

**(12) PATENT**  
**(19) AUSTRALIAN PATENT OFFICE**

**(11) Application No. AU 200010110 B2**  
**(10) Patent No. 762638**

(54) Title  
**Trailer zoning arrangements**

(51)<sup>7</sup> International Patent Classification(s)  
**B60P 003/20                      B60P 003/42**  
**B60H 001/32                    B60P 007/14**  
**B60P 003/05                    B62D 033/04**

(21) Application No: **200010110**

(22) Application Date: **2000.01.05**

(30) Priority Data

(31) Number	(32) Date	(33) Country
<b>PP8014</b>	<b>1999.01.05</b>	<b>AU</b>

(43) Publication Date : **2000.07.06**

(43) Publication Journal Date : **2000.07.06**

(44) Accepted Journal Date : **2003.07.03**

(71) Applicant(s)  
**Fiberglass Transport Equipment Pty. Ltd.**

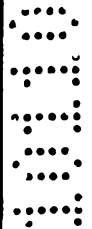
(72) Inventor(s)  
**Grantley Keil Smyth; Mark Josef Fainberg**

(74) Agent/Attorney  
**WATERMARK PATENT and TRADEMARK ATTORNEYS, Locked Bag 5, HAWTHORN  
VIC 3122**

(56) Related Art  
**US 4221421**

## ABSTRACT

The specification discloses a load carrying region (10) of a vehicle / trailer having fixed peripheral walls formed by a floor (11), a front wall (12), a ceiling (13), a pair of opposed side walls (14, 15), a rear wall consisting of or including a rear access door or doors, and a zoning arrangement (20) adapted to divide the region (10) into separate zones (18, 19), the zoning arrangement (19) including wall means (21) formed from at least two wall sections (22, 23) hinged at (24) together for relative pivoting movement about a longitudinally extending axis with an uppermost one of the wall sections (23) also being hinged at (26) or pivotal movement about a further fixed longitudinally extending axis located at or adjacent the ceiling (13) of the load carrying region (10), whereby in a first configuration the wall means (21) forms a dividing wall extending from the floor (11) to the ceiling (13) between the zones (18, 19) and, in a second configuration, the wall sections (22, 23) are folded about the hinges to be stored adjacent one of the fixed peripheral walls (11, 12, 13, 14, 15).





AUSTRALIA

Patents Act 1990

**ORIGINAL  
COMPLETE SPECIFICATION  
STANDARD PATENT**



Application Number:

Lodged:



Invention Title:

TRAILER ZONING ARRANGEMENTS



The following statement is a full description of this invention, including the best method of performing it known to us :-

**TRAILER ZONING ARRANGEMENTS**

The present invention relates to an improved zoning arrangement to be used in conjunction with transport vehicles / trailers used for transporting foodstuffs of the type requiring refrigeration or cooling during their distribution to retail outlets or the like.

There are many requirements in this industry including the fact that different foodstuffs often need to be transported at differing temperature ranges to be considered safely handled. Some foodstuffs need to be frozen and remain frozen during their handling including transport while others simply need to be chilled and remain chilled through the same process. Often transport vehicles including trailers need to be able to transport both types of products and therefore the interior of the load carrying regions of such vehicles / trailers need to be satisfactorily zoned for different products being carried. Another preferred aspect is that most vehicle loading and unloading facilities are designed to be most efficiently utilised when the load carrying region is accessed through a rear end door.

In one known zoning arrangement for vehicle / trailers of the aforementioned kind, the load carrying region is divided into two sections, a forward lower temperature zone for frozen goods, and a rear relatively higher temperature zone for goods that can be safely stored and transported at cool or chill temperatures but not freezing temperatures. The two zones are divided by a transverse wall which may be fixed or at least partly movable and access is achieved to both zones through separate access doors in the side walls of the vehicle or trailer. While such arrangements work satisfactorily they have the disadvantage that the carrying capacities of the respective zones are substantially fixed and they are somewhat more difficult to load and unload because of the side access doors. In another known arrangement, the load carrying region of a vehicle / trailer has been divided lengthwise with differing temperature zones on either side of the dividing wall. Such an arrangement has the benefit of allowing conventional access through rear loading / unloading door means, but still provides a permanent division of the internal load carrying region thereby fixing the load carrying capacity of each zone. Moreover, the



panels forming the internal dividing wall are either fixed in position, or if removable, involve a significant level of effort to do so and the panels must be stored external of the vehicle if they are removed.

