



## Description

**[0001]** The invention relates to a luminaire component for forming a luminaire, such as a luminaire for emergency lighting (i.e., escape route illumination) or escape/exit sign applications, and such a luminaire. The luminaire component hereby is designed to be easily mounted by a user mechanically and electrically to a corresponding adapter element, forming the luminaire. Hereby the lighting means and driver electronics as well as electrical connecting means of the luminaire component are all arranged on a common printed circuit board, PCB, which is accommodated inside a body molding forming a housing component of the luminaire component and thus the luminaire.

**[0002]** Presently known luminaires with a wide range of potential application scenarios, and in particular emergency luminaires for emergency lighting and/or an escape route luminaire, require the manual coupling of connecting wires for power supply and/or communication of the luminaire with a power supply system or a luminaire management system during installation. This makes installation particularly time-consuming, and this manual installation also involves a considerable source of error with regard to incorrect commissioning due to faulty wiring. Furthermore, in such previously known luminaires, a housing cascading is often provided, in which individual components are formed modularly and have their own housings with external contact points, via which these modular components are then connected to other components of the luminaire or the luminaire component, whereby these modules are ultimately arranged within a common housing of the luminaire or the luminaire component, so that the luminaire or the luminaire component has increased manufacturing costs due to material consumption, complicated assembly and also an increased weight and larger dimensions. By such a "housing in housing" arrangement, with, e.g., the driver components being placed in an own housing inside the luminaire housing the demand for materials of a luminaire is increased and thus promotes waste of materials.

**[0003]** Thus, the invention is therefore concerned with the task of providing a luminaire component and a luminaire with such a luminaire component, in which the installation is particularly simple and error-prone, whilst also allowing various lighting scenarios.

**[0004]** According to the invention, the luminaire component for forming a luminaire comprises:

- lighting means formed by one or more LEDs,
- driver electronics, which is connectable to an external mains supply and is adapted to drive the lighting means based on power obtained from the external mains supply,
- electrical connecting means for connecting the driver electronics with an external mains supply, and
- a body molding forming a housing component which accommodates the lighting means, the driver elec-

tronics and the electrical connecting means.

**[0005]** Hereby the lighting means, the driver electronics and the electrical connecting means are arranged on a common carrier element, which is formed by a printed circuit board, PCB. Moreover, the electrical connecting means are combinable with at least two different external adapter elements for connection with different power supply structures and/or the body molding is combinable with at least two different light emitting elements, which emit the light of the lighting means.

**[0006]** With such a luminaire component having the lighting means, the driver electronics and the electrical connecting means arranged on a common carrier element and the electrical connecting means being configured to connect with an external mains supply, a particularly simple and safe installation of the luminaire component is achieved, since the driver electronics are connected via connection of the electrical connecting means with a power supply automatically also to the power supply. Furthermore, by means of the common housing, which is formed by the body molding, a particularly simple assembly of the components, as well as a particularly space and weight-saving luminaire component is created.

**[0007]** Further, the luminaire itself is embodied herein, whereas the luminaire comprises:

- the luminaire component according to any herein presented embodiment thereof, and
- an adapter element which is combinable with the luminaire component.

**[0008]** Hereby the adapter element comprises means for a mechanical connection with the body molding of the luminaire component and means for an electrical connection with the electrical connections means of the luminaire component.

**[0009]** This allows a particularly simple and error-free assembly of the luminaire component and the adapter, whereby the luminaire is ready for operation as soon as the two components are coupled by means of the mechanical and electrical coupling, since the connection of the adapter element with mains supply provides the necessary power supply. In a preferred embodiment, the means for an electrical connection can be integrally formed with the means for a mechanical connection. This further simplifies commissioning of the luminaire.

**[0010]** Hereby it is also conceivable that the luminaire component for a self-contained emergency lighting comprises an emergency energy supply such as an accumulator and/or an other energy storage element, which thus is placed inside the luminaire. Furthermore it is also conceivable that the emergency energy supply is placed within one meter of the luminaire and connected via wires thereto, and thus forms an external component of the luminaire.

