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(54) **Locking device for windows or the like**

(57) A security device of the bolt type for anti-intrusion closure of window and door frames, such as windows, French windows and the like, the device being characterized in that it comprises a rectilinear guide (6), an eye (10), a U-iron (13) having a first arm (14) sliding engaged into the guide (6) and a second arm (15) which can be inserted into the eye (10), and removable stopping means (21) for holding the second arm (15) in the position inserted into the eye (10).

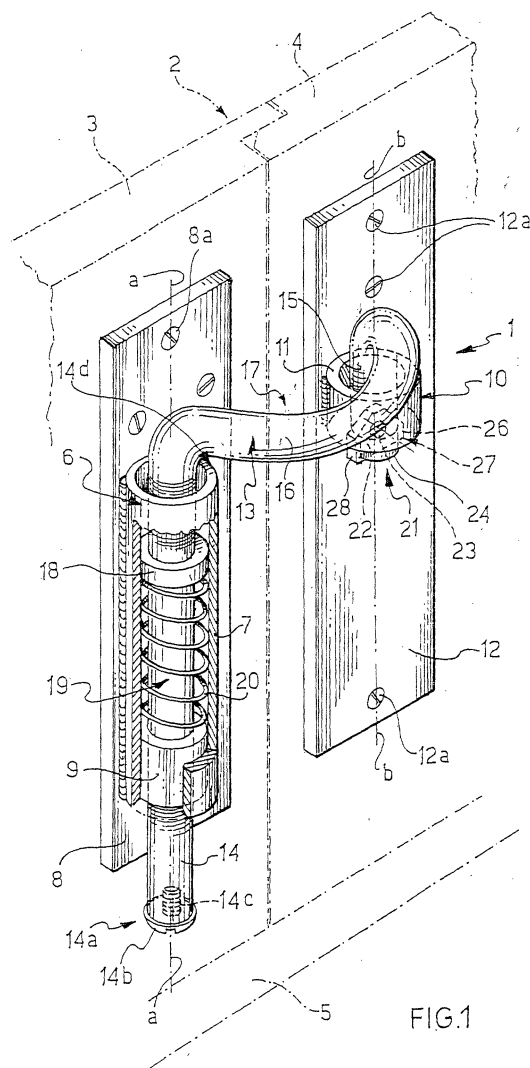


FIG.1

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DescriptionField of Application

[0001] The present invention broadly relates to a security device for anti-intrusion closure of window and door frames, and in particular, to a bolt-type device for securing window and door frames such as windows, French windows, and the like.

Prior Art

[0002] As is known, windows, French windows and the like window and door frames are equipped with a vast variety of latches, all of which adapted to be worked from the inside to fasten and unfasten the window and door frame as necessary. On two-casement windows, these latches are usually arranged to cooperate with a striker plate mounted on the casing adjacently to the commissure of the wings of the casing when in the shut position.

[0003] Such latches perform satisfactorily so long as the reason for shutting a window is weatherproofing, but offer low resistance to tampering by anybody determined to break into a house and commit theft. The repair personnel sent to restore a breached window and door frame invariably find that especially the striker plate of the latch has been uprooted by prying with a crowbar or shattered by hammer and chisel.

[0004] A number of devices have been proposed for defeating unauthorized entry attempts, such as proximity sensors and vibration detectors, as well as generic robbery alarms.

[0005] Although these devices give generally good service and are extensively employed, they are not designed to uphold the resistance of a closure fitting to attack for the time necessary to nearest police patrol to reach the site. Furthermore, these devices go often wrong, and are susceptible to artful neutralization.

[0006] The underlying problem of this invention is to provide a security device which can overcome the above limitations of the prior art.

Summary of the Invention

[0007] This problem is solved by a security device of the bolt type for anti-intrusion closure of window and door frames, such as windows, French windows and the like, characterized in that it comprises a rectilinear guide, an eye, a U-iron having a first arm sliding engaged into the guide and a second arm which can be inserted into the eye, and removable stopping means for holding the second arm in the position inserted into the eye.

[0008] Further features and advantages of the security device according to the invention will be apparent from the following description of a preferred embodiment thereof, given by way of non-limitative example

with reference to the accompanying drawings.

Brief Description of the Drawings

[0009]

Figure 1 is a part-sectional perspective view of a security device according to the invention.

Figure 2 is a schematic front elevation view of the device shown in Figure 1 in a different operating position thereof.

