

(19)



Europäisches Patentamt

European Patent Office

Office européen des brevets



(11)

EP 1 301 677 B1

(12)

EUROPEAN PATENT SPECIFICATION

(45) Date of publication and mention
of the grant of the patent:

16.11.2005 Bulletin 2005/46

(21) Application number: **01963609.1**

(22) Date of filing: **29.06.2001**

(51) Int Cl.7: **E05G 1/10**, E05G 1/14

(86) International application number:
PCT/NO2001/000278

(87) International publication number:
WO 2002/006616 (24.01.2002 Gazette 2002/04)

(54) **WALL CONSTRUCTION FOR STORAGE OF VALUABLES**

WANDSTRUKTUR ZUR AUFBEWAHRUNG VON WERTSACHEN

STRUCTURE DE MUR POUR LE STOCKAGE DE VALEURS

(84) Designated Contracting States:
**AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU
MC NL PT SE TR**

(30) Priority: **29.06.2000 NO 20003390**

(43) Date of publication of application:
16.04.2003 Bulletin 2003/16

(73) Proprietor: **Birkeland, Kjell
5854 Bergen (NO)**

(72) Inventor: **Birkeland, Kjell
5854 Bergen (NO)**

(74) Representative: **Plougmann & Vingtoft A/S
Sundkrogsgade 9,
P.O. Box 831
2100 Copenhagen (DK)**

(56) References cited:
EP-A2- 0 526 972 US-A- 3 851 602

EP 1 301 677 B1

Note: Within nine months from the publication of the mention of the grant of the European patent, any person may give notice to the European Patent Office of opposition to the European patent granted. Notice of opposition shall be filed in a written reasoned statement. It shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).

Description

[0001] The present invention relates to a wall construction, particularly for a storage box for securities, comprising an outer wall and an inner wall between which are arranged a number of layers or tiers, where one of the tiers is comprised of an electricity-conducting material, and contact means for the activation of an electric circuit.

[0002] Today it is common for storage of valuables, for example in a shop, a super-market, a kiosk or the like, to store the valuables in a safe, or that the valuables are placed in a bag to be subsequently placed in a night-safe. It is during such transportation of valuables that robbery often occurs. However, robbery occurs also with the owner or staff being forced to open the safe. This is a problem which has increased over the years, both in Norway and in many other countries, especially the USA.

[0003] From known techniques different arrangements are used for transportation of valuables. For example, NO B 162039 disclose an installation for transport of valuables which consists of a cassette which is arranged to be placed in a vehicle and a permanent station. If the cassette is removed from the cassette holder, an electronic circuit is activated, triggering an alarm for a sound signal or smoke development, colouring of the valuables, etc.

[0004] US Patent 4.852.502 disclose a safe deposit box which consists of a wall of several layers in which a conductor reacts by breaking or shortening when damage is done to the wall, and which when damaged, activates a circuit connected to the conductor, whereby the securities in the safe deposit box are damaged or destroyed. The wall of the box is equipped with electrical reinforcement means which are galvanically separated from the circuit.

[0005] Furthermore, US Patent 4.942.831 disclose a container with an electrically protecting cover which surrounds a storage room. A processor unit monitors the electrical systems and, at any attempts to break open the container, activates the means which render the valuables useless.

[0006] The known technique which lies closest to the present invention is SE 501675 which concerns a laminated tier for use in break-in safe containers and rooms. The laminated tier consists of a fine mesh knitted or weaved mat of electricity-conducting fibres, an electricity-conducting fibre mat, an intermediate tier of an electricity isolating material and two outer tiers. The laminated tier is held together with the aid of a binder in the form of a plastic material.

[0007] The known solutions, and especially SE 501675, do not provide a storage unit with a wall construction that offers complete protection both against mechanical influences and thermal influences. A wall construction in a storage unit for valuables must be able to withstand external stresses in the form of attempts to,

for example, cut through the construction with the aid of a cutting torch, saw off one or more of the sides, i.e. the wall constructions, to remove or get access to, for example, an inner container which contains the valuables.

[0008] With the present invention it is not possible to remove one of the walls in such a storage box for valuables without an electric circuit activating a mechanism which destroys the valuables or which makes the banknotes useless. Correspondingly, it will not be possible to use a cutting torch or the like to make an opening in the wall construction without the electronic circuit being activated.

[0009] It is therefore an object of the present invention to provide a wall construction, in particular for a storage unit for valuables, such as banknotes or other securities which, in the case of mechanical influences or thermal influences, activates an electronic circuit, and which is simple and which is lightweight and which is in addition as burglary-proof as possible.

