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(54) **Protective screen wall**

Schutzschirmwand

Mur écran protecteur

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(56) References cited:
EP-A- 0 104 867 **FR-A- 2 443 121**
US-A- 3 729 889

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Description

[0001] The present invention relates to a protective screen wall according to the preamble of Claim 1.

[0002] 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 a T-shaped profile is provided being of glass fibre material and provided with a shielding core. The legs of the T are fixed with the outside surface of the external panel, i.e. abut against the outside surface of the panel.

[0003] 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.

[0004] 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.

[0005] From US-A-3729889 a connection between two wall panels is known using a T-shaped profile. This T-shaped profile is fixed in its position by pins extending parallel to the web of the T-profile.

[0006] The object of the present invention is to avoid the disadvantages described above and to provide an improved protective screen wall.

[0007] This object is achieved by the characterizing measures of Claim 1.

[0008] 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.

[0009] 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.

[0010] 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.

[0011] 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.

[0012] 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.

[0013] 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.

[0014] 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.

[0015] 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.

[0016] 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.

[0017] 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.

[0018] The sheet lead used can be, for example, sheet lead of the NHL 25 type which is 2.09 mm thick.

[0019] The finishing layer on the external wall parts can comprise 0.9 mm thick laminate material.

[0020] 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.

[0021] 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 panel 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.

[0022] A cross-section in the vertical direction at the position of a pane 18 is shown in Fig. 2.

[0023] 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.

[0024] 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 construction is present, and this can be seen in Fig. 4.

[0025] 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.

[0026] 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 (2-5), connecting means (13) for attaching a pair (3;4) of said panels to each other, and a protective screen section (10,11,12,17) to be fitted near the boundary between said pair of panels, in which at least one panel (4) of said pair of panels comprises two external walls (7,8) situated at a distance from each other and having a sheet of radiation-inhibiting material (9) placed between them, each panel of said pair (3;4) of said panels having near the boundary thereof a fastening (14) for said connecting means (13) and an accommodation (10) for part of the protective screen section (10,11,12,17) cooperating with the fastening (14), accommodation (10) respectively of the other panel, the protective screen section comprising in cross section of a T-section (12), the leg of the T-section (12) extending at right angle to said external walls (7,8), characterised in that, both external walls (7,8) extend substantially flush to adjacent external walls of the other panel of said pair of panels (3,4) and in that the accommodation (10) for part of the protective screen section comprises a groove (11) in one of the external walls (7), defined between the sheet (9) and the outer surface of said one external wall, and wherein in each panel a further accommodation is defined in the other external wall (8) between the sheet (9) and the outer surface of said other 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.

Patentansprüche

1. Schutzschirmwand mit mindestens zwei Paneelen (2-5), Verbindungsmitteln (13) zum Anbringen eines Paares (3; 4) der Paneele aneinander, und einem Schutzschirmabschnitt (10, 11, 12, 17) der in der Nähe der Abgrenzung zwischen dem Paar der Paneele eingebracht wird, wobei mindestens ein Panel (4) des Paares der Paneele zwei Aussenwände (7, 8) umfaßt, die in einem Abstand voneinander angeordnet sind und ein Flächengebilde aus strahlungshemmendem Material (9) zwischen sich angeordnet haben, wobei jedes Panel des Paares (3; 4) der Paneele in der Nähe von deren Abgrenzung eine Befestigung (14) für die Verbindungsmittel (13) aufweist, sowie eine Aufnahme (10) für einen Teil des Schutzschirmabschnittes (10, 11, 12, 17), der mit der Befestigung (14) der Aufnahme (10) des jeweils anderen Panels zusammenwirkt, wobei der Schutzschirmabschnitt im Querschnitt einen T-Abschnitt (12) umfaßt, wobei der Schenkel des T-Abschnittes (12) sich im rechten Winkel zu den Außenwänden (7, 8) erstreckt, dadurch gekennzeichnet, daß beide Aussenwände (7, 8) sich im wesentlichen fluchtend zu benachbarten äußeren Wänden des anderen Panels des Paares der Paneele (3, 4) erstrecken und dadurch, daß die Aufnahme (10) für einen Teil des Schutzschirmabschnittes eine Rille (11) in einer der Aussenwänden (7) aufweist, begrenzt zwischen dem Flächengebilde (9) und der äußeren Oberfläche der einen Außenwand, und wobei in jedem Panel eine weitere Aufnahme in der anderen Außenwand (8) begrenzt wird, zwischen dem Flächengebilde (9) und der äußeren Oberfläche der anderen

