



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication: **19.03.2014 Bulletin 2014/12** (51) Int Cl.: **F24F 13/14** ^(2006.01) **A62C 2/24** ^(2006.01)

(21) Application number: **13184166.0**

(22) Date of filing: **12.09.2013**

(84) Designated Contracting States: AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR Designated Extension States: BA ME (30) Priority: 12.09.2012 PL 40074812	(71) Applicant: Rothgangl, Erhard 61130 Saint Germain de la Coudre (FR) (72) Inventor: Rothgangl, Erhard 61130 Saint Germain de la Coudre (FR) (74) Representative: Kacperski, Andrzej Kancelaria Prawno-Patentowa ul. Kupa 3/9 31-057 Krakow (PL)
---	---

(54) **Smoke extractor release**

(57) Smoke extractor release, in particular for a roof smoke flap and a smoke window or a ventilation window characterised in that the axis of revolution of the releasing lever (9) is a shaft (8), having a cylinder sector with a truncated flat surface (C), while the collar (6) of the pusher (5) has a two-stage side surface profile, in which the part of the side surface constituting a spring (7) bumper has

a cylindrical shape with a circumferential flat surface (A), towards the striker (7) turning into a cone with a concave side surface (B), in addition in the stand-by position of the release the concave surface (B) of the striker (4) pusher (5) is supported by the cylindrical surface of the shaft (8) and the pusher (4) is interlocked in the position of spring (7) tensioning.

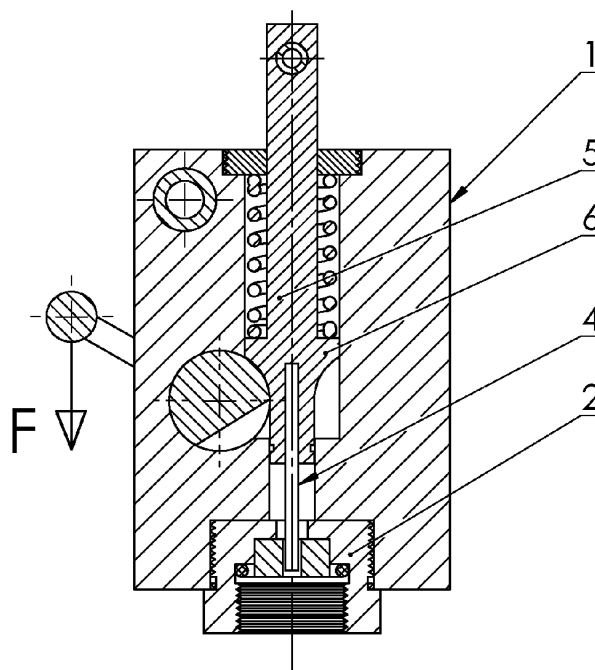


FIG. 1

Description

[0001] This invention concerns a smoke extractor release, in particular for a roof smoke flap and a smoke or ventilation window, fitted with a pneumatic feeding installation, with its actuation initiated by the energy of compressed gas.

[0002] A piercer for initiating remote releasing, in particular for systems for opening smoke extractors, in particular smoke flaps, is known from description PL 61502 Y1. The piercer contains a body with a needle valve placed inside, in the form of a piston placed in a cylinder, connected to the striker for piercing a gas cartridge, actuated by a releasing lever, fitted with a member fixing the releasing lever in position after piercing the gas cartridge. The member fixing the releasing lever constitutes an interlocking lever, mounted in the body freely on an axle and falling under its own weight, fitted with a cut-out. The releasing lever has a boss mating the cut-out of the interlocking lever. The contour of the interlocking lever corresponds to the contour of the release lever, so that in the armed position on the section between the boss and the bend out of the releasing lever the surfaces of both levers are complementary.

