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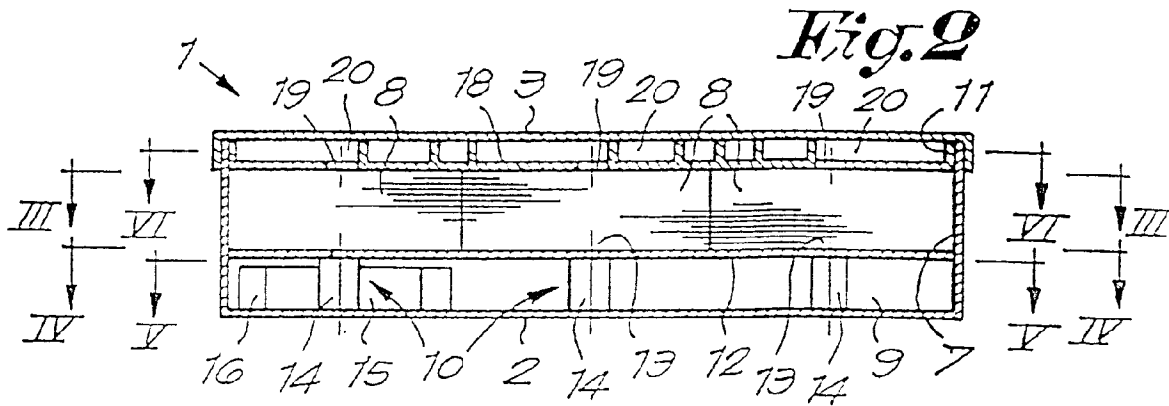
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(54) **Device for securing valuable documents**

(57) A device for securing valuable documents comprises a closable volume with at least two spaces (7,9). A first space (7) is herein intended to receive the valuable documents, while in the second space (9) are ar-

ranged capsules (14) which contain a pyrotechnic mixture. The capsules will be ignited in the case of undesired handling of the device in order to generate a flame which as it were perforates the documents present in the first space.



Description

This invention relates to a device for securing valuable documents such as shares, bonds, banknotes and the like. This invention relates particularly to such a device which is arranged either portably or fixedly in a private or public building, bank, means of transport or the like.

Such devices are already known wherein, when they are used incorrectly, for instance in the case of a robbery or in the case of undesired opening thereof or the like, the contents are brought into contact with ink, smoke or other substance, the intention of which is to damage or destroy the valuable documents.

It has however been established that these known devices are not such that the documents placed therein are always completely damaged and/or destroyed after an undesired attempt to open the device or, in the case of combination locks or the like, after an incorrect code has been entered.

It has indeed been established that in such a case a relatively large number of valuable documents nevertheless remains undamaged, so that it still worth making the effort to break into such a device.

The present invention has as its subject a device for securing valuable documents, more specifically a device wherein in the case of undesired opening of the device or unskilled handling of the device these documents are rendered completely unusable, this in a manner such that particular data thereof, for instance identification numbers or the like, are preserved.

For this purpose this invention relates to a device which consists of a closable volume which is divided into at least two spaces, wherein the first space is intended for arrangement therein of the documents for securing, while in the second space are provided capsules which contain a pyrotechnic mixture and which will be ignited in the case of undesired handling of the device in order to generate a flame which as it were perforates documents present in the first space.

In a further embodiment the device according to the invention will be provided with at least a maze or labyrinth along which the generated gasses can be removed, this such that flames and/or gases under pressure cannot exit from the device in any way whatever when the security comes into operation.

Delay mechanisms can also be arranged on the means which cause the destruction of the valuable documents such that the destruction takes place at short time intervals in order to prevent the destructive action being too intense at a given moment and flames and/or gases under pressure exiting from the device.

In order to better demonstrate the features of the invention, two devices according to the invention without any limitative character are described hereinbelow by way of example with reference to the annexed drawings, in which:

- figure 1 shows in perspective a device according to the invention which in this case is formed by a holdall;
- figure 2 shows on larger scale a cross-section along line II-II in figure 1;
- figures 3, 4, 5 and 6 show respective cross-sections along the lines III-III, IV-IV, V-V, and VI-VI in figure 2;
- figure 7 shows an electric circuit diagram of the ignition device according to the invention;
- figure 8 shows an electric circuit diagram similar to that of figure 7 but for an alternative embodiment;
- figure 9 shows a cross-section through an ignition capsule such as is used in a device according to the invention;
- figure 10 shows a table of possible pyrotechnic mixtures;
- figure 11 shows a front view of a device according to the invention but relating to another embodiment, i.e. that of a security case
- figure 12 shows a cross-section along lines XII-XII in figure 11;
- figures 13 and 14 show cross-sections along lines XIII-XIII and XIV-XIV in figure 12;
- figure 15 shows on larger scale the part designated F15 in figure 13.