The objective of the present invention is to provide an improved mechanism  
5 for enabling zoning reconfigurations within the load carrying region of a refrigerated/cooled vehicle or trailer, such reconfigurations being possible with reasonable ease while still maintaining rear door access to the zones within the load carrying region. A preferred objective is to ensure that all equipment required for reconfiguration processes is carried/stored on board the vehicle.

10 Accordingly, the present invention provides a vehicle having a load carrying region for transporting a refrigerated/cooled load having a zoning arrangement formed therein, said load carrying region having peripheral wall means including a ceiling, a floor, a pair of opposed side walls, a front wall and a rear wall including or formed by closable access means, said zoning arrangement including wall means  
15 formed from at least one wall section extending longitudinally of said load carrying region parallel to said side walls, the or each said wall section in a first configuration forming a dividing wall extending upwardly from the floor of the load carrying region, and in a second configuration the wall section is/are movable to a storage position adjacent the ceiling. Preferably the or each said wall section  
20 remains connected to the peripheral wall means in said first configuration and in said second configuration. The dividing wall in the first configuration may be located centrally between the opposed side walls or alternatively be offset relative a central plane between the opposed side walls of the load carrying region.

In accordance with one preferred embodiment, the or each said wall section  
25 includes at least two panel members hinged together whereby the panel members are pivotally movable relative to each other about a longitudinally extending axis or axes, an uppermost one of said panel members also being

30

hinged for pivotal movement about a fixed longitudinal axis located at or adjacent the ceiling of the load carrying region.

Because the load carrying region is selectably dividable by the wall means that extends longitudinally of the region, it is possible to load or unload  
 5 all zones of the load carrying region through conventional rear access door means. Moreover, when the wall means is in the first configuration, two separate zones are provided, each of which can be supplied with separate cooling air flow to create zones of differing low temperature as may be desired. The air flow may originate from the same cooling system or may come from  
 10 separate cooling systems.

In one preferred embodiment, at least two said wall sections are provided with said wall sections being separated by sealing strip means when in the first unfolded configuration. Preferably the sealing strip means are rigid providing rigidity to the wall means when the wall sections are in the first  
 15 unfolded configuration. Conveniently it is possible to have one or more wall sections in the first unfolded configuration with a removable end wall or plug member closing the end of one zone while any remaining wall sections can be in the elevated folded configuration thereby providing a still further adjustability to the separate zones that can be readily formed by the system described  
 20 above.

In one preferred embodiment, a longitudinally extending groove is provided in the floor wall of the load carrying region adapted to receive and hold a lower edge portion of a lower most said panel member of the or each said wall section when in said first unfolded configuration. Preferably seal means  
 25 are provided associated with longitudinally extending edges of each said panel member adapted to seal between respective said panel members when said panel members are located in said first unfolded configuration.

Preferably when the panel members are located in the second folded configuration, said panel members are located below the ceiling wall of the load  
 30 carrying region and extending to a position adjacent a said side wall of the load carrying region whereby a duct region is established between the folded panel

members and the ceiling wall to transfer cold or cool air to a rear end of the folded panel members.

In accordance with a still further preferred embodiment the or each said wall section is bodily moved to position an upper edge region thereof adjacent one said side wall and the or each said wall section is pivotally mounted to swing about a longitudinally extending axis to position a lower edge region thereof at or adjacent the other said side wall when the or each said wall section is moved to the second configuration. In another possible embodiment the or each said wall section is bodily movable from said first configuration to said second configuration where the or each said wall section is located against or adjacent to a said side wall of the load carrying region.

In accordance with a still further preferred aspect, the present invention provides a vehicle / trailer including a load carrying region as set out above further including temperature control means for controlling temperature within different zones within said load carrying region formed by said zoning arrangement.

Preferred aspects of the present invention will become apparent from the following description given in relation to the accompanying drawings, in which :-

Figure 1 is a partial longitudinal cross-sectional view of a load carrying region of a vehicle / trailer showing the forward end thereof and wall means of the zoning arrangement according to a preferred embodiment of the present invention;

Figure 2 is a cross-sectional or end view taken along lines II-II of Figure 1;

Figure 3 is a detailed cross-sectional and side view of the area A shown in Figure 1.

Figure 4 is a detailed cross-sectional and side view of the area B shown in Figure 1;

Figure 5 is a detailed cross-sectional view of the area marked C shown in Figure 2; and

Figure 6 is a partial detailed cross-sectional view of the area marked D shown in Figure 2.