[0003] A piercer for a membrane closing a compressed gas vessel, having a cuboidal body with a vessel socket, which is connected by a side channel to the gas outlet socket, a tubular striker with a longitudinal slot, fixed in a piston sliding coaxially with the vessel socket and loaded with a return spring, and a releasing lever, which is fitted in a bearing on an axle fixed in the body and with its upper wall pressing a piston towards the vessel is known from description EP 2 008 693 A1. The striker piston has an internal neck close to the end protruding out of the body, whereas a cut-out is made in the upper wall of the releasing lever, the cut-out is shaped by a hole with a diameter slightly greater than the piston diameter and through a notch connected to it with its width slightly greater than the neck, in addition the axis of symmetry of the cut-out is perpendicular to the bearing axis of the releasing lever.

[0004] The object of the invention is to introduce a release with a lever that does not require too strong a force for actuating. At the same time such a release should enable the system initiating smoke flap actuation to be easily armed by returning it to the stand-by condition without additional tools and activities.

[0005] The smoke extractor release according to the invention has a cuboidal body placed on a fixing member, with a cartridge seat which is connected by a channel to the gas outlet, a striker fixed on a pusher guided in the body hole coaxially with the cartridge seat and fitted with an actuating spring and a releasing lever.

[0006] The essence of the solution according to the invention consists in that the axis of revolution of the releasing lever is a shaft, having a cylinder sector with a truncated flat surface, while a pusher collar has a two-stage side surface profile, in which a part of the side sur-

face constituting a spring bumper has a cylindrical shape with a circumferential flat surface, towards the striker turning into a cone with a concave side surface.

[0007] In the release stand-by position the concave surface of the striker pusher is supported by the cylindrical surface of the shaft and the pusher is interlocked in the spring tensioning position.

[0008] In the release actuation position the flat surface of the shaft turned by a selected angle is situated alongside the wall of the hole that guides the pusher in the body thus opening this hole for the pusher collar and its flat surface.

[0009] The shaft through its flat surface is supported by a pin mating the return spring.

[0010] The body along with the cartridge is seated in a pivotal manner in a bracket, with the possibility of inclining around its axis. The cartridge constitutes a lever for arming the release by pulling the cartridge forward and turning the body around its axis.

[0011] The striker pusher has a mandrel mating a pad fitted with a movable indicator of the release condition, in addition the pad is bent at an angle and deformable in the stand-by position.

[0012] The cartridge with compressed gas may be situated with the piercing surface upwards or downwards the release.

[0013] The advantage of the solution according to the invention is to optimise the force necessary to actuate the release and to re-arm it without using any tools.

[0014] The solution according to the invention is presented in the embodiment example shown in the pictures, where individual figures present:

Fig. 1 - the release body in the longitudinal section, in the stand-by condition,

Fig. 2 - the release body in the longitudinal section, after tripping,

Fig. 3 - the release in the longitudinal section, with the striker return unit shown, in the stand-by condition,

Fig. 4 - the release in the longitudinal section, with the striker return unit shown, during return to the stand-by condition,

Fig. 5 - the release in a perspective view, in the stand-by condition,

Fig. 6 - the release in a perspective view, in the condition after tripping.

[0015] The release has a cuboidal body 1 with a compressed gas cartridge 3 seat 2, preferably the gas is carbon dioxide CO₂, connected by a channel to the gas outlet. In the body 1 a striker 4 for piercing the cartridge 3 is movably seated. The striker 4 is supported by the pusher 5 with the collar 6 pressed by the actuating spring 7. The pusher 5 is guided in the body 1 hole coaxially with the cartridge 3 seat 2.

[0016] The pusher 5 collar 6 has a two-stage side surface profile. The part of the side surface constituting a

spring 7 bumper has a cylindrical shape with the circumferential flat surface "A" towards the striker 4 turning into a cone with the concave side surface "B".

[0017] The actuating member is the shaft 8 connected to the lever 9 and constituting its axis of revolution. The shaft 8 has a cylinder sector with a truncated flat surface "C". In the stand-by position the cylindrical surface of the shaft 8 supports the concave surface "B" of the pusher 5 collar 6 interlocking it in the spring 7 tensioning position.

