(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 3 059 750 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
24.08.2016 Bulletin 2016/34

(51) Int Cl.:
H01H 9/02 *(2006.01)* *H01H 9/16* *(2006.01)*

(21) Application number: **16156222.8**

(22) Date of filing: **18.02.2016**

(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
Designated Validation States:
MA MD

(30) Priority: **23.02.2015 IT VI20150056**

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(54) KEY OPERABLE CONTROLLER

(57) Key operable controller (10) comprising:
- a casing (11) which houses an operable device;
- at least two keys (12) connected to the device to operate it and protruding from said housing (11) to be operated by a user.

The casing (11) has a cavity (14) having at least one opening (15) facing outwards from the casing (11) which comprises an inner wall (16) surrounding said cavity (14) to the perimeter thereof.

The key operable controller (10) comprises light emitting means fixed to the casing (11) and arranged so as to face into said cavity (14) through said inner wall (16).

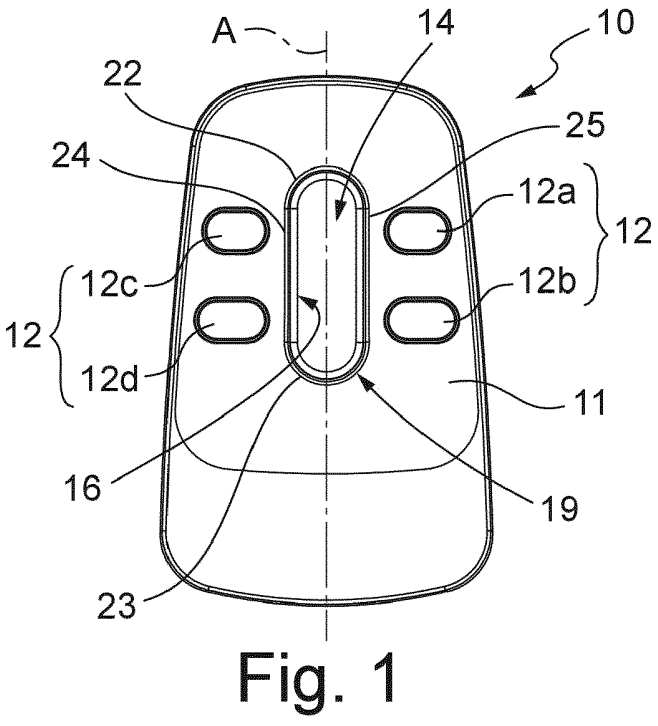

Fig. 1

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Description

[0001] The present invention relates to a key operable controller.

[0002] In particular, the present invention relates to a key operable controller that is provided with a device operable via at least two keys wherein the actuation of these keys is indicated by a different luminous signal each associated to a corresponding key and which is more distinctly visible than traditional solutions.

[0003] Nowadays, in the field of key operable controllers is known to provide lighting elements acting to improve the keys visibility and/or to signal the actuation of one or more of those keys.

[0004] In particular, in the field of remotes for automatic barriers, such as doors and gates, it is sometimes provided a light emitter that is activated contextually to the actuation of one of the remote control keys to indicate contextually both the remote control efficiency and the actual activation thereof.

[0005] Thus, the user has the possibility to became aware of unintentional operation of a key, by detecting the light signal that is consequently activated.

[0006] A problem of these traditional commands is that the light signal is hardly visible.

[0007] Furthermore, these traditional remote controls do not allow to determine the cause of the light signal activation, i.e. what key was unintentionally operated.

[0008] A further disadvantage of these traditional remote controls consists in the fact that the light signal is produced by means of light sources which, facing from or through the surface of the body of the controller, compromises the aesthetics.

[0009] The problem underlying the present invention is to increase the effectiveness of the light-signaling.

[0010] Main aim of the present invention is to provide a key operable controller that provides a solution to this problem by overcoming the aforementioned drawbacks.

[0011] Within this aim, it is an aim of the present invention to propose a key operable controller that allows to obtain a light signal more easy to be seen compared to traditional commands.

[0012] Another object of the present invention is to provide a key operable controller that, in case of unintentional activation of a key among a plurality of keys, allows to effectively identify the operated key.

[0013] Another object of the invention is to propose a key operable controller that conceal the presence of the signal light.

[0014] This aim, these objects and others which will become apparent hereinafter are achieved by a key operable controller according to appended claim 1.

[0015] Features of the detail of a key operable controller according to the invention are disclosed in the corresponding dependent claims.