Figure 3 is a schematic front elevation view of the device shown in Figure 1 in another operating position thereof.

Detailed Description

[0010] With reference to the drawings, a security device of the bolt type according to this invention is generally shown at 1.

[0011] The security device 1 is for application to a window and door frame 2, shown in dash-and-dot lines, which may be a window having two wings 3 and 4 hinged to a casing 5.

[0012] This bolt security device 1 comprises a rectilinear tubular cylindrical guide 6 having a vertical axis a-a. The guide 6 comprises a tubular section 7 cut from pipe stock and welded onto a baseplate 8. The baseplate 8 is attached to the window wing 3 by means of screws 8a. A bearing bush 9 is mounted fixedly in the bottom portion of the tubular section 7.

[0013] The security device 1 further comprises an eye 10, being a short cutting of pipe stock 11 and having an axis b-b. The eye 10 is welded onto a respective baseplate 12. This baseplate 12 is attached to the other wing 4 of the window by means of screws 12a. The pipe cutting 11 has a lead-in formation 11a at its top end.

[0014] With the wings in the shut position, the axis of the guide 6 and that of the eye 10 would be set apart a predetermined distance l, e.g. 65 mm.

[0015] The security device 1 also comprises a U-iron 13, which may be obtained by hot bending a length of steel wire having a predetermined diameter D, e.g. 10 mm.

[0016] The U-iron 13 has a first arm or guiding arm 14, and a second arm or working arm 15, the axes of these arms extending parallel to each other at the distance l from each other.

[0017] The two arms 14 and 15 are joined to each other in the U-shape by an intermediate section 16, which section forms a handgrip 17 for operating the U-iron.

[0018] It should be noted that the intermediate section 16 is shaped at a circular arc lying in a perpendicular plane to the plane that contains both wings. It thus forms a bridge clearing any existing latches on the window and door frame.

[0019] The U-iron 13 is oriented to describe a reversed "U".

[0020] The first arm 14 is guided in the guide 6. More precisely, it is guided at the bottom in the bush 9, and is provided at the top with a collar 18, which collar is made integral to the arm, for example by welding, and which arm is arranged to slide inside the tubular section 7.

[0021] The first arm 14 includes a limit stop 14a in the form of a screw 14b engaged in a threaded blind hole 14c in the bottom end of the arm 14. This limit stop 14a will abut against the bush 9 upon the arm 14 reaching its upward limit end. In the opposite direction, a limit stop 14d is provided by the intermediate section 16 abutting the bush 9 when the first arm 14 reaches its downward limit end.

[0022] The second arm 15 can be engaged in the eye 10 against the bias of a resilient means 19. In particular, the resilient means 19 comprises a spring 20 mounted over the first arm 14 and held between the bush 9 and the collar 18 to constantly bias the U-iron 13 upwards.

[0023] A releasable stopping means 21 holds the second arm 15 firmly inside the eye 10 in contrast with the bias of said resilient means 19, after the second arm is inserted through the eye 10.

[0024] In the example, the stopping means 21 comprises an equalizer 22, which is hinged to the free end 24 of the second arm 15 by means of a pin 23, and housed inside a slit 25 formed in the second arm 15.

[0025] The equalizer 22 can be moved between a substantially horizontal position projecting from the second arm 15 and a substantially vertical position recessed into the slit 25. The equalizer 22 attains and maintains the projecting position naturally by gravity, but must be moved manually into the recessed position. In the horizontal position, a jutting end 26 of the equalizer 22 provides a stop 27 adapted to abut the eye 10, while the other end 28 of the equalizer 22 reacts against the bottom 29 of the slit 25.

[0026] The operation of this device will be described with reference to the working setting of the device shown in Figure 1, in which the device is in an active position.

[0027] In the setting shown, the second arm 15 is engaged in the eye 10 and held therein against the bias force of the spring 20 by the stop 27 abutting the eye 10.

[0028] Thus, the two wings 3 and 4 are fastened together by the U-iron 13, more precisely by the intermediate section 16 bridging the distance between the guide and the eye to lock the wings securely together.

[0029] To open the window and door frame from the inside, the U-iron is pushed down (see arrow F1), against the bias of the spring 20, with one hand, and the equalizer 22 is brought into its recessed position into the slit 24 with the other hand (see arrow F2). Thereafter, the one hand is taken away from the U-iron, to release it and allow the force of the spring 20 to repel it upwards along the direction of arrow F until its limit stop 14a abuts the bush 9 (see Figure 3).

