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(54) **Anti-intrusion security device**

(57) An anti-intrusion security device is disclosed, comprising a first movable rod (2) arranged inside a fixed rod (3) operatively associated to mechanical means allowing its positioning and translation, wherein one or more clamps of said first rod (2) are provided, controlled by a lock (6) integrated with said rod. The device may be operated manually or powered with or without remote control.

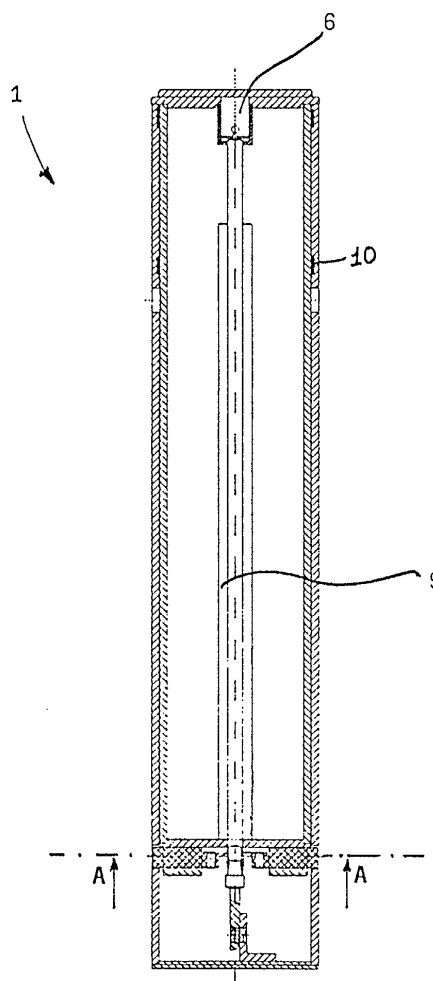


Fig. 1

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Description

[0001] The present invention relates to an anti-intrusion security device.

[0002] More particularly the present invention relates to an anti-intrusion or anti-theft security device to be installed near overhead or rolling doors such as those used for garages, or near revolving devices such as those allowing access inside a car stall.

[0003] Locking and security devices are presently provided, generally comprising a lock normally being a member of a padlock of suitable size, where said padlock is generally connected to a steel eye provided on the door or device to be blocked.

[0004] As to the security block for overhead doors of car garages, a device is for instance known arranged externally the garage near the door, comprising a steel bar hinged to the ground, blocking the garage door when the bar is in an upright position warranted by a padlock arranged near said hinge and interacting therewith.

[0005] Although these devices solve the mentioned technical problem, they have some drawbacks.

[0006] Although the mechanisms used are simple, they undergo a fast wear in view the atmospheric agents, since said blocking devices are mainly used outdoors. After a short period of time jamming or opening and closing difficulties are found due to oxidation of the components both of the device and the padlock coupled to it, and in case of low temperature, ice formation may hinder the normal motion of the used hinges.

[0007] A further drawback consists of the inconvenience of use. These devices are mostly coupled with a padlock close to the ground and this obliges the user to stoop any time said devices are to be locked or unlocked. In addition to the natural inconvenience there is also a high probability to get stained or dirty in case of rain or snow.

[0008] The object of the present invention is to remove the prior art drawbacks.

[0009] Therefore, object of the invention is to provide an anti-intrusion security device which is practical, of simple construction and efficient in use, warranting a high reliability with time coupled to high safety standards.

[0010] Briefly, according to the invention an anti-intrusion security device is provided comprising a metal rod operatively associated to mechanical means allowing its positioning, where one or more clamps of said rod are actuated by a lock integrated with the rod.

[0011] The anti-intrusion security device according to the invention is characterised by having the features recited in claim 1.

[0012] Further advantageous features are indicated in the dependent claims.

[0013] Other details, advantages and features of the anti-intrusion security device according to the invention will be better understood by reading the following description with reference to the accompanying drawing in

which two preferred embodiments are shown as an illustrative but non limiting example.