Although in the examples described below a holdall or security case is understood as device, it will be apparent that the present invention can be applied to displaceable as well as fixed devices, such as for instance a safe or the like.

In the figures 1 to 6 is shown a holdall 1 substantially consisting of a base 2 and a cover 3 which is connected by means of hinges (not shown) and suitable locks 4-5 to the base and wherein the latter is provided with a hand-grip 6.

This holdall 1 can be manufactured from any random material.

The volume of holdall 1 is substantially divided into three separate spaces, that is, a space 7 in which the valuable documents 8, for instance paper money, can be stored, a space 9 in which the ignition and combustion mechanism 10 is arranged and a space 11 in which one or more labyrinths are provided in which the flames respectively gasses released during the ignition respectively combustion caused by the ignition and combustion mechanism 10 can expand before leaving the device.

Said spaces 7 and 9 are mutually separated by a plate 12 of metal, for instance aluminium, in which at the location

of a provided bundle of valuable documents 8, for instance banknotes, a hole 13 is arranged, wherein opposite each hole 13 in space 9 a capsule 14 is provided, each filled with a pyrotechnic mixture.

All capsules 14 are electrically connected to an electronic security system which, as shown in figure 7, can be constructed as follows.

5 Each capsule 14 is electrically connected to the earthing which is formed in this case by plate 12 and is further connected to an electronic switching device 15 which is placed in the circuit of a battery 16 situated between switching device 15 and plate 12, wherein aforesaid circuit is provided with a switch 17 which allows the security to be placed under voltage.

10 The space 11 of holdall 1 is bounded in this case by a plate 18 which forms a partition between this space 11 and space 7 and which is embodied in metal, for instance aluminium, wherein in this plate 18 relatively large holes 19 placed more co-axially with holes 13 in plate 12 are provided opposite each bundle of documents 8.

The space 11 is further divided into one or more mazes or labyrinths, in this case one labyrinth 20 per capsule 14, wherein these labyrinths 20 discharge into the atmosphere via a passage 21 provided for this purpose in the outer wall of space 11 and in the nearby walls of the base 2 and the cover.

15 Figure 8 shows a variant of the diagram according to figure 7 wherein in this case determined capsules 14 are provided with a delay mechanism 22 which has for its object to form a barrier between the ignition mechanism 23 and the pyrotechnic mixture of capsule 14 in order to effect a delay in the combustion of the pyrotechnic mixture. These delay mechanisms 22 can be mutually identical or subdivided into groups, or can be all different in order to effect ignitions occurring at different moments in time.

20 Other embodiments of the electronic security system are of course possible.

Figure 9 shows in more detail a capsule 14 which is embodied in steel, wherein this capsule 14 is connected via an opening 24 to the delay mechanism 22 respectively the ignition mechanism 23 and wherein in this capsule 14 is arranged a pyrotechnic mixture which is formed by so-called pyrotechnic compositions, in this case an initiation composition 25 and three combustion compositions 26, 27 and 28 which can have a suitable configuration, wherein the whole is closed off by a plate 29 of a non-flammable material.

25 The pyrotechnic mixture can have any configuration whatsoever, wherein a table is shown in figure 10, solely by way of example, of materials which can be employed in any combination whatever within the stated ratios to form an initiation composition 25 respectively a combustion composition 26-27-28.

30 In a preferred configuration the initiation composition could consist of magnesium, strontium peroxide and binders, while the pyrotechnic mixture could consist of iron oxide, magnesium, aluminium, barium nitrate, graphite and synthetic phenol resin.

The use and operation of the device according to the invention are very simple and as follows.

35 When a quantity of valuable documents 8, such as for instance banknotes, must be arranged in a holdall 1 according to the invention, for instance with a view to transport of such documents, these documents will be arranged in space 7 precisely ordered relative to holes 13 on plate 12, this space preferably being dimensioned in proportion to the dimensions of these documents.

Device 1 will subsequently be closed whereby documents 8 are completely secured and wherein during this closing the switch 17 will be opened in suitable manner.