[0010] Storage boxes which are manufactured with the aid of the wall construction, according to the invention, can be used in most of the cases in which money shall be transported to a different place in a safe and simple way. The wall construction can, of course, also be used in stationary storage units, such as a safe. The wall construction must then, of course, be adapted to the safe's purpose by adjusting the dimensions of the wall construction. Furthermore, such a storage unit, manufactured with the wall construction according to the present invention, can be equipped with a feeding unit such as an electric banknote feeder, something which will considerably simplify the feeding of banknotes. To secure withdrawal of the banknotes, a withdrawal unit, such as a removable lock cartridge, can be used.

[0011] The wall construction according to the present invention is characterised in that the construction comprises a intermediate thermal expansion mat and a intermediate layer, comprising contact means and a yielding system which, under counter- and pro influences from a spring force, is arranged to counteract and to bring about the completion or breakage of an electric circuit.

[0012] Preferred embodiments of the present invention are characterised in that the intermediate thermal expansion mat and the intermediate layer are arranged on each side of an electricity-conducting tier, respectively, and that the construction furthermore encompasses a reinforced plate arranged between the intermediate thermal mat and the outer wall. The construction comprises, from the inside to the outside, an inner wall, a layer comprising contact means and a yielding system, an electricity-conducting tier such as a metal foil, a thermal mat, a reinforced plate and an outer wall.

[0013] The contact means comprise a number of opposite, outwardly extending contact arms, contact rails or contact cushions arranged to the outer sides of the inner wall and/or the electricity-conducting tier, respectively, and the spring system comprises a number of

bolts arranged to the outer sides of the inner wall, with coil springs being arranged onto the bolts and arranged to force the electricity-conducting tier, the thermal mat and the reinforced plate against the outer wall.

[0014] Furthermore, the thermal mat comprises a graphite-based mineral fibre of a stabilised volume-expanding material with a thickness of between 1.5 mm and 4.0 mm, preferably between 1.8 mm and 3.0 mm, where the thermal mat has an expansion ratio of about 9:1 when heated to around 190°C and an expansion force of about 1.5 kg/cm² at around 400°C.

[0015] The present invention also relates to an use of a wall construction, according to the wall construction as mentioned previously according to the present invention, comprising of an outer wall and an inner wall between which are arranged a number of layers or tiers, where one of the tiers is comprised of an electricity-conducting material and contact means for activation of an electric circuit, whereby a number of wall constructions make up one side, a number of sides or all sides, preferably 6 sides, of a storage unit for valuables, particularly for securities such as banknotes, in that one or more of the wall constructions which are used to form the storage unit comprise a feeding device in an inlet opening, in the form of, for example, a banknote feeder, and a locking device in a withdrawal opening in the form of, for example, a removable locking cartridge. Use of the wall constructions, according to the present invention, is thereby carried out in that one or more of the wall constructions are put together to form a transportable storage unit, whereby banknotes are fed into the unit before transportation, for safe transport from one place to another safe storage place or in that one or more of the wall constructions are put together to form a stationary storage unit for valuables, such as a safe or the like.

[0016] The invention shall now be described further with the aid of the enclosed drawings; in which,

Figure 1 shows a partial section of a wall construction according to the present invention.

Figure 2 shows as an example, a storage unit seen in perspective, composed of a number of wall constructions according to the invention.

[0017] As figure 1 shows, the wall construction comprises an outer wall 12, a plate 14, a mat 16, an electricity-conducting tier 18, a partially open layer 20 and an inner wall 22. The outer wall 12 is comprised of a metallic material. A reinforced wall 14 is arranged inside the outer wall. This reinforced wall 14 can comprise of acid-resistant steel with a thickness of about from 0.1 mm to 0.5 mm, preferably 0.2 mm to 0.3 mm. It is preferred that the plate 14 consists of a material which is strong and conducts heat well, and is also not too heavy. Other materials that provide similar characteristics to acid-resistant steel can of course be used also.

[0018] A thermal mat 16 is arranged inside the reinforced plate 14. This mat is comprised of a graphite-

based mineral fibre of a stabilised volume-expanding material with a thickness of between 1.5 mm and 4.0 mm, preferably between 1.8 mm and 3.0 mm. The thermal mat has an expansion ratio of about 9:1 when heated to around 190 °C, and an expansion force of around 1.5 kg/cm² at about 400 °C. Preferably, a thermal mat with the product designation TECHNOFIRE 60853 and manufactured by TECHNICAL FIBRE PRODUCT is used, but as mentioned, other mats or tiers with similar characteristics can be used. An electricity-conducting tier 18 is arranged to the thermal mat. This tier 18 can, for example, be a thin metal foil. The tier 18, the mat 16 and the plate 14 are held together with the aid of, for example, glue.

