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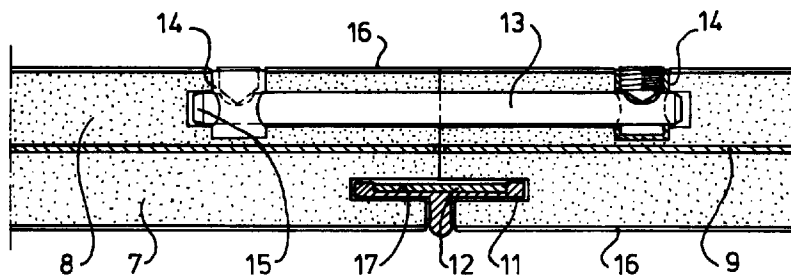
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(54) Protective screen wall

(57) Protective screen wall consisting of a laminated construction with at least two external wall parts (7,8) and a sheet of radiation-inhibiting material (9) placed between them. In order to combine the protective screen panels to form a protective screen wall, it is proposed that each panel should be provided with con-

necting means (13,14) at at least one edge. In addition, in order to prevent radiation from passing between the boundary of two panels, housings are provided, for receiving an edge part of radiation-inhibiting material, which is in the form of a T-section (12).

fig - 3



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Description

The present invention relates to a protective screen wall according to the preamble of Claim 1.

Such a wall is known from European Patent Application 0,104,867. In that structure the adjoining panels near the adjoining edges are provided with an L-shaped outward projecting flange through which a bolt connection can be fitted. At the opposite side, L-shaped inward projecting accommodations are present on either side, for fitting a layer of lead placed between fibre boards.

Such a construction can be very satisfactory for heavy industrial applications, but it is totally unsuitable for use in hospitals. For the fact is that fitting such projecting parts for the connecting means is not permitted, because they can lead to patients sustaining injuries, to movable equipment (such as beds) being damaged, and to difficulties with cleaning. Besides, the construction known from European Patent Application 0,104,867 has the disadvantage that it warps from the side where the bolt force is acting.

Additionally, it is not easily possible to use sheet material, such as lead, of different thicknesses in the housing lying opposite the connecting means. Combination with panes which enable the radiologist to see the patient is not possible with this construction either.

The object of the present invention is to avoid the disadvantages described above and to provide an improved protective screen wall.

This object is achieved by the characterizing measures of Claim 1.

Unlike the construction according to the prior art, the connecting means now extend in the panel in housings fitted for them between the outside wall and the lead sheet. In other words, when they are fitted, an outward projecting part is no longer present, so that a flush finished unit is obtained, while the lead sheet is not drilled.

The same applies to the overlapping protective screen section, which is fitted in a housing between the outside wall and the sheet of radiation-inhibiting material. Due to the fact that the connecting means are situated closer to the central axis of the panel concerned, there will be less of a tendency to warp. Besides, such warping is prevented by the fact that the protective screen section is bounded on either side by the panel, so that warping is not easily possible. According to the invention, the housing for the radiation-inhibiting material is also used for accommodating a section, preferably a T-section, which forms an externally exposed edge between two protective screen panels. This produces a finishing moulding, and it is also possible to provide the body of this T-section with a recess for the overlapping edge part material. The edge part material will in fact normally contain a lead material, which is relatively soft and difficult to handle. The handling can be facilitated considerably by producing the T-section described above from, for example, aluminium, and by accommodating the lead material therein in the recess bounded

therein. With the same dimensions in the support, the thickness of the sheet of lead material can be changed, and an adaptation to differing circumstances can be provided without the wall panel having to be changed any further. The protective screen section used can be connected either to a further panel corresponding to the first panel mentioned or to a different type of panel, such as a pane. In particular, the direct and simple connection to a pane makes a particularly simple modular construction of the device according to the invention possible.

The connecting means between the two wall parts can comprise any constructions known in the prior art. According to a preferred embodiment, a so-called "Spør" is used.

In this case a bore is made near the edge in one of the external wall parts in both protective screen panels, said bores extending in the plane of the wall in line with each other when the panels are placed against each other. A pin provided with conical recesses and tapered ends is placed therein. A spør nut with hexagonal socket-head screw is then placed in the external wall parts concerned, at right angles to the plane of the panel, in the bores provided for the purpose. A locking mechanism is provided by making these hexagonal socket-head screws engage with the conical recesses in the abovementioned pin. The abovementioned external wall parts can comprise any materials known in the prior art, such as laminates.

According to an advantageous embodiment, at least one of those external wall parts is made of MDF (medium density fibre board) sheet material. This sheet material is preferably provided with a finishing layer, such as veneer or HPL, the latter being a high-pressure laminate made of plastic.