[0016] Further characteristics and advantages of the invention result from the description of preferred, but not exclusive, embodiments of a key operable controller according to the invention, which are illustrated only by way of non-limitative example in the accompanying drawings, in which:

- Figure 1 shows a first embodiment of a key operable controller according to the present invention, in front elevation;
- Figure 2 shows the command to the keyboard of Figure 1, in perspective view;
- Figure 3 illustrates a second embodiment of a key operable controller according to the present invention, in front elevation;
- Figure 4 illustrates the command to the keyboard of Figure 3, in perspective view.

[0017] With particular reference to the above figures, it is indicated with numeral 10 a key operable controller comprising:

- a casing 11 housing an operable device, not shown;
- at least two keys 12 connected to the device to operate it and protruding from the casing 11 to be operated by a user.

[0018] In a first embodiment, shown in figures 1 and 2 for sake of example only, the key operable controller may consist of a remote control, in which case the device will comprise an emitter of a driving signal to a distant device, such as to the operating means of a controllable barrier of the type of automatic gates.

[0019] In the non limiting example shown in the accompanying figures 1 and 2, the key operable controller includes four keys 12 which are specifically identified by the references 12a, 12b, 12c, 12d, respectively.

[0020] In a second embodiment, exemplified in Figures 3 and 4, the key operable controller advantageously consists of a keyboard which can be fixed to the wall and, according to the non-limiting example shown, it is provided with twelve keys 12 each provided with a corresponding numerical indication applied thereon or inscribed on the casing 11.

[0021] According to the present invention, the key operable controller 10 has a particular peculiarity in that the casing 11 has a cavity 14 having at least one opening 15 facing outwards from the casing 11, which comprises an inner wall 16 that surrounds the cavity 14 delimiting the perimeter thereof.

[0022] According to the present invention, the command to keyboard 10, also comprises light-emitting means, not shown, fixed to the casing 11 and arranged so as to face into the cavity 14 through the inner wall 16.

[0023] The emitting means, since they face out through the inner wall 16, are hardly visible from the outside of the casing 11, thus are easily concealed so that their presence can not be easily perceptible by the user.

[0024] Moreover, being facing in the cavity 14, the emitting, means when activated, light up at least part of the inner wall 16 which will tend to spread the light

throughout the whole cavity 14 and to the outside thereof so that it will be possible to modulate the light emission visibility adopting cavities 14 of different sizes and inner walls 16 of different extensions.

[0025] In general, however, the user easily perceives the light signal thanks to the extension of the cavity 14 and of the inner wall 16 which are preferably sized so as to be larger than the signal lights of the known commands.

[0026] The cavity 14 may be a blind hole, but preferably, to increase the visibility of the light signal, is passing through the casing 11 and is provided with a second opening 17, opposite to the first opening 15 relative to the casing 11.

[0027] A particular efficiency, durability and energy savings are obtained when the light-emitting means comprise at least one LED.

[0028] Preferably, the emitting means are housed within the casing 11 which is equipped with at least one hole 18.

[0029] The hole 18 and the emitting means are mutually arranged in such a way that, when they are activated, said emitting means emit a light beam directed towards at least a portion of the inner wall 16 of the casing 11.

[0030] To optimize the effectiveness of the light-signaling, the key operable controller 10 preferably comprises at least a light guide 19 covering at least a portion of the inner wall 16 and facing to the emitting means for spreading the light when they are activated.

[0031] This optimization is maximum when the light guide 19 preferably completely covers the inner wall 16.

[0032] To allow an easy and immediate understanding of which key 12 is activated, the emitting means are preferably configured generally to emit at least two light radiations of different color and are connected to the keys 12 so that the operation of differnt keys 12 corresponds to the emission of light radiation of different color; wherein each color of said light radiation is associated with a specific key 12.

[0033] For example, the emitting means preferably comprise a colored LED for each key 12 which will be activated selectively in response to the operation of the respective key.

[0034] Preferably, to facilitate the operation of the command to the keyboard 10, the casing 11 has two mutually parallel faces 20, 21 on which the cavity 14 faces, moreover, this allows to limit the overall dimensions both in the case of implementing the present invention in the form of remote control, either in the form of keyboard wall.

[0035] The cavity 14 is preferably elongated in a development direction A parallel to the faces 20, 21, so as to limit the overall dimensions safeguarding the effectiveness of light signaling.

[0036] In accordance with the embodiments illustrated in the accompanying figures, the inner wall 16 comprises two demi-cylindrical sections 22, 23, opposite each other, and two flat sections 24, 25, opposite each other and connecting the demi-cylindrical portions (22, 23) .

