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(54) Partitions.

(57) A movable partition can be clamped at its top and bottom edges against a ceiling and a floor with a releasable clamp mechanism (6). The partition incorporates a penetration-resisting protective shield (12) which is made from layers (12a) of a highly penetration-resistant fabric backed by impact absorbing sheets (12b). The fabric (12a) may be woven from aramid fibres and the backing sheets (12b) may consist of resilient foam plastics sheets and semi-stiff polycarbonate sheets.

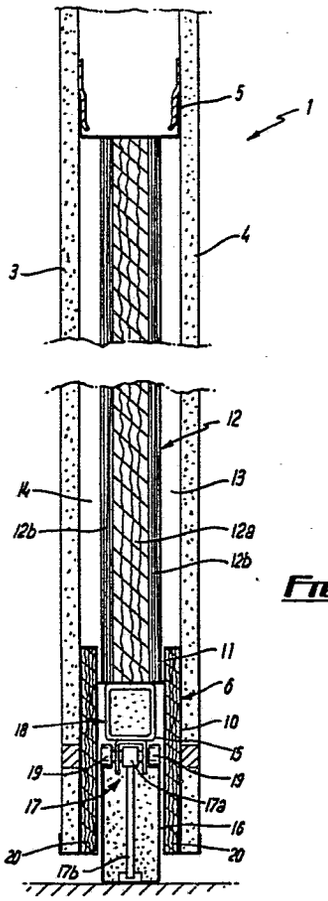


FIG.4

PARTITIONS

This invention relates to a movable protective partition.

A known movable partition, comprises a wall-shaped partition element which is engageable at a top edge with a top structure such as a ceiling. At a bottom edge, the partition element is connected to a clamp mechanism which is engageable with a bottom structure such as a floor. The clamp mechanism is adjustable between a first position at which the partition element is urged upwardly against the top structure so as to be held against movement relative thereto, and a second position at which the partition element is retracted downwardly so as to be free to move relative to the top structure. A similar movable partition having the clamp mechanism betwee the top edge and the top structure is disclosed in U.K. Patent 1,121,442.

An object of the invention is to provide a movable partition of the kind described which can provide protection against penetration by shrapnel, bullets and other impelled fragments and offensive missiles, yet which need not be unduly bulky or heavy.

According to the invention therefore there is provided a movable partition of the kind described above characterised in that said partition element has applied thereto a penetration-resisting protective shield comprising one or more layers of a fabric made from fibres of high tensile strength and high stretch resistance such as to be capable of resisting penetration by a bullet, and one or more backing sheets formed from an impact-absorbing material behind said fabric.

With this arrangement it has been found possible to achieve effective protection without requiring the partition element to be of an unduly bulky or heavy construction. Accordingly, effective protection can be achieved in the context of a readily movable partition.

With regard to the said fibres, these are preferably aramid fibres as sold by Du Pont under the trade name KEVLAR, and the fabric is preferably closely woven from such fibres. Reference is made to U.K. Patent 2128720B which describes the use of this closely woven fabric to give penetration resistance to building structures.

The protective shield may be applied to the partition element in any suitable manner. Thus, the shield may be fixed to a front or rear surface of the partition element. Alternatively, the shield may be incorporated within the partition element e.g. by fixing between front and back skins thereof. Such skins may be formed from any suitable structural material such as wood panel or other materials. Most preferably, the shield extends over all or essentially all of the partition element to give extensive protection; and, if desired, the shield (or one or more auxiliary shields of the same or different construction) may extend alongside the said clamping mechanism. Alternatively, if desired, the shield may be arranged to give protection over part only of the partition element.

With regard to the construction of the protective shield, preferably there is a plurality of layers of the fabric, which layers may be interconnected by bonding and/or stitching in one or more groups. The impact-absorbing backing material may take any suitable form although in a preferred embodiment a plastics material particularly comprising one or more thin flexible semi-stiff polycarbonate sheets and/or one or more resiliently compressible foamed plastics sheets is used. The shield may be a self-supporting unitary structure in that the component layers may be interconnected and/or enclosed within a bag or other container. The shield may be sandwiched between retaining panels formed from wood or other building material.

The said partition element may be suspended from a track along which it is free to run when the clamp mechanism is released. The clamp mechanism may be spring-urged into the first position (the clamping position) and a key may be provided for moving the mechanism to the second (release) position. The key may be effective from either side.

In practice, a plurality of partition elements may be used edge to edge to define a continuous screen. In this case, adjoining edges may be stepped or otherwise constructed so that they can overlap each other.