**[0011]** Optionally the electrical connecting means of

the luminaire component are adapted to combine with the at least two different external adapter elements via a plug-connection. This allows the luminaire component to be used in a particularly versatile manner and in different scenarios, as the plug connection facilitates mounting and thus connection of the luminaire component to the respective external adapter element. For example, an external adapter element can be provided with a direct wired connection with mains power and/or a communication line, whereby the adapter element is wall and/or ceiling mounted, whereby it is also conceivable that the adapter element is arranged in an installation opening. Furthermore, it is conceivable that the adapter element comprises a track adapter by means of which the adapter element (and thus also the luminaire component coupled thereto) can be reversibly connected to a lighting track system. In this case, the adapter element is preferably formed in such a way that it is completely accommodated in the interior of the respective track system, so that the luminaire component connected to the adapter element lies flush against the track system. With an electrical connecting means configured in this manner, a flexible coupling is thus created. Additionally, the mechanical connection may also lock the luminaires position towards the track system, so that the luminaires position cannot be changed after commissioning, and is thus securely mounted.

**[0012]** Optionally the luminaire component additionally comprises power storage means in the form of an accumulator, whereby the power storage means are arranged on the PCB. This ensures that the driver electronics can be supplied with power even in the event of a power failure, i.e. if the external mains supply is not functioning, which is particularly relevant with regard to safetycritical lighting elements such as escape sign luminaires and escape route luminaires. In this respect, in addition to the mechanical coupling of the power storage means with the PCB, there is also an electrical coupling of the power storage means with the electronic components of the luminaire component and in particular with the driver electronics.

**[0013]** Optionally the power storage means in the form of an accumulator are reversibly mounted on the PCB within an accumulator holder element, which is fixedly mounted on the PCB. This makes maintenance (e.g. due to ageing of the power storage means, or other defects of the components of the luminaire component) of the luminaire or luminaire component particularly easy, as the power storage means can be replaced easily and safely, to ensure proper functioning of the luminaire, and extending its overall lifecycle.

**[0014]** Optionally the electrical connecting means are adapted to electrically connect the accumulator with the driver electronics only when the luminaire component is connected to an external adapter element. In this preferred embodiment, the electrical coupling of the power storage means with the other components of the luminaire component only takes place if the electrical con-

necting means is connected to an external adapter element. This ensures that the electrical connection only exists when the luminaire component is actually installed, i.e. coupled/mounted to an external adapter element.

This has the technical advantage that an additional transport safety device for the components is not required, since there is no electrical coupling between power storage means and other components of the luminaire component. Furthermore, this additionally simplifies the installation of the luminaire component, since a separate connection of the power storage means is also not required, since the electrical connection is also automatically established with the coupling of the luminaire component to an external adapter element via the electrical connecting means. In addition, damage, especially damage resulting from a short circuit caused by mechanical damage to the PCB of the luminaire component, during production, transport and installation is prevented particularly effectively, which improves overall luminaire safety and luminaire installation. In this case, the external adapter element can be provided with loop-through contacts, which establish an electrical contact between corresponding lines in the electrical connecting means, and thus electrically couple the power storage means with the other components of the PCB, as soon as the electrical connecting means is coupled with the corresponding external adapter element - i.e. the luminaire is installed/mounted. Furthermore, in combination with the previously mentioned replaceable power storage means a particularly advantageous design is created, as the power storage means are automatically disconnected from the PCB as soon as the luminaire component is separated from the corresponding external adapter element for maintenance. This greatly minimizes the risk of injury to the user or damage to the luminaire or luminaire component.

**[0015]** Optionally the body molding comprises an attachment portion, which is arranged adjacent to the lighting means, said attachment portion being adapted to releasable connect with a light emitting element. This realizes a particularly versatile light emission, whereby the light emitting element may be adapted to the respective lighting scenario.

**[0016]** Optionally the attachment portion comprises a longitudinal groove, whereas at least a portion of a light emitting element is slid into the longitudinal groove. This makes it particularly easy and safe to connect the light emitting element to the luminaire component. The groove also ensures that the light emitting element is always optimally arranged in relation to the lighting means of the luminaire component, so that light is coupled into the light emitting element particularly efficiently.