[0019] Electricity-conducting contact means 24a, 24b are arranged between the inner wall 22 and the electricity-conducting tier 18 which is secured to the expandable mat 16. The contact means can comprise a number of opposite outwardly extending contact arms, contact rails or contact cushions, arranged to the outer sides of the inner wall 22 and/or the electricity-conducting layer 18, respectively. Shown in figure 1 is an example of contact cushions 24a and outwardly extending contact arms 24b. Only one of each is shown in the drawing, but several of each type can, of course, be arranged in the wall construction, and/or other contact means can also be used.

[0020] When the wall construction 10 is put together, the springs 28a, 28b, which are arranged onto the bolts 26a, 26b, will force the layers and/or tiers lying on the outside against the outer wall 12, which in turn can be secured to other outer walls in a number of other wall constructions to provide a storage unit. The bolts 26a, 26b are not secured to the outer wall 12, only to the inner wall 22. This results in the bolts extending out from the inner wall towards and/or to the outer wall. The spring system is arranged, under counter- and pro influences from a spring force, to counteract and to provide that the electric circuit is closed.

[0021] The electric circuit can be connected to different mechanisms which will destroy or make the securities useless when the circuit is closed. The mechanisms can of course be activated by the circuit being broken. The contact means will then be arranged so that they provide a closed circuit all the time during «normal» use, but are broken by an external influence corresponding to the completion of the circuit. Mechanisms which are used, can, for example, be a firing mechanism which dyes the securities so that they are useless. A battery 36 is connected to the mechanism 34, as shown in figure 2. This can be a passive electronic solution for the firing mechanism 34, which thereby does not use power from the in-built battery 36. Such mechanisms are well known and will not be further described here.

[0022] It is important that the spring system is arranged to exert a sufficient spring force so that the outer layers, i.e., the tier 18, mat 16 and the reinforced plate 14, are forced sufficiently against the outer wall 12, so

that the mentioned layers do not move inwards and activate the electric circuit if a storage unit, composed of wall constructions according to the present invention, is exposed to normal impacts and strikes. At the same time, the spring force must not be so large that the mentioned outer layers are not forced easily inwards to activate the electrical circuit at any attempts to break into the storage unit.

[0023] With attempts to drill through, or use an angle grinder on the wall construction, according to the present invention, the drill will push against the reinforced plate 14 and force this inwards so that the plate 14, the mat 16 and the foil 18 are moved towards the inner wall 22. This result in that the electric tier 18 (the foil) comprising the contact means close the electric circuit. In addition, the production of heat from the drill or angle grinder leads to the thermal mat 16 expanding and correspondingly pressing the electricity-conducting tier 18 inwards so that the electric circuit is activated.

[0024] Attempts to burn a hole in the wall construction with the aid of, for example, a welding flame, will as mentioned above, lead to the thermal mat 16 expanding and forcing the electrical tier 18 inwards for activation of the electric circuit.

[0025] With attempts to remove the outer wall 12, or bend the outer wall outwards, the reinforced plate 14, because of the spring force, will also move outwards, or glide along the outer wall 12 such that, corresponding to that mentioned above, the contact means 24a,24b are closed or are broken, activating the electric circuit. The reinforced plate 14 is not secured to the outer wall, but is forced against the outer wall 12 due to the force from the springs 28a, 28b.

[0026] The wall construction, according to the present invention, will, when composed of a number of corresponding wall constructions, provide a safe, transportable, or stationary storage box for storage of valuables, such as banknotes, ammunition, keys or the like.

Claims

1. Wall construction (10), particularly for a storage box for valuables such as securities, comprising of an outer wall (12) and an inner wall (22) in between which are arranged a number of layers or tiers, where one of the tiers is comprised of an electricity-conducting material, and contact means (24a,24b) for the activation of an electric circuit, **characterised in that** the construction (10) comprises an intermediate thermal expansion mat (16) and a intermediate layer (20) comprising contact means (24a, 24b) and a spring system (28a,28b), which during counter- and pro influences from a spring force, are arranged to counteract and to ensure that the electric circuit is activated.