[0030] At this stage, the second arm 15 is fully disen-

gaged from the eye 10, and the equalizer 22 allowed to resume its horizontal position by gravity. Presently the wings can be opened and, if desired or necessary, the U-iron 13 can be turned aside, approximately a half-turn to a position close against the first wing.

[0031] To return the security device in the active position, once the window and door frame is shut, the U-iron 13 is moved down against the bias of the spring 20 in the direction of arrow F1 as previously explained. Thus, the second arm 15 will be again engaged in the eye 10. During this movement, the equalizer 22 is moved by the eye in its recessed position inside the slit 24, against its weight.

[0032] Tests have shown that the window and door frame can resist tampering from the outside, even when the attacker makes use of crowbars or other house-breaking tools. A window and door frame equipped with the inventive security device has given convincing proof that it will stay shut. Also, it will resist burglary efforts by trick, since no manual efforts exerted from the outside can succeed in defeating the device, nor can such attempts be carried out with the necessary coordination.

[0033] It should be noted that in the above embodiment, the device is described as incorporated to a two-wings window. In the instance of a single wing window, however, the device would be mounted between the wing and the casing, e.g. with the guide attached to the wing and the eye to the casing.

[0034] A major advantage of the device according to this invention is that it can protect a window and door frame to which it is incorporated against attack with such standard housebreaking tools as crowbars, prying levers, hammers and chisels.

[0035] Another advantage is that it also protects a window and door frame against attack by trick, since none of the actions required to open it can be applied in a coordinated fashion.

[0036] The construction of this security device, moreover, is quite simple, no minor advantage for a device that is to be manufactured in very large volumes.

[0037] It should be further noted that the device of this invention is quick to apply or retrofit to any window and door frame, including preinstalled ones.

[0038] Additional advantages of the inventive device include ergonomic design for the easy operation of the handgrip part, and the possibility to apply it to window and door frames that already mount latches of various description, which advantages are both inherent to that the intermediate section of the U-iron is a bridging configuration.

[0039] Finally, the life of the device according to this invention is practically unlimited, with no need for maintenance or servicing, and in any case, it is never less than the life of the window and door frame.

[0040] It should be understood that many changes and modifications may be made to the device described hereinabove, and the materials used in its construction varied in order to fill individual demands, without depart-

ing from the protection scope of the invention as defined in the following claims.