**[0017]** Optionally the driver electronics is adapted to operate the lighting means in different operation modes depending on the type of light emitting element attached to the body molding. This allows the light output to be adjusted to the respective light emitting element. In particular, the light emitting element can be specific with re-

gard to the application of the luminaire, so that the light emission characteristic, such as the color temperature and/or the light intensity, is set according to the application or the light emitting element used. The setting can be made automatically or manually. An automatic setting can be made, for example, by corresponding sensors in the driver electronics that check the light emitting element used.

**[0018]** Optionally the lighting means comprise a plurality of LEDs, the operation modes differing from each other with respect to the number and/or position of the LEDs, which are operated. Thus, an even more individualized light output adapted to the respective lighting scenario can be achieved. Hereby it is conceivable that for an exit sign application the luminaire comprises a string of LEDs, while for an emergency lighting application a single LED spot is possible - whereas also multiple LEDs spots for multiple spot illuminations are possible. In embodiments of the luminaire with multiple LEDs it is also possible, that the number or pattern of electrically actuated LEDs can be set via input means, which allows an user to select a specific application for the luminaire, i.e. e.g. emergency lighting or escape/exit sign applications. Hereby it is further conceivable that e.g. a present string of LEDs is driven in such a way to only actuate individual LEDs of the LED string, forming individual LED spots.

**[0019]** Optionally the operation mode is selectable via a user input device mechanical input device or via an electronic input device. This allows the operating mode to be set manually in a simple manner. The respective input device is preferably arranged directly on the luminaire component. In particular, an electronic setting via the electronic input device enables a convenient setting option in which a user does not have to be in the immediate vicinity of the luminaire or the luminaire component. Preferably, the mechanical input device is a switch or a jumper link mechanical selection. This allows the operation mode to be set directly and easily. Preferably, the electronic input device is a Bluetooth, a Wifi, or a NFC communication. Hereby alternatively or additionally the electronic input device may also be connected to a wired communication bus.

**[0020]** Optionally the adapter element is directly connected with lines of an external mains supply and preferably also with lines of a communication bus. This allows a simple coupling of the luminaire component with the respective power and/or communication lines by coupling the luminaire component with the external adapter element, resulting in an easy installation of the luminaire. Or optionally the adapter element comprises a track adapter which is adapted to reversibly connect with a track of a lighting track system and comprises means for an electrical interface means and mechanical interface means. This means that the luminaire (i.e. luminaire component plus external adapter element) can also be used in conductor rail systems or lighting track systems. In this respect, the flexibility of the application possibilities is increased. Preferably, the electrical and mechanical in-

terface means are formed by the same component. This reduces the complexity of the coupling and thus simplifies the setup and commissioning of the luminaire. Further preferably, when the adapter element comprises a track adapter: the mechanical interface means lock a position of the luminaire on the lighting track system. This improves the mounting of the luminaire and furthermore prevents accidental movement of the luminaire along the track.

**[0021]** Optionally the luminaire further comprises a light emitting element attached to the body molding. This allows for targeted light output, increasing the application range of the luminaire.

**[0022]** Optionally the light emitting element is:

- a plate-like light guiding element forming a light emitting surface, which preferably comprises a pictogram, or
- an optical element comprising at least one lens adapted for a spot-like light emission.

**[0023]** With the light emitting element as a plate-like guiding element, escape sign luminaires in particular can be created. The use of an optical element that has at least one lens with a spot-like light emission creates the application range of the luminaire as escape route lighting. It is further conceivable that multiple of the optical elements are attached to the body molding, whereas preferably each optical element is assigned to one LED of the luminaire component.

**[0024]** Optionally, the luminaire also includes a back cover that can be coupled to and snapped onto the body molding to close the luminaire. In this case, it can be provided that the back cover carries the external adapter element. In particular, the back cover can be pre-mounted, e.g. on a wall or ceiling or in an installation opening or on a lighting track system, whereby the luminaire component with its electrical connecting means is mechanically coupled to the back cover by means of snap connections. In this way, the body molding of the luminaire component is closed off at the top, whereas when the luminaire component is coupled to the external adapter element, the back cover is also coupled to the body molding, thus achieving a closed housing of the luminaire. For this purpose, snap elements can be provided, preferably in an edge region of the back cover, which interact with equivalent elements of the body molding. Alternatively, particularly in an embodiment of the luminaire with a track adapter, the luminaire is directly mounted on the track system without a back cover, whereas the track system itself closes the body molding of the luminaire, forming a closed housing of the luminaire. Hereby an adapter bracket for fixing the track adapter to the luminaire component may be used as an adapter element. This results in a further reduced mounting height of the luminaire and a particularly aesthetically integrated luminaire.