40 Switch 17 can be provided at any random position, for instance between base 2 and cover 3; in one of the locks 4-5; in combination with a combination lock; in combination with a keyboard for entering a code in which a code must be entered at regular points in time to keep switch 17 opened, and so on.

The switch 17 or the electronic security system can also be controlled remotely, in which case initiation of the security system does not have to take place by closing holdall 1.

45 When forced entry is made into such a holdall 1, wherein either cover 3 is distorted; or locks 4 or 5 are deformed; or in the case of a keyboard, this keyboard is damaged or an incorrect code is entered, the switch 17 will be closed in suitable manner and via the electronic switching device 15 a command will be given to capsules 14 whereby the ignition mechanism 23 will cause combustion of the initiation composition 25 and subsequently the combustion compositions 26-27-28, this such that a flame is generated through the holes 13 in plate 12 which perforates the stack of documents 8 and wherein this flame and the developed gases then enter a labyrinth 20 so as to expand therein before leaving holdall 1, this such that flames and/or gases under pressure cannot escape in any way whatever from holdall 1.

50 The thus formed perforation of documents 8 can cause a frusto-conical burn hole in the bundle of documents 8 with a diameter of about 3 to 4 cm at the bottom and about 1 cm at the top and with a total height of at least 5 cm.

In this manner can be brought about that documents 8 are as it were destroyed, although these documents 8 continue to exist per se so that various matters can still be checked.

55 Figure 8 shows an electrical diagram wherein a delay mechanism 22 is arranged on determined capsules 14 with the intention of programming the ignition of capsules 14 so that, for instance in the example of figure 8, three capsules 14 ignite together, after a few seconds a second series of three capsules 14 ignites and finally after a few more seconds a third series of capsules 14 ignites, whereby the intensity of the combustion is spread over time.

Shown in figures 11 to 15 is another embodiment of the invention wherein the device is formed by a security case 30. The construction hereof is analogous to that of holdall 1 wherein cover 3 is however replaced by a flap 31 in a narrow side wall of security case 30, while the space 11 in which one or more labyrinths 20 are provided is formed as a roller shutter 32.

5 In the figures 11 to 15 identical or equivalent components or spaces are designated with the same reference numeral as in figures 1 to 6.

Identical or similar components or spaces in figures 11 to 15 are designated with the same reference numeral as in figures 1 to 6.

10 In this embodiment the plate 12 forms a container such that the space 9 in which the ignition and combustion mechanism 10 is arranged extends round space 7, except on the front side where flap 31 is situated.

This flap 31 is lockable in closed position by a lock 5 with an electronic key.

The space 11 which forms one or more labyrinths 20 is not located immediately against flap 31 but on the inside at a distance therefrom in the roller shutter 32 which is slidable over guides 33 in space 9.

15 The slats of roller shutter 32 are double-walled and manufactured from metal and provided close to one end with an opening 34 on either side. This slat is divided into two in its longitudinal direction by a partition 35 which is connected at one end against the end of the slat along which openings 34 are situated but remains with its other end a short distance removed from the other end of the slat.

20 A labyrinth 20 is thus formed in each slat whereby the combustion gases flowing in via opening 34 to the inside have to cover a long path before they enter the space between roller shutter 32 and flap 31 from the opening 34 on the outside of the lamella. From this space they can escape into the environment through the clearance of flap 31.

Successive slats of roller shutter 32 are placed such that openings 34 are alternately located on the one side and on the other side of roller shutter 32.

By closing flap 31 or after this closing via remote control the switch 17 is opened or the security system is initiated by one means or other.

25 In the case of forced entry the security case 30 operates in the same manner as described above for holdall 1.

Due to the above described construction of roller shutter 32 no flames and/or gases under pressure can escape from this security case 30.

30 It will be apparent that the present invention is in no way limited to the embodiments described by way of example and shown in the annexed drawings but that a device according to the invention can be implemented in all kinds of forms and dimensions without falling outside the scope of the invention.

Claims

35 1. Device for securing valuable documents, characterized in that it consists of a closable volume which is divided into at least two spaces (7) and (9), wherein the space (7) is intended for arrangement therein of the documents (8) for securing, while in the second space (9) are provided capsules (14) which contain a pyrotechnic mixture and which will be ignited in the case of undesired handling of the device in order to generate a flame which as it were perforates the documents (8) present in the first space (7).

