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(54) **ACTIVATOR DEVICE FOR PYROTECHNIC CARTRIDGES THAT GENERATE GASES**

(57) A device for activating gas-generating pyrotechnic cartridges comprising a body (1) which serves as a housing for a plurality of electronic cartridges with a metal base (2) located on a compartmentalised base (3) and which is magnetised by the presence of a magnet, which allows the cartridges (2) to be optimally positioned; and where the bottom of the compartmentalised base (3) incorporates connection terminals (6) which are connected to the electrical means available in the cartridge (2) and are therefore configured as an activation system for the cartridges (2) themselves; which is configured as an element for the activation by means of electrical discharge of disposable pyrotechnic cartridges whose purpose is to generate inert gases for the signalling or extinguishing of fire or fire outbreaks.

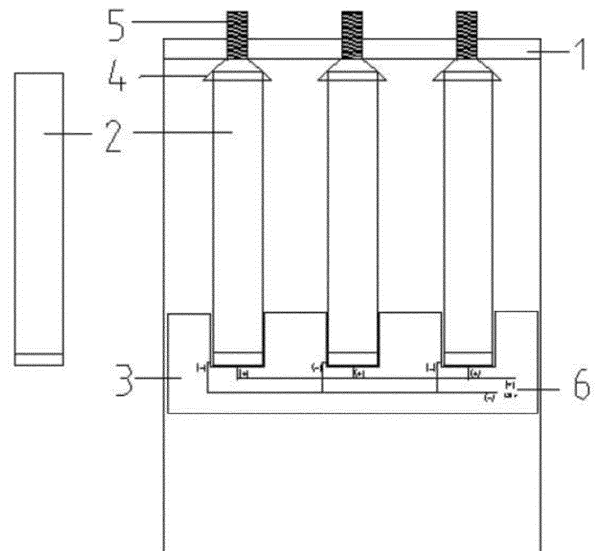


FIG.1

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Description

Object of the invention

[0001] The object of the present report is a device for activating gas-generating pyrotechnic cartridges, for manual and/or automatic activation, and for special use in fixed installations; more specifically, it will be configured as an element for the activation by electrical discharge of disposable pyrotechnic cartridges whose purpose is to generate inert gases for the signalling or extinguishing of fire or fire outbreaks; and which is designed to be activated once it receives a start signal from a flame detector, smoke detector or pyrolysis detector, or even an alarm, which generates a subsequent activation, either manually or remotely, by sending an electric discharge that initiates the combustion of the cartridges.

Background of the invention

[0002] Nowadays, in the field of fire prevention and/or firefighting, there are multiple electronic devices whose purpose is to detect and send a signal (acoustic or luminous) instantaneously or remotely that enables the detection of fire or its derivatives.

[0003] In the state of the art, there is a huge multitude of solutions for extinguishing small fires depending on the type of fire that originates it. The types of fire that we can find are determined according to the physical state of the fuels that cause them, so we can define 3 classes basically: class A, fires caused by solid fuels such as wood, cardboard, paper, fabrics, etc.; class B, caused by liquid fuels such as petrol, alcohol, waxes, greases, etc.; and class C, caused by gaseous fuels such as butane, natural gas, propane, methane, etc.

[0004] Although electrical fires are not categorised, they should also be taken into account because of their frequency of occurrence.

[0005] In order to extinguish such fires, the applicant is aware of various techniques and means for their extinguishing, including the one described in utility model ES 1265524U of the same applicant, which describes a fire extinguishing cartridge operated by an actuating device characterised in that it comprises a compacted pyrotechnic composition generating extinguishing gases inside a container, where said container is closed by a throttling closure at the top and by pyroelectric activation means at the base.

[0006] The invention described here is designed to house and activate, automatically or manually, the whole range of cartridges (such as the one described above) of different sizes depending on the volume to be flooded, in an efficient and safe manner, by means of electronic initiation. Likewise, its magnetic fixing will allow easy replacement when the cartridges have been used or need to be checked periodically. This magnetic fastening guarantees the contact of the activation connections at all times if the element containing the cartridges is subjected

to shocks or vibrations.

