AUSTRALIA 671451

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Section 29 (1)
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Patents Act 1990

NOTICE OF ENTITLEMENT

(To be filed before acceptance)

We, **TEKNION FURNITURE SYSTEMS,** of 560 Supertest Road, Downsview, Ontario, Canada M31 2M6, being the applicant in respect of Application No. **39791/93** state the following:-

The person nominated for the grant of the patent has entitlement from the actual inventors by assignment.

The person nominated for the grant of the patent has entitlement from the applicant of the application listed in the declaration under Article 8 of the PCT by assignment.

The basic application listed on the request form is the first application made in a Convention country in respect of the invention.

TEKNION FURNITURE SYSTEMS

By our Patent Attorneys,
WATERMARK PATENT & TRADEMARK ATTORNEYS

.....

for Richard H. Baddeley

Registered Patent Attorney

27 June, 1996.

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(19) AUSTRALIAN PATENT OFFICE (10) Acceptance No. 671451

(54) Title
SECURING BRACKET

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(51)[6] **E04B 002/82**

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(56) Prior Art Documents
US 4120124

(57) Claim

1. An office panelling system (2) having a plurality of interconnected panels (6) where adjacent panels are rigidly connected by means of a structural connection (20) therebetween, each panel having a frame (10) with a plurality of horizontal members (40) extending in the length of said panel (6) with each horizontal member (40) having a slot (8) extending in the length of said member which slot is accessible at an exterior face of said panel (6); at least some of said panels (6) forming angled panels (6) which are connected at an angle to one another and intermediate a length of one of said angled panels (6), said angled panels (6) being positively secured by means of securing arrangements (20) where each securing arrangement (20) releasably engages opposed horizontal slots (8) of said angled panels (6) and locks therewith, each securing arrangement (20) comprising at a first end thereof a first engaging member (22) for receipt in the opposed slot of one of said angled panels and a locking member (26) for movement from a position accommodating placement of said first engaging member (22) in said slot (8) to a position

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cooperating with said horizontal member (40) to fixedly retain said first engaging member (22) in said slot (8), each securing arrangement (20) including at a second end thereof a second engaging member (22) and locking member (26) for engaging the slot (8) in the other panel (6) of said angled panels to form a rigid connection therebetween.

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PCT

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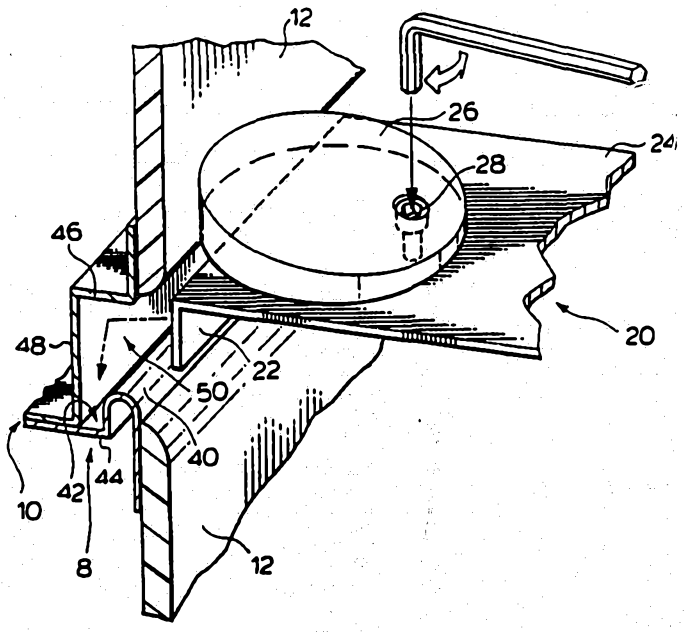
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(54) Title: SECURING BRACKET



(57) Abstract

A securing arrangement for office panels accommodates off panel angular connection while structural securement of the panels is obtained. The panels have accessible rails (40) at predetermined heights which can be engaged by a structural member (20) which in turn locks with an adjacent panel. Preferably, several structural members are used for securing two adjacent panels.

TITLE: SECURING BRACKET

FIELD OF THE INVENTION

The present invention relates to office panelling systems and, in particular, relates to methods of interconnecting office panels.