[0037] In this way it is obtained an particularly appreciable aesthetical form and that is simple to make too.

[0038] Advantageously, the keys 12 are divided into two groups, also preferably having the same keys number, placed on two opposite sides of the cavity 14, and advantageously aligned in the development direction A.

[0039] The invention thus conceived is susceptible to numerous modifications and variants, all falling within the scope of the appended claims.

[0040] Moreover, all the details may be replaced with other technically equivalent elements.

[0041] The materials employed, as well as the shapes and the dimensions, may be varied depending on the contingent requirements and of the state of the art.

[0042] Where the constructional features and the techniques mentioned in the following claims are followed by reference signs or numbers, such signs and reference numbers have been applied with the sole purpose of increasing the intelligibility of the claims and consequently, they do not constitute in any way a limitation to the interpretation of each element identified, purely by way of example, by such signs and reference numbers.

Claims

1. Key operable controller (10) comprising:

- a casing (11) which houses an operable device;
- at least two keys (12) connected to said device to operate it and protruding from said housing (11) to be operated by a user;

characterized in that said casing (11) has a cavity (14) having at least one opening (15) facing outwards from said casing (11), which comprises an inner wall (16) surrounding said cavity (14) delimiting the perimeter; said key operable controller (10) comprising light emitting means fixed to said casing (11) and arranged so as to face in said cavity (14) through said inner wall (16).

2. Key operable controller (10) according to claim 1 **characterized in that** said cavity (14) passes through said casing (11) and is provided with a second opening (17), opposite to said first opening (15) with respect to said casing (11).

3. Key operable controller (10) according to one of the preceding claims **characterized in that** said light emitting means comprise at least one LED.

4. Key operable controller (10) according to one of the preceding claims **characterized in that** said emitting means is housed in said casing (11) which is provided with at least one hole (18); said hole (18) and said emitting means being mutually arranged in

such a way that, when said emitting means is activated emits a light radiation directed towards at least a portion of the inner wall (16) of said casing (11).

5. Key operable controller (10) according to one of the preceding claims **characterized in that** it comprises at least one light guide (19) covering at least a portion of said inner wall (16) and facing said emitting means for spreading the light when the latter is activated .

6. Key operable controller (10) according to claim 5 **characterized in that** said light guide (19) completely covers said inner wall (16).

7. Key operable controller (10) according to one of the preceding claims **characterized in that** said emitting means are configured to emit at least two light radiations of different colors and are connected to said keys (12) such that the actuation thereof causes the emission of light radiation of different colors; each color of said light radiation being associated with each of said keys (12).

8. Key operable controller (10) according to one of the preceding claims **characterized in that** said casing (11) has two faces (20, 21) parallel each another on which said cavity (14) is opened.

9. Key operable controller (10) according to claim 8 **characterized in that** said cavity (14) is elongated in a direction (A) parallel to said faces (20, 21).

10. Key operable controller (10) according to claim 9 **characterized in that** said inner wall (16) comprises two semi-cylindrical sections (22, 23), mutually opposed, and two opposed flat sections (24, 25) connecting said semi-cylindrical sections (22, 23).