[0018] In the release actuation position the flat surface "C" of the shaft 8 turned by a properly selected angle is situated alongside the wall of the hole that guides the pusher 5 in the body 1, thus opening this hole for the pusher 5 collar 6 and its flat surface "A".

[0019] The shaft 8 through its flat surface "C" is supported by a pin 10 mating the return spring 11.

[0020] The body 1 is seated in a pivotal manner in a bracket 12, with the possibility of turning around the axle 13 by pulling the cartridge 3 forward.

[0021] The pusher 5 at its top end, opposite the striker 4, has a mandrel 14 mating the angular arm of the bracket 12. The mandrel 14 interlocks the bent elastic pad 15 situated underneath and constituting a movable indicator of the release condition.

[0022] In the stand-by condition the lever 9 is situated in its top position. The cylindrical surface of the shaft 8 supports the concave surface "B" of the striker 4 pusher 5 interlocking it in the spring 7 tensioning position. The lifted mandrel 14 of the pusher 4 releases the pad 15, which bent at a selected angle has its second arm situated above the fixed indicator of the stand-by condition placed on the body 1. The pad 15 has the alarm indicator on its angular arm. After tripping of the release, the mandrel 14 presses the pad 15, whose arm covers the stand-by indicator with the alarm indicator.

[0023] During actuating of the release by pressing the lever 9 with the force F the shaft 8 turns. The flat surface "C" of the shaft 8 takes a position that enables the collar 6 to be unlocked and releases the pusher 5, which under the pressure of the spring 7 shifts. It causes a movement of the striker 4 under the influence of the spring 7 and piercing of the cartridge 3 - a compressed gas vessel. The smoke extractor operation is initiated.

[0024] In the condition after tripping, in order to re-arm the release the cartridge 3 is pulled and used as a lever, the body 1 is turned along the cartridge around the axis 11. As a consequence the pusher 4 supported on the bracket 12 arm and pulled by the mandrel 14 and the tension of the spring 7 moves. At the same time the shaft 8 turns under the influence of the mandrel 10 pushed by the spring 11. After the release has been armed - the striker 4 has returned to the stand-by condition - it is possible to replace the used cartridge 3 easily.

smoke flap and a smoke window or a ventilation window, fitted with a pneumatic feeding installation, whose actuation is initiated by the energy of compressed gas, having a cuboidal body placed on a fixing member, with a cartridge seat, which is connected by a channel to the gas outlet, a striker fixed on a pusher guided in a body hole coaxially with the cartridge seat and fitted with an actuating spring and a releasing lever, **characterised in that** the axis of revolution of the releasing lever (9) is a shaft (8), having a cylinder sector with a truncated flat surface (C), while the collar (6) of the pusher (5) has a two-stage side surface profile, in which the part of the side surface constituting a spring (7) bumper has a cylindrical shape with a circumferential flat surface (A), towards the striker (7) turning into a cone with a concave side surface (B), in addition in the stand-by position of the release the concave surface (B) of the striker (4) pusher (5) is supported by the cylindrical surface of the shaft (8) and the pusher (4) is interlocked in the position of spring (7) tensioning.

2. Release as claimed in claim 1 **characterised in that** in the striker (4) actuation position the flat surface (C) of the shaft (8) turned by a selected angle is situated alongside the wall of the hole that guides the pusher (5) in the body (1) thus opening this hole for the pusher (5) collar (6) and its flat surface (A).
3. Release as claimed in claim 1 **characterised in that** the shaft (8) through its flat surface (C) is supported by a pin (10) mating the return spring (11).
4. Release as claimed in claim 1 **characterised in that** the body (1) along with the cartridge (3) is seated in a pivotal manner in a bracket (12), with the possibility of inclination around the axis (13).
5. Release as claimed in claim 1 **characterised in that** the cartridge (3) constitutes a lever for arming the release by pulling the cartridge (3) forward and turning the body (1) around the axle (13).
6. Release as claimed in claim 1 **characterised in that** the striker pusher (3) has a mandrel (14) mating a pad (15) fitted with a movable indicator of the release condition, in addition the pad (15) is bent at an angle and deformable in the stand-by position.
7. Release as claimed in claim 1 **characterised in that** the cartridge (3) is situated with the piercing surface towards the top of the release.