Claims

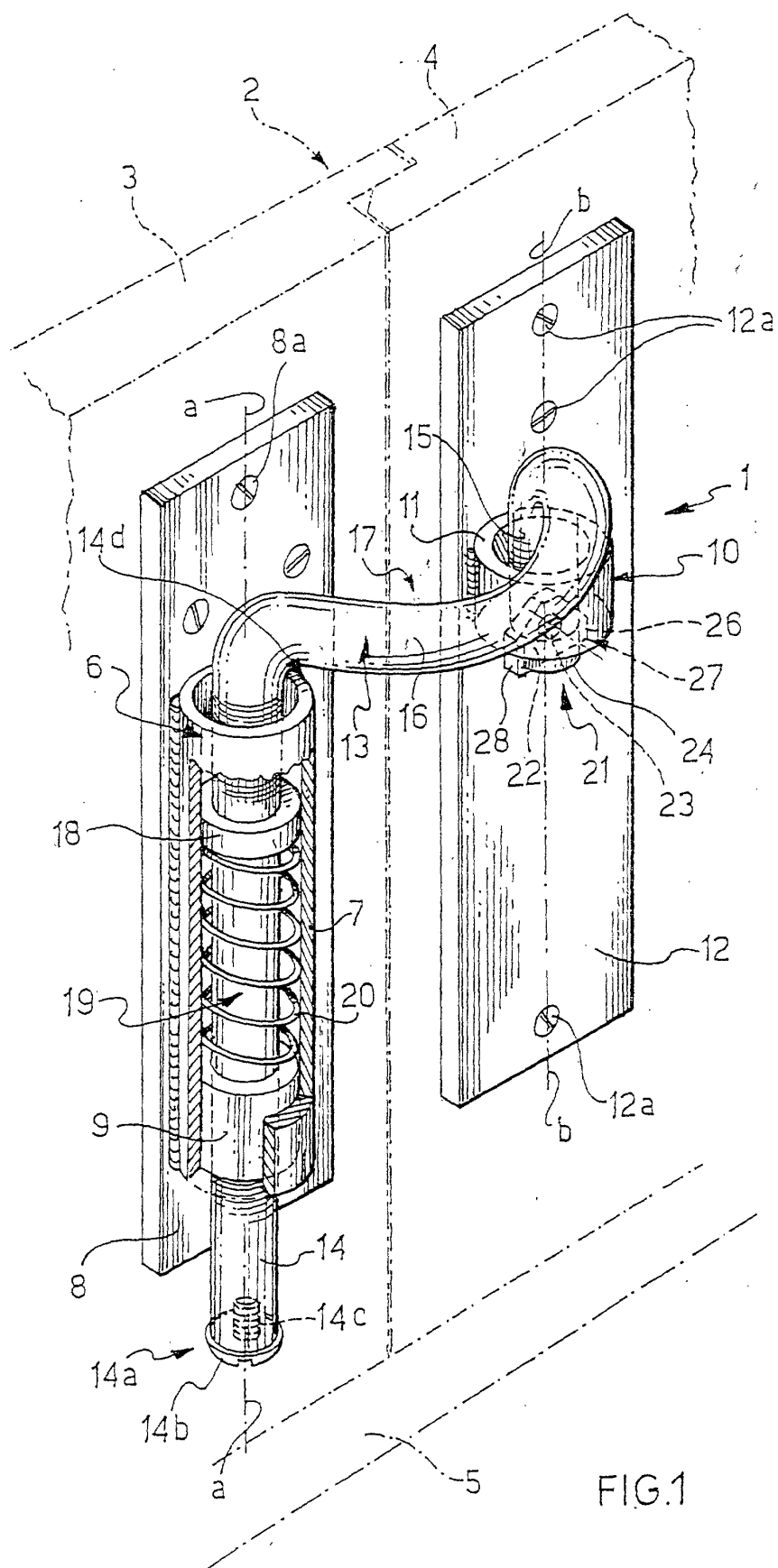
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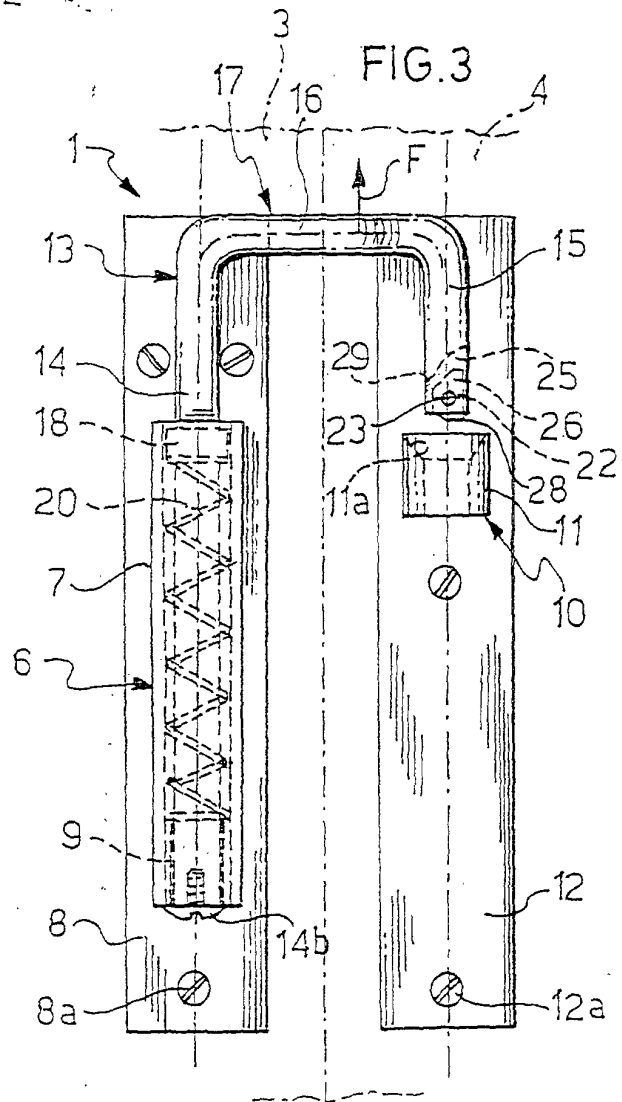
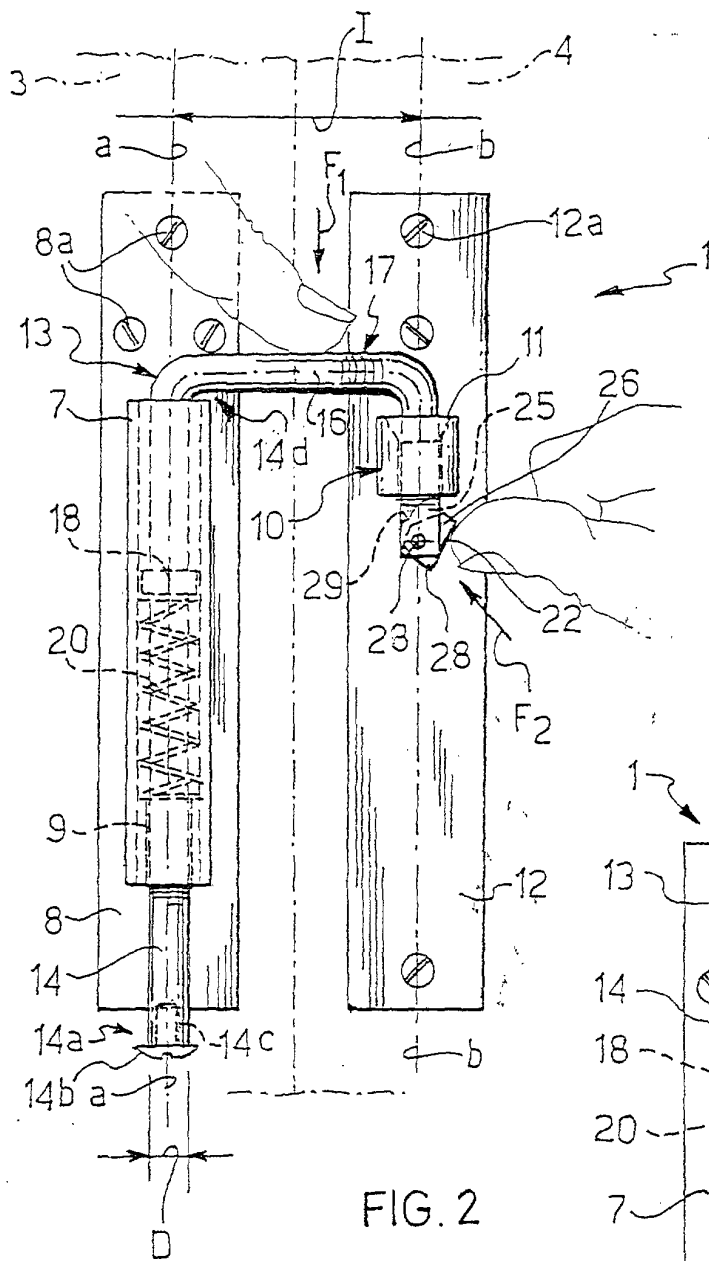
1. A security device of the bolt type for anti-intrusion closure of window and door frames, such as windows, French windows and the like, **characterized in that** it comprises a rectilinear guide (6), an eye (10), a U-iron (13) having a first arm (14) sliding engaged into the guide (6) and a second arm (15) which can be inserted into the eye (10), and removable stopping means (21) for holding the second arm (15) in the position inserted into the eye (10). 10 15
2. The security device according to claim 1, **characterized in that** it comprises resilient means (20) acting on the U-iron (13) against the insertion of the second arm (15) into the eye (10). 20
3. The security device according to claim 2, **characterized in that** the resilient means comprises a spring (20) mounted over the first arm (14) and lodged into the rectilinear guide (6). 25
4. The security device according to claim 1, **characterized in that** the removable stopping means (21) comprises a hinged equalizer (22) in correspondence of the free end (24) of the second arm (15) which is movable against its weight from a projecting active position to an inactive position recessed into the arm (15). 30
5. The security device according to claim 1, **characterized in that** the U-iron (13) comprises an intermediate section forming a handgrip. 35
6. The security device according to claim 1, **characterized in that** the first arm (14) and the guide (6) are cylindrical. 40

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EUROPEAN SEARCH REPORT

Application Number
EP 01 12 2500

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.7)
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A	US 5 274 881 A (DEROSA FRANK) 4 January 1994 (1994-01-04) * column 2, line 48 - line 57; figures 1,2 * ----	1	
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The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
THE HAGUE		12 December 2001	Pieracci, A
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 I : 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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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 01 12 2500

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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12-12-2001

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