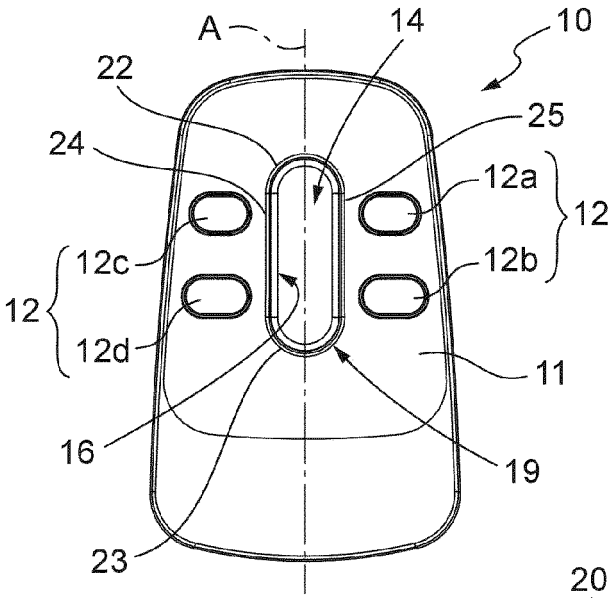

Fig. 1

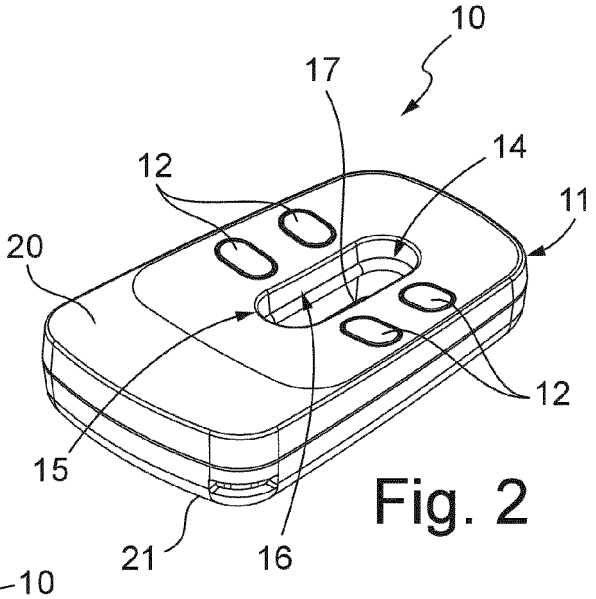

Fig. 2

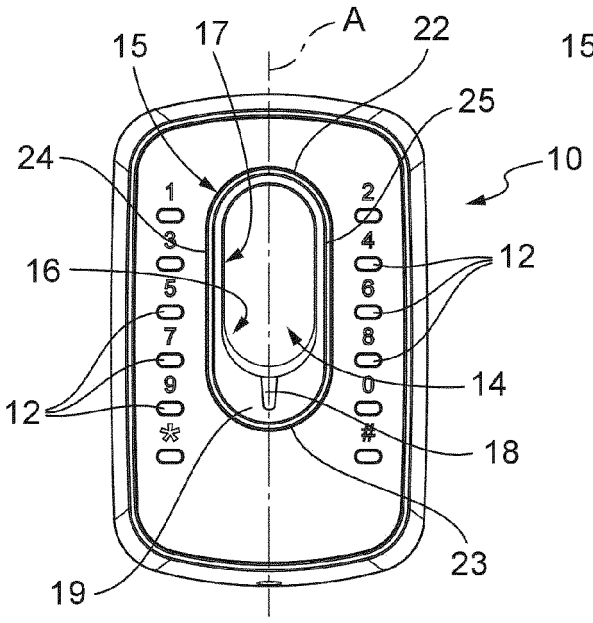

Fig. 3

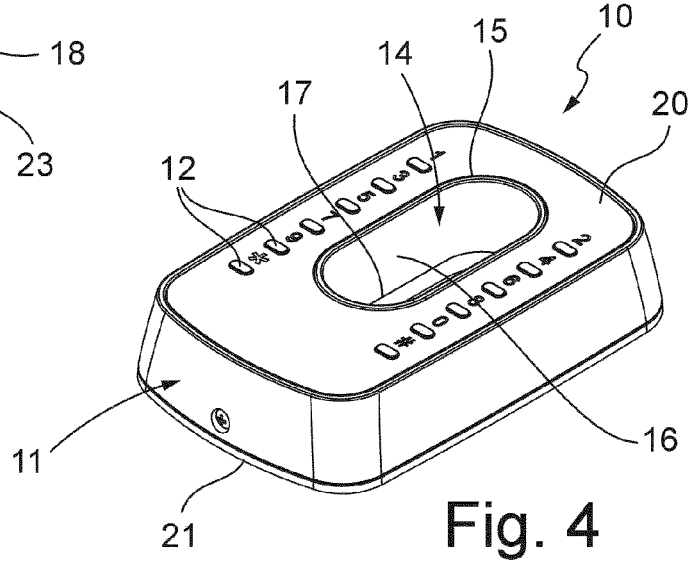

Fig. 4

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EUROPEAN SEARCH REPORT

Application Number
EP 16 15 6222

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	WO 2012/093412 A1 (LUMAC S R L [IT]; PELATTIERO LUIGINO [IT]) 12 July 2012 (2012-07-12) * page 8, lines 4-17; figure 4 *	1-10	INV. H01H9/02 ADD. H01H9/16
A	US 2005/018413 A1 (HOFFMAN LAWRENCE ANDREW [US]) 27 January 2005 (2005-01-27) * abstract; figure 2 *	1	

TECHNICAL FIELDS SEARCHED (IPC)

H01H

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	10 May 2016	Simonini, Stefano

CATEGORY OF CITED DOCUMENTS

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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 16 15 6222

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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10-05-2016

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2012093412 A1	12-07-2012	NONE	
US 2005018413 A1	27-01-2005	US 7329021 B1	12-02-2008
		US 2005018413 A1	27-01-2005

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