Description of the invention

[0007] The technical problem solved by the present invention is the simple and effective activation of pyroelectric initiation cartridges, such as the CEX40-A fire extinguishing cartridge activated by electric discharge (and quickly replaceable). For this purpose, the device for activating gas-generating pyrotechnic cartridges, which is the subject of the present invention, comprises a body which serves as a housing for a number of electronic cartridges located in compartments which, in their lower part, incorporate connection terminals which are connected to electrical means available in the cartridge, the base of the housing of the cartridges being magnetic; and where the body has centring cones that are configured as a means of positioning the cartridges of compacted pyrotechnic composition generating extinguishing gases, these, together with the powerful magnet at the base of the housing, ensure the correct location of the cartridges and their sealing; and where finally, next to these cones, in their upper part, there are channels designed to focus and direct the inert gases to the place where they are required, or direct exit nozzles if there is no need to channel the gases.

[0008] In practice, once the cartridges are housed in the body and connected to the terminals, once the electrical activation signal has been received, the cartridge will burn, generating an energetic projection of inert gases that flood the space where the gas outlet has been located.

[0009] The device presented here will be configured as an activation platform for this type of cartridge or other cartridges of different sizes and similar functionality, resolving the activation manoeuvres, projection of the effect to the desired place and quick replacement of the cartridges once they have been used.

[0010] Therefore, the device recommended here has the advantage of being able to implement any type of logic that allows its activation, for example, an approved flame detector, or a fixed extinguishing device based on the detection of elements derived from pyrolysis that discriminates between hundreds of electrical cabinets, which is the one that should receive the discharge of extinguishing gases. All of them are proven alarm detection and management devices.

[0011] This device has the function of electronically activating the cartridges selected according to the volume to be flooded. When these consumables are activated automatically, the certainty of immediacy is obtained, avoiding the evolution of the possible fire and eradicating it when it is still an outbreak of fire, avoiding major damage both personal and structural.

[0012] Due to the large number of different installations that can be found, it may be considered preferable in some of them to detect and activate manually after due checks, a circumstance that is resolved by the present

invention with remote activation, and therefore making it a versatile tool capable of being used regardless of whether the activation mode is carried out manually or automatically, on site or remotely.

Brief description of the figures

[0013] The following is a very brief description of a series of drawings which help to better understand the invention and which relate expressly to an embodiment of said invention which is presented as a non-limiting example thereof.

FIG 1. Shows a view of a device for activating gas-generating pyrotechnic cartridges, in a closed position and ready for use.

FIG 2. Shows a view of the device for activating gas-generating pyrotechnic cartridges, in an open position to enable cartridge exchange, maintenance or other tasks necessary to enable proper operation of the device.

Detailed description of a detailed embodiment of the invention

[0014] A non-limiting preferred embodiment of the invention is shown in the attached figures. More specifically, the device for activating gas-generating pyrotechnic cartridges, which is the subject of this memory, comprises a body (1) which serves as a housing for a number of electronic cartridges with a metal base (2) placed on a compartmentalised base (3) and which is magnetised by the presence of a magnet, which allows the optimum positioning of the cartridges (2), and where, the compartmentalised base (3) in its lower part incorporates connection terminals (6) which will be connected to the electrical means available in the cartridge (2) and therefore, being configured as an activation system for the cartridges (2) themselves.

[0015] In a preferred embodiment, the body (1) has centring cones (4) which are configured as a means of positioning the cartridges (2) of compacted pyrotechnic composition generating extinguishing gases, and where the function of the said cones (4) is to ensure correct positioning of the cartridges (2) and their sealing.

[0016] The cones (4) are followed by channels (5) designed to focus and direct the inert gases to the place where they need to be used.

[0017] In one particular embodiment, the body (1) incorporates direct gas outlet nozzles on its upper part, without ducting.

[0018] In a preferred embodiment, the connection terminals (6) must have a current sufficient to ensure the activation of the cartridge (2) and where, in this practical embodiment, the minimum current that must flow is 1,3 V.

[0019] In a practical, non-limiting embodiment, the

body (1) incorporates a battery to supply the connection terminals (6) with the minimum current required to activate the cartridges (2).

[0020] In one practical embodiment, the compartmentalised base (3) is capable of being moved to facilitate the exchange of cartridges (2).