The invention will be explained in greater detail below with reference to exemplary embodiments shown in the drawing, in which:

Fig. 1 shows in top view a protective screen wall according to the invention, consisting of different types of protective screen panels;

Fig. 2 shows a cross-section over the height of the wall panel in the position shown in Fig. 1;

Fig. 3 shows a cross-section along line III-III in Fig. 2, and

Fig. 4 shows a cross-section along the line IV-IV in Fig. 2.

The protective screen wall according to the invention is indicated in its entirety by 1 in Fig. 1. It consists of various types of protective screen panels 2 - 5.

These panels are only examples of many variants which are obvious for a person skilled in the art after reading the present description and appended claims.

Each protective screen panel 2 - 5 consists of two external wall parts 7, 8 and a sheet or membrane of lead placed between them. The external wall parts 7, 8 are provided with a finishing layer 16 on the outside.

As a non-limiting example, the external wall parts 7, 8 can consist of MDF material having a thickness of, for example, 18 mm and a height which depends on the application. A standard length of approximately 2.20 metres is envisaged here.

The sheet lead used can be, for example, sheet lead of the NHL 25 type which is 2.09 mm thick.

The finishing layer on the external wall parts can comprise 0.9 mm thick laminate material.

As can be seen from Fig. 1, adjoining protective screen panels are provided with accommodation grooves 10. A T-section 12 can be placed therein. Said T-section 12 is provided with a recess 17, in which an edge strip of lead 11 is accommodated. The T-section is preferably of anodized aluminium. It can be seen from the figures that the base of the T also forms a finishing moulding between two adjoining panels. The presence of the edge strip of lead 11 means that radiation is prevented from passing through the gap between sheets of lead of two adjoining wall panels. In the construction shown in Fig. 1, in the case of hospital applications the patient will generally be at the external wall part 7 side of protective screen panel 4, while the operative will be at the external wall part 8 side.

In order to connect the two wall parts to each other, a so-called "Spør" system is present. This is shown more clearly in Fig. 3. It can be seen from this that a pin 13, which near the ends thereof is provided with conical recesses 15, extends in aligned bores of two adjoining protective screen panels. The protective screen panels are provided with bores extending at right angles thereto, for the accommodation of spør nuts 14 with hexagonal socket-head screws 20. Tension is provided by tightening the hexagonal socket-head screws 20. The distances here are selected in such a way that when the pins are pulled inwards fully, the panels will lie rigidly against each other, i.e. when the pins move inwards, the panels are pulled towards each other. Such a construction is extremely strong and is not unattractive in appearance. A slightly different construction is used in 4. It consists of a simple housing 22, in which an edge strip of lead 23 has been placed, which strip is not supported by a T-section or the like.

A cross-section in the vertical direction at the position of a pane 18 is shown in Fig. 2.

This pane 18 consists of a lead glass material and has a thickness which lies, for example, between 7 and 8.5 mm. The lead equivalent present therein is selected depending on the specified radiation, and in this case the values proposed by the National Radiological Protection Board (NRPB) are followed. It can be seen from Fig. 2 that a T-section provided with an edge strip 11 of radiation-inhibiting material is also present at the position of the boundary between pane 18 and the corresponding panel. Here again, a seamless seal against radiation is obtained by overlapping.

Fig. 2 also shows how the underside of the panel according to the invention connects to the ground. For this purpose, an H-section 19 with an overlap construc-

tion is present, and this can be seen in Fig. 4.

Although the invention is described above with reference to a preferred embodiment, it will be understood that numerous modifications can be made thereto without going beyond the scope of the present invention.

For instance, it is possible not only to provide a division between laterally adjoining panels, but also to place panel parts on top of each other. In this case the same protection can be provided as in the case of the lateral boundary. It is also possible to use all kinds of other forms, such as in window frames, doors, mobile walls and double walls.

Claims

1. Protective screen wall comprising at least two panels, connecting means for attaching said panels to each other, and a protective screen section to be fitted near the boundary of said panels, in which at least one panel (2-5) comprises two outside walls (7, 8) situated at a distance from each other and having a sheet of radiation-inhibiting material (9) placed between them and near the edge thereof fastenings for said connecting means and a accommodation for the protective screen section, characterized in that the protective screen section comprises a T-section, in that the external walls extend substantially straight to the end boundary thereof and said accommodation for receiving the T-section is defined between the sheet (9) and an external wall (7), the leg of the T-section extending at right angles to said external wall, and a further accommodation being defined between the sheet and the other external wall (8), for receiving said connecting means.
2. Protective screen wall according to Claim 1, in which said other panel (2-5) corresponds to said at least one panel.
3. Protective screen wall according to Claim 1, in which said other panel comprises a glass pane (18) which is engaged by the body of the T-section.
4. Protective screen wall according to one of the preceding claims, in which the T-section comprises a support (12), while a radiation-inhibiting material (11) is accommodated in the body.
5. Protective screen wall according to one of the preceding claims, in which the connecting means comprise at least one projection (13) projecting from the protective screen panel, and extending parallel to the plane of the panel.
6. Protective screen wall according to one of the preceding claims, in which at least one of said external wall parts comprises MDF sheet material.