BACKGROUND OF THE INVENTION

Office panelling systems typically are designed about individual office panels which can be interconnected and joined to subdivide what would otherwise be an open space. Initially, individual free-standing panels were used, however, integrated panelling systems now also serve as passageways for conduits, for power and communications wiring, as well as for supporting office components such as desks, filing cabinets, etc. The interconnected panelling systems typically rely on the series of connected panels for stability. 'T' junctions of panels typically occur at a junction of panel ends and various connections methods have been proposed at such a junction. A junction intermediate a panel length is difficult to interconnect and causes problems with passage of wires between panels. Although a 'T' shaped junction is the most typical, other angled junctions are used.

Panelling systems are designed to allow for both flexibility in initial design as well as flexibility in changing the design should the needs of the space change in the future. One such design is shown in United States Patent 4,120,124. In this system, the panels are joined at the ends.

There remains a need for a panelling system having improved flexibility.

SUMMARY OF THE INVENTION

A securing arrangement for engaging the frame of an office panel, according to the present invention, comprises a first engaging member for receipt in a slot and a second member for movement from a position accommodating placement of said first engaging member in said slot to a position

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cooperating with said slot to fixedly locate said first engaging member relative to said slot. This securing arrangement can engage slots provided in the panels and can quickly secure the panels together at a host of locations intermediate a panel length as opposed to connections at the ends of the panels. Therefore, a junction between two panels can occur intermediate the length of one of the panels while still providing positive securement of the panels to one another. Preferably, panels are connected at two different height positions.

According to a preferred aspect of the invention, the second member is rotatable from a position accommodating placement of the first engaging member in a slot to a position fixedly locating the first engaging member relative to the slot.

According to yet a further aspect of the invention, the second member is a cam member.

The invention is also directed to an office panelling system having a multiplicity of interconnected panels joined in end-to-end fashion with other panels joined at an angle to the first series of panels. The panels each have cover members supported by interior frames, with each frame having horizontal securing rails at common specified locations from the base of each panel and running horizontally across the frame. The panels, at a junction, are positively secured with one end of the panels intermediate the length of, and at an angle to, another one of said panels, with the securement being accomplished by means of a securing arrangement. The securing arrangement engages corresponding rails of each panel and fixedly secures the panels in a predetermined orientation due to the rigid connection therebetween.

According to a further aspect of the invention, this securing arrangement fixedly secures said panels at predetermined angular orientations.

According to yet a further aspect of the invention, the securing arrangement is a fixed bracket having opposite

end flanges engaged in respective slots of the joined panels.

According to yet a further aspect of the invention, the rails are located at spaced intervals between the base and top of the panels.

BRIEF DESCRIPTION OF THE DRAWINGS

Preferred embodiments of the invention are shown in the drawings, wherein:

Figure 1 is a partial perspective view showing two series of panels interconnected, with one series intermediate the length of, and secured to, one of the panels of the other series;

Figure 2 is a partial top view showing various series of panels interconnected intermediate the length of individual panels;

Figure 3 is a partial top view showing movement of a camming member used to lock the securing bracket;

Figure 4 is a perspective view of the securing bracket with two camming members;

Figure 5 is a top view showing one securing bracket engaging two panels and predetermining the angular orientation between the panels;

Figure 6 is partial perspective view showing how an end of a bracket is inserted into a slot of the panel; and

Figure 7 is an elevational view showing a securing bracket engaging a slot of a panel.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

A first series of office panels 2 are shown in Figure 1 with a second series of office panels indicated as 4. The second series forms a generally perpendicular junction with the first series of connected office panels 2. Securing brackets 20 are shown in Figure 1 maintaining the particular desired orientation of the connected first series of office panels 2 and the connected second series of office panels 4. The series of connected office panels

are each made up of individual office panels 6. Each office panel 6 has a number of horizontal slots shown as 8 which are visible and actually form part of the frame that is behind the decorative elements 12. Thus, the office panels include an interior metal frame 10 which has a number of horizontal slots 8 which are exposed between the horizontal junction between vertically spaced decorative elements 12. The interior metal frame 10 secures and supports the decorative elements 12.

The first horizontal slot 8 is provided approximately 6 inches or 152.4mm above the base of a panel and then preferably is provided at 15 inch or 381mm intervals. The panel frame includes all of the slots 8 however decorative elements can fully conceal these slots.

