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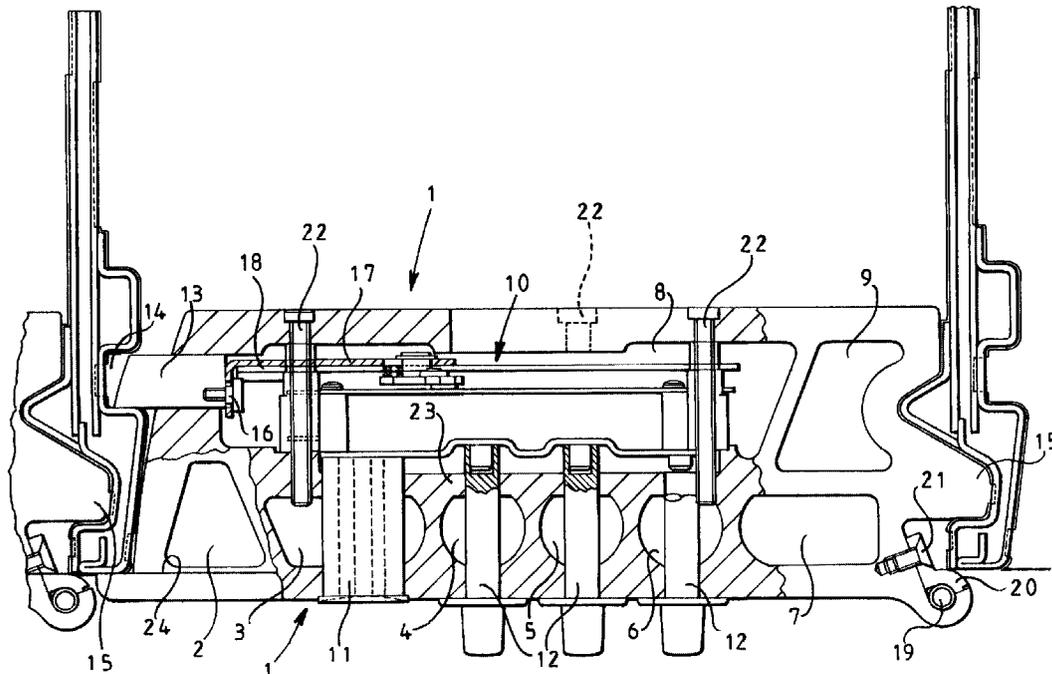
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(54) **Safe deposit locker doors**

(57) A safe deposit locker door is formed as a monolithic element having a cellular structure in a forward portion thereof and a compartment housing a locking mechanism (10) in a rearward portion thereof. The cellular structure is formed with cells (2-7) which can be filled with material of extreme hardness, whilst the lock-

ing mechanism is a dual-control lock having a bolt head (13) extendible into a detention in the associated carcass of the door. The element is preferably an aluminium extrusion.



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Description

The present invention relates to safe deposit lockers and more particularly to an improved form of construction for the doors thereof.

Safe deposit locker doors are commonly fabricated from sheet steel and offer relatively low resistance to attack with conventional burglary tools, assuming that a burglar can gain forcible or surreptitious entry to the strongroom, vault or other secure area where the lockers are installed. It is therefore an aim of the invention to provide a safe deposit locker door structure which can of itself offer improved resistance to burglarious attack without, however, unduly increasing the cost and weight of the individual doors.

In accordance with the invention a safe deposit locker door comprises a cellular structure in a forward portion thereof and a compartment housing a locker mechanism in a rearward portion thereof.