Referring to Figure 1 of the annexed drawings, the forward end of a load carrying region 10 of a vehicle / trailer is shown having a floor 11, a front wall 12 and a ceiling 13. The load carrying region also has peripheral wall means including a pair of side walls 14, 15 (Figure 2) and a conventional rear access door (not shown). A refrigeration / cooler unit 16 is mounted from the front wall 12 and is arranged to deliver refrigerated / cooled air flow to the load carrying region 10 via an access grill or opening 17. The load carrying region 10 is divided into separate zones 18, 19 by a zoning arrangement 20 as is best seen in Figure 2. In one preferred arrangement as illustrated the refrigerated air is delivered from the unit 16 only into the zone 18 and a separate cooler unit or units might be provided for zone 19. If zone 18 is intended to be the colder zone, then zone 19 might be cooled by evaporative type cooler units mounted in the ceiling 13. Alternatively, the refrigeration / cooler unit might be a split type system delivering very cold air flow to zone 18 and less cold air to zone 19 and in this latter case would include a delivery opening to zone 19.

The zoning arrangement 20 preferably includes two or more wall sections 21, two of which are shown in Figure 1. Each wall section 21 includes a lower panel member 22 and an upper panel member 23 extending longitudinally of the load carrying region 10 with the panel members 22, 23 being hinged together conveniently by a plurality of hinge members 24. The arrangement 20 further includes a downwardly depending wall part 25 fixed to the ceiling 13 to which each of the upper panel members 23 are hingedly connected by a plurality of hinge members 26. Arranged between the top edge of the upper panel members 23 and the lower edge of the wall part 25 are sealing strip means 27 adapted, in use, to minimise air flow between the zones 18, 19 when the wall sections 21 are in an unfolded configuration as shown in full outline in Figures 1 and 2. Similarly sealing strip means 28 are provided between the lower edges of the upper panel members 23 and the upper edges of the lower panel members 22 (Figure 4) to minimise air flow between the zones 18, 19. The lower edges of the lower panel members 22 are adapted to be received in and held by a longitudinally extending groove 29 in the floor 11 of the load carrying region.



Located between adjacent wall sections 21 is a rigid upright sealing strip 30 consisting of an upright generally square tubular section 31, a rear plate 32 and a front plate 33. The front and rear plates 32, 33 on one side define a groove to receive and hold an upright edge zone 34 of the panel members 22, 23 of one wall section 21. The panel members 22, 23 of an adjacent wall section 21 on the other side of sealing strip 30 have upright edge zones pressed against the rear plate 32 by a releasable fastening means 39. The fastening means 39 has a rotatable tongue member 35 rotatable from the secured position shown in Figure 3 to allow the right hand wall section 21 (Figure 1) to be released, when desired, from the sealing strip 30.

When it is desired to move a wall section 21 to a storage position, all that is required is for its upright edges to be released from the upright sealing strips 30, the panel members 22, 23 are then kicked to the right to release the lower edge from the groove 29, and then the lower panel member 22 is folded up to overlie the top panel member 23 and the two panel members are together pivoted about the hinge members 26 to the position 40 shown in Figure 2. A restraining arrangement 41 is provided to retain the panel members 22, 23 in the elevated position. In one preferred embodiment the restraining arrangement 41 may comprise a longitudinally extending bar 42 that in an extended position is located underneath the panel members 22, 23, and in a withdrawn position, is located against the side wall 14 to allow the panel members to pivot downwardly to the position illustrated in full outline. As is best seen in Figure 2, a form of a duct 43 is formed between the panel members 22, 23 and the ceiling 13 to receive and deliver at least part of the cooling air flow from the delivery opening 17. In this manner, at least part of the cooling air flow is delivered to a downstream end of the panel members 22, 23 to improve the cooling characteristics of the zone 18.

It will of course be appreciated that the zone 18 might extend to the rear access door, that is fully along the longitudinal length of the load carrying region 10 or alternatively might be shortened by folding up one or more of the wall section 21 to the position 40 illustrated in dashed outline in Figure 2. In such a

case, a rear temporary closure wall or door is provided to close the rear end of the zone 18.