The invention will now be described further by way of example only and with reference to the accompanying drawings in which:-

Figure 1 is a front elevation of one form of a partition according to the present invention;

Figure 2 is a vertical end view of the arrangement of Figure 1;

. Figure 3 is a horizontal section through the partition of Figure 1;

and

Figure 4 is a vertical section to an enlarged scale on the line 4-4 of Figure 1.

With reference to the drawings, a protective partition which may be fitted in a building to protect an area of a room or the like, comprises a partition element 1 which is suspended from a channel-shaped track 2 fixed to a ceiling or other top structure.

The partition element 1 comprises front and back rectangular facing boards 3, 4 formed from wood panels or any other suitable building materi-

als. The boards 3, 4 are fixed in parallel spaced-apart disposition by means of a rigid metal channel section member 5 in the upper region of the partition element 1, and by means of a clamp mechanism 6 (yet to be described) at the bottom edges of the boards 3, 4. The top and side edges of the boards 3, 4 are also fixed together by suitable top and side bridging structures 7, 8 and on such top structure 7 there are mounted roller assemblies 9 which fit within the channel-shaped track 2.

The clamp mechanism 6 has an elongate H-section rigid metal structure 10 which is securely fixed between the boards 3, 4. At the top of this structure 10 there is a recess 11 and a protective shield 12 is secured in the cavity between the boards 3, 4 so that a bottom edge of the shield 12 fits in the recess 11 and a top edge of the shield 12 is secured beneath the member 5. The side edges of the shield 12 are bounded by the side edge structures 8 of the partition element 1.

The shield 12 comprises a penetration-resisting structure sandwiched between two panels 13, 14 formed from wood, polystyrene foam or other material. The penetration-resisting structure comprises from front to back:

a) a number of layers (say 8 to 30) of ballistic fabric woven from Kevlar in the form of individual flexible fabric sheets stitched and/or bonded together in one or more groups, the resulting assembly being in the form of a rigid board or being relatively flexible as desired; (Reference 12a).

b) an impact-absorbing backing layer comprising one or more sheets of thin, flexible semi-stiff polycarbonate (such as the transparent polycarbonate sold under the trade name LEXAN) and one or more sheets of a resiliently compressible foamed plastics material (such as the foamed, cross-linked, closed-cell polyethylene sold under the trade name PLASTAZOTE or EVAZOTE). (Reference 12b).

The abovementioned H-shaped structure 10 of the clamp mechanism 6 defines an open-bottomed box structure 15 and this contains an inner box 16.

Within the box 16 there is a lever arrangement 17 which is fixed, via an intermediate member 18, to the H-shaped structure 10. The lever arrangement 17 comprises a first lever 17a pivotally mounted at one end relative to the member 18, and a second lever 17b pivotally connected at one end to the other end of the lever 17a and pivotally mounted at its other end on the bottom of the box 16. The lever 17a can be pivoted downwardly about a horizontal axis by spring pressure or by means of a key inserted through a hole in the partition element 1 (on either side) into engagement with a respective hexagonally apertured head 19. The lever arrangement 17 can be pivoted downwardly to a position at which the box 16 is clamped against the floor surface thereby to restrain movement of the partition element 1. By insertion of the key as aforesaid, the lever arrangement 17 can be pivoted upwardly until the box 16 clears the floor surface, and the partition element 1 can be moved freely along the track 2.

The side walls of the H structure 10 contain cavities 20 which may contain layers of the above described Kevlar fabric, or protective shields as described above.

Multiple partition elements 1 may be suspended edge to edge from the track 2, and it will be noted from Figure 3 that the vertical side edges are stepped to permit overlapping. The arrangement may be such that the protective shield 12 extends at least partially into each stepped configuration to ensure protection at the overlapping edge regions.

With the arrangement so far described good protection is achieved whilst permitting easy manoeuvrability of the partition element.

It is of course to be understood that the invention is not intended to be restricted to the details of the above embodiment.

For example, the protective shield 12 as described is effective against penetration from both sides due to use of a back-to-back arrangement of shields i.e. two, like protective shields each with front layers of fabric and rear impact-absorbing layers but facing in opposite directions. If only penetration resistance from a front side is required, it is possible to provide the impact-absorbing layer on the rear side only.

Claims

1. A movable partition comprising a wall shaped partition element which is engageable at a top edge with a top structure and at a bottom edge is connected to a clamp mechanism which is engageable with a bottom structure, the clamp mechanism being adjustable between a first position at which the partition element is urged upwardly against the top structure so as to be held against movement relative thereto, and a second position at which the partition element is retracted downwardly so as to be free to move relative to the top structure, characterised in that said partition element has applied thereto a penetration-resisting protective shield comprising one or more layers of a fabric made from fibres of high tensile strength and high stretch resistance such as to be capable of resisting penetration by a bullet, and one or more backing sheets formed from an impact-absorbing material behind said fabric.