[0014] Fig. 1 is a vertical sectional view of a first version with manual actuation of the anti-intrusion security device in the retracted configuration.

[0015] Fig. 2 is a horizontal sectional view of the device shown in Fig. 1, taken along line A-A.

[0016] Fig. 3 is a vertical sectional view of the device of the invention in the extended configuration.

[0017] Fig. 4 is a top plan view of the device of the invention.

[0018] Fig. 5 is a vertical sectional view of a second version with powered actuation of the security device in the retracted configuration.

[0019] Fig. 6 is a similar vertical sectional view of the device of Fig. 4 in the extended configuration.

[0020] Fig. 7 is a horizontal sectional view of the device taken along the line B-B.

[0021] With reference firstly to Figs. 1-4 of the drawings, the anti-intrusion security device 1 comprises a first movable rod 2 preferably made of metal, of stainless steel and tubular shape, operatively associated to mechanical means carrying out its positioning and translation into the operative position.

[0022] The movable rod 2 is arranged inside a second tubular fixed rod 3 also made with the same materials of rod 2 but of slightly bigger diameter so that the movable rod 2 may slide telescopically inside it. A couple of seals 10 like O-rings and similar members, give a perfect adhesion of rods 2 and 3 engaged to each other.

[0023] Advantageously said mechanical means comprise a couple of airdraulic pistons 9, having one end constrained to the lower base 4 of the fixed rod 3 and the other end constrained to the upper base 5 of the movable rod 2.

[0024] Said pistons may be replaced by equivalent elastic means such as springs and the like, provided that the arrangement is such that in the rest condition the device 1 is in the extended configuration as shown in Fig. 3.

[0025] The movable rod 2 is provided on its upper base 5 with a lock 6 (operated by a key or other kind) acting through a cam or equivalent mechanical means on a couple of horizontally moving pins 7 that in the extended position, that is with closed lock, prevent the movable rod 2 to slide inside the fixed rod 3.

[0026] The lock is protected against the atmospheric agents by a lid 8 applied on its top.

[0027] The operation of the anti-intrusion security device according to the invention can be easily understood by the foregoing description.

[0028] The device 1 is buried for instance near an overhead door whose opening should be prevented, preferably in the condition shown in Fig. 1, that is with closed lock 6 and retracted configuration, the movable rod 2 being fully received inside the fixed rod 3. The underground arrangement is preferably such to cause the upper base 5 of the movable rod 2 to be flush with the

ground at said configuration.

[0029] At this point it is sufficient to unlock the lock 6 for instance by its key to actuate the device.

[0030] Indeed, the lock 6 acting on the pins 7 causes retraction of the pins that will no more prevent the translation motion between rod 2 and rod 3. The elastic energy stored in the airdraulic pistons 9 will allow the vertical translation upwards of the movable rod 2 that at the end of its stroke (Fig. 3) will block by contrast opening of said overhead door (non shown in the drawings).

[0031] Finally, locking the lock 6 withdrawal of rod 2 inside rod 3 is prevented, allowing the device 1 to keep its anti-intrusion configuration.

[0032] The unlocking operations are very simple and similar to the preceding ones.

[0033] The lock 6 is unlocked, the cam connected therewith causes the pins 7 to be retracted so that the pins do not oppose any more the rods 2 and 3 allowing the translation motion of rod 2 relative to rod 3, then the rod 2 is manually pushed downwards by the user against the strength of the airdraulic pistons 9 until said rod 2 is fully retracted inside the rod 3 (Fig. 1). The device 1 will then be blocked in this position by the pins 7 moved by the lock 6, preventing the extension of the airdraulic pistons 9 so that the device is ready for a subsequent use.

[0034] It is to be also noted that the locking and unlocking operations of the device of the invention are simple and rather handy, still maintaining a total efficiency as to the anti-breaking anti-intrusion security.

[0035] With reference now to Figs. 5 to 7, a second powered embodiment of the anti-intrusion device of the invention is shown.