Details of the securing bracket 20 and camming members used in association therewith are shown in Figures 3 through 5. The securing bracket 20 has downwardly extending flanges or tabs 22 adapted to engage and cooperate with a slot 8 of two separate panels. One of the flanges 22 engage one panel while the other flange engages a further panel. The downwardly extending flanges or tabs 22 are interconnected by a support plate 24. Preferably, the support plate and the flanges are formed as a single piece. A rotatable cam 26 is provided adjacent each extending flange 22 and is movable by means of a pivot action about the Allen screw 28 from a position which allows the bracket to easily be inserted in a slot of a panel to a position, generally indicated as 32 in Figure 4, wherein a thick part of the cam has located itself over the respective extending flange 22 and has locked the respective flange in a slot 8 of a panel, as indicated in Figure 7. It can be seen that the cam has a thick portion, generally shown as 34, and a thinner section 32 interconnected by a curved upper surface 33. This curved upper surface when the cam is engaging a slot preferably has full contact with the depth of the slot as indicated in Figure 7. Once the securing bracket 20 has been brought

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into engagement with the respective panels 2a and 4a in Figure 5, the cams 26 have been brought into an engaging position, with the thick portion 34 located in the slot and bearing against the top plate 46 of the slot, as shown in Figure 7. This movement of the cam also serves to draw flange 22 into intimate contact with the back of the rail 40, as shown in Figure 7.

Details of one horizontal slot 8 is shown in Figure 6 wherein the slot 8 is defined by a rail 40 having a recess 42 therebehind, with the slot preferably having a closed bottom 44, a closed top 46 and a closed back face or side 48. The slot is open at the front face 50. Although bottom 44, the top 46 and the back face 48 are closed, notched or punched areas could be present and possibly used for engaging the securing bracket 20, if so desired, or other components.

In order to secure bracket 20 to the slot 8 shown in Figure 6, the bracket is brought into engagement with slot 8 by flange 22, passing over the rail 40 and then being moved downwardly such that the bottom of the flange 22 is in contact with the recess 42. This has been accomplished with the cam 26 moved to a non-operative position by pivotting of the cam away from the extending flange 22. Once the bracket has been located within the slot 8, i.e. with flange 22 in engagement with slot 8, the cam 26 may be moved to pass through the open portion of the slot and eventually move to a locked position, with the thick portion 34 of the cam being in engagement with the closed top 46 and with the cam also urging extending flange 22 into intimate contact with the back of the rail 40. This type of positioning can be predetermined by the manufacturing of the components, including the cam, and a locked position can be defined. The cam can provide a progressive lock surface to accommodate minor variations. This locked position can be maintained by tightening of the Allen screw 28. There are a host of arrangements for

suitably maintaining the cam 26 in the locked type position shown in Figure 7.

The securing bracket 20 can engage the slots 8 of two panels ar , thus fixedly secure the panels in a particular off module orientation. It can be appreciated that the support plate 24 can be shaped for different angles, such as 30°, 60°, 45°, 75°, etc., such that the bracket is suitable for many applications. In the panelling system of Figure 1, two securing brackets 20 have been used to secure the second series of connected office panels 4 in a perpendicular orientation to the connected series of office panels 2 at a position in the series of connected office panels 2 intermediate the length of one panel. Thus, it is possible to make the connection at non-end locations of panels, adding additional flexibility to the planner and to allow rearrangement of the panels for future situations. The securing bracket is used for off module junctions whereas traditional securing is used where the ends of the panels meet a junction.

This bracket 20 has been specifically described with respect to fixing one panel at a predetermined orientation relative to another panel by means of a bracket engaging respective horizontal slots. It is also possible to use these horizontal slots 8 and the securing bracket 20 for securing of other equipment, such as a light, generally shown as 60 in Figure 1. Therefore, this securing arrangement need not secure two adjacent panels, but can be used for providing a fixed securement of a bracket or other components within the horizontal slot 8 at various spaced locations within the individual panels 6.

Panels can have varying heights and the use of spaced slots 8 as engaging locations simplifies securement. The system preferably has rails at fixed elevations, even if panels are stacked one atop the other as described in our United States Patent 4,535,577. Decorative elements may enclose some slots to achieve a desired visual appeal. The first rail is typically about 6 inches or 152.4mm above the lower

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edge of a base panel and a rail is preferably provided every 15 inches or 381 mm thereafter.

The panel frames 10 include a power supply entry port 19 within the 6 inch or 152.4mm metal base of the frame. These entry ports are used to provide a power connection 21 (armored cable) between the panels connected off module. This allows full powering of panels on the off module arm of the panelling system.