The cellular structure is designed to absorb the energy of attacks with hammers or other percussive tools while minimising the amount of structural material required for this purpose. Preferably, the said cellular structure and compartment are defined together within a monolithic element such as an aluminium extrusion or casting, or a plastics moulding or extrusion. The toughness of such materials enhances the resistance of the structure to attack with percussive tools. They are also of advantage for their tendency to clog and render less effective the working surfaces of abrasive discs or core drills. The thermal conductivity of aluminium makes it a material difficult to penetrate by means of an oxy-acetylene torch while a plastics structure may deter such an attack by the generation of noxious fumes when burnt. The depth of the structure from the front face of the door to the bolt and/or other vital parts of the locking mechanism is also preferably chosen to be at least, say, 65mm, so as to exceed the effective reach of commonly available portable disc cutters or grinders. Such a door is therefore capable of achieving desirable resistance times to attacks from a variety of burglary tools while at the same time retaining relatively light weight and economy of production. In particular, the security of the structure is not dependent on the use of the expensive hard and dense materials usually associated with the construction of high quality penetration-resistant doors. Nevertheless, it is within the scope of the invention to incorporate such materials into the structure if it is desired to provide even higher levels of resistance to, for example, an angle grinder. In particular the design lends itself to filling of the cells in the forward portion of the structure with a matrix, e.g. a plastics matrix, containing nuggets of fused or sintered alumina or zirconia or other like material of extreme hardness.

A preferred embodiment of the invention is illustrated in the accompanying drawing which is a fragmentary part-sectional plan view of a safe deposit locker carcase with a safe deposit locker door in its installed

and locked condition.

The body of the illustrated door is formed by a monolithic member 1 of aluminium. The forward portion of this member is formed with a series of cells 2-7 running vertically through it and its rearward portion is formed with a compartment 8 and a further cell 9 running vertically through it. A lock 10 is mounted in the compartment 8 and in the illustrated embodiment is of a generally known dual-control kind requiring operation of both a key and a mechanical combination to unlock. The keyway for the lock is shown at 11 and dial shafts for the combination mechanism at 12. The head 13 of the lock bolt engages in a keep in the form of a detention 14 in the associated locker carcase. The profile of each member 1 also includes a lateral extension 15 so that the bolt head 13 will be blocked by the extension 15 of the neighbouring door even if the detention 14 can be destroyed or deformed to release the bolt. The bolt head 13 is pinned at 16 to the bolt tail 17 and when extended is deadlocked by a pivotal bar 18 located to the rear of the compartment 8. The door is hinged to a fixed vertical rod 19 through a bushing 20 which is attached by screws 21 to the member 1, these screws being accessible for assembly/disassembly of the door to/from the carcase only when the door is in an open position.

The cellular structure of the member 1 is designed to permit deformation without fracture under impacts delivered to the front face of the door and thereby resists attacks by percussive tools. As previously indicated, the thermal conductivity of aluminium will make the door difficult to breach by means of an oxy-acetylene torch. The depth of the member 1 from its front face to the bolt head 13 in the illustrated embodiment is at least 65mm, e.g. 67.5 mm, which means that the bolt and deadlocking bar 18 should not be reachable by commonly available portable disc cutters. In addition, a series of bolts or screws 22 are passed from the rear face of the member 1, through compartment 8 and into intermediate web 23 of member 1 to prevent any sizeable pieces of the forward portion of the door being removed by cutting through its cells.