2. Wall construction according to claim 1, **character-**

ised in that the intermediate thermal expansion mat (16) and the intermediate layer (20) are arranged on each side of the electricity-conducting tier (18), respectively.

3. Wall construction according to claim 1, **characterised in that** the construction (10) furthermore includes a reinforced plate (14) comprised of a material which is heat-conducting and resistant to external strains, arranged between the intermediate thermal mat (16) and the outer wall (12).

4. Wall construction according to claim 3, **characterised in that** the construction (10) consists of, from the inside to the outside, an inner wall (22), a layer (20) comprising contact means (24a,24b) and a spring system (28a,28b), an electricity-conducting tier (18), a thermal expansion mat (16), a reinforced plate (14) and an outer wall (12).

5. Wall construction according to claim 4, **characterised in that** the contact means (24a,24b) comprise a number of opposite, outwardly extending contact arms, contact rails or contact cushions, arranged to the outer sides of the inner wall (22) and/or the electricity-conducting tier (18), or the thermal mat (16), respectively.

6. Wall construction according to claim 4, **characterised in that** the spring system comprises a number of outwardly extending bolts (26a,26b) arranged to the outer sides of the inner wall (22), where the bolts (26a,26b) extend to or towards the outer wall (12), whereupon coil springs (28a,28b) are arranged onto the bolts (26a,26b), arranged to force the electricity-conducting tier (18), the thermal mat (16) and the reinforced plate (14) against the outer wall (12).

7. Wall construction according to one of the preceding claims, **characterised in that** the thermal mat (16) comprises a graphite-based mineral fibre of a stabilised volume expanding material with a thickness of between 1.5 mm and 4.0 mm, preferably between 1.8 mm and 3.0 mm.

8. Wall construction according to claim 7, **characterised in that** the thermal mat (16) has an expansion ratio of about 9:1 when heated to around 190 °C, and an expansion force of about 1.5 kg/cm² at around 400 °C.

9. Wall construction according to one of the preceding claims, **characterised in that** the wall construction (10) comprises a feeding inlet (30) for valuables including a banknote feeder.

10. Wall construction according to one of the preceding claims, **characterised in that** the wall construction

(10) comprises a withdrawal opening (32) including a lockable, removable plate.

11. Use of a wall construction (10) according to claims 1-10, whereby a number of the wall constructions (10) are combined to constitute a number of sides in a storage unit for valuables, particularly for securities such as banknotes, ammunition, keys and the like.
12. Use according to claim 11, in that one or more of the wall constructions (10) in the storage unit comprise a feeding device in an inlet opening, in the form of, for example, a banknote feeder, through which banknotes are fed, and a locking device in a withdrawal opening in the form of, for example, a removable locking cartridge through which banknotes are withdrawn.
13. Use according to claims 11-12, in that a number of wall constructions (10) form a transportable storage unit, whereby banknotes are fed into the unit before transportation, for safe transport from one place to another safe storage place.
14. Use according to claim 11, in that a number of wall constructions (10) form a stationary storage unit for valuables, such as a safe and the like.
15. Use according to claim 11, in that a number of wall constructions (10) form a stationary storage unit for valuables, and that the storage unit is arranged as an integral part of an automat, such as a slot machine, payment automat, etc., or in connection with payment equipment such as ticketing systems for transportation, cinema, etc.

Patentansprüche

1. Wandkonstruktion (10), insbesondere für einen Aufbewahrungsbehälter für Wertgegenstände wie zum Beispiel Wertpapiere, umfassend eine äußere Wand (12) und eine innere Wand (22), zwischen welchen eine Anzahl von Schichten oder Lagen angeordnet ist, wobei eine der Lagen aus einem elektrisch leitenden Material besteht, und Kontaktmittel (24a, 24b) für die Aktivierung einer elektrischen Schaltung, **dadurch gekennzeichnet, dass** die Konstruktion (10) eine Zwischenmatte (16) zur thermischen Expansion und eine Kontaktmittel (24a, 24b) umfassende Zwischenschicht (20) und ein Federsystem (28a, 28b) umfasst, welche bei gegen- und mitwirkenden Einflüssen von einer Federkraft dazu angeordnet sind, sich entgegenzuwirken und sicherzustellen, dass die elektrische Schaltung aktiviert wird.