40 2. Device as claimed in claim 1, characterized in that the spaces (7) and (9) are mutually separated by means of a metal plate (12) in which a hole (13) is provided at the position of each bundle of documents (8), wherein a said capsule (14) is arranged opposite each hole (13) in the space (9).

45 3. Device as claimed in claim 2, characterized in that the metal plate (12) forms a container inside which the space (7) for the documents (8) for securing is located and which is provided with an opening in a side wall and is then closable by a flap (31) wherein the flap (31) is also mounted on a base (2) which encloses said container, wherein the space (9) in which the capsules (14) are provided is located between this container and the base (2).

50 4. Device as claimed in any of the claims 1-3, characterized in that in addition to the two said spaces (7) and (9) it has a third space (11) in which at least one labyrinth (20) is provided which on the one side is in communication with the side of a bundle of documents (8) located opposite the side facing toward a capsule (14) and on the other side is in communication with the atmosphere.

55 5. Device as claimed in claim 4, characterized in that the space (11) is separated from the space (7) by means of a metal plate (18) in which a hole (19) is provided at the position of each bundle of documents (8).

6. Device as claimed in claims 2 and 5, characterized in that the holes (19) in the plate (18) are placed coaxially with

the holes (13) in the plate (12).

7. Device as claimed in claim 4, characterized in that a labyrinth (20) is provided per bundle of documents (8).
- 5 8. Device as claimed in either of the claims 4-5, characterized in that the space (11) in which at least one end is provided on either side with an opening (34) is divided into two in longitudinal direction by a partition (35) which connects on the side where the openings (34) are located to the end of the slat but on the other end leaves clear a passage from the one to the other side of the partition.
- 10 9. Device as claimed in claims 3-8, characterized in that the roller shutter (32) is disposed a small distance from the flap (31) in the container formed by the plate (12) and in closed position closes off the space (7) outside this container.
- 15 10. Device as claimed in any of the foregoing claims, characterized in that the capsules (14) each consist of a metal casing which is filled with a pyrotechnic mixture and which on the end located against the plate (12) which bounds the space (7) for the documents (8) for securing is closed by a plate (29) of a non-flammable material and which on the other end is connected to an ignition mechanism (23).
- 20 11. Device as claimed in claim 10, characterized in that in the case of at least a part of the capsules (14) a delay mechanism (22) is provided between the ignition mechanism (23) and the pyrotechnic mixture (25-28).
12. Device as claimed in any of the foregoing claims, characterized in that the pyrotechnic mixture is formed by an initiation composition (25) and one or more combustion compositions (26-27-28).
- 25 13. Device as claimed in claim 12, characterized in that the initiation composition (25) and the combustion compositions (26-27-28) are formed by a combination in a determined ratio of the materials and values given in figure 10.
14. Device as claimed in any of the foregoing claims, characterized in that each capsule (14) is electrically connected to an electronic security system.
- 30 15. Device as claimed in claim 14, characterized in that the security system contains a switch (17) which is actuated by a movable part of the device.

