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(12) # EUROPEAN PATENT APPLICATION

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(54) **Security door.**

(57) A security door comprises first and second facing panels 1,8 spaced to form a void with a sheet of reinforcing material 3 positioned within the void by a resilient material 5 held in a channel shaped section 4. A second sheet of reinforcing material 6 is rigidly attached to the channel shaped section 4.

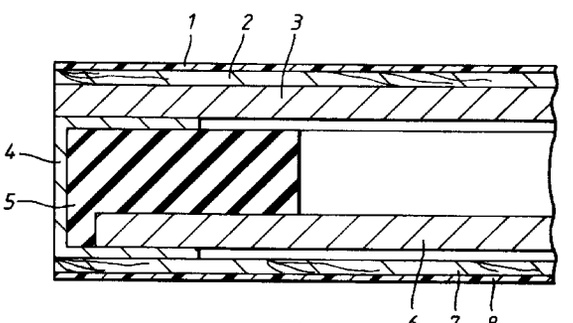

Fig.1.

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This invention relates to a security door and has for its object the provision of an improved such door.

A security door whether it is a ballistic door, that is a door which is designed to be resistant to bullets, shot or other high velocity projectiles, or a vandal resistant door for which a lower degree of impact resistance may be satisfactory, or a door which offers resistance to ballistic, vandal and burglar/intruder attack, requires to be both impact resistant on the one hand and of reasonably light construction on the other.

According to the present invention, a security door comprises first and second facing panels spaced to form a void with a sheet of reinforcing material positioned within the void.

The sheet of reinforcing material may be positioned within the void by a structure including resilient material.

Preferably the resilient material is positioned in a channel-shaped section.

A second sheet of reinforcing material may be rigidly attached to the structure including the resilient material.

Two constructions of door in accordance with the invention will now be described by way of example with reference to the accompanying drawings in which:-

Figure 1 is a partial sectional view of a ballistic door, and

Figure 2 shows a similar view of an improved ballistic, burglar and vandal resistant door, the improvement being embodied in the addition of a sheet of steel to an outermost face of an outer sheet of reinforcing material thus providing resistance for external use.

Referring to Figure 1, the door comprises two facing panels 1 and 8, panel 1 preferably being located on the outside, or attack side of the door and panel 8 being located on the inside; these facing panels being affixed to and supported by plywood panels 2 and 7 respectively. The outer plywood panel 2 is further affixed to a first sheet of reinforcing material 3 to form a three part sandwich; the inner face of this sandwich being spaced from the inner face of the two part sandwich formed by panels 7 and 8 by an aluminium channel section 4. Positioned within the channel section is a second sheet of reinforcing material 6 located and maintained by resilient material 5. This resilient material may be made of rubber or of a similar material. In the arrangement shown, this further sheet of reinforcing material 6 is located against the inner rear surface of the aluminium channel section 4. Various methods may be employed to assemble the panels, a preferred method being to join the plywood panels 2 and 7, the sheets of reinforcing material 3 and 6, the aluminium channel 4 and the resilient material 5 by means of screws or other mechanical fastening means and to secure the facing panels 1 and 8 to the plywood panels 2 and 7 by a proprietary impact adhesive. The reinforcing material may be manufactured from 6 gauge (4.88 mm thick) aluminium alloy 2014A T6 to British Standard BS1740:1987 (formerly aluminium alloy HS15 TF to British Standard BS1740:1972). The facing panels may be manufactured from melamine sheet as available from numerous sources of supply.

In use, the door is mounted so that the outer face of the three part sandwich 1, 2 and 3, forms the outside face of the door. This door construction has been found to be resistant to damage from bullets and shotgun pellets or slugs to acceptable limits. Should the melamine panel 1 and plywood panel 2 be penetrated, the reinforcing sheets 3 and 6 offer good resistance to the penetration of any bullet or shotgun pellets. This resistance is particularly related to the space between these reinforcing sheets.

Typical thicknesses for the panels and sheets and dimensions for the aluminium channel are approximately:-

melamine panel 1, 1.6 mm thick,
plywood panel 2, 3 mm thick,
reinforcing sheets 3, at least 4.8 mm thick,
aluminium channel 4, 35 mm x 25 mm x 3 mm thick,
reinforcing sheets 6, at least 4.8 mm thick,
plywood panel 7, 3 mm thick, and
melamine panel 8, 1.6 mm thick.

Referring to Figure 2 the construction of this door is similar to that shown in Figure 1 with components 11-18, being similar to components 1 to 8, respectively, but with the addition of a mild steel sheet positioned on the outer face of reinforcing panel 13 between that face and the plywood panel 12. Such an arrangement offers enhanced resistance against vandal and other physical manual attack where the door forms an external barrier. The mild steel sheet 19 is preferably 1.6 mm thick.

In use, the steel reinforced front panel 19 provides satisfactory "first line" protection against vandalism and other forms of manual attack but should the front panel be penetrated, the aluminium reinforcing sheets 13 and 16 provide an enhanced degree of "second line" protection.

Claims

1. A security door comprising first and second facing panels and a sheet of reinforcing material, characterised in that the panels (1, 8, 11, 18) are spaced to form a void and that the a sheet of reinforcing material (6, 16) is positioned within the void.

2. A security door according to claim 1, characterised in that the sheet of reinforcing material (6, 16) is positioned within the void by a structure includ-

ing resilient material (4, 5, 14, 15).

3. A security door according to claim 2, characterised in that the resilient material (5, 15) is positioned in a channel shaped section (4, 14).

4. A security door according to claims 2 or 3, characterised in that a second sheet of reinforcing material (3, 13) is rigidly attached to the structure including the resilient material (4, 5, 14, 15).