2. Wandkonstruktion nach Anspruch 1, **dadurch gekennzeichnet, dass** die Zwischenmatte (16) zur thermischen Expansion und die Zwischenschicht (20) auf jeweils einer Seite der elektrisch leitenden Lage (18) angeordnet sind.
3. Wandkonstruktion nach Anspruch 1, **dadurch gekennzeichnet, dass** die Konstruktion (10) darüber hinaus eine verstärkte Platte (14) beinhaltet, welche aus einem Material besteht, das wärmeleitend und widerstandsfähig gegenüber externen Beanspruchungen ist, und welche zwischen der thermischen Zwischenmatte (16) und der äußeren Wand (12) angeordnet ist.
4. Wandkonstruktion nach Anspruch 3, **dadurch gekennzeichnet, dass** die Konstruktion (10) von innen nach außen aus einer inneren Wand (22), einer Schicht (20), welche Kontaktmittel (24a, 24b) und ein Federsystem (28a, 28b) umfasst, einer elektrisch leitenden Lage (18), einer Matte (16) zur thermischen Expansion, einer verstärkten Platte (14) und einer äußeren Wand (12) besteht.
5. Wandkonstruktion nach Anspruch 4, **dadurch gekennzeichnet, dass** die Kontaktmittel (24a, 24b) eine Anzahl von gegenüberliegenden sich nach außen erstreckenden Kontaktarmen, Kontaktschienen oder Kontaktpuffern umfassen, welche jeweils an den äußeren Seiten der inneren Wand (22) und/oder der elektrisch leitenden Lage (18) oder der thermischen Matte (16) angeordnet sind.
6. Wandkonstruktion nach Anspruch 4, **dadurch gekennzeichnet, dass** das Federsystem eine Anzahl von sich nach außen erstreckenden Bolzen (26a, 26b) umfasst, welche an den äußeren Seiten der inneren Wand (22) angeordnet sind, wobei sich die Bolzen (26a, 26b) bis zu oder in Richtung der äußeren Wand (12) erstrecken, wobei Spiralfedern (28a, 28b) auf den Bolzen (26a, 26b) angeordnet sind, welche dazu angeordnet sind, die elektrisch leitende Lage (18), die thermische Matte (16) und die verstärkte Platte (14) gegen die äußere Wand (12) zu zwingen.
7. Wandkonstruktion nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die thermische Matte (16) eine graphitbasierte Mineralfaser aus einem stabilisierten Volumenexpansionsmaterial mit einer Dicke von zwischen 1,5 mm und 4,0 mm, vorzugsweise zwischen 1,8 mm und 3,0 mm, umfasst.
8. Wandkonstruktion nach Anspruch 7, **dadurch gekennzeichnet, dass** die thermische Matte (16), wenn sie auf ungefähr 190°C erwärmt wird, ein Expansionsverhältnis von ungefähr 9:1 und bei unge-

fähr 400°C eine Expansionskraft von ungefähr 1,5 kg/cm² aufweist.

9. Wandkonstruktion nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die Wandkonstruktion (10) einen Zuführungseinlass (30) für Wertgegenstände einschließlich einer Banknotenzuführungsvorrichtung umfasst. 5
10. Wandkonstruktion nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die Wandkonstruktion (10) eine Entnahmeöffnung (32) einschließlich einer verriegelbaren entfernbarer Platte umfasst. 10
11. Verwendung einer Wandkonstruktion (10) nach Anspruch 1-10, wobei eine Anzahl der Wandkonstruktionen (10) kombiniert wird, um bei einer Aufbewahrungseinheit für Wertgegenstände, insbesondere für Wertpapiere, wie zum Beispiel Banknoten, Munition, Schlüssel oder Ähnlichem, eine Anzahl von Seiten zu Dildern. 15
12. Verwendung nach Anspruch 11, wobei eine oder mehrere der Wandkonstruktionen (10) in der Aufbewahrungseinheit eine Zuführungsvorrichtung in einer Einlassöffnung in Form von zum Beispiel einer Banknotenzuführungsvorrichtung, durch welche Banknoten zugeführt werden, und eine Verriegelungsvorrichtung in einer Entnahmeöffnung in Form von zum Beispiel einem entfernbarer Verriegelungseinsatz, durch welchen Banknoten entnommen werden, umfasst. 20
13. Verwendung nach Anspruch 11-12, wobei eine Anzahl von Wandkonstruktionen (10) eine transportable Aufbewahrungseinheit bildet, wobei Banknoten für einen sicheren Transport von einem Ort zu einem anderen sicheren Aufbewahrungsort vor dem Transport in die Einheit zugeführt werden. 25
14. Verwendung nach Anspruch 11, wobei eine Anzahl von Wandkonstruktionen (10) eine stationäre Aufbewahrungseinheit für Wertgegenstände, wie zum Beispiel einen Safe oder Ähnliches bildet. 30
15. Verwendung nach Anspruch 11, wobei eine Anzahl von Wandkonstruktionen (10) eine stationäre Aufbewahrungseinheit für Wertgegenstände bilden, und wobei die Aufbewahrungseinheit als ein integraler Teil eines Automaten, wie zum Beispiel eines Spielautomaten, eines Bezahlungsautomaten usw., oder im Zusammenhang mit Bezahlungsrichtungen, wie zum Beispiel Kartenverkaufssystemen für Beförderungsmittel, Kino usw., angeordnet ist. 35