**[0025]** Optionally the luminaire further comprises a secondary housing, which is designed to receive the

body molding and can be snapped onto it. This makes it possible to achieve an individual appearance of the luminaire, which can be adapted to the respective preferences of a user. This specifically enables the luminaire to carry individual symbols such as trade marks, or other special features for individual luminaire manufacturers.

**[0026]** The invention is explained in detail below with reference to examples of embodiments and with reference to the drawing. The figures show:

Figure 1A Front view with view of the internal components of an exemplary embodiment of a luminaire according to the invention with an exemplary embodiment of a luminaire component, wherein the luminaire component is arranged separately from the external adapter element; wherein the luminaire component is coupled to the external adapter element arranged on a ceiling and directly connected to mains supply.

Figure 1B Front view with view of the internal components of an exemplary embodiment of a luminaire according to the invention with an exemplary embodiment of a luminaire component, wherein the luminaire component is coupled to the external adapter element arranged on a ceiling and directly connected to mains supply;

Figure 2A Front view with view of the internal components of an exemplary embodiment of a luminaire according to the invention with an exemplary embodiment of a luminaire component, wherein the luminaire component is coupled to an external adapter element comprising a track adapter and thus configured for coupling to a lighting track system;

Figure 2B Front view with schematic view of an exemplary embodiment of a luminaire according to the invention, which is to be coupled with a lighting track system via the track adapter of the external adapter element;

Figure 3A Angled view of a schematic illustration of an exemplary embodiment of a luminaire component which has an attachment portion into which a light emitting element can be inserted, and a light emitting element in form of a plate-like light guiding element;

Figure 3B Bottom view of a schematic illustration of an exemplary embodiment of a luminaire component, which has an attachment portion into which a light emitting element can

be inserted;

Figure 3C Side view of a schematic illustration of an exemplary embodiment of a luminaire component having an attachment portion into which a light emitting element can be inserted, wherein the inserted light emitting element is a plate-like light guiding element;

Figure 3D Bottom view of a schematic illustration of an exemplary embodiment of a luminaire component, which has an attachment portion into which a light emitting element can be inserted, wherein the inserted light emitting element is an optical element with lenses;

Figure 3E Schematic illustration in a top view of an exemplary embodiment of an optical element having lenses, in different positions of the lenses relative to the respective associated LED.

**[0027]** Figure 1A shows an exemplary embodiment of the luminaire 1, whereas in Figure 1A the components luminaire component 10 and external adapter element 20 are separated from each other. Figure 1B shows the same setup but with an established connection of the luminaire component 10 and the adapter 20.

**[0028]** The luminaire component 10 of Figures 1A and 1B comprises lighting means 100 formed by multiple LEDs 110; driver electronics 200, which is connectable to an external mains supply 31 and is adapted to drive the lighting means 100 based on power obtained from the external mains supply 31; electrical connecting means 300 for connecting the driver electronics 200 with an external mains supply 31; and a body molding 400 forming a housing component 401 which accommodates the lighting means 100, the driver electronics 200 and the electrical connecting means 300. The lighting means 100, the driver electronics 200 and the electrical connecting means 300 are arranged on a common carrier element 500, which is formed by a printed circuit board, PCB, 501. The luminaire 1 per se comprises the luminaire component 10 and the adapter element 20, which is combinable with the luminaire component 10, whereas in the embodiments shown in the Figures the luminaire also comprises a light emitting element 40, 41, 44 attached to the body molding 400. Hereby it is conceivable that the external mains supply 31 is also used for communication, such as a power line communication.

**[0029]** The PCB 501 is the central element of the luminaire component 10, as the individual components are directly arranged on it. The PCB 501 can also be connected directly to the body molding 400, or to the housing component 401.