5. A security door according to claim 4, characterised in that there is provided a steel sheet (19) between the second sheet of reinforcing material (13) and the adjacent facing panel (1, 8, 11, 18).

6. A security door according to any preceding claim, characterised in that the or each sheet of reinforcing material (3, 6, 13, 16) comprises substantially 2014A T6 aluminium alloy.

7. A security door according to any preceding claim, characterised in that the or each sheet of reinforcing material (3, 6, 13, 16) is at least 4.8 mm thick.

8. A security door according to claim 2, or any one of claims 3 to 7 as appended to claim 2, characterised in that the resilient material (5, 15) comprises substantially rubber.

9. A security door according to claim 3, or any one of claims 4 to 8 as appended to claim 3, characterised in that the channel section (4, 14) comprises substantially aluminium.

10. A security door as according to any preceding claim, characterised in that the facing panels (1, 8, 11, 18) include melamine.

11. A security door according to any preceding claim, characterised in that the facing panels (1, 8, 11, 18) include wood (2, 7, 12, 17).

12. A security door according to claim 5, or any dependent claim thereof, characterised in that the steel sheet (19) is at least 1.6 mm thick.

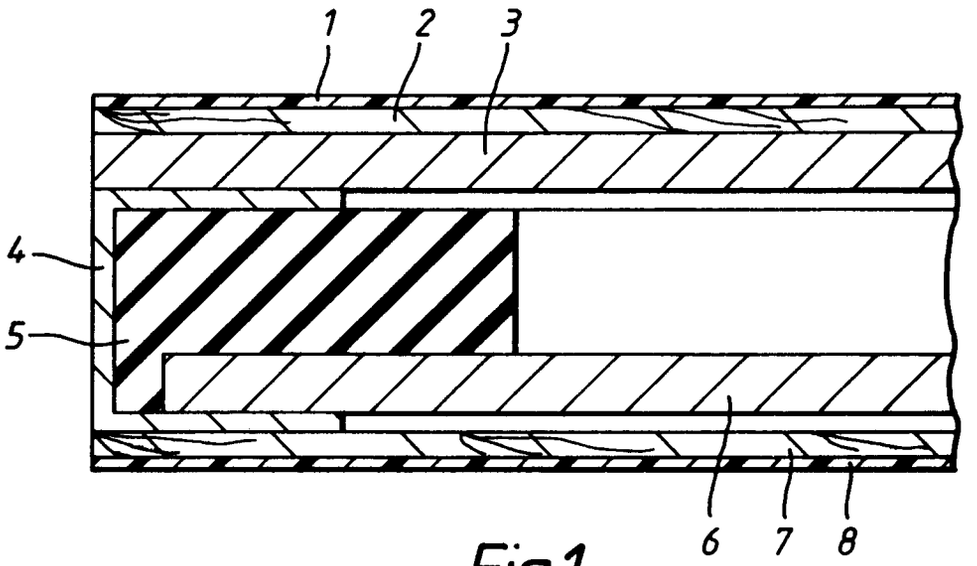

Fig.1.

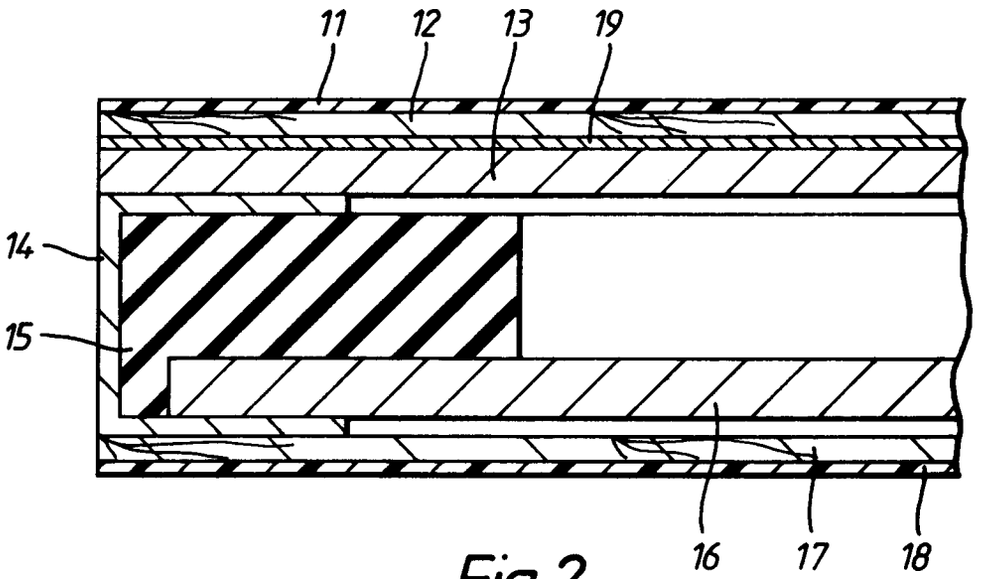

Fig.2.

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EUROPEAN SEARCH REPORT

Application Number

DOCUMENTS CONSIDERED TO BE RELEVANT

EP 92305136.1

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
A	DE - A - 3 934 983 (SÄLZER) * Totality * --	1	E 06 B 5/10
A	CH - A - 657 891 (TÜRENFABRIK BRUNEGG) * Totality * --	1	
A	FR - A - 2 497 866 (MATESANZ HERNANDEZ) * Page 5, line 36 - page 8, line 36; fig. 4,9 * --	1	
A	FR - A - 2 567 189 (SVENSK DORRTEKNIK) * Fig. 1-3; pages 7,8 * ----	1	

TECHNICAL FIELDS SEARCHED (Int. Cl.5)

E 06 B 3/00
E 06 B 5/00

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
VIENNA	10-08-1992	KRUMPSCHMID

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
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E : earlier patent document, but published on, or after the filing date
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