Revendications

1. Structure de mur (10), en particulier pour une boîte de stockage d'objets de valeur tels que des objets à mettre en sécurité, comprenant un mur extérieur (12) et un mur intérieur (22) entre lesquels sont agencés un certain nombre de couches ou de plans, où l'un des plans est composé d'un matériau conducteur de l'électricité, et des moyens de contact (24a, 24b) destinés à l'activation d'un circuit électrique, **caractérisée en ce que** la structure (10) comprend un mat de dilatation thermique intermédiaire (16) et une couche intermédiaire (20) comprenant des moyens de contact (24a, 24b) et un système de ressort (28a, 28b), qui au cours des influences dans un sens et dans l'autre dues à une force de ressort, sont agencés pour être antagonistes et pour garantir que le circuit électrique est activé. 5
2. Structure de mur selon la revendication 1, **caractérisée en ce que** le mat de dilatation thermique intermédiaire (16) et la couche intermédiaire (20) sont agencés de chaque côté du plan conducteur de l'électricité (18), respectivement. 10
3. Structure de mur selon la revendication 1, **caractérisée en ce que** la structure (10) comprend de plus une plaque renforcée (14) constituée dans un matériau qui est conducteur de la chaleur et qui résiste à des contraintes extérieures, disposée entre le mat thermique intermédiaire (16) et le mur extérieur (12). 15
4. Structure de mur selon la revendication 3, **caractérisée en ce que** la structure (10) se compose, en allant de l'intérieur vers l'extérieur, d'un mur intérieur (22), d'une couche (20) comprenant des moyens de contact (24a, 24b) et un système de ressort (28a, 28b), d'un plan conducteur de l'électricité (18), d'un mat de dilatation thermique (16), d'une plaque renforcée (14) et d'un mur extérieur (12). 20
5. Structure de mur selon la revendication 4, **caractérisée en ce que** les moyens de contact (24a, 24b) comprennent un certain nombre de bras de contact opposés qui s'étendent vers l'extérieur, de rails de contact ou de coussinets de contact, agencés vers les côtés extérieurs du mur intérieur (22) et / ou le plan conducteur de l'électricité (18), ou le mat thermique (16), respectivement. 25
6. Structure de mur selon la revendication 4, **caractérisée en ce que** le système de ressort comprend un certain nombre de boulons qui s'étendent vers l'extérieur (26a, 26b) agencés vers les côtés extérieurs du mur intérieur (22), où les boulons (26a, 26b) s'étendent vers le mur extérieur (12), où des 30

ressorts à boudin (28a, 28b) sont disposés sur les boulons (26a, 26b), agencés pour pousser de force le plan conducteur de l'électricité (18), le mat thermique (16) et la plaque renforcée (14) contre le mur extérieur (12).