In a possible further preferred embodiment, each wall section 21 may be formed by a single panel member which extends from the floor to the ceiling in the first configuration acting as a longitudinal dividing wall. In this embodiment an upper region of the panel member is supported to enable bodily sliding movement thereof towards one of the side walls 14 or 15 and in this position, the panel member might be configured to enable upwards pivoting movement thereof to position the panel member in a storage position against or adjacent to the ceiling 13 with the lower edge region of the panel member releasably retained by suitable fastener or support elements (such as 41, 42). Again a form of duct can be provided between the panel member and the ceiling to assist with the flow of cold or cool air to a downstream end of the panel member (or members). In a still further possible preferred embodiment each wall section 21 may be formed by a single panel member supported for bodily movement from a central longitudinally extending dividing position to a position against or adjacent a side wall of the load carrying region. Conveniently in the aforementioned embodiments the or each wall section remain connected to the peripheral wall structure of the load carrying region.

20



THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A vehicle having a load carrying region for transporting a refrigerated / cooled load having a zoning arrangement formed therein, said load carrying region having peripheral wall means including a ceiling, a floor, a pair of opposed side walls, a front wall and a rear wall including or formed by closable access means, said zoning arrangement including wall means formed from at least one wall section extending longitudinally of said load carrying region parallel to said side walls, the or each said wall section in a first configuration forming a dividing wall extending upwardly from the floor of the load carrying region, and in a second configuration the or each said wall section is/are movable to a storage position adjacent the ceiling.

2. A vehicle according to Claim 1, wherein the or each said wall section remains connected to the peripheral wall means in said first configuration and in said second configuration.

3. A vehicle according to Claim 1 or Claim 2, wherein the or each said wall section is arranged adjacent to a said side wall in said second configuration.

4. A vehicle according to any one of Claims 1 to 3, wherein the or each said wall section includes at least two panel members hinged together whereby the panel members are pivotally movable relative to each other about a longitudinally extending axis or axes, an uppermost one of said panel members also being hinged for pivotal movement about a fixed longitudinal axis located at or adjacent the ceiling of the load carrying region.

5. A vehicle according to Claim 4, wherein a longitudinally extending groove is provided in the floor wall of the load carrying region adapted to receive and hold a lower edge portion of a lower most said panel member of the or each said wall section when in said first unfolded configuration.

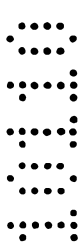
6. A vehicle according to any one of Claims 1 to 5, wherein at least two said wall sections are provided with said wall sections being separated by sealing strip means when in said first unfolded configuration.

5 7. A vehicle according to Claim 6, wherein the sealing strip means is rigid in construction.

8. A vehicle according to Claim 4 or Claim 5, wherein seal means are provided associated with longitudinally extending edges of each said panel member adapted to seal between respective said panel members when said panel members are located in said first unfolded configuration.

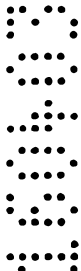
9. A vehicle according to Claim 4 or Claim 5, wherein in said second folded configuration said panel members are located below the ceiling of the load carrying region and extend to a position adjacent a said side wall of the load carrying region whereby a duct region is established between the folded panel members and the ceiling wall to transfer cold or cool air to a rear end of the folded panel members.

10. A vehicle according to Claims 1 or Claim 2, wherein the or each said wall section is bodily moved to position an upper edge region thereof adjacent one said side wall and the or each said wall section is pivotally mounted to swing about a longitudinally extending axis to position a lower edge region thereof at or adjacent the other said side wall when the or each said wall section is moved to the second configuration.



25

11. A vehicle according to Claim 3, wherein the or each said wall section is bodily movable from said first configuration to said second configuration.



30

12. A vehicle according to any one of Claims 1 to 11, further including at least one removable wall plug member arranged to selectably close at least one zone formed between a said wall section and a side wall of the load carrying region.

13. A vehicle having a load carrying region according to any one of Claims 1 to 11, further including temperature control means for controlling temperature within different zones within said load carrying region formed by said zoning arrangement.

5

**DATED** this 15th day of April 2003

**FIBERGLASS TRANSPORT EQUIPMENT PTY LTD**

WATERMARK PATENT & TRADE MARK ATTORNEYS  
290 BURWOOD ROAD  
10 HAWTHORN VICTORIA 3122  
AUSTRALIA

P16675AU00 SKP/SLB

15

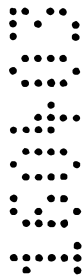
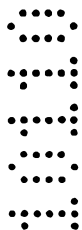


