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(54) **A MONITORING DEVICE APPLICABLE TO SYMMETRICAL ELECTRIC STRIKES**

(57) The invention relates to a monitoring device applicable to symmetrical electric strikes, particularly to symmetrical electric strikes (2) having a mechanism, which can be actuated electrically, for locking and unlocking a latch of the electric strike.

Said monitoring device comprises an independent module (1) of the strike, suitable for being externally fixed on a symmetrical electric strike; said module (1) comprising an electric terminal strip (11) of the symmetrical strike connected to a power supply circuit and a switch (12) having a push button (13) suitable for the actuation thereof by the locking and unlocking mechanism of the electric strike (2).

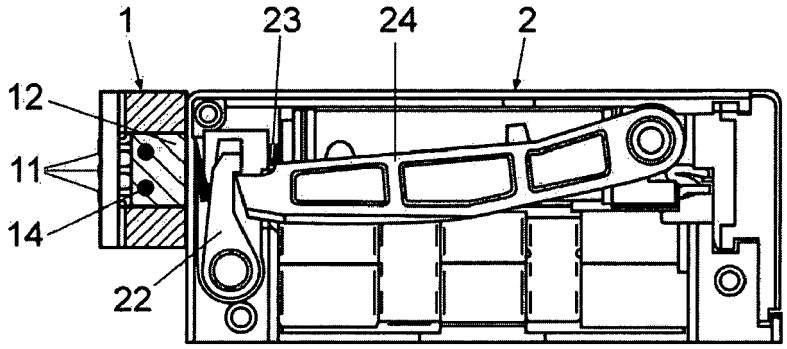

Fig. 3

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Description

Technical field

[0001] The invention relates to a monitoring device applicable to symmetrical electric strikes for doors, and a symmetrical electric strike including said monitoring device.

[0002] The monitoring device is made up of an independent module of the symmetrical electric strike, intended to be externally fixed to one of the ends of said strike and which has an electric terminal strip of the strike connected to a power supply circuit and a switch that is activated by means of the power supply of the strike, providing a signal indicating the locked or unlocked state of the strike.

Background art

[0003] At present, there are known asymmetrical electric strikes having a box that houses a mechanism that has levers that, due to the action of elastic means, tend to remain in a locked position of a latch of the electric strike, and a solenoid arranged on one side of the box and that when electrically powered, activates a first lever for unlocking the strike.

[0004] In this type of strikes, known as asymmetrical strikes given the off-centred arrangement of the latch due to the space occupied by the solenoid on one of the sides of the box, when the solenoid activates a first lever, arranging it in an unlocked position of the strike, said first lever in turn actuates a push cam responsible for activating and deactivating a microswitch housed in the box of the strike, behind the latch, and which provides an external signal indicating the open or closed position of said first lever and subsequently, the locked or unlocked state of the strike.

[0005] However, the symmetrical electric strike models, for which the monitoring device of the present invention is intended, are more compact than the asymmetrical models since the latch is centred with respect to the box. In these symmetrical strikes, the solenoid is not arranged on one side of the box, but rather it is placed longitudinally, behind the latch of the strike; therefore, said symmetrical strikes have less space between the internal components of the locking and unlocking mechanism, which notably impedes the incorporation of a microswitch inside the box that is able to provide an electrical signal indicating the locked or unlocked state of the electric strike.

[0006] These symmetrical strikes have a first lever, which can be actuated by a solenoid and is responsible for locking or unlocking the latch. Said first lever is located near one of the ends of the box, an important part of the space behind the latch being occupied by a long lever against which the latch acts and which is responsible for locking or unlocking the rotation of said latch.

[0007] Therefore, in these symmetrical strikes, the incorporation of means for monitoring the state of the strike is especially complex.

[0008] Therefore, the technical problem that is proposed is the development of a monitoring device of symmetrical electric strike models that can be easily coupled to said symmetrical strikes without impeding or interfering with the movements of the internal levers of the strike, as well as a symmetrical electric strike that incorporates said monitoring device.

[0009] The applicant of the invention is unaware of the existence of monitoring devices applicable to symmetrical strikes, which enable the aforementioned problem to be resolved and which have similar features to that of the present invention.

Description of the invention

[0010] To resolve the previously mentioned drawbacks, the device for monitoring symmetrical electric strike models, object of this invention, has been envisaged, which has particular constructive features intended to facilitate the coupling thereof to symmetrical electric strikes of different types.