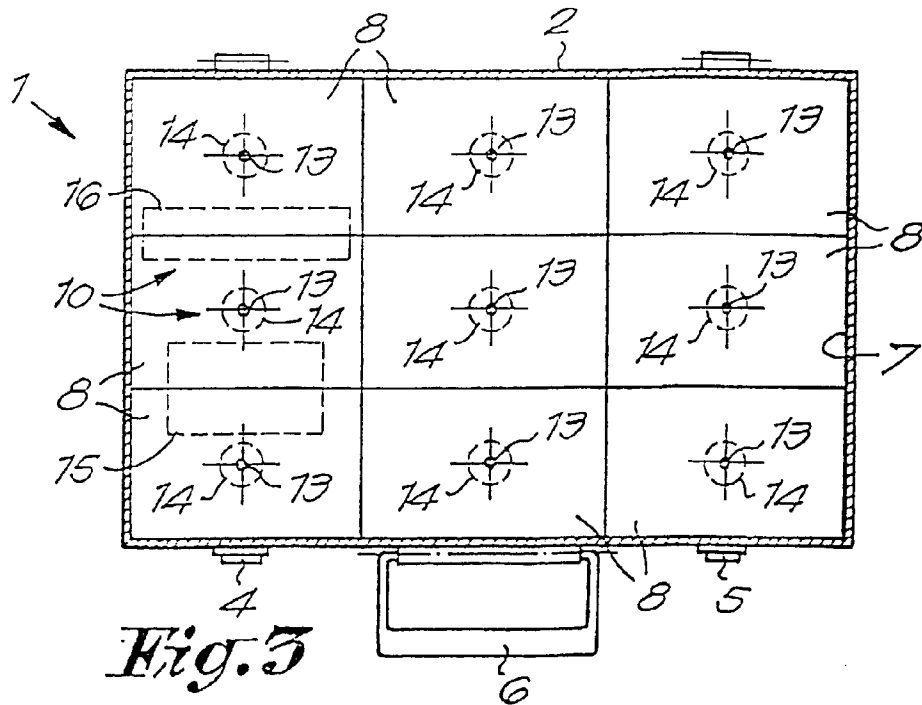
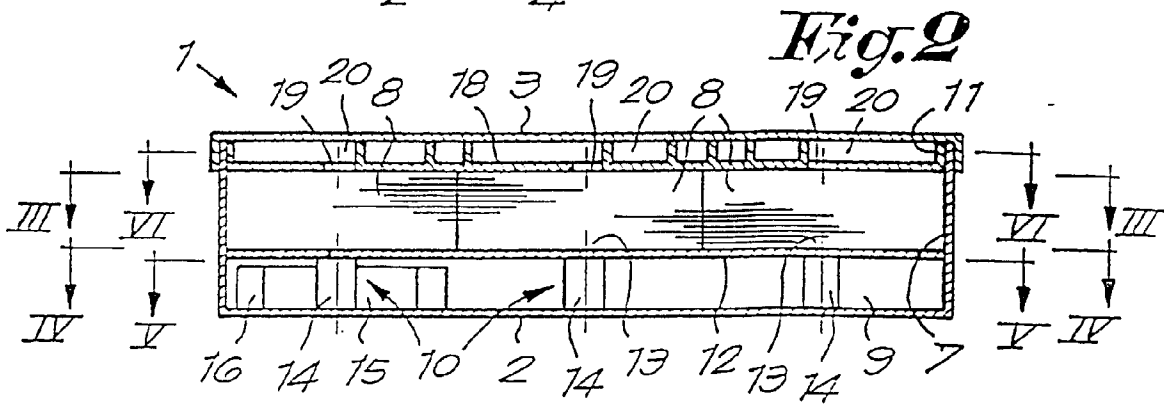
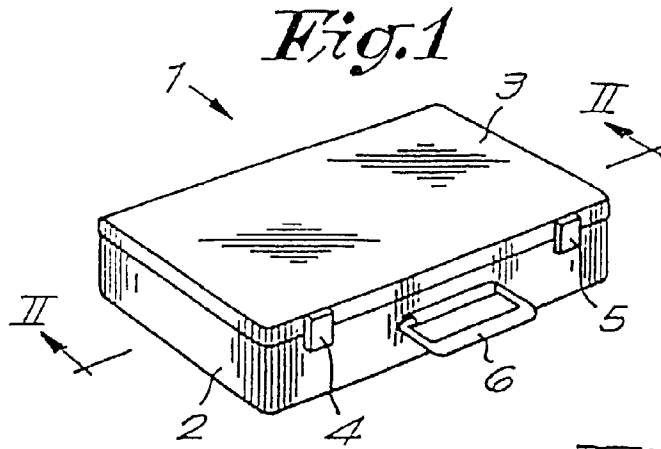