Claims

1. Smoke extractor release, in particular for a roof

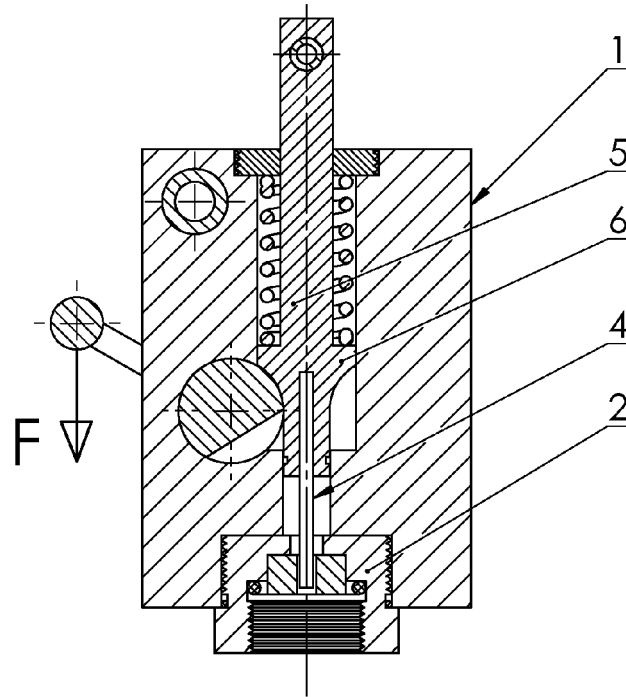


FIG. 1

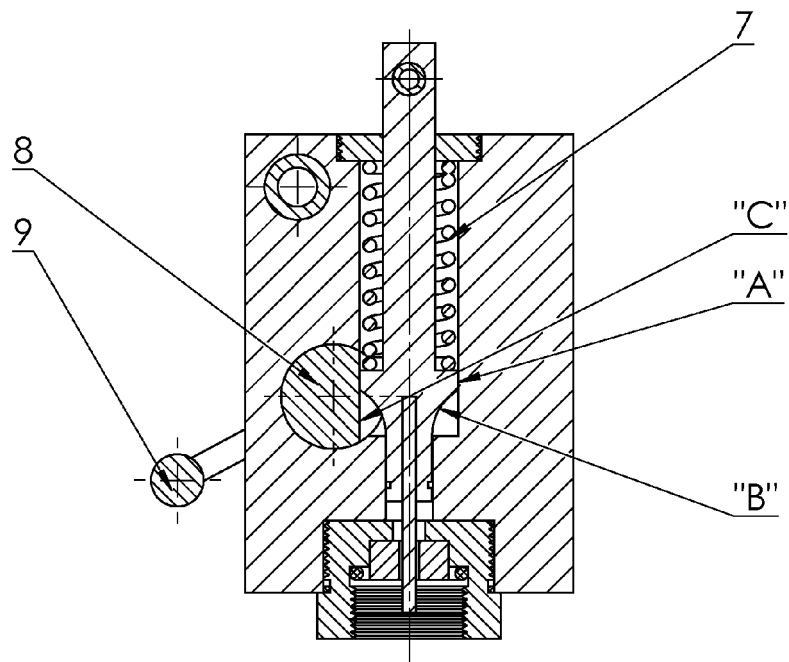