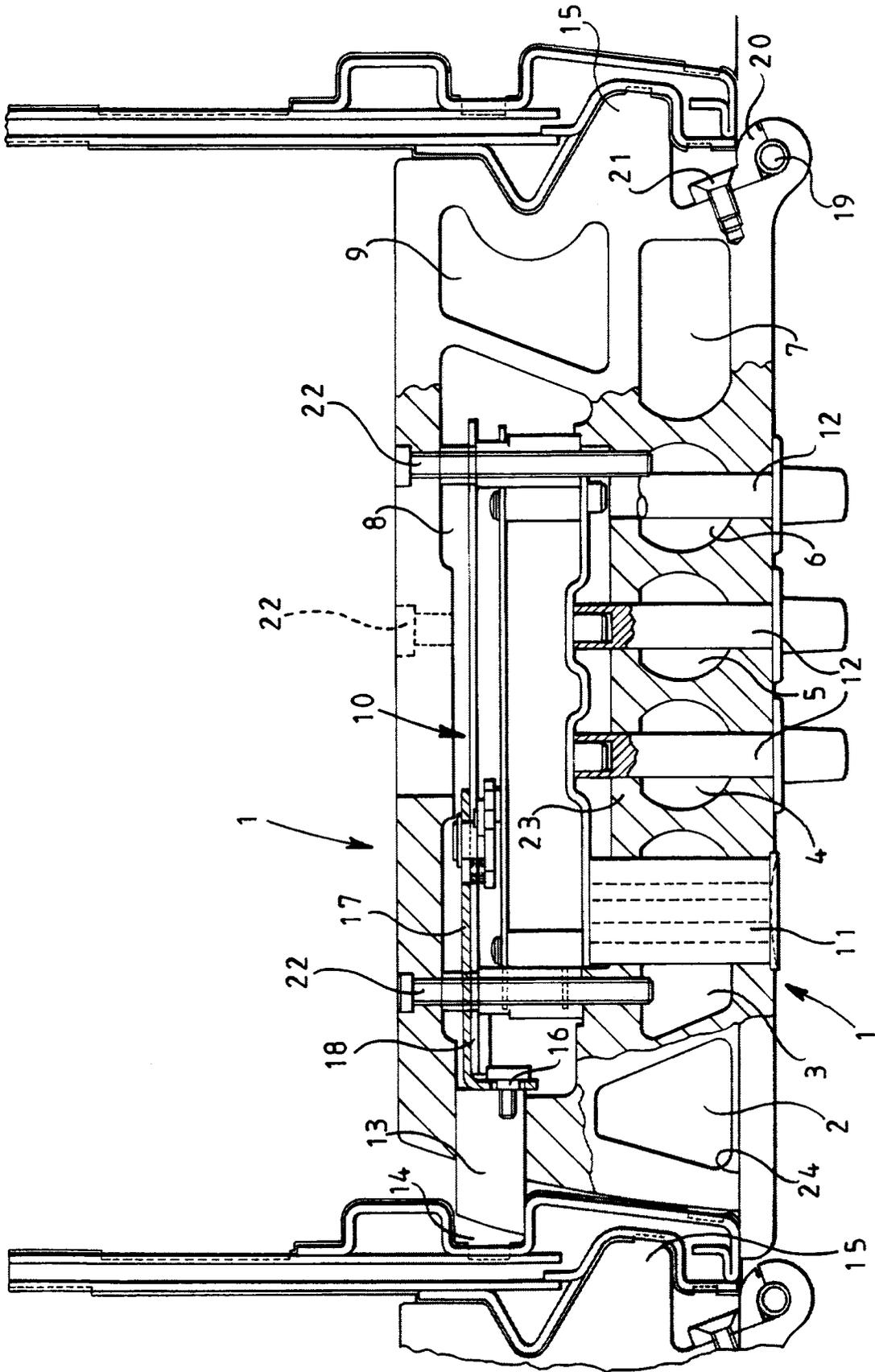
The member 1 is preferably formed from an aluminium extrusion. In particular this enables doors of different heights to be produced to match lockers of different volumes by cutting appropriate lengths from the same extruded profile. The extrusion defines the external door profile as viewed in plan and the forms of the cells and compartment 2-9. It is machined to define the upper and lower portions of the door rim 24 and to produce the various horizontal passages to pass the keyway 11, dial shafts 12, bolt head 13 and screws 21 and 22. Alternatively the member 1 can be formed complete as a pressure die casting.

It will be appreciated that the number of cells, and also their size, can be varied from that shown. For example particularly where the member 1 is an extrusion, e.g. of aluminium, the amount of material can be reduced by reducing the number of cells, with at least

some of them becoming larger than those shown. For example, cells of the general form of cells 2 and 7 could remain, but between them, and bounded inwardly by an intermediate web of the form of web 23, the cells 3 and 4 could be formed as a larger single cell, and the cells 5 and 6 could be formed as a further larger single cell. Moreover the cells 2 and 7 could extend rearwardly of the new intermediate web disposed behind the two new larger cells. The cell 7 could be of triangular shape.