Wand (8) zur Aufnahme der Verbindungsmittel.

2. Schutzschirmwand nach Anspruch 1, bei der das andere Panel (2-5) dem mindestens einem Panel entspricht.
3. Schutzschirmwand nach Anspruch 1, bei der das andere Panel ein Glaspanel (18) umfaßt, welches durch den Körper des T-Abschnittes in Eingriff genommen wird.
4. Schutzschirmwand nach einem der vorhergehenden Ansprüche, bei dem der T-Abschnitt einen Träger (12) umfaßt, während ein strahlungshemmendes Material (11) im Körper aufgenommen wird.
5. Schutzschirmwand nach einem der vorhergehenden Ansprüche, bei der die Verbindungsmittel mindestens einen Vorsprung (13) umfassen, der von dem Schutzschirmpanel abragt und sich parallel zu der Ebene des Panels erstreckt.
6. Schutzschirmwand nach einem der vorhergehenden Ansprüche, bei der mindestens eines der Außenwandteile ein MDF-Flächenmaterial umfaßt.
7. Schutzschirmwand nach Anspruch 6, bei der das MDF-Flächenmaterial mit einer Abschlußschicht vorgesehen wird.

Revendications

1. Mur écran protecteur, comprenant au moins deux panneaux (2-5), un moyen d'accouplement (13) pour fixer une paire (3;4) desdits panneaux l'un à l'autre, et une section (10,11,12,17) d'écran protecteur à installer près de la limite entre ladite paire de panneaux, au moins un panneau (4) de ladite paire de panneaux comportant deux parois extérieures (7,8) qui sont situées à une certaine distance l'une de l'autre et sont séparées par une feuille de matière (9) de prévention de rayonnement placée entre elles, chaque panneau de ladite paire (3;4) desdits panneaux ayant près de sa limite une fixation (14) pour les dites moyens d'accouplement (13) et un logement (10) pour une partie de la section (10,11,12,17) d'écran protecteur coopérant respectivement avec la fixation (14) et le logement (10) de l'autre panneau, la section d'écran protecteur comportant en coupe transversale une section en T (12), la branche de la section en T (12) s'étendant perpendiculairement auxdites parois extérieures (7,8), caractérisé en ce que les deux parois extérieures (7, 8) s'étendent sensiblement au ras de parois extérieures adjacentes de l'autre panneau de ladite paire de panneaux (3,4) et en ce que le logement (10) pour une partie de la section d'écran pro-

tecteur comporte dans une première des parois extérieures (7) une gorge (11) définie entre la feuille (9) et la surface extérieure de ladite première paroi extérieure, et, dans chaque panneau, un autre logement étant défini dans l'autre paroi extérieure (8) entre la feuille (9) et la surface extérieure de ladite autre paroi (8) pour recevoir les dites moyens d'accouplement. 5

2. Mur écran protecteur selon la revendication 1, dans lequel ledit autre panneau (2-5) correspond audit au moins un panneau. 10
3. Mur écran protecteur selon la revendication 1, dans lequel ledit autre panneau comporte une vitre (18) contre laquelle vient le corps de la section en T. 15
4. Mur écran protecteur selon l'une des revendications précédentes, dans lequel la section en T constitue un support (12), tandis qu'une matière (11) de prévention de rayonnement est logée dans le corps. 20
5. Mur écran protecteur selon l'une des revendications précédentes, dans lequel le moyen d'accouplement comporte au moins une saillie (13) dépassant du panneau d'écran protecteur et s'étendant parallèlement au plan du panneau. 25
6. Mur écran protecteur selon l'une des revendications précédentes, dans lequel au moins une desdites parties de parois extérieures comporte une feuille en MDF. 30
7. Mur écran protecteur selon la revendication 6, dans lequel la feuille en MDF est pourvue d'une couche de finissage. 35

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fig-1

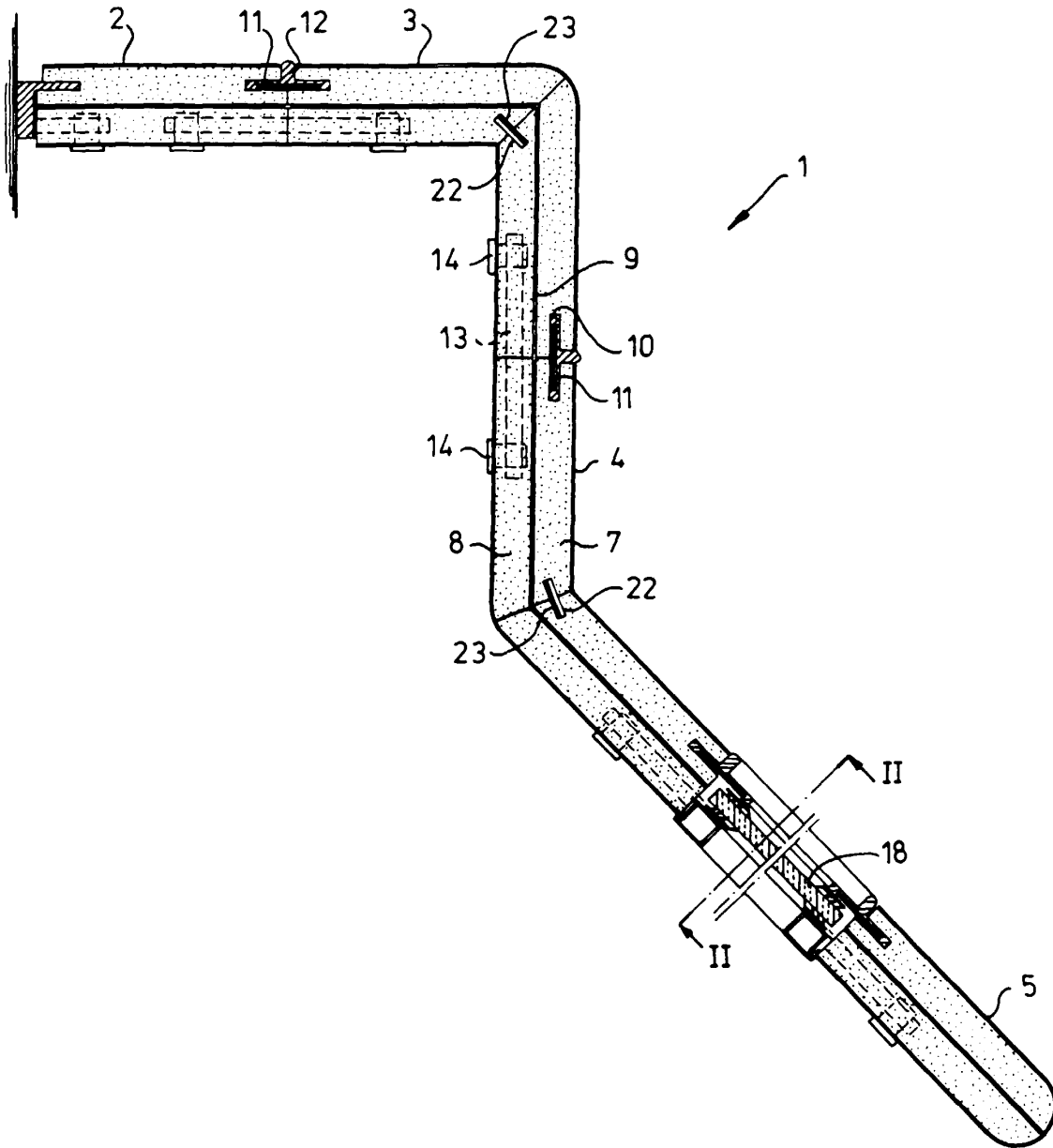


fig-2

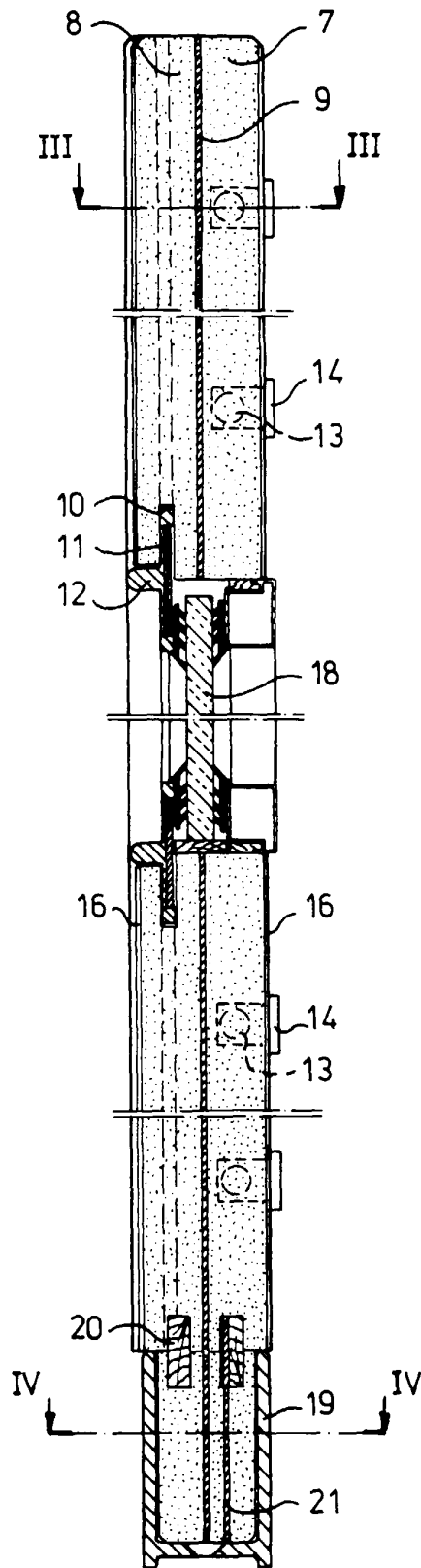


fig - 3

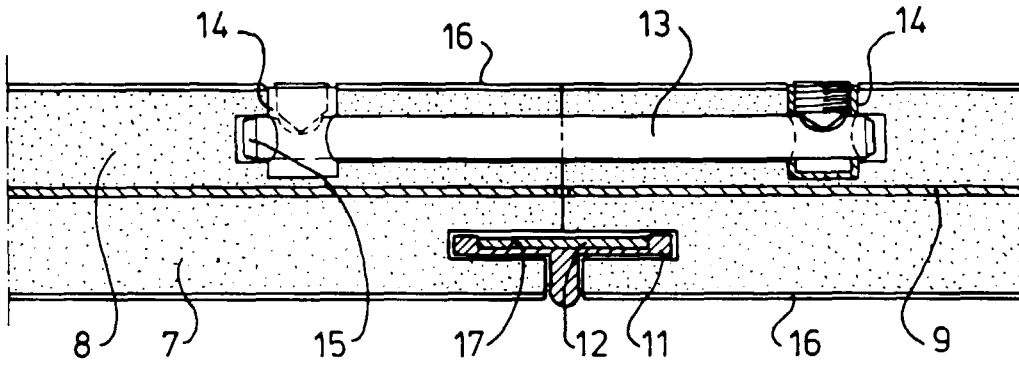


fig - 4