2. A movable partition as claimed in claim 1, characterised in that said fibres of high tensile strength and high stretch resistance comprise aramid fibres.

3. A movable partition as claimed in claim 2, characterised in that said fabric is closely woven from said aramid fibres.

4. A movable partition as claimed in any preceding claim, characterised in that said impact-absorbing material comprises one or more thin flexible semi-stiff polycarbonate sheets.

5. A movable partition as claimed in any preceding claim, characterised in that said impact-absorbing material comprises one or more resiliently compressible foamed plastics sheets.

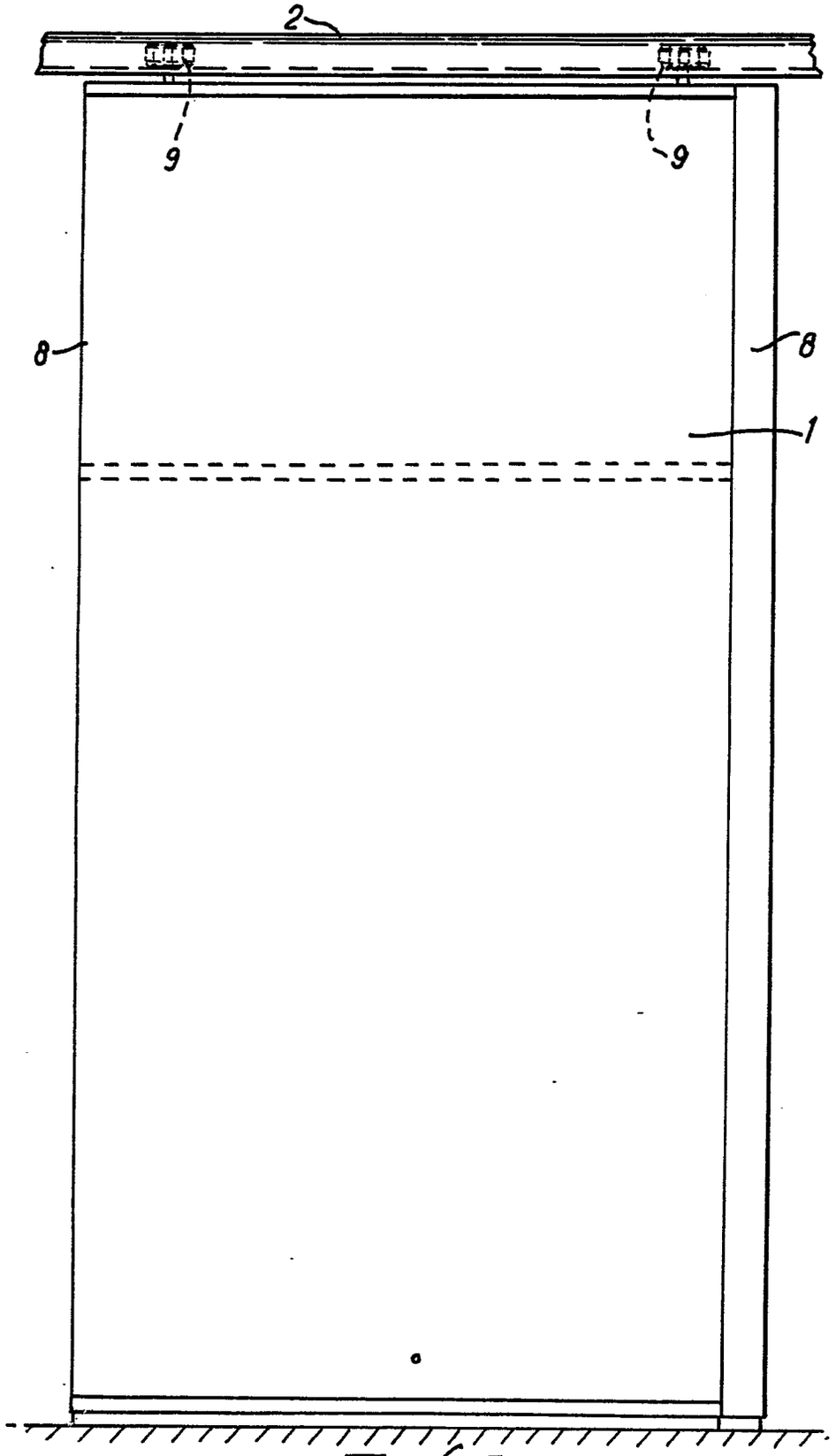
6. A movable partition as claimed in any preceding claim, characterised in that said shield is incorporated within the partition element.