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THE EMBODIMENTS OF THE INVENTION IN WHICH AN EXCLUSIVE PROPERTY OR PRIVILEGE IS CLAIMED ARE DEFINED AS FOLLOWS:

1. An office panelling system (2) having a plurality of interconnected panels (6) where adjacent panels are rigidly connected by means of a structural connection (20) therebetween, each panel having a frame (10) with a plurality of horizontal members (40) extending in the length of said panel (6) with each horizontal member (40) having a slot (8) extending in the length of said member which slot is accessible at an exterior face of said panel (6); at least some of said panels (6) forming angled panels (6) which are connected at an angle to one another and intermediate a length of one of said angled panels (6), said angled panels (6) being positively secured by means of securing arrangements (20) where each securing arrangement (20) releasably engages opposed horizontal slots (8) of said angled panels (6) and locks therewith, each securing arrangement (20) comprising at a first end thereof a first engaging member (22) for receipt in the opposed slot of one of said angled panels and a locking member (26) for movement from a position accommodating placement of said first engaging member (22) in said slot (8) to a position cooperating with said horizontal member (40) to fixedly retain said first engaging member (22) in said slot (8), each securing arrangement (20) including at a second end thereof a second engaging member (22) and locking member (26) for engaging the slot (8) in the other panel (6) of said angled panels to form a rigid connection therebetween.

2. An office panelling system as claimed in claim 1 wherein said first engaging member and said second engaging member (22) each has an offset flange (22) for engaging one of said slots (8) of said panels (6) and each locking member (26) is of variable thickness which cooperates with said horizontal member (40) in a wedging manner for fixedly

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securing said respective engaging member (22) in a slot (8) of said panels (6).

3. An office panelling system (2) as claimed in claim 1 or 2 wherein each slot (8) is open on one side and closed at the top (46) and bottom (44) and each locking member (26) engages said slot (8) to wedge said respective engaging member (22) in said slot (8).

4. An office panelling system (2) as claimed in claim 3 wherein each slot (8) is closed on one side (48) and has a lower rail (40) with an upturn for engaging a downwardly extending flange (22) at one end of said engaging members (22), and wherein each locking member is a cam (26) which engages both the top (46) and closed side (48) of said slot (8) and forces said downwardly extending flange (22) into pressure contact with said upturn of said lower rail (40).

5. An office panelling system (2) as claimed in claim 1 wherein said angled panels (6) are connected at two horizontal positions.

6. An office panelling system (2) as claimed in claim 1 wherein said angled panels (6) are connected at two horizontal positions and wherein said horizontal positions are each intermediate the height of said respective panels (6).

7. An office panelling system (2) as claimed in claim 1 wherein each panel (6) has horizontal members (40) which are vertically spaced approximately 15 inches or 381mm.

8. An office panelling system (2) as claimed in claim 7 wherein said securing arrangements (20) fixedly secure said angled panels (6) at a predetermined angular orientation.

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9. An office panelling system (2) as claimed in claim 8 wherein each slot (8) is closed on one side (48) and said locking member (26) is a cam which engages both the top (46) and closed side (48) of said slot (8).

10. An office panelling system (2) as claimed in claim 9 wherein each slot (8) has a lower rail (40) behind which a downwardly extending end flange (22) of an engaging member (22) is located.

11. An office panelling system as claimed in claim 1 wherein said frame (10) of each panel (6) has said horizontal slots (8) for receiving one of said securing arrangements (20) at about 6 inches or 152.4mm above a lower edge of said frame (10) and intervals of 15 inches or 381mm thereafter.

12. An office panelling system (2) as claimed in claim 7 wherein said releasable securing arrangement (20) is capable of engaging any slot (8) of a panel at any position along the length of the slot (8).

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FIG.1.