[0011] To do so, and according to the invention, this device comprises an independent module of the strike and intended to be externally fixed on one of the ends of the box of the strike, in a position facing the first lever of the strike, to carry out the function of a switch that does or does not allow the electricity to flow.

[0012] Specifically, said switch can be integrated into switching circuits, the activation thereof being preferably mechanical, although it can also be optical.

[0013] This external module is standard for the different symmetrical strikes with the purpose of allowing the incorporation thereof in the entire range of symmetrical strike models.

[0014] The aforementioned module has been designed to be mounted on the outside of the symmetrical strikes, providing versatility for the monitoring function for the different products.

[0015] This external module can be integrated into a countless number of strikes by simply fixing the same to the outer side of the box of the strike, for example, by screwing, although other types of mechanical fastenings are not excluded.

[0016] The external nature of said module definitively prevents the problem entailed in incorporating the switch inside the box of the strike.

[0017] According to the invention, this module incorporates an electric terminal strip of the strike connected to a power supply circuit and a switch that is activated by means of the power supply of the door opener.

[0018] Said switch is made up of a microswitch that is fixed to the module by means of extrusions of material.

[0019] The mechanical actuation of the switch, located inside the external side module of the device, creates contact between a push button of the microswitch and the first lever, such that when said first lever is moved by

the solenoid of the strike, said first lever actuates the push button of the microswitch causing the switching that indicates the unlocked position of the strike.

Brief description of the content of the drawings

[0020] As a complement to the description provided herein, and for the purpose of helping to make the characteristics of the invention more readily understandable, the present specification is accompanied by a set of drawings, which, by way of illustration and not limitation, represent the following:

- Figure 1 shows a schematic perspective view of an exemplary embodiment of the monitoring device applicable to symmetrical electric strike models.
- Figure 2 shows a perspective view of a symmetrical electric strike having the monitoring device of the preceding figure.
- Figures 3 and 4 show plan views of the monitoring device coupled to a symmetrical electric strike on the outside and in which said strike has been partially represented, enabling the first lever to be seen in: a first locked position in which the switch of the monitoring device is not actuated; and in a second unlocked position, actuating the switch of the monitoring device.
- Figure 5 shows a partial detailed view of the device of Figure 3, with a cross section through a horizontal plane and in which the switch of the monitoring device of the invention and the first lever of the symmetrical strike in a locked position of said strike can be seen.

Detailed description of embodiments of the invention

[0021] As can be observed in the example shown in Figure 1, this device comprises an independent module (1) intended to be fixed externally on one of the ends of an electric strike, as will be explained further on.

[0022] The module (1) of the device comprises an electric terminal strip (11) to connect the symmetrical strike to a power supply circuit (not shown) and a switch (12) visible in Figures 3 to 5.

[0023] This device comprises a switch (12) that is fixed inside the module (1) by means of extrusions (12) of material and that has a push button (13) for the actuation thereof.

[0024] The assembly of the device is designed to be fixed mechanically by removable fixing means on one of the sides of any symmetrical electric strike, as shown in Figures 2 to 4, said fixing being carried out by means of screws, although other types of removable fixing means that enable the disassembly thereof are not excluded.

[0025] The device is dimensioned and designed so that the push button (13) of the switch (12) be actuated by the locking and unlocking mechanism of the strike.

[0026] In this case, the push button (13) of the switch is actuated by a first lever (22) of the mechanism of the strike, which moves between a locked operating position of the strike, shown in Figure 3, wherein said first lever (22) retains a second lever (24) in a position that hinders the opening of the latch (21) of the strike; and an unlocked position, shown in Figure 4, wherein it releases the second lever (24), enabling the opening of the latch (21) of the strike.

[0027] In this exemplary embodiment, the aforementioned first lever (22) is moved to the unlocked position, shown in Figure 3, by a solenoid (23) when said solenoid is electrically powered.

[0028] In the aforementioned unlocked position, the first lever (22) does not act on the push button (13) of the switch (12) of the device, but when it is moved to the unlocked position, as shown in Figure 4, said first lever (22) actuates the push button of the switch (12), which provides a signal of the locked or unlocked state of the strike.

[0029] Having sufficiently described the nature of the invention, it is hereby stated that the materials, shape, size and layout of the described elements may be modified, provided that it does not imply altering the essential features of the invention claimed below.