[0036] In this version the functions of the device are unaltered relative to the embodiment of Figs. 1 to 4 and parts of the device similar to those previously described have the same reference numerals on the drawings.

[0037] However, in such a version the translation movement of the movable rod 2 is carried out by an electric motor 20 actuating a worm screw 21 driving the movable rod 2 until the two stop points are reached. At the upper dead-centre two cams 22 provided on the head 23 of the worm screw 21 push the two pins 24 arranged in the bottom 25 of the movable rod 2, entering the corresponding slots 26 made on the fixed rod 3, preventing any subsequent translation of the movable rod. Starting again the motor 20 in the downward direction, the worm screw 21 automatically releases the pins 24 from the cams 22 allowing the translation movement of the movable rod. At the lower dead-centre however, the movable rod rests on the base detent 27 and is kept by the clamp 28 of the motor so that it cannot be moved manually. The device is operated with electric power produced by a transformer connected to the mains and supported by buffer batteries. The operation is actuated through a remote control sending pulses to an electronic card inserted in the transformer battery circuitry to be installed for instance inside the garage or in a protected

site. However, the actuation may also be carried out though a key operated switch or similar fixed device. The electric part of the device is fully conventional and therefore does not need to be herein described and illustrated in detail.

[0038] Obviously many modifications, adaptations, integrations, variations and substitutions may be made to the embodiments previously described as an illustrative and non limiting example, without departing however from the scope of the invention as set forth in the following appended claims.

Claims

1. An anti-intrusion security device comprising a first movable rod (2) arranged inside a second fixed rod (3) of a slightly greater diameter relative to said first movable rod (2) so that the latter may slide telescopically inside it, one or more seals (10) allowing a perfect adhesion of said rods (2, 3) engaged to each other, **characterised by** comprising mechanical means operatively associated to said movable rod (2) allowing its positioning and translation.
2. The device according to claim 1 **characterised in that** one or more clamps of said first rod (2) are provided, actuated by a lock (6) integrated with said rod.
3. The device according to claim 2 **characterised in that** said mechanical means comprise elastic means operatively associated to said rods (2, 3).
4. The device according to claim 3, **characterised in that** said elastic means comprise a couple of airdraulic pistons (9), each piston having a first end fixed to the lower base (4) of said second rod (3) and the other end fixed to the upper base (5) of said first rod (2).
5. The device according to claim 2 **characterised in that** said lock (6) acts on said one or more clamps by a cam or equivalent mechanical means.
6. The device according to claim 2, **characterised in that** said clamps comprise two horizontally moving pins (7) preventing the movement of said first rod (2) when in their extended position, when said lock (6) is closed.
7. The device according to claim 1 **characterised in that** the translation movement of the movable rod (2) is carried out by a worm screw (21) actuated by an electric motor (20).
8. The device according to claim 7 **characterised in that** the head (23) of the worm screw (21) is provided

ed with two cams (22) that at the upper dead-centre of the translation movement, push two pins (24) arranged in the bottom (25) of the movable rod (2) to enter corresponding slots (26) made on the fixed rod (3) thus preventing any subsequent translation of the movable rod. 5

9. The device according to claim 8 **characterised in that** at the lower dead-centre the movable rod (2) rests on a base detent (27) and is stopped by the clamp (28) of the electric motor (20) preventing any manual operation of the device. 10

10. The device according to claim 7 **characterised in that** the electric motor (20) is actuated through a remote control or other device preferably arranged in a distant and/or protected site. 15