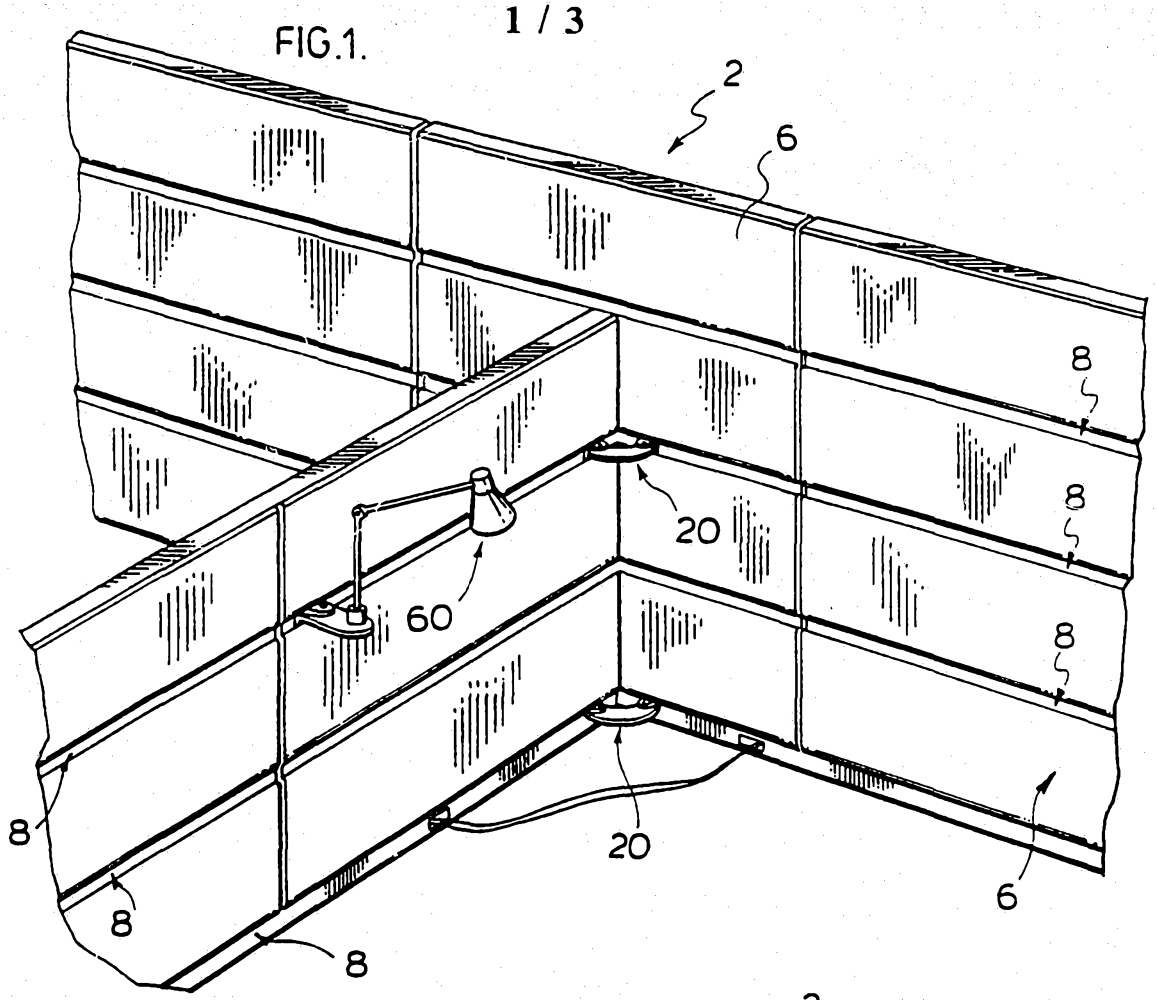
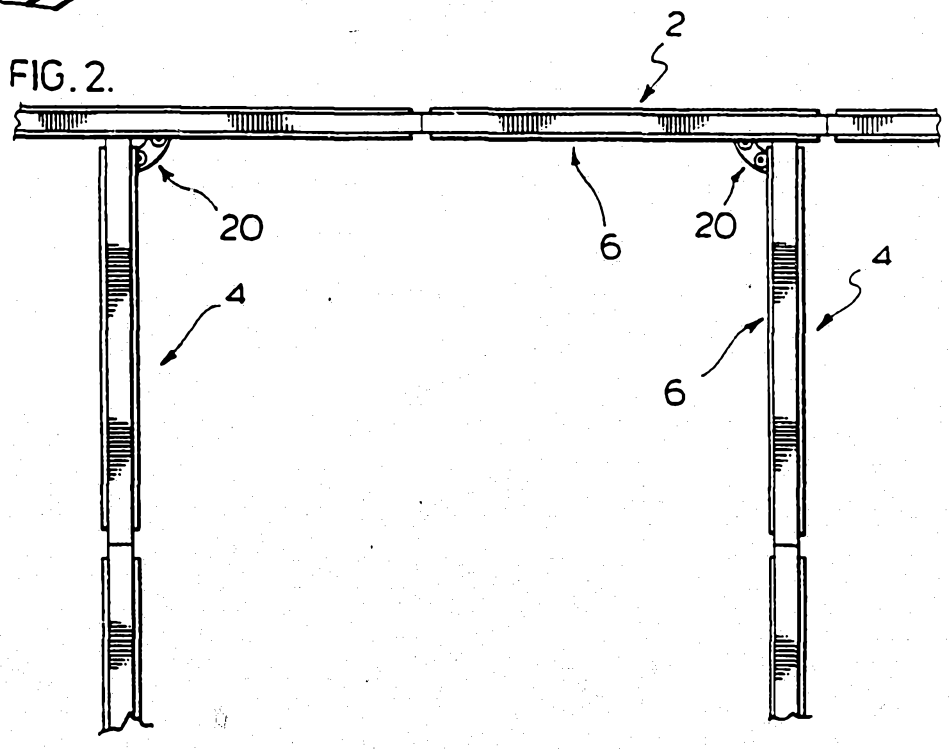