Fig 1.1/2

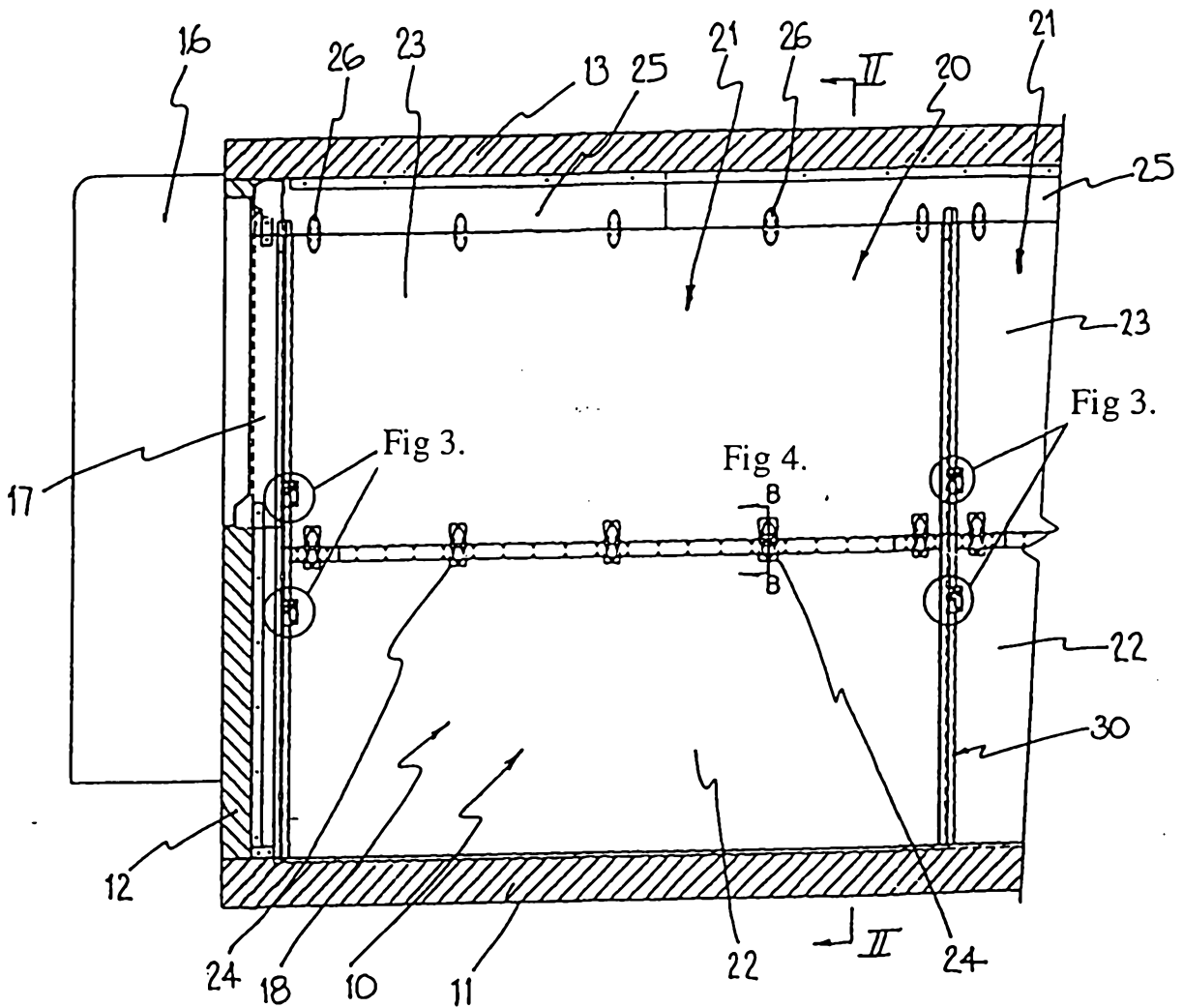


Fig 3.

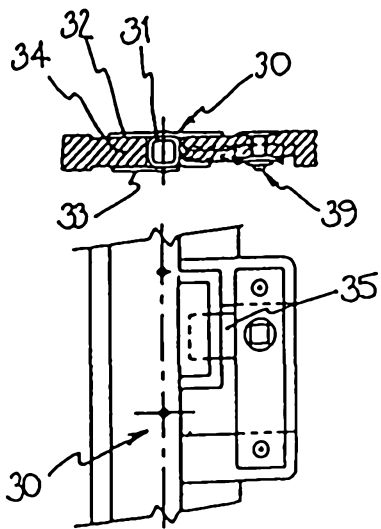


Fig 4.