Claims

1. A monitoring device applicable to symmetrical electric strikes, particularly to symmetrical electric strikes (2) having a mechanism, which can be actuated electrically, for locking and unlocking a latch of the electric strike; **characterised in that** said monitoring device comprises an independent module (1) of the strike, suitable for being externally fixed on a symmetrical electric strike; said module (1) comprising an electric terminal strip (11) of the symmetrical strike connected to a power supply circuit and a switch (12) having a push button (13) suitable for the actuation thereof by the locking and unlocking mechanism of the electric strike (2).

2. The device according to claim 1, **characterised in that** the switch (12) is fixed inside the module (1) by means of extrusions (12) of material of the module (1) itself.

3. The device according to claim 1, **characterised in that** said device is dimensioned and designed so that the switch (12) is actuated by a first lever (22) of the actuating mechanism of the symmetrical strike (2) that moves due to the action of a solenoid (23) between a locked position and an unlocked position of the strike.

4. A symmetrical electric strike, comprising a latch (21) and a locking and unlocking mechanism, which can

be actuated electrically and having a first lever (22) that moves between a locked position and an unlocked position of the strike due to the action of a solenoid (23), **characterised in that** said strike comprises an externally fixed monitoring device according to any of claims 1 to 3.

5. The strike according to claim 4, **characterised in that** the monitoring device (1) is externally fixed to the strike (2) by removable fixing means.