FIG. 2.



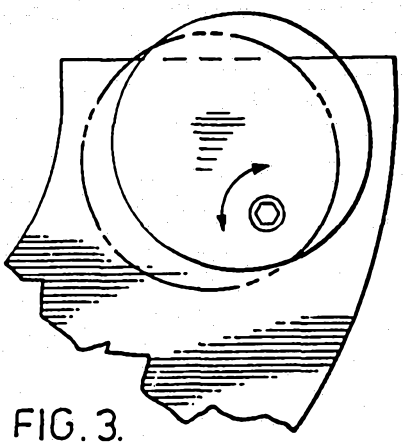


FIG. 3.

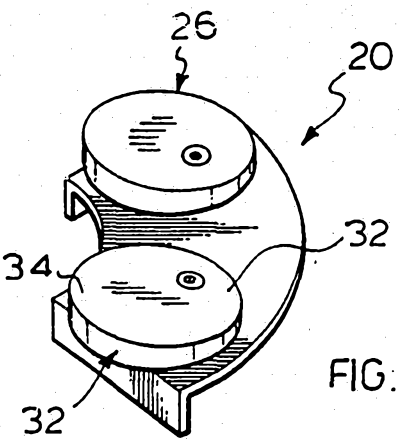


FIG. 4.

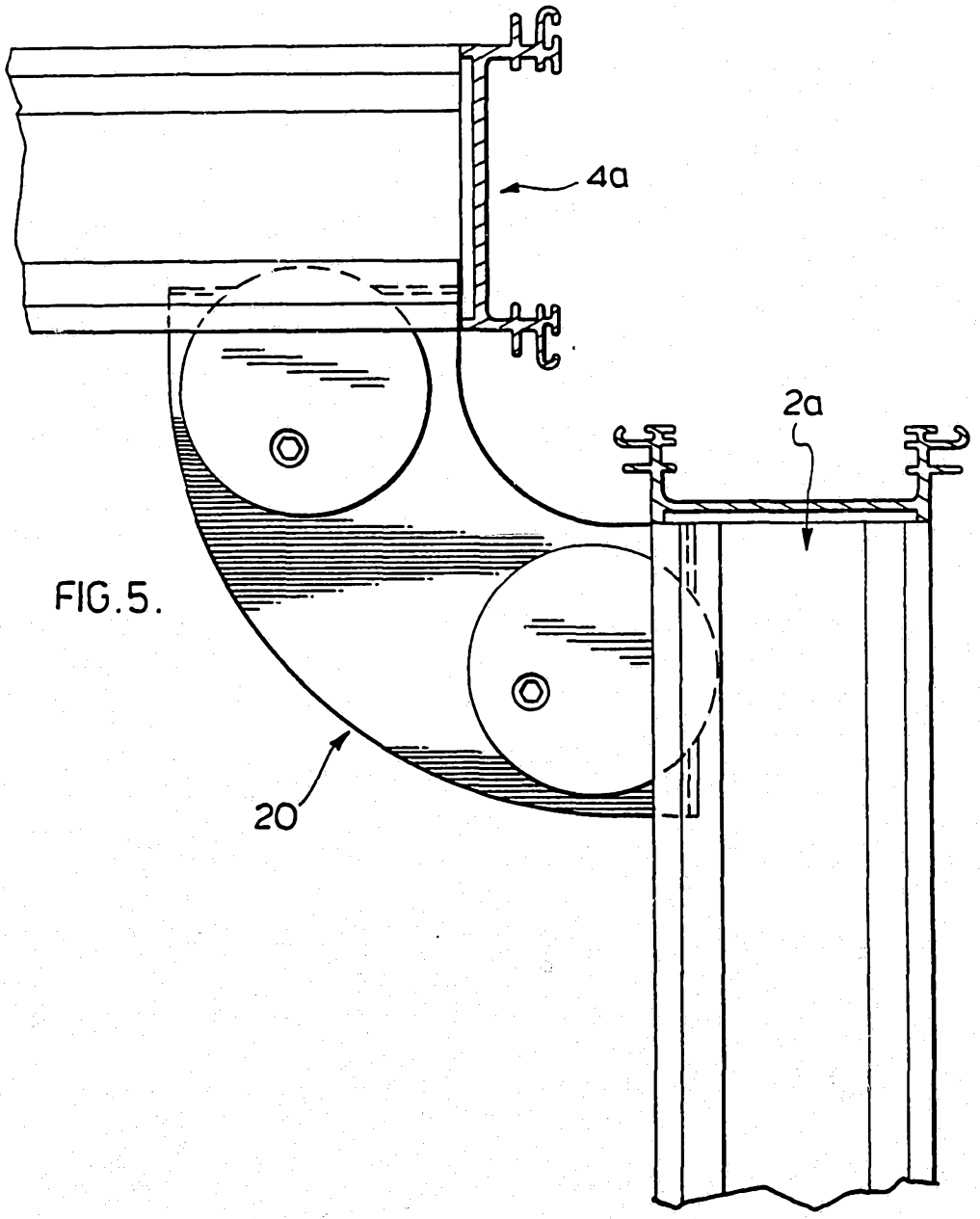


FIG. 5.

FIG. 6.