Claims

1. Device for activating gas-generating pyrotechnic cartridges, **characterised by** comprising a body (1) which serves as a housing for a plurality of electronic cartridges with a metal base (2) located on a compartmentalised base (3) and which is magnetised by the presence of a magnet, which allows optimum positioning of the cartridges (2); and where the bottom of the compartmentalised base (3) incorporates connection terminals (6) that are connected to the electrical means available in the cartridge (2) and are therefore configured as an activation system for the cartridges (2) themselves.
2. Device for activating gas-generating pyrotechnic cartridges according to claim 1, where the body (1) has centring cones (4) which are configured as a means of positioning the cartridges (2) and where, next to said cones (4), there are channels (5) designed to focus and direct the inert gases to the place where they need to be used.
3. Device for activating gas-generating pyrotechnic cartridges according to claim 1, where the body (1) incorporates in its upper part direct gas outlet nozzles.
4. Device for activating gas-generating pyrotechnic cartridges according to claim 1, wherein the connection terminals (6) have a minimum current of 1.3 V.
5. Device for activating gas-generating pyrotechnic cartridges according to claims 1 and 4, wherein the body (1) incorporates a battery which supplies the connection terminals.
6. Device for activating gas-generating pyrotechnic cartridges according to claim 1 wherein the compartmentalised base (3) is capable of being displaced to facilitate the exchange of cartridges (2).