Claims

1. A safe deposit locker door comprising a cellular structure in a forward portion thereof and a compartment housing a locking mechanism in a rearward portion thereof. 15
2. A door as claimed in Claim 1, wherein the cellular structure and the compartment are defined together within a monolithic element. 20
3. A door as claimed in claim 2, wherein the monolithic element is of aluminum.
4. A door as claimed in Claim 3, wherein the monolithic element is an extrusion. 25
5. A door as claimed in Claim 3, wherein the monolithic element is a casting. 30
6. A door as claimed in Claim 2, wherein the monolithic element is a plastics material moulding.
7. A door as claimed in Claim 2, wherein the monolithic element is a plastics material extrusion. 35
8. A door as claimed in any one of the preceding claims, wherein the cellular structure is formed with a plurality of cells extending therethrough, said cells being disposed vertically in the intended in use position of the door. 40
9. A door as claimed in any one of the preceding claims, wherein cells of the cellular structure are filled with a matrix. 45
10. A door as claimed in Claim 9, wherein the matrix is of plastics material containing material of extreme hardness. 50
11. A door as claimed in Claim 10, wherein the extreme hardness material is fused alumina.
12. A door as claimed in Claim 10, wherein the extreme hardness material is sintered alumina. 55
13. A door as claimed in Claim 10, wherein the extreme hardness material is fused zirconia.
14. A door as claimed in Claim 10, wherein the extreme hardness material is sintered zirconia.
15. A door as claimed in any of the preceding claims, wherein the compartment has a further cell extending therethrough.
16. A door as claimed in Claim 15, wherein said further cell is disposed vertically in the intended in use position of the door. 10
17. A door as claimed in any one of the preceding claims, wherein the locking mechanism comprises a bolt having a bolt head extendible from said compartment to engage a keep provided by locker carcass associated with the door to form said safe deposit locker, in use.
18. A door as claimed in Claim 17, wherein the keep is a detention in said locker carcass.
19. A door as claimed in Claim 17 or Claim 18, wherein its profile includes a lateral extension so that the bolt will be blocked by said extension of a neighbouring door, in use, even if said keep should be destroyed/deformed to try to release the bolt.
20. A door as claimed in any one of Claims 17 to 19, wherein the bolt head is connected to a bolt tail which can be deadlocked, in use, by a pivotal bar.
21. A door as claimed in Claim 20, wherein the pivotal bar is located to the rear of said compartment.
22. A door as claimed in any of the preceding claims, wherein the locking mechanism is a dual control lock requiring both a key and a mechanical combination to unlock.
23. A door as claimed in any one of the preceding Claims, which, in use, is hinged to a rod, which is disposed vertically in the intended in use position of the door, the rod extending through a bushing attached to the door.
24. A door as claimed in any one of Claims 17 to 21 when dependent upon Claim 2, in which the element has a depth of at least 65mm from its front face to said bolt head.
25. A door as claimed in Claim 2 or any one of Claims 17 to 21 when dependent upon Claim 2, wherein a plurality of screws extend from a rear face of the element into an intermediate web at the rear of said cellular structure.
26. A safe deposit locker including a safe deposit locker door as claimed in any one of the preceding claims.





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EUROPEAN SEARCH REPORT

Application Number
EP 97 31 0589

| 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) |
| X | DE 37 12 592 A (SOMMER METALLBAU-STAHLBAU) | 1,8-10, 15-18 | E05G1/026 E05G1/08 |
| Y | * column 3, line 7 - line 60 * * column 4, line 52 - column 5, line 3 * * column 5, line 56 - column 6, line 25; figures 1,2 * --- | 11-14 | |
| Y | DE 32 41 526 C (VERSCHLEIBTECHNIK - H.WAHL) * column 1, line 54 - column 2, line 9; figure 1 * --- | 11-14 | |
| A | DE 41 23 181 A (AUSTRIA METALL) * column 1, line 46 - column 2, line 49; figures 1,2 * ----- | 1-5 | |
| The present search report has been drawn up for all claims | | | TECHNICAL FIELDS SEARCHED (Int.Cl.6) E05G |
| Place of search THE HAGUE | | Date of completion of the search 2 April 1998 | Examiner Guillaume, G |
| 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 P : intermediate document | | T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document | |

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