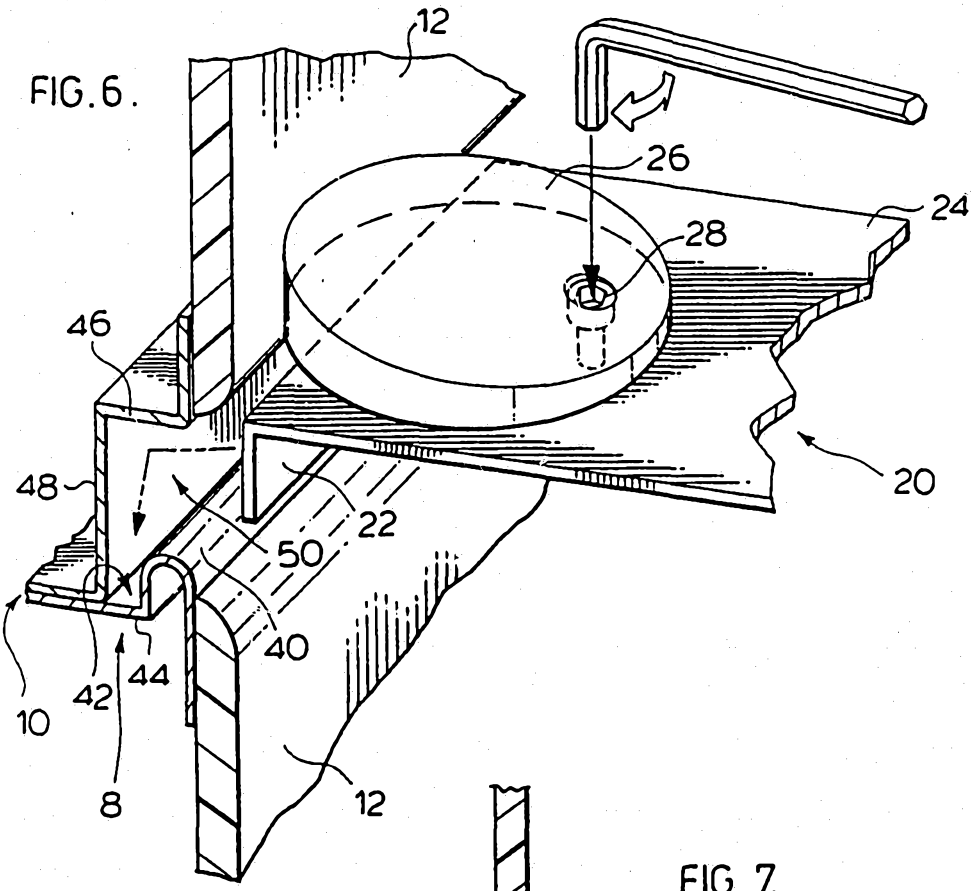
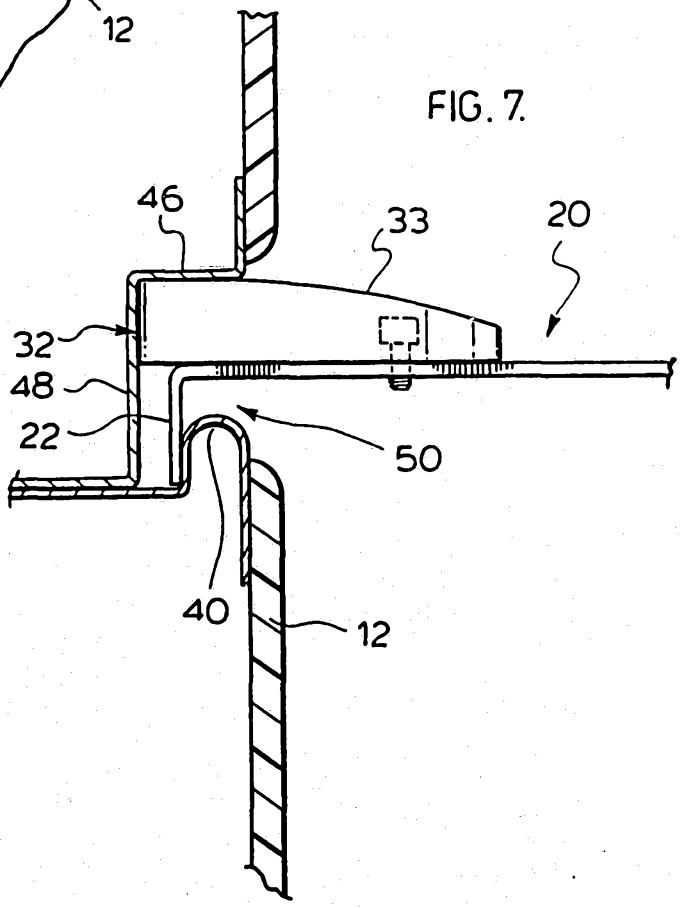


FIG. 7.



INTERNATIONAL SEARCH REPORT

International Application No PCT/CA 93/00185

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all)[6]

According to International Patent Classification (IPC) or to both National Classification and IPC

Int.Cl.5 E 04 B 2/74

II. FIELDS SEARCHED

Minimum Documentation Searched[7]

Classification System	Classification Symbols
Int.Cl.5	E 04 B F 16 B A 47 B

Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched[8]

III. DOCUMENTS CONSIDERED TO BE RELEVANT[9]

Category °	Citation of Document,[11] with indication, where appropriate, of the relevant passages[12]	Relevant to Claim No.[13]
X	US,A,4120124 (TEMPLE ET AL.) 17 October 1978 see column 5, line 39 - line 46; figure 12 ---	1,2
X	US,A,4545142 (WHISNANT) 8 October 1985 see column 4, line 19 - line 35; figure 2 ---	1,2
X	WO,A,8905891 (HENNIX EXPO AB) 29 June 1989	1-3
A	see page 4, line 24 - page 7, line 34; figures ---	4,9
A	EP,A,0434433 (GIANARDI) 26 June 1991 see column 1, line 1 - column 5, line 31; figures --- -/-	1-4

° Special categories of cited documents :[10]

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

IV. CERTIFICATION

Date of the Actual Completion of the International Search	Date of Mailing of this International Search Report
18-08-1993	21 -12- 1993
International Searching Authority	**Signature of Authorized Officer**
EUROPEAN PATENT OFFICE	A.K. FORDHAM

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CA93/00185

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see PCT/ISA/206 mailed on 150993

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☐ As all searchable claims could be searches without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-9

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest.

☐ No protest accompanied the payment of additional search fees.