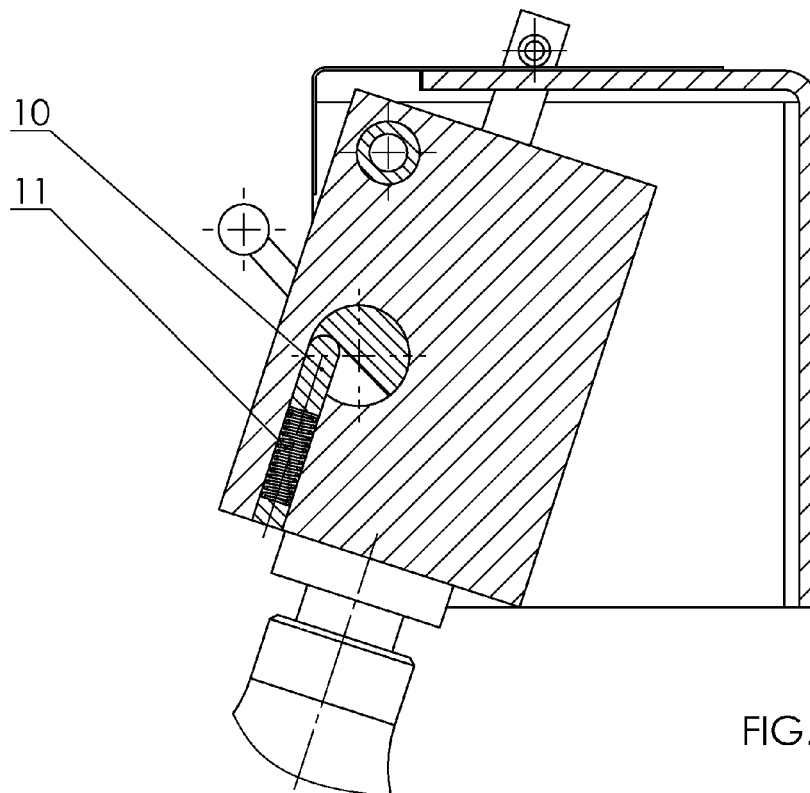
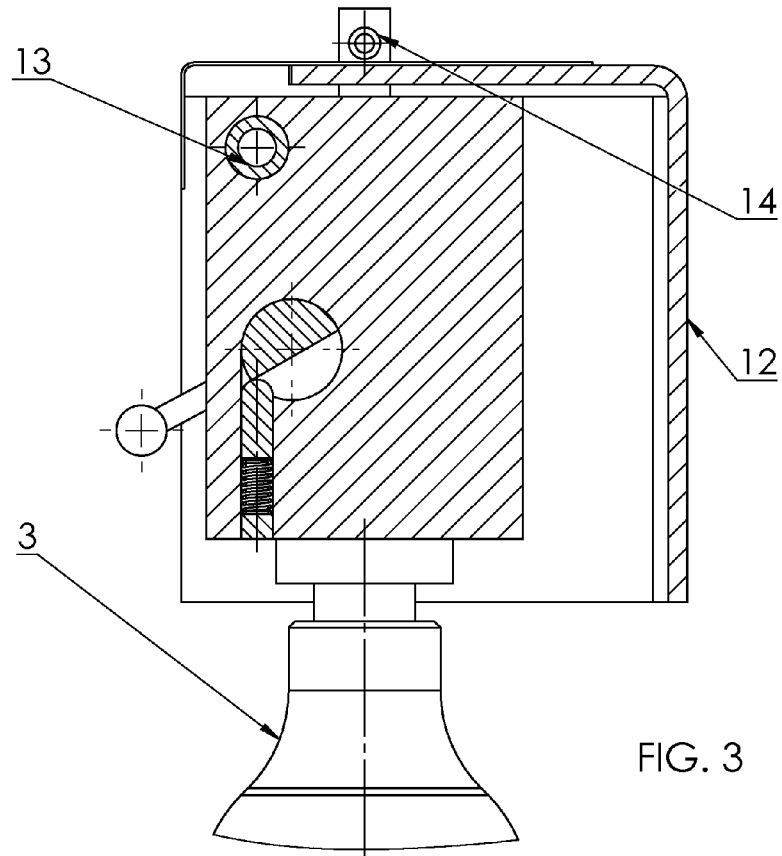
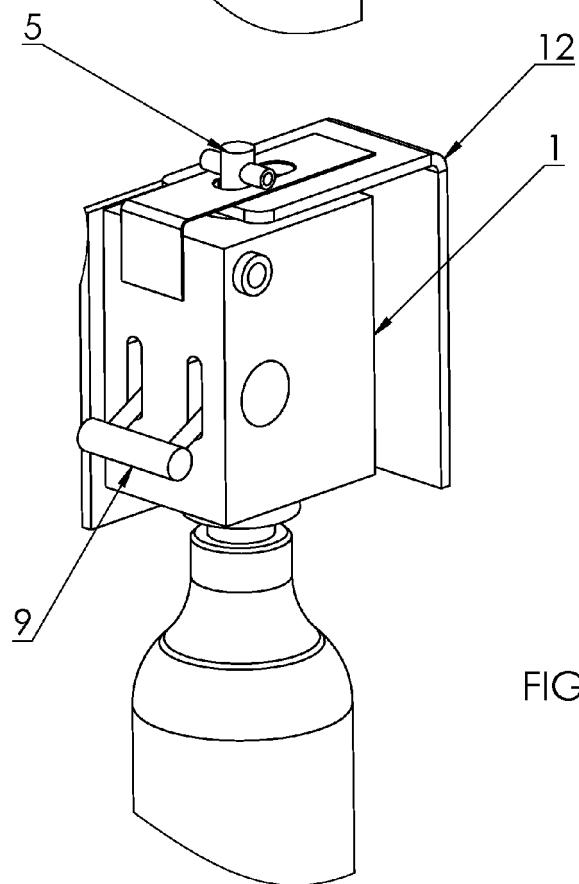