7. Structure de mur selon l'une quelconque des revendications précédentes, **caractérisée en ce que** le mat thermique (16) comprend une fibre minérale à base de graphite d'un matériau d'expansion de volume stabilisé dont l'épaisseur est comprise entre 1.5 mm et 4.0 mm, de préférence entre 1.8 mm et 3.0 mm. 10
8. Structure de mur selon la revendication 7, **caractérisée en ce que** le mat thermique (16) possède un rapport d'expansion de 9 : 1 environ lorsque il est chauffé à 190 °C environ, et une force d'expansion de 1.5 kg / cm² environ à 400 °C environ. 15
9. Structure de mur selon l'une quelconque des revendications précédentes, **caractérisée en ce que** la structure de mur (10) comprend une entrée d'introduction (30) des objets de valeur comprenant un distributeur de billets de banque. 20
10. Structure de mur selon l'une quelconque des revendications précédentes, **caractérisée en ce que** la structure de mur (10) comprend une ouverture de retrait (32) comprenant une plaque pouvant être verrouillée et amovible. 25
11. Utilisation d'une structure de mur (10) selon les revendications 1 à 10, grâce à laquelle un certain nombre de structures de mur (10) sont associées pour constituer un certain nombre de côtés d'une unité de stockage d'objets de valeur, en particulier des objets à mettre en sécurité tels que des billets de banque, des munitions, des clefs et similaires. 30
12. Utilisation selon la revendication 11, selon laquelle une ou plusieurs des structures de mur (10) de l'unité de stockage comprennent un dispositif de distribution situé dans une ouverture d'entrée, sous la forme, par exemple, d'un distributeur de billets de banque, à travers laquelle des billets de banque sont distribués, et un dispositif de verrouillage d'une ouverture de retrait sous la forme, par exemple, d'une cartouche de verrouillage amovible à travers laquelle les billets de banque sont retirés. 35
13. Utilisation selon les revendications 11 à 12, selon laquelle un certain nombre de structures de mur (10) forment une unité de stockage transportable, grâce à laquelle les billets de banque sont introduits dans l'unité avant le transport, pour un transport sécurisé d'un endroit à un autre endroit de stockage sécurisé. 40

14. Utilisation selon la revendication 11, selon laquelle un certain nombre de structures de mur (10) forment une unité de stockage fixe d'objets de valeur, telle qu'un coffre-fort et similaire. 45

15. Utilisation selon la revendication 11, selon laquelle un certain nombre de structures de mur (10) forment une unité de stockage fixe d'objets de valeur, et l'unité de stockage est agencée comme une partie intégrée d'un distributeur automatique, tel qu'une machine à sous, un distributeur automatique de billets, etc., ou en association avec un matériel de paiement tel que des systèmes de billetterie destinés au transport, au cinéma, etc. 50