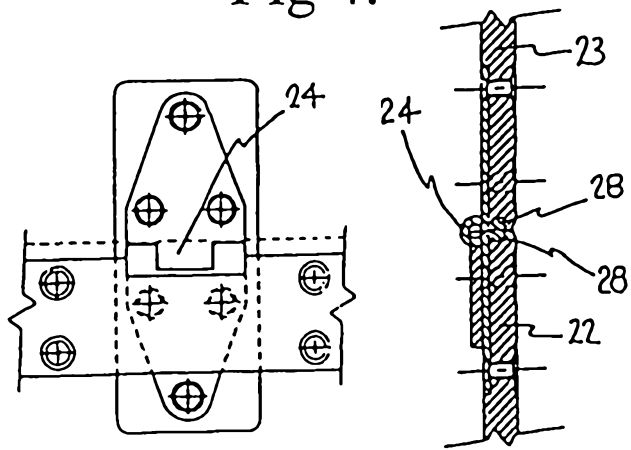


Fig 2.

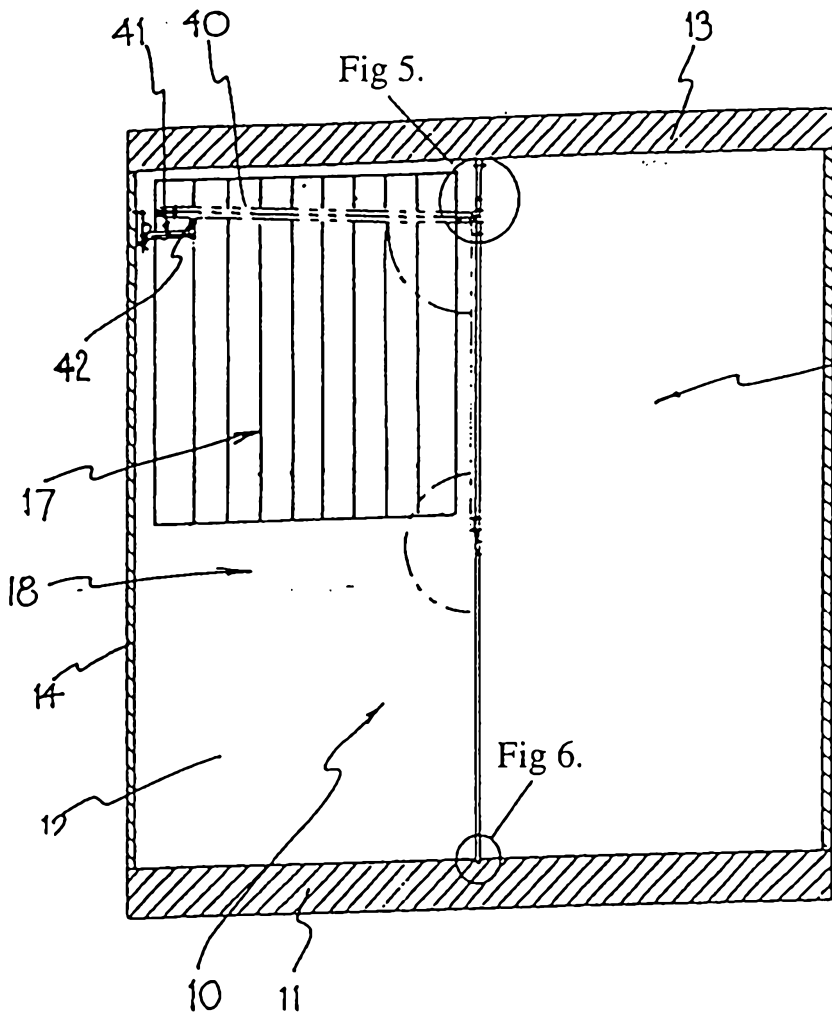


Fig 5.

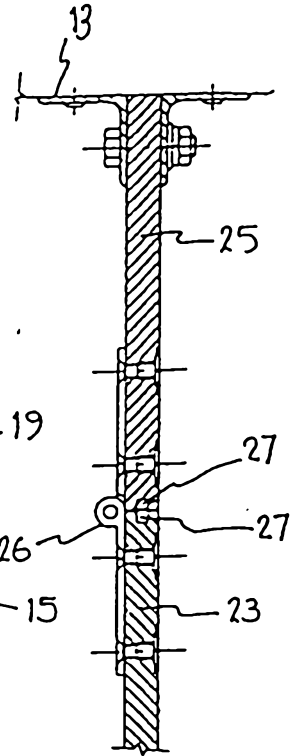


Fig 6.