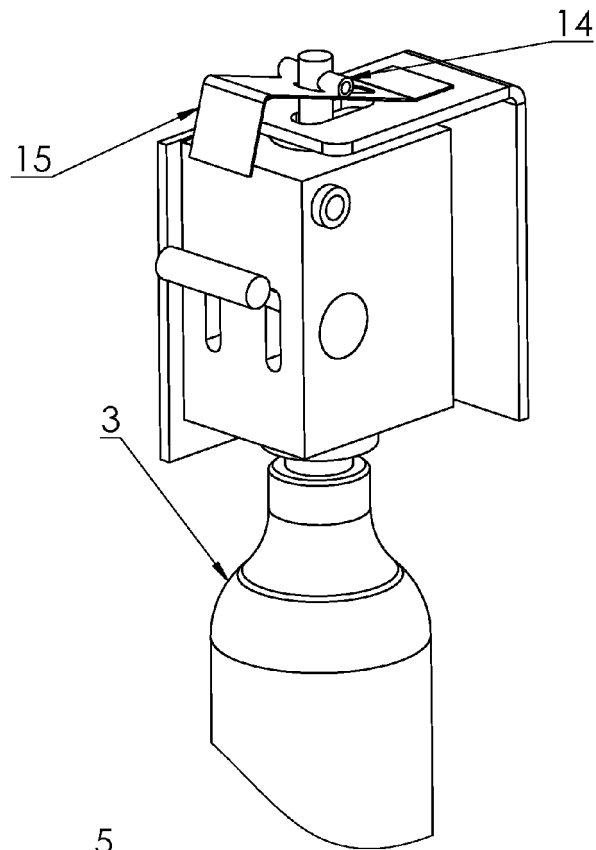


FIG. 2





REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- PL 61502 Y1 [0002]
- EP 2008693 A1 [0003]