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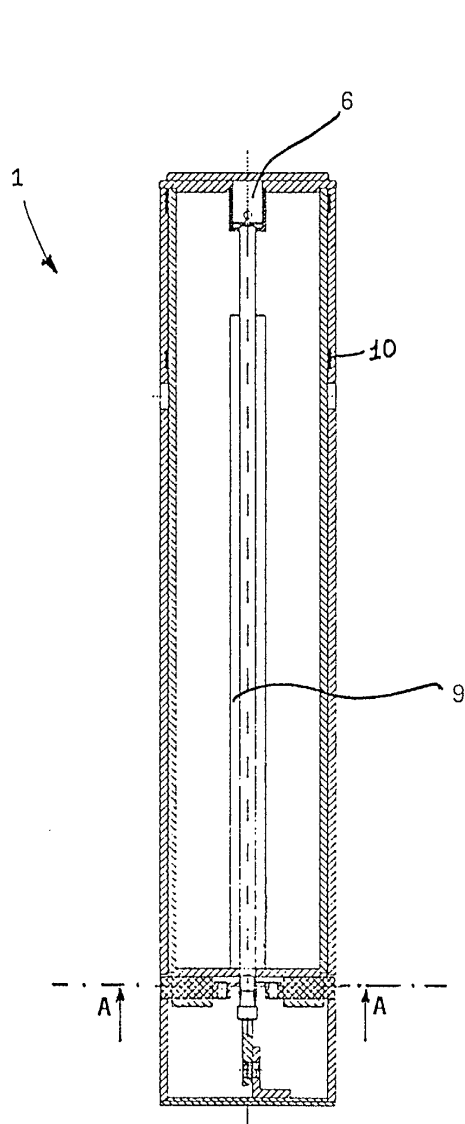


Fig. 1

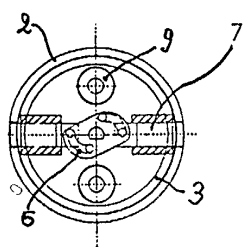


Fig. 2

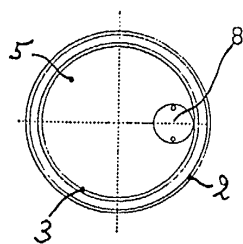


Fig. 4

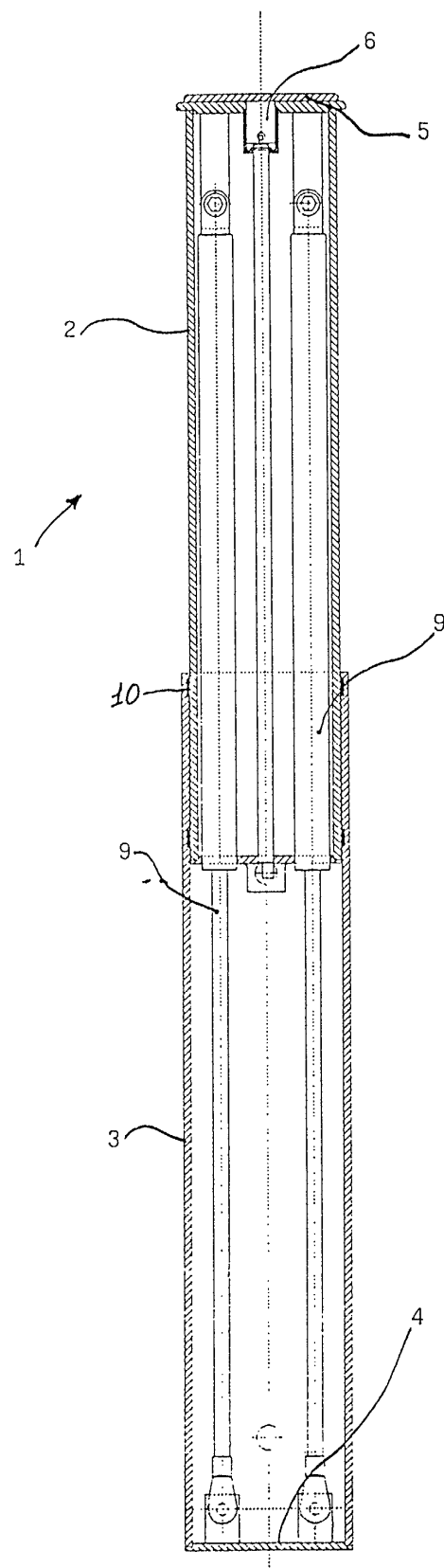


Fig. 3