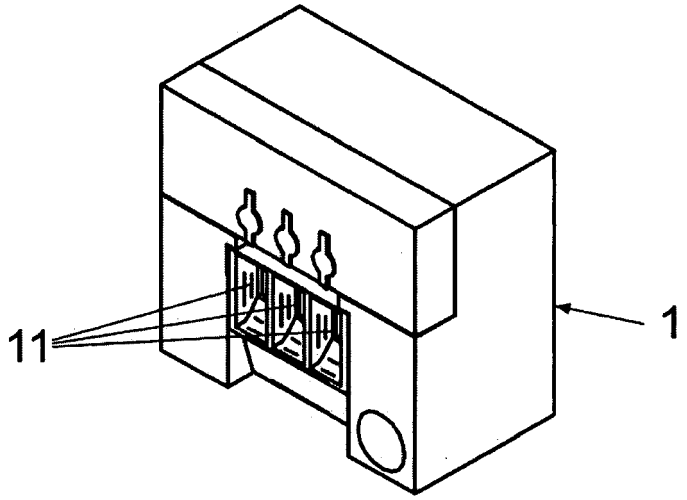

Fig. 1

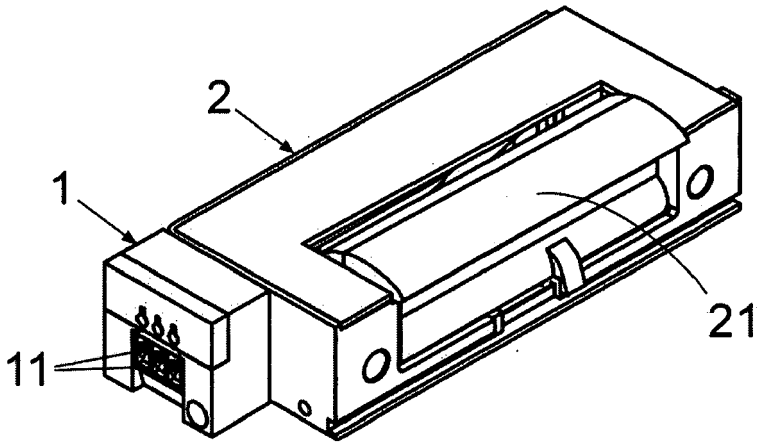

Fig. 2

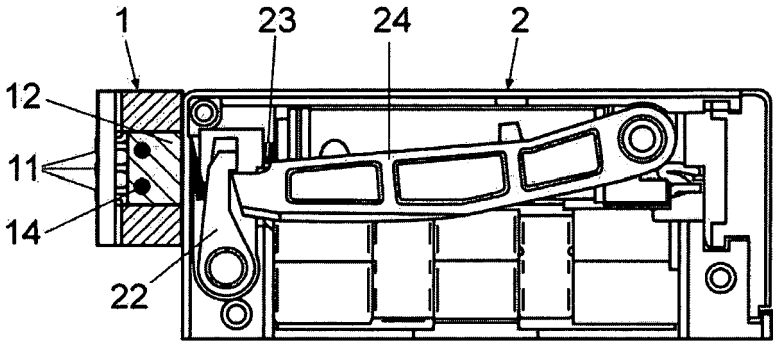

Fig. 3

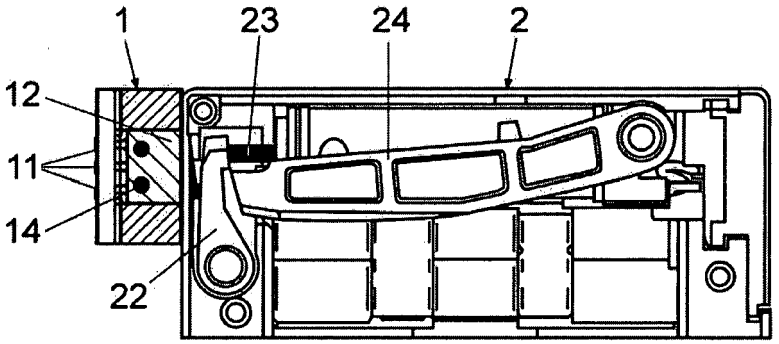

Fig. 4

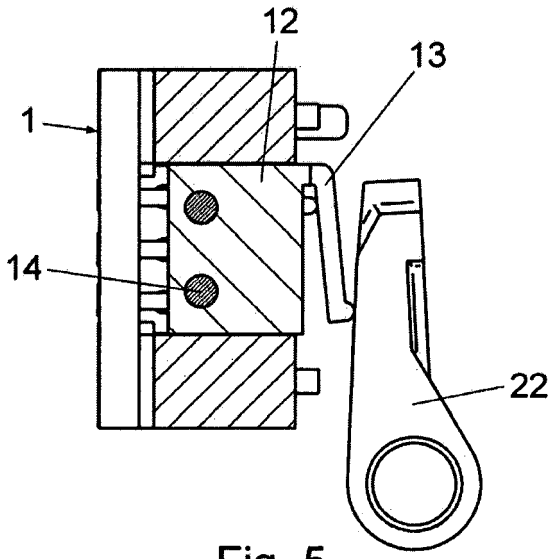

Fig. 5

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EUROPEAN SEARCH REPORT

Application Number
EP 18 00 0812

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	EP 2 924 204 A1 (ASSA ABLOY SICHERHEITSTECHNIK [DE]) 30 September 2015 (2015-09-30) * paragraph [0011] * * paragraph [0027] - paragraph [0035] * * figures 1-4 *	1-5	INV. E05B47/00 E05B63/04
X	EP 2 933 404 A1 (ASSA ABLOY SICHERHEITSTECHNIK [DE]) 21 October 2015 (2015-10-21) * paragraph [0025] - paragraph [0033] * * figures 1-2 *	1-5	
X	EP 1 672 150 A2 (MONTAJES ELECTRONICOS DORCAS S [ES]) 21 June 2006 (2006-06-21) * paragraph [0004] - paragraph [0006] * * paragraph [0024] * * figure 1 *	1-5	
X	DE 10 2016 118074 A1 (ASSA ABLOY SICHERHEITSTECHNIK GMBH [DE]) 29 March 2018 (2018-03-29) * paragraph [0028] * * paragraph [0032] - paragraph [0033] * * figures 1-6 *	1-5	TECHNICAL FIELDS SEARCHED (IPC) E05B
X	US 5 735 559 A (FROLOV GEORGE [US]) 7 April 1998 (1998-04-07) * column 3, line 31 - line 42 * * column 4, line 33 - line 58 * * column 5, line 39 - column 6, line 17 * * column 7, line 28 - line 36 * * column 8, line 21 - line 28 * * figures 1, 3, 5, 9 *	1-5	

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	25 January 2019	Antonov, Ventseslav

CATEGORY OF CITED DOCUMENTS

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25-01-2019

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 2924204 A1	30-09-2015	DE 102014104053 A1	24-09-2015
		EP 2924204 A1	30-09-2015
EP 2933404 A1	21-10-2015	DE 102014104094 A1	01-10-2015
		EP 2933404 A1	21-10-2015
		ES 2643085 T3	21-11-2017
		PL 2933404 T3	29-12-2017
EP 1672150 A2	21-06-2006	AT 423255 T	15-03-2009
		EP 1672150 A2	21-06-2006
		ES 2257951 A1	01-08-2006
		ES 2322599 T3	23-06-2009
DE 102016118074 A1	29-03-2018	NONE	
US 5735559 A	07-04-1998	NONE	

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