7. Protective screen wall according to Claim 6, in which the MDF sheet material is provided with a finishing layer.

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fig-1

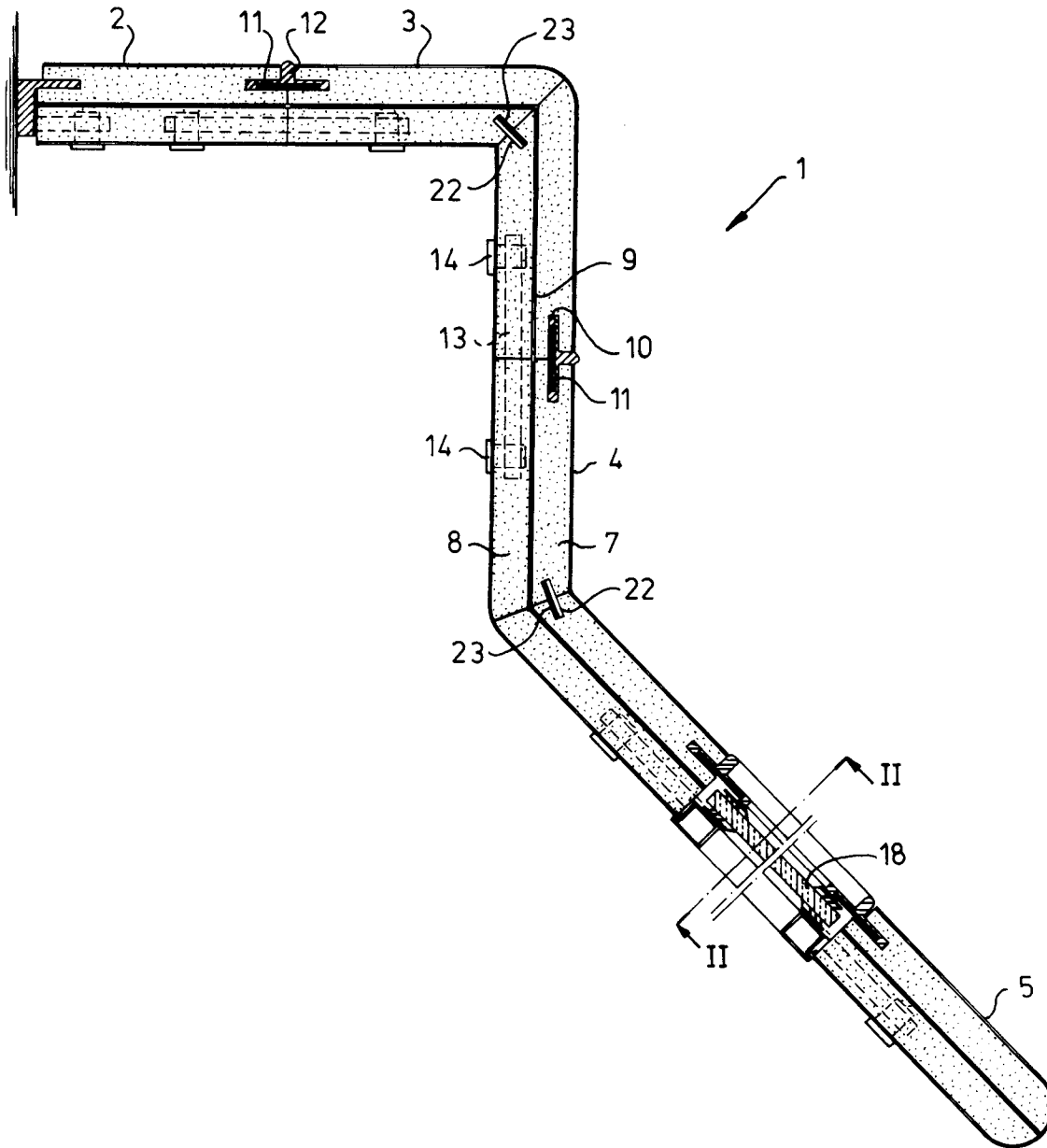


fig-2

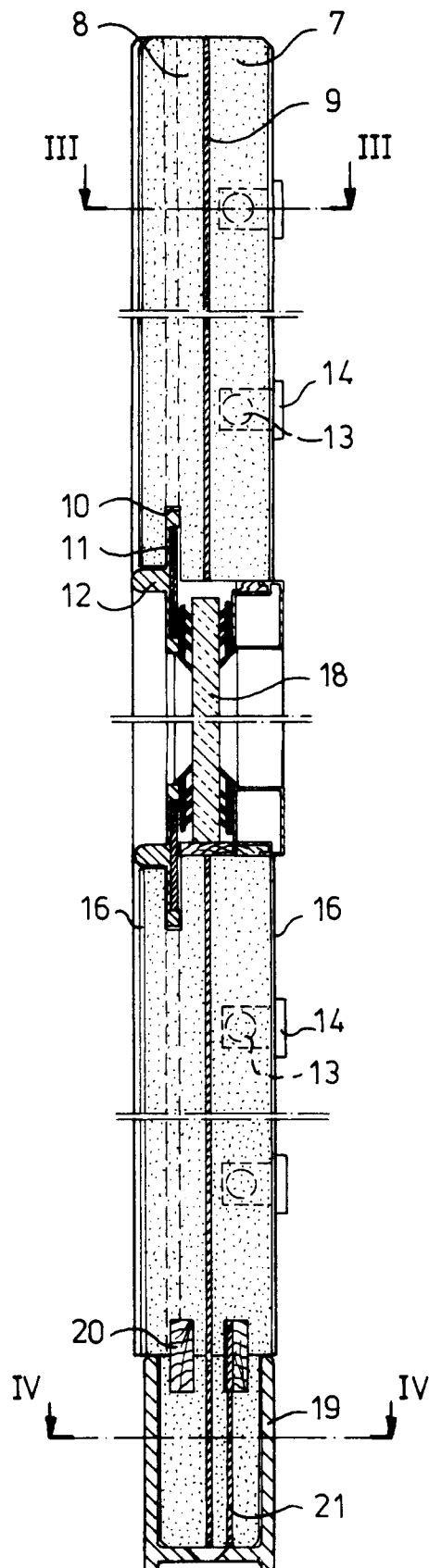


fig - 3

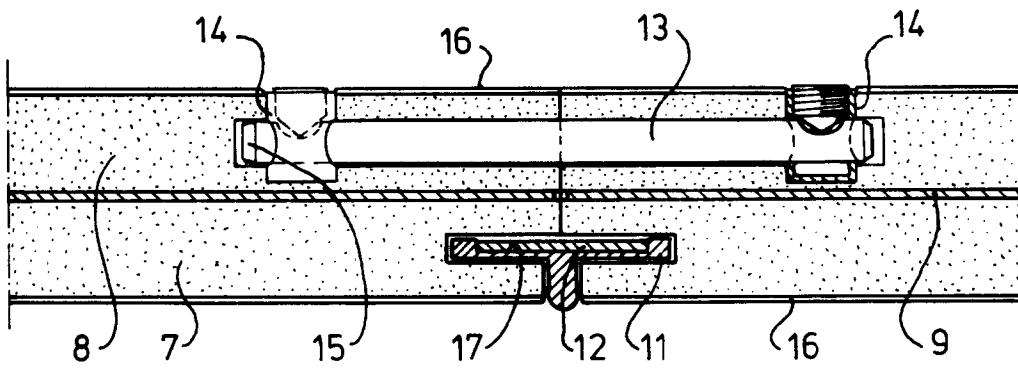
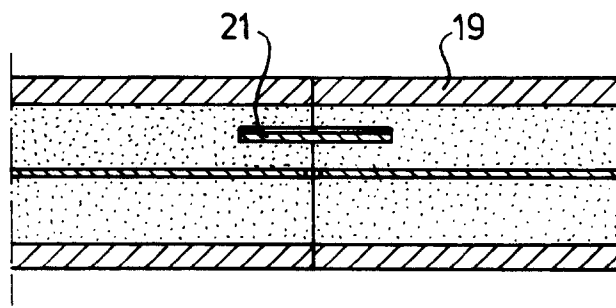


fig - 4





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EUROPEAN SEARCH REPORT

Application Number
EP 96 20 2322

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
Y	EP-A-0 104 867 (BAGNELL MICHAEL J ; IVY WILLIAM R (US)) 4 April 1984 * page 2, line 27 - page 4, line 26; figures 2,3 *	1,2,4,6,7	G21F3/00
Y	US-A-3 729 889 (BARUZZINI G) 1 May 1973 * column 4, line 66 - column 5, line 10 * * column 10, line 39 - line 50; figures 1,2,8,9,27 *	1,2,4,6,7	
A	FR-A-2 443 121 (PILLOT ALAIN) 27 June 1980 * page 1, line 10 - line 35; figures 1,4,5,13 *	1,5,6	
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			G21F
Place of search		Date of completion of the search	Examiner
THE HAGUE		21 November 1996	Jandl, F
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