**[0030]** The electrical connecting means 300 hereby

connect with the (external) adapter element 20 via a plug connection 50 as illustrated in Figure 1A, whereas the same plug connection 50 may be present with regard to the other embodiment of the luminaire component 10 illustrated in Figures 2A and 2B. Some sort of mechanical interface is hereby needed to ensure a secure and stable connection of the adapter element 20 to the luminaire component 10. Hereby, the plug connection 50 preferably simultaneously performs an electrical and mechanical connection between the components. Alternatively or additionally the mechanical connection can be achieved by other coupling means, e.g. means for a mechanical connection 23 such as snap in plastic brackets which are placed on the adapter element 20 and interact (and thus fix) the luminaire component 10 (e.g. the body molding 400 or the PCB 501), or vice versa.

**[0031]** The adapter element 20 comprises means for a mechanical connection 23 with the body molding 400 of the luminaire component 10 and means for an electrical connection 25 with the electrical connections means 300 of the luminaire component 10. These mechanical connections 23 can be integrally formed with the electrical connections 25, alternatively or additionally further mechanical connection elements may be provided with the body molding 400, respectively the housing component 401, and the adapter element 20, respectively its back cover 29, establishing an additional snapping connection SN, as illustrated in Figure 1A. The plug connection 50 can further be established via a snapping SN.

**[0032]** Thus, the electrical connection means 300 automatically provides an electrical connection of the components of the luminaire component 10 when mounted on the adapter element 20, achieving a secured power supply of the luminaire component 10, as power can only be supplied when connected to the adapter element 20.

**[0033]** With the back cover 29 and the housing component 401 a closed housing of the luminaire 1 is formed. As shown in the different embodiments of Figures 1A, 1B the housing of the luminaire 1 may be fixedly mounted to a ceiling or a wall, or a recess therein. Alternatively, as shown in the embodiment of Figures 2A, 2B the luminaire 1 may alternatively be mounted on a lighting track system 60 via a respective adapter element 20 with a track adapter 22.

**[0034]** The adapter element 20 is connected to at least one wire connection 30, such as the mains supply 31, but may also be connected to a communication bus 32, respectively a communication line 32. However, it is also conceivable that the mains supply 31 already includes a power communication line, such that an extra communication line 32 is not necessary. The connections of the adapter element 20 are coupled to the luminaire component 10 via the electrical connection means 300.

**[0035]** The luminaire component 10 and thus the luminaire 1 further comprises power storage means 600 in the form of an accumulator 601, whereby the power storage means 600 are arranged on the PCB 501. Hereby the power storage means 600 in the form of an accumu-

lator 601 are reversibly mounted on the PCB 501 within an accumulator holder element 650, which is fixedly mounted on the PCB 501. Via the accumulator holder element 650 the accumulator 601 of the luminaire 1 can be easily and cost effectively replaced after end-of-life of the accumulator 601, improving maintenance of the luminaire 1 and thus expanding its life time.

**[0036]** Furthermore, the electrical connecting means 300 are adapted to electrically connect the accumulator 601 with the driver electronics 200 only when the luminaire component 10 is connected to an external adapter element 20. This may be realized via a loop-through connection of the electrical connection means 300 and the adapter element 20. Thus, again a secured power supply of the luminaire component 10 is achieved, as power from the accumulator 601 can only be supplied when the luminaire component 10 connected to the adapter element 20. This is especially relevant with regard to transportation and installation of the luminaire component 10, respectively the luminaire 1.

**[0037]** Furthermore, the body molding 400 comprises an attachment portion 800, which is arranged adjacent to the lighting means 100, whereas the attachment portion is adapted to releasable connect with a light emitting element 40, 41, 44. Hereby, as further shown the light emitting element 40, 41, 44 can be realized in different manners. The embodiment of the light emitting element 40, 41, 44 shown in Figures 1A, 1B, 2A, 2B, 3A, 3B and 3C with a plate-like light guiding element 41 forming a light emitting surface 42, which comprises a pictogram 43 and the other embodiment of the light emitting element 40, 41, 44 shown in Figures 3D and 3E with an optical element 44 comprising at least one lens 44a, 44b, 44c adapted for a directed light emission. Hereby various implementations of lenses 44a, 44b, 44c are conceivable, whereas different lenses 44a, 44b, 44c are used for different use scenarios. Exemplary the lenses 44a, 44b, 44c may comprise a (first) lens 44a that is designed for spot illumination - e.g., to illuminate a hydrant, a fire extinguisher, an emergency alarm button, and so forth - and/or another (second) lens 44b that is used for escape route illumination, and/or yet another (third) lens 44c that is used for anti-panic illumination. It is also conceivable that the optical element 44 has multiple lenses 44a, 44b, 44c of the same characteristic (escape route illumination; anti-panic illumination; spot illumination) but with different light emission direction.