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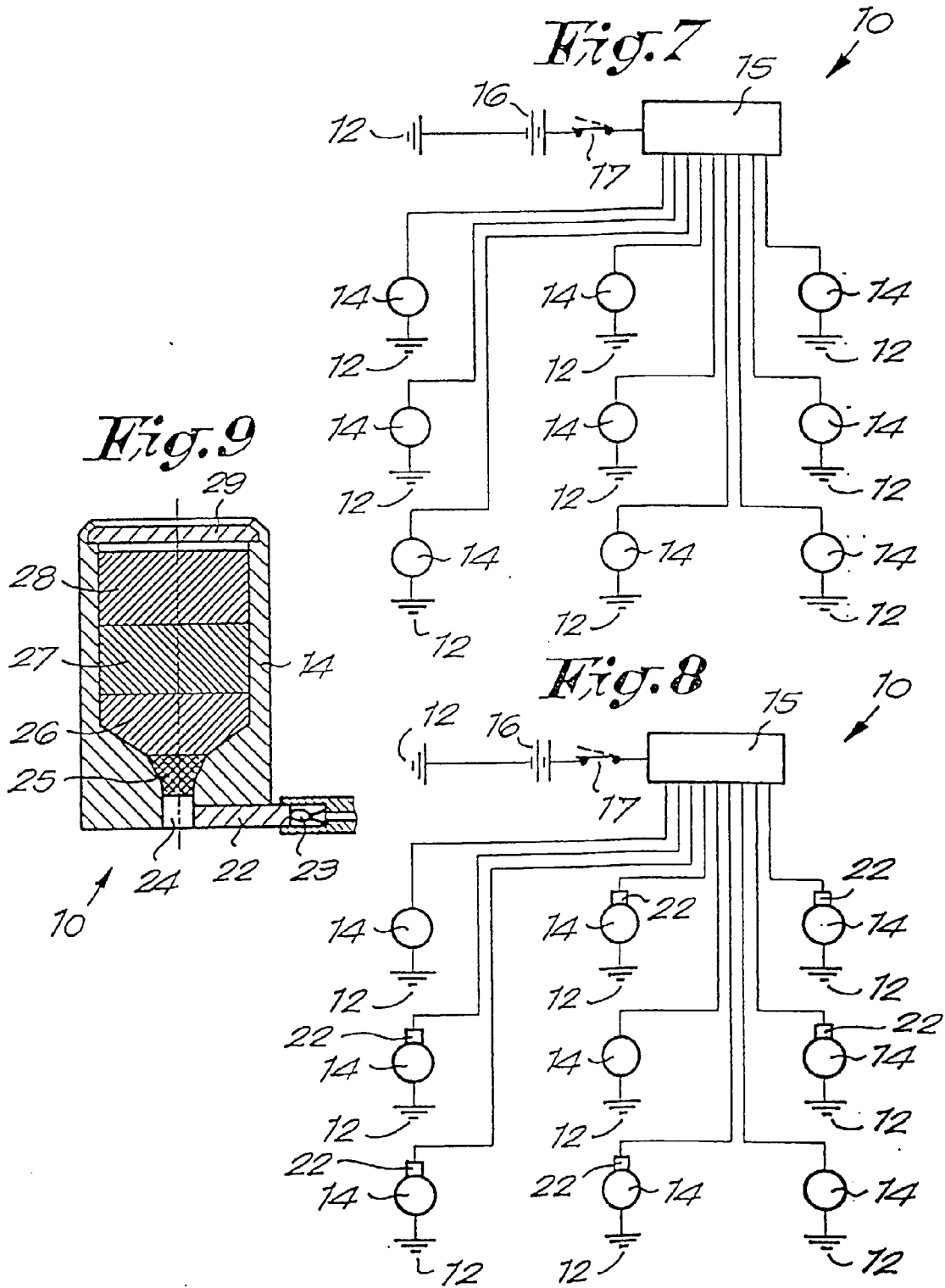