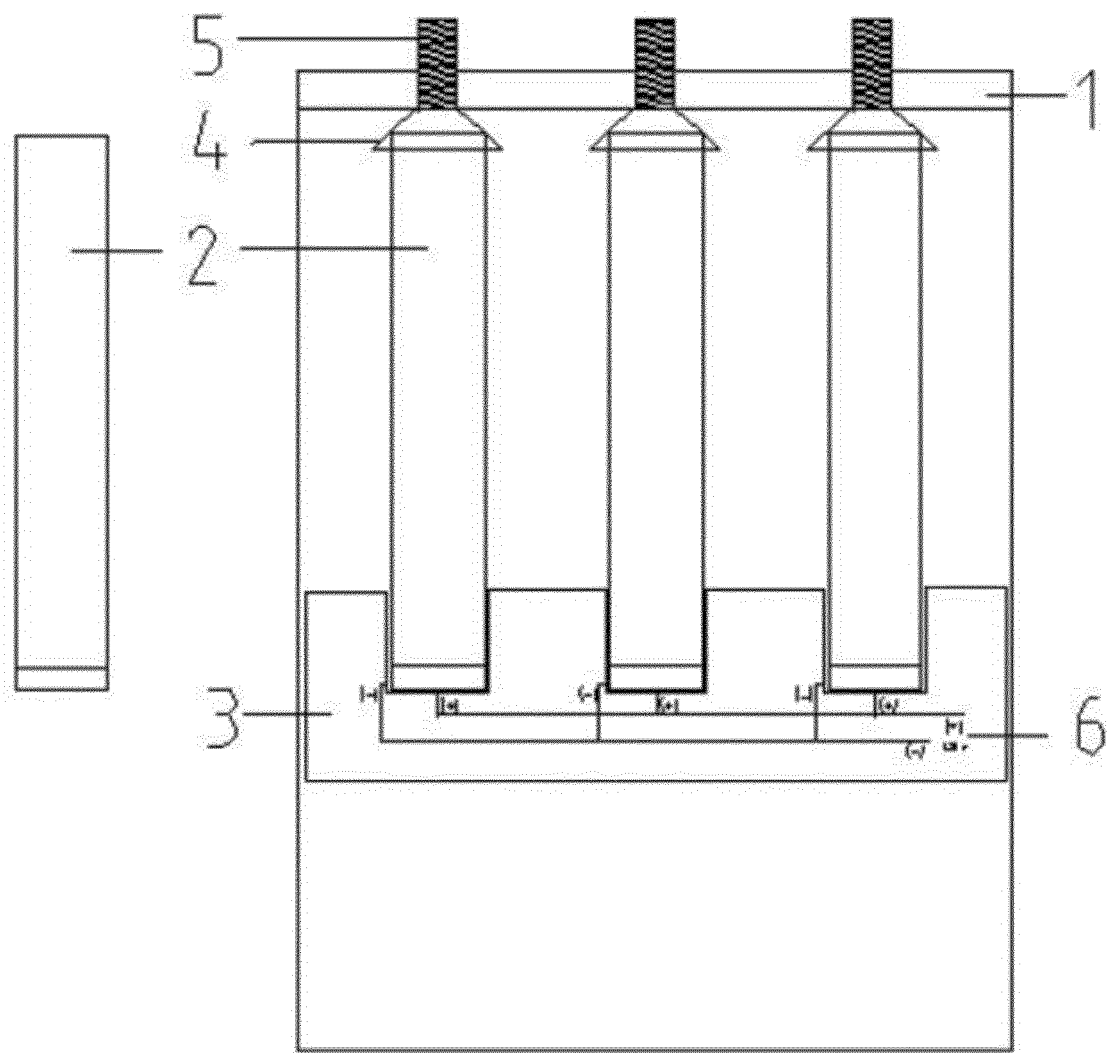


FIG.1

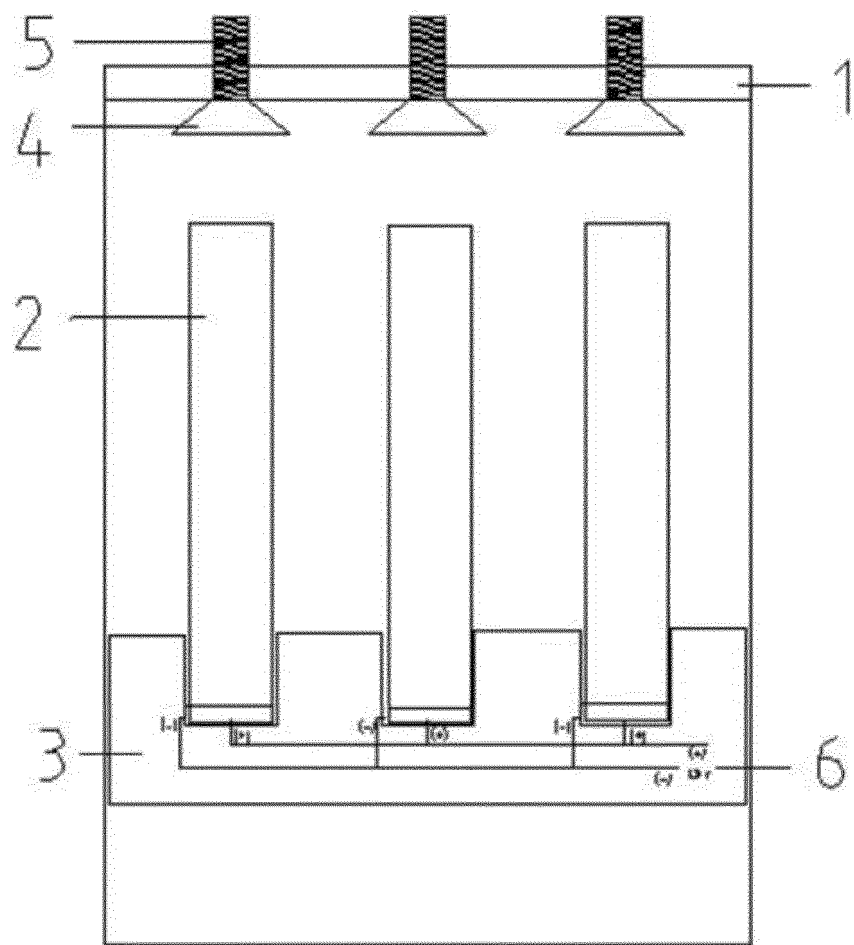


FIG.2

INTERNATIONAL SEARCH REPORT

International application No.
PCT/ES2024/070116

A. CLASSIFICATION OF SUBJECT MATTER

A62C35/13 (2006.01)

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
A62C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPODOC, INVENES

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	CN 110743116 A (HUBEI JIANDUN FIRE TECH CO LTD) 04/02/2020, paragraphs [0021]-[0029]; figures 1-3.	1,3-5
Y	ES 1297251 U (PEREZ CALLE EDUARDO) 17/02/2023, page 4, lines 10-28; figures 1-4.	1,3-5
A	CN 206762106 U (CHONGQING JUNDAO FIRE FIGHTING EQUIPMENT CO LTD) 19/12/2017, paragraphs [0016]-[0025]; figures 1, 2.	1,2
A	ES 1217465 U (PEREZ CALLE EDUARDO ET AL.) 18/09/2018, page 5, line 13 - page 6, line 2; figures 1, 2.	1,4,5

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents:

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document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other documents, such combination being obvious to a person skilled in the art

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Date of the actual completion of the international search

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INTERNATIONAL SEARCH REPORT

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Information on patent family members

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Patent document cited in the search report	Publication date	Patent family member(s)	Publication date
CN110743116 A	04.02.2020	NONE	
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ES1297251U U	17.02.2023	WO2024018101 A1 ES1297251Y Y	25.01.2024 09.05.2023
-----	-----	-----	-----
CN206762106U U	19.12.2017	NONE	
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ES1217465U U	18.09.2018	WO2020008090 A1 ES1217465Y Y	09.01.2020 10.12.2018
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REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- ES 1265524 U [0005]