**[0038]** Moreover, it is to be stated, that the optical element 44 shown in Figures 3D and 3E is also compatible with the luminaire component 10 shown in Figures 1A, 1B, 2A, 2B, 3A, 3B and 3C. Thus, the presented light emitting elements 40, 41, 44 are interchangeable, whereas each light emitting element 40, 41, 44 is optimized for a different application area. While the light emitting element 40 with the plate-like light guiding element 41 is used for an escape sign luminaire, the luminaire 1 with the optical element 44 as the light emitting element 40 is used for a direct light emission such as escape route

lighting (with the escape route lens 44b), anti-panic lighting (with the anti-panic lens 44c) and/or a spot illumination (with the spot-light lens 44a).

**[0039]** As shown in detail in the Figures 3A, 3B, 3C the attachment portion 800 of the presented embodiment of the luminaire component 10 comprises a longitudinal groove 810, whereas at least a portion of a light emitting element 40, 41, 44 is slid SL into the longitudinal groove 810.

**[0040]** The light emitting element is preferably inserted in the insertion direction SL from an end face of the luminaire component 10. As can be seen from Figures 3A, 3B and 3D, the insertion direction SL is independent of the respectively selected light emitting element 40, 41, 44.

**[0041]** In particular, it may be provided that the groove 810 has a dovetail-shaped notch and that the light emitting element 40, 41, 44 has an equivalent dovetail-shaped profile 49, as can be seen in particular from figures 3A and 3C, into which the light emitting element 40, 41, 44 can be inserted so that the light emitting element 40, 41, 44 is coupled to the luminaire component 10 in a simple and secure manner. This further achieves that the light emitting element 40, 41, 44 is fixed in its position relative to the lighting means 100, so that a particularly advantageous light coupling into the light emitting element 40, 41, 44 is accomplished. This profile-shaped configuration and coupling with respect to the groove 810 and the light emitting element 40, 41, 44 is not limited to the embodiment of the light emitting element 40 as a plate-like light guiding plate 41 shown in Figure 3A, but is also conceivable with respect to the optical element 44.

**[0042]** In this respect, a particularly simple assembly of a corresponding luminaire 1 is guaranteed with the luminaire component 10 configured in this way.

**[0043]** Furthermore, the driver electronics 200 is adapted to operate the lighting means 100 in different operation modes depending on the type of light emitting element 40, 41, 44 attached to the body molding 400. Hereby different light intensity and/or lighting color can be set depending on the respectively connected light emitting element 40, 41, 44, such that light emission is adapted to the individual needs of the respective lighting scenario. Hereby it is possible that the operation modes differing from each other with respect to the number and/or position of the LEDs 110 that are operated.

**[0044]** The operation mode setting may automatically be achieved via sensors of the luminaire component 10, which check on the respective inserted light emitting element 40, 41, 44. It is also conceivable that the operation mode is selectable via a user input device 700, 708, 709, 710. Hereby a mechanical input device 708, 709 or via an electronic input device 710 could be used. The mechanical input device 708, 709 may be a switch 709 or a jumper link 708 mechanical selection. When an electronic input device 710 is used, it is preferably a Bluetooth, a Wifi, or an NFC communication. With these implementations for a manual setting of the operation mode, a fur-

ther increase in flexibility is achieved. Hereby alternatively or additionally, the electronic input device 710 may also be connected to a wired communication bus 32.