Fig. 10

PYROTECHNIC MIXTURE	FUEL	COMBUSTION MATERIAL (OXYDANT)	BINDING AGENT	LUBRICANT
INITIATION COMPOSITION	20-30 % - MAGNESIUM - ALUMINIUM	60-80 % - BARIUM PEROXIDE - BARIUM NITRATE - STRONTIUM PEROXIDE - STRONTIUM NITRATE	5-10 % - SYNTHETIC PHENOL RESIN - GUM LACQUER - GUM ARABIC	7-9 % - GRAPHITE - ZINC STEARATE
COMBUSTION COMPOSITION	75-85 % - MAGNESIUM - ALUMINIUM - Mg/Al 50/50	50-80 % - BARIUM NITRATE - POTASSIUM PERCHLORATE - IRON OXIDE	5-10 % - SYNTHETIC PHENOL RESIN - GUM LACQUER - GUM ARABIC	7-9 % - GRAPHITE - ZINC STEARATE

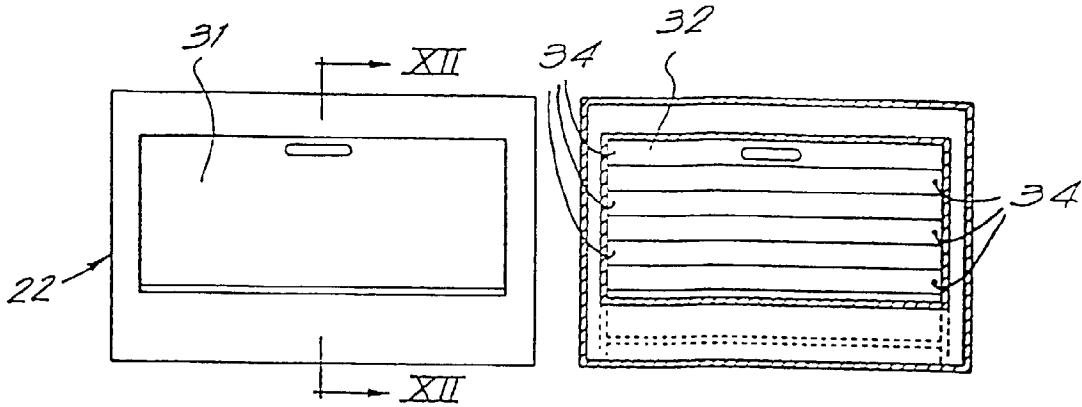


Fig. 11

Fig. 14

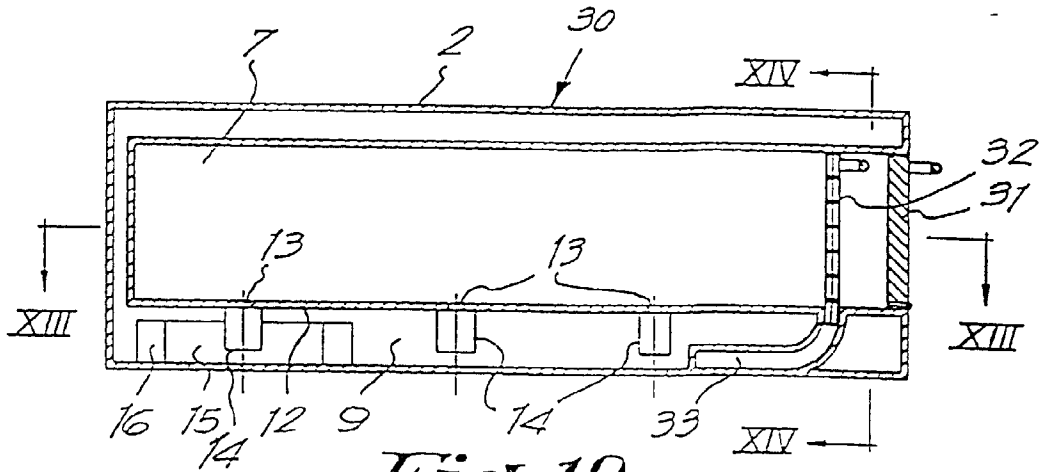


Fig. 12

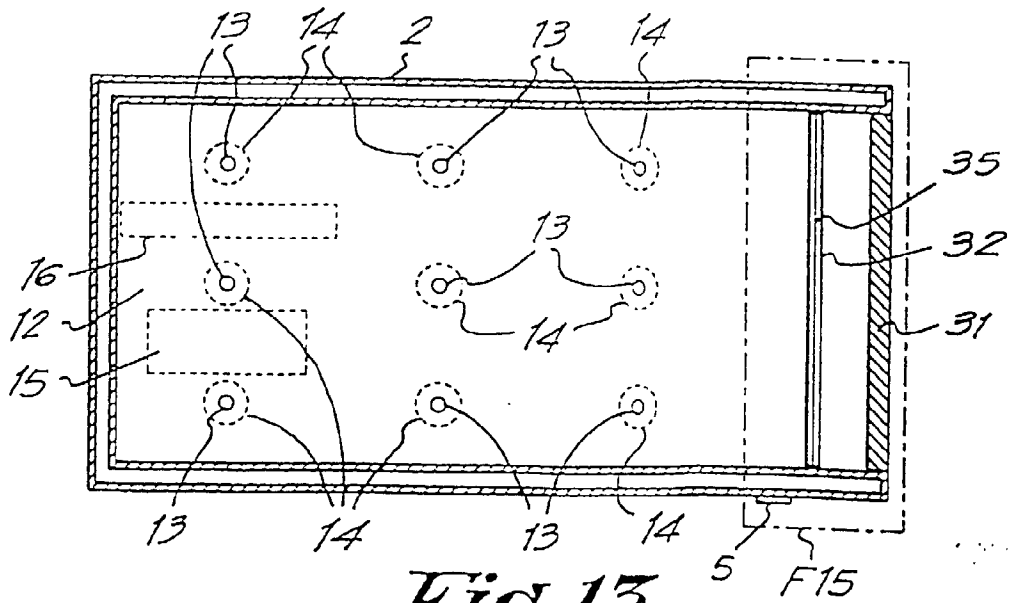