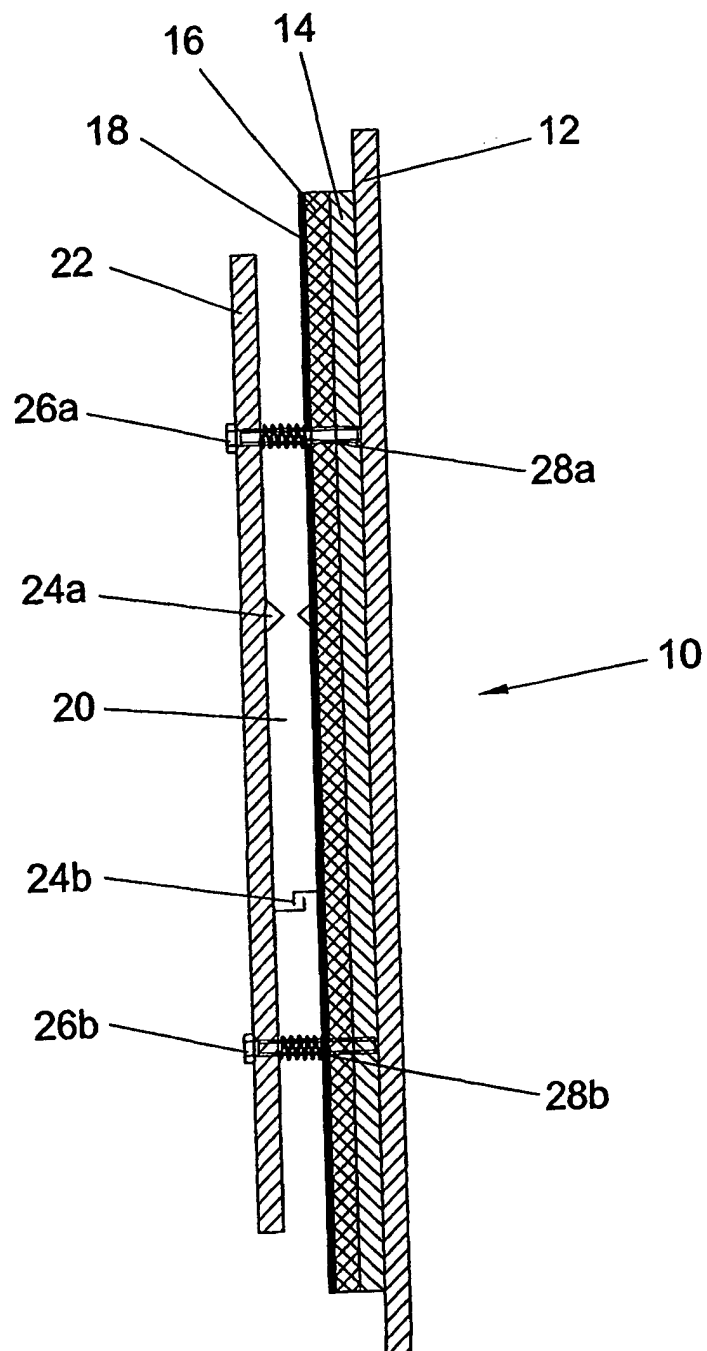


FIG. 1

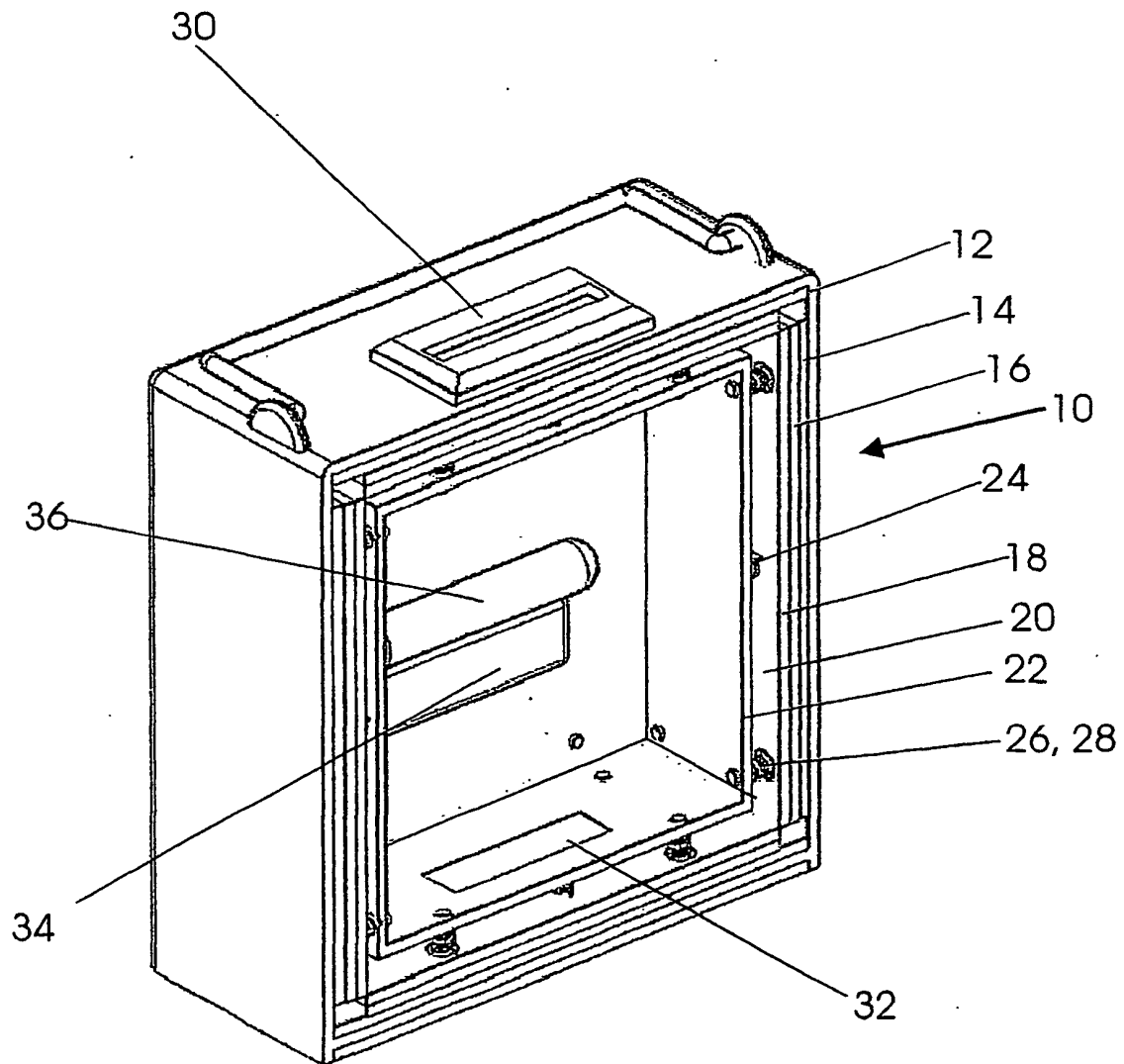


FIG. 2