**[0045]** The switch 709 may additionally or alternatively be used for testing the luminaire 1. Hereby by actuating the switch 709 the luminaire 1 may feedback the current operation mode and/or may perform a functionality check concerning the connection of the electrical connecting means 300 with the adapter 20, and thus of the connection of the common carrier element 500 (PCB 501) with the respective wires 30. The functionality check may hereby comprise a test routine that simulates an emergency event such as a loss of mains power and checks whether the luminaire 1 operates correctly. The lighting component 10 may also comprise an additional indicator LED 207, which indicates the functionality of the luminaire 1, and especially may feedback the setting concerning the operation mode and/or the result of the functionality check upon actuating the test switch 709. Hereby the indicator LED 207 may also indicate upon coupling of the electrical connecting means 300 with the adapter 20, whether power storage means 600 (in the form of an accumulator 601) are present, and/or may also indicate whether an input from an user input device 700, 708, 709, 710 is detected. Furthermore, the indicator LED 207 may indicate whether a power storage means 600, such as an accumulator 601, is charging correctly. Thus, the indicator LED 207 may support a user during commissioning of the luminaire 1, but may also feedback status of charging and status of functionality of the luminaire 1 during operation after commissioning.

**[0046]** The electrical connecting means 300 are combinable with at least two different external adapter elements 20 for connection with different power supply structures, as schematically illustrated in the different embodiments of Figures 1A, 1B and 2A, 2B.

**[0047]** The exemplary embodiments of the luminaire component 10, which are shown in Figures 1A, 1B, 2A, 2B, have essentially the same structural design. Only the design of the (external) adapter element 20 shows differences with regard to the different embodiments of the luminaire 1, since these are designed for different mounting types. Thus, the lighting component 10 can be connected electrically and mechanically in various ways via the respective physical interfaces of the different adapter elements 20. Features shown in the embodiment of the luminaire component 10 of Figures 1A and 1B, but not explicitly in the embodiment of the luminaire component 10 of Figures 2A and 2B, can be readily transferred to this embodiment and vice versa.

**[0048]** With regard to Figures 2A and 2B another embodiment of the luminaire 1 is shown, whereas the therein presented luminaire 1 is configured to be attached to a lighting track system 60. Hereby the adapter element 20 comprises a track adapter 22, which is adapted to reversibly connect with a track of a lighting track system 60 and comprises means for an electrical interface means 28 and mechanical interface means 27. Via the

track adapter 22 the luminaire 1 is thus connected to the respective wire connections 30 of the lighting track system 60, whereas the wires 30 at least comprise an external mains supply 31 and preferably also lines of a communication bus 32. Hereby it is also conceivable that the electrical interface means 28 of the track adapter 22 also form mechanical interface means 27. Hereby, in a preferred implementation, the track adapter 22 additionally locks the position of the luminaire 1 on the track system 60, so that it cannot be (unintentionally) moved after commissioning.

**[0049]** As indicated in Figures 2A and 2B the back cover 29 may be provided with snap on elements (shown in the edge region of the back cover 29) which interact with the housing component 401, respectively with the body molding 400 of the luminaire component 10.

**[0050]** The Figures 3A, 3B and 3C deal with the embodiment of the light emitting element 40, 41 being a plate-like light guiding element 41 forming a light emitting surface 42, which comprises a pictogram 43, such as an arrow pointing in the direction of the emergency escape and/or the commonly known "running man". As displayed schematically in Figure 3B all LEDs 101 of the lighting means 100 shall be active when the plate-like light guiding element 41 is used.

**[0051]** In contrast thereto, as also schematically displayed in Figure 3D, only the LEDs 101 that are provided with an optical element 44 as the light emitting element 40, 44 shall be active when the luminaire 1 is operated. However, multiple optical elements 44 can be arranged next to each other, such that multiple LEDs 101 are active. Hereby each optical element 44 is assigned to one individual LED 101. The setting of the active LEDs 101 may be performed as previously described via an automatic or manual selection of the operation mode.

**[0052]** Furthermore it is conceivable that the lenses 44a, 44b, 44c of the optical element 44 can be slid across a single LED 110 or cluster of LEDs 110 to get the required light distribution. Therefore, via a mechanical adjustment of the positioning of the respective optical element 44 and thus the positioning of the respective lens(es) 44a, 44b, 44c over a respective single LED 110, a desired light emission can be achieved.

**[0053]** The optical elements 44 are displayed in detail in Figure 3E showing the adjustability of each optical element 44. As apparent each optical element 44 comprises multiple lenses 44a, 44b, 44c, whereas comprising at least one lens 44a, 44b, 44c adapted for a spot-like light emission. In particular the optical element 44 may comprise a spot-light-lens 44