7. A movable partition as claimed in any preceding claim, characterised in that said shield extends over substantially all of the partition element.

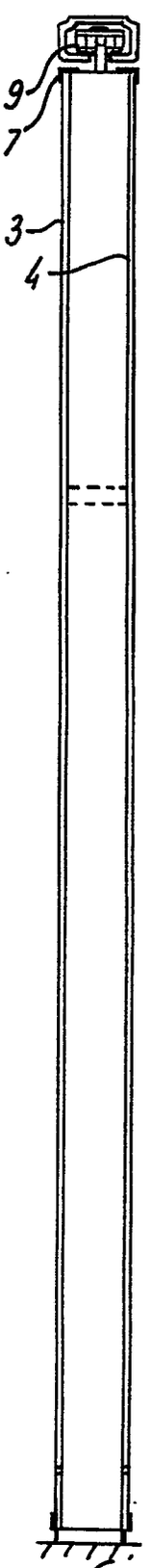
8. A movable partition as claimed in any preceding claim, characterised in that said shield extends alongside the said clamping mechanism.

9. A movable partition as claimed in any preceding claim, characterised in that said shield is a self-supporting unitary structure.

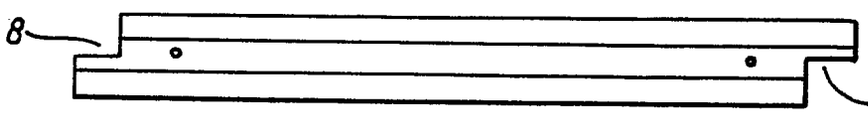
10. A movable partition as claimed in any preceding claim, characterised in that said shield is sandwiched between retaining panels.



ФИГ.1



ФИГ.2



ФИГ.3

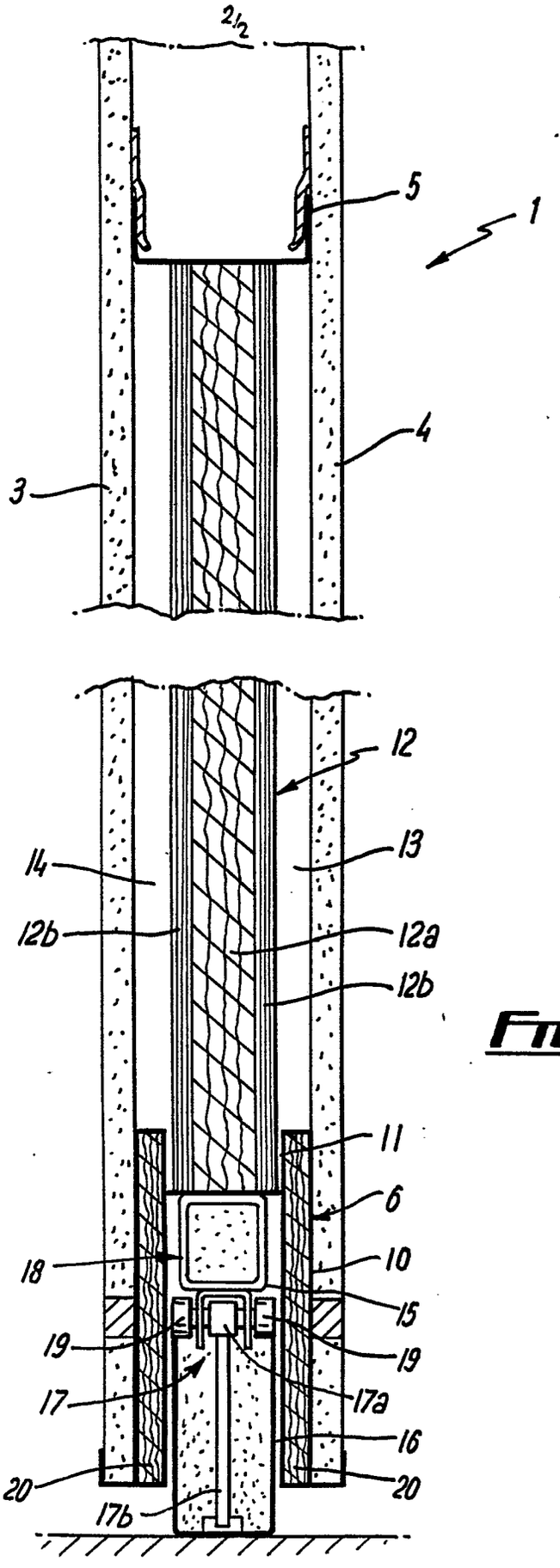


FIG.4