system using retaining elements 11 which are in normal use vertically mounted on a wall, onto which elongate horizontally extending panels 10 are fitted. The retaining element 11 in its preferred form comprises a substantially U-section channel member which can be fixed to a wall 20 by nails, screws or the like through apertures 12. The projecting side walls 13 of the retaining element 11 are provided with recesses 14, at regular intervals substantially corresponding to the height of panels 10. Further such recesses 14 might be provided in the element 11, to facilitate use of the retaining element with panels 10 of other heights, or for use with combinations of panels 10 of different heights. The recesses 14 are undercut, to provide projecting lips 15 and 16. The panels 10 preferably comprise roll-formed metal sheets or strips, approximately 15cm in height, and of any suitable length. It may be found preferable to cut the panels 10 to a desired length as ordered, rather than to provide them in predetermined sizes. It will be appreciated that the height of the panels may be varied considerably. Panels of, for example, 5 cm or 30 cm height might be used, with correspondingly altered retaining elements 11, but it

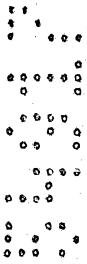
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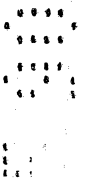
5 should be appreciated that panels with a greater height will generally provide a lesser range of heights at which shelves can be attached, and those of lesser height will be more time consuming to install, as a greater number of panels will be required to cover the same wall area. The height of the panel is preferably selected so that a whole number of panels will make up standard wall heights, to avoid the cutting or trimming of panels to fit the wall.

10 Each panel is folded on the lower and upper edges to provide co-operating parts of a channel. The lower edge 17 is in the form of an S-bend, so that in normal use as shown in Figure 3, it hooks under the projecting lip 15 of a recess 14 in the retaining element and turns in behind it, and recurves to form the rear wall of the channel. The lowermost portion hooks behind the other lip 16 of the recess 14, as shown.



15 The upper edge 18 is bent to form a clip, which in normal use clips over the projecting lip 16 and thereby fastens in place not only the upper edge 18, but also the lower edge 17 of the panel 10 above. Thus, when a wall is to be covered with panels 10, in normal use the top panel will be fitted in place first, and then each subsequent panel fitted in place below it. By this means each panel except the lowermost panel is locked in place

20 by those below.



25 As shown in figure 3, the lower edge 17 of the panel 10 does not extend all the way into the undercut behind the lower projecting lip 16. This space facilitates fitting of the panels onto the retaining element 11. The lower edge 17 is firstly fitted into a recess 14, and pushed downwardly as far as possible into the space behind the lower projecting lip 16. In this position there is sufficient clearance for the recurving portion 19 of the S-bend to pass under the upper projecting lip 15. The recurving portion 19 can then be pushed up behind the lip 15, and the upper edge 18 clipped into another recess 14 above. It should be noted that this system provides a finished channel which

30 has a substantially flat base surface and rear wall, which is relatively easy to clean and will not in normal use tend to trap and collect dust. The upper surface of the channel is undercut to provide a flange with which a shelf bracket can engage.

35 It will be appreciated that the spacing between the vertical retaining elements 11 is not critical, and as long as at least one retaining element is positioned at or near each end of the panels 10, a stable wall cladding will be formed. Preferably however one or more

additional retaining elements 11 are fixed to the wall at positions between the ends of the panels, to provide additional support.

5 The channel 21 provided by the co-operating edges of the panels 10 can be used to retain a shelf bracket 22, such as that illustrated in figure 3. The shelf bracket 22 includes a hook element 23 which in normal use engages with the channel 21, and a foot 24 which bears against the face of the panel 10. It will be appreciated that a wide variety of brackets could be produced to engage with and be supported by the channel 21 in a similar fashion.

10 If the retaining elements 11 and wall panels 10 are correctly fitted on the wall 20, shelves can relatively quickly and easily be put in place where desired. Two or more brackets engaged with the same channel 21 will naturally be at the same elevation, and consequently a shelf supported by them will be horizontal. No measurement of heights
15 is required to provide horizontal shelves, or a number of shelves at the same elevation. The horizontal distance between brackets at the same level can be easily adjusted to exactly suit a particular length of shelf.

20 The use of metal panels 10 can provide fire safety advantages, and allows a wide range of colours and textures to be used. It will be appreciated that the metal panels may be contoured or perforated during the roll forming process, to give desired decorative or acoustic properties. Insulation panels or the like could be mounted behind the panels 10 if required.

25 Materials other than roll formed metal could be used, although metal panels as described are preferred at present.

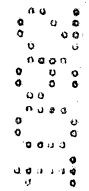
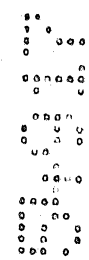
30 It will be appreciated that both the support element 11 and the panel 10 may be modified considerably within the scope of the present invention. In an embodiment shown in Figure 4, the lips 15 and 16 defining a recess 14 on the support element are cut and pressed out of the face of the support element, rather than the projecting side walls. The rear wall of the channel is comprised of an upward extension of the clip at the upper edge 18, and the lower edge 17 comprises a straight, projecting flange arranged to clip onto the lower lip 16 of the recess, to lock the S-bend section in engagement, instead of the upper edge 18.

35 It will be appreciated that a variety of other changes and modifications might be made within the scope of the invention, which may be characterised by the following claims.



THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A panel assembly including:
a plurality of elongate wall panels;
and a plurality of elongate support elements arranged in use transversely relative
to said elongate wall panels;
5 wherein each said elongate support element includes a plurality of recesses, each
said recess being undercut to provide an overhanging lip at the mouth of said
recess;
and each said wall panel is comprised of sheet material folded to provide a first
part of a channel along a first edge of said panel, a complementary second part of
10 a channel parallel to said first part along a second edge opposite said first edge,
and a raised face between said parts of channels;
said first part including two oppositely recurving portions in the general form of
an S-bend in cross-section, a first said portion forming an overhanging hollow
flange and the second said portion recurving behind the first to provide an
15 undercut behind said first portion;
wherein an intermediate wall extends behind and substantially parallel to said
raised face between said first and second recurving portions, and a rear face
extends behind and substantially parallel to said raised face and said intermediate
wall from said second recurving portion;
20 whereby a channel can be formed by the association of said first edge of one said
panel with said second edge of a second said panel, said channel having an
overhanging hollow flange formed by said first recurving portion;
wherein the dimensions of said parts of a channel and said recesses provide that,
with a said panel extending transversely across a said support element, said first
25 part of a channel can be fitted into a said recess and is moveable along said
support element within said recess to an engaged position at which said first
recurving portion passes around said overhanging lip of the recess, and said
intermediate wall, said second recurving portion and said rear face underlie said
overhanging lip of the recess, the longitudinal overlap between said overhanging
30 lip and said intermediate wall acting to engage said first part of a channel in said
recess;
further including means engageable to retain said first part of a channel in said
engaged position, said means comprising a flange on said panel, engageable with



a detent on said support element.

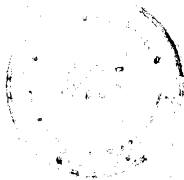
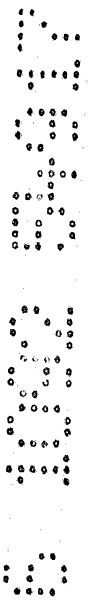
2. A panel assembly as claimed in claim 1, wherein said flange on said panel, engageable with a detent on said support element to retain said first part of a channel in said engaged position, comprises said second part of a channel at said second edge of the panel.
3. A panel assembly as claimed in claim 1 or claim 2, wherein said detent comprises a second lip at the mouth of a said recess.
4. A panel assembly as claimed in any one of claims 1 to 3, wherein said rear face of said first part of a channel is provided with a transversely projecting flange, arranged to engage with said second part of a channel at the second edge of another panel in use.
5. A panel assembly as claimed in any one of claims 1 to 4 wherein said first part of a channel is at the lower edge of each said wall panel and the first said recurving portion forms a downwardly extending flange, and wherein said complementary second part of a channel is at a upper edge of each said wall panel.
6. A panel assembly as claimed in any one of claims 1 to 5 wherein the depth of said recesses in said elongate support elements is not less than the depth of said channel relative to said raised faces of said panels, such that unrecessed portions of the elongate support elements lie against or near the rear surface of said raised faces of the panels and act to brace and support said raised faces against denting or buckling.
7. A panel assembly as claimed in any one of claims 1 to 6 wherein said elongate panels are formed from sheet metal.

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8. A panel assembly substantially as herein described with reference to any one of Figures 1 to 3 of the accompanying drawings.

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DATED: 5 October 1992

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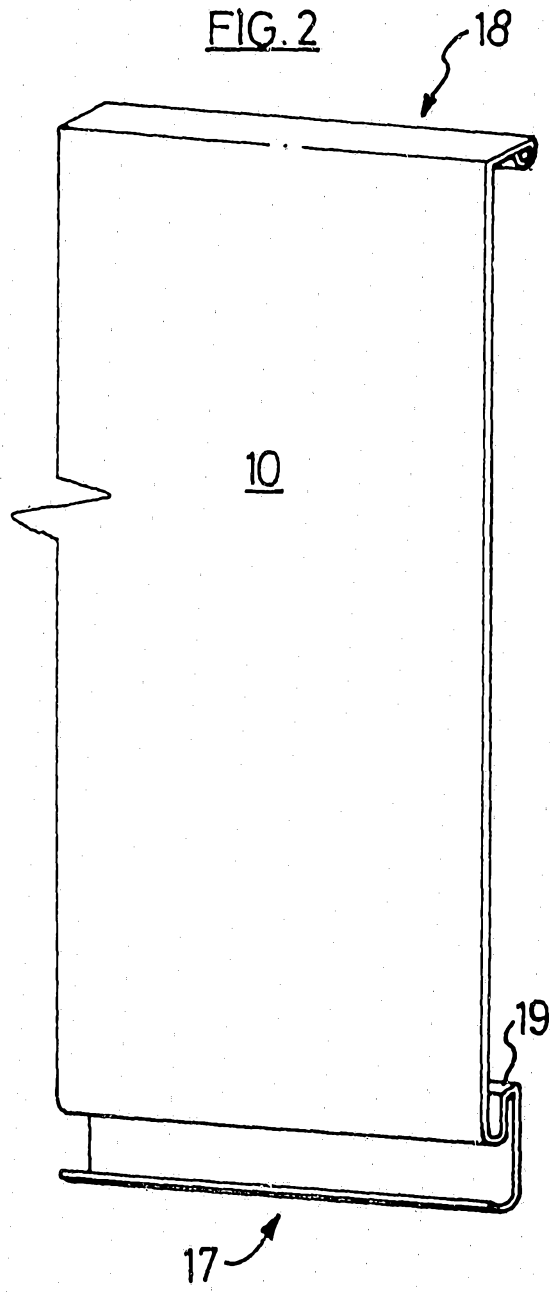
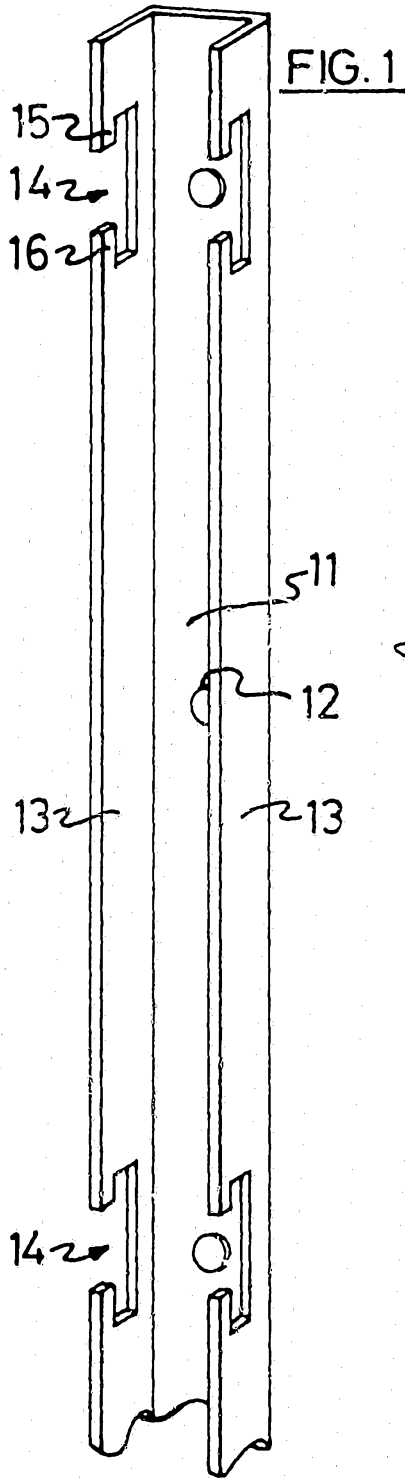
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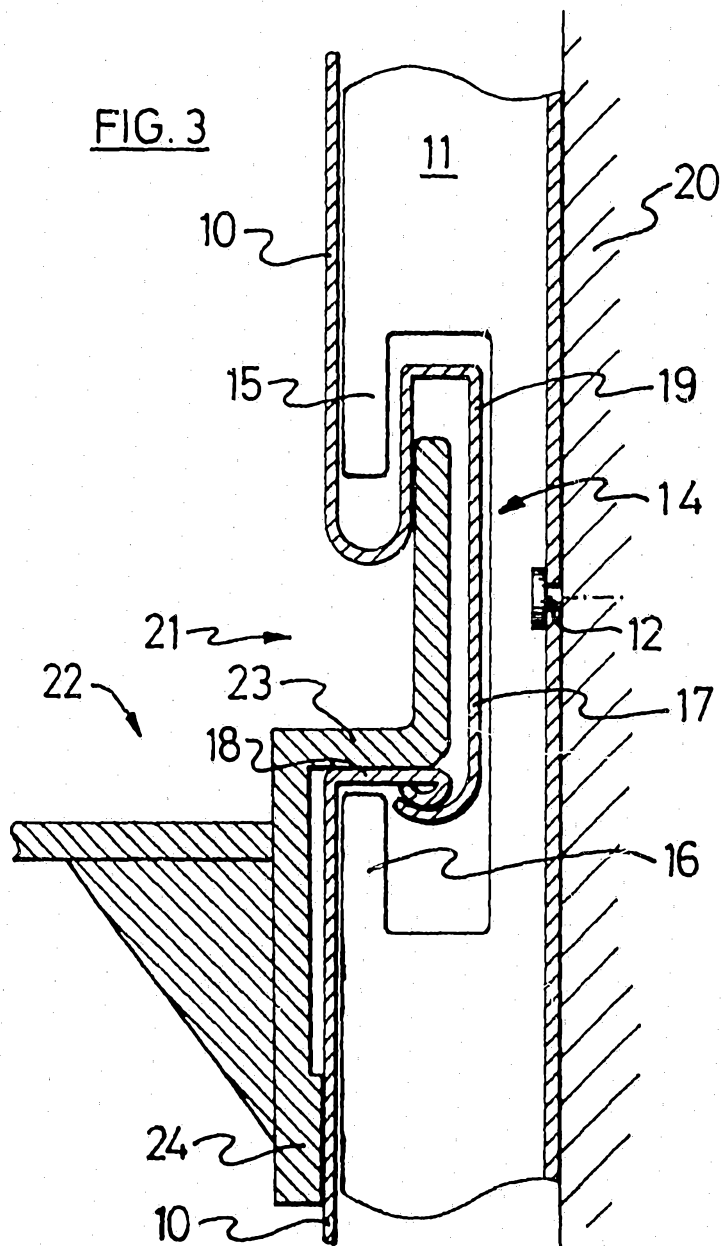


FIG. 4