Fig. 13

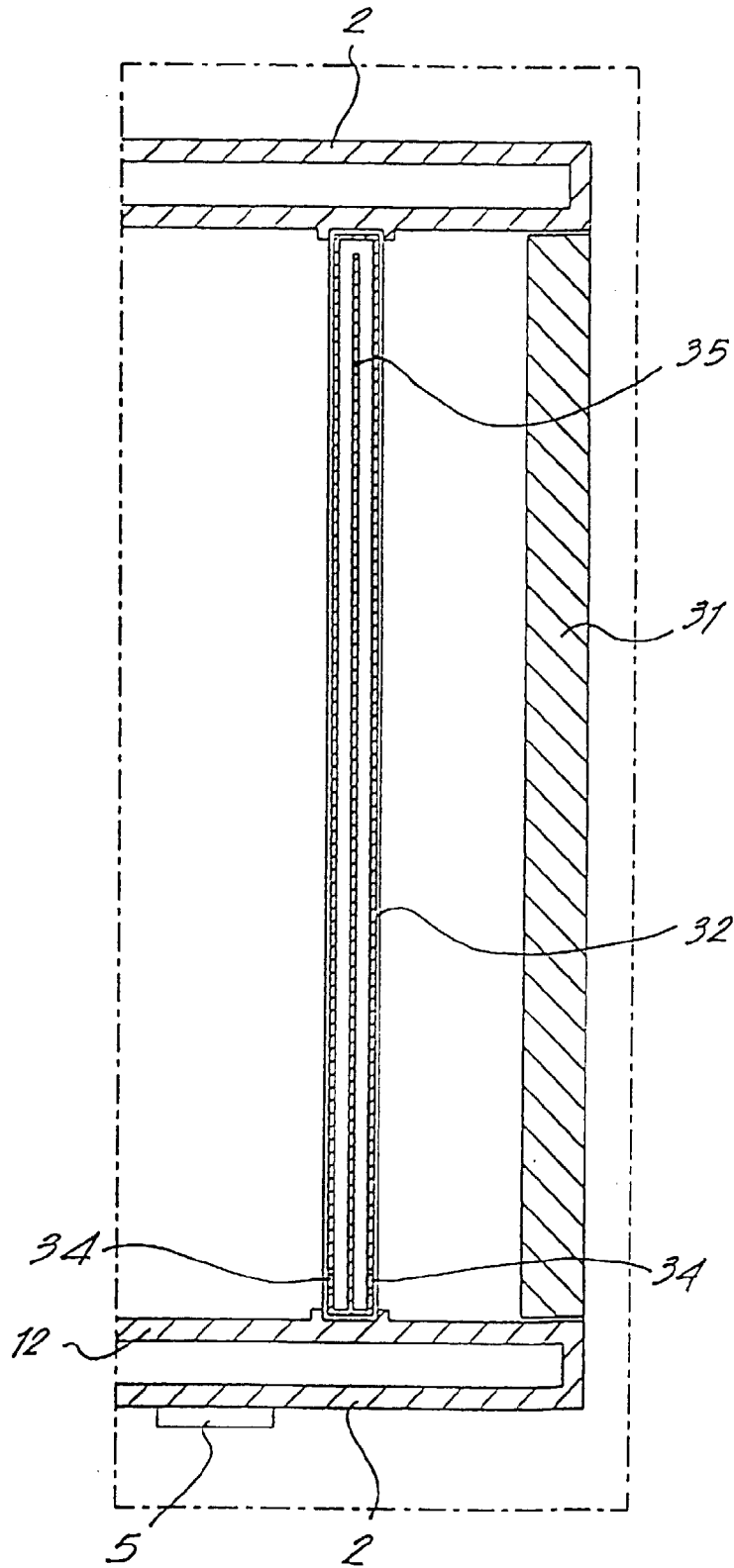


Fig. 15



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 98 20 0877

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)
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Y	FR 2 595 491 A (BOUTROY) 11 September 1987 * page 11, line 36 - page 12, line 13; figures * * page 12, line 37 - page 13, line 9 * * page 15, line 8 - line 13 * * page 19, line 11 - line 14 * ---	1,14,15	
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The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 24 June 1998	Examiner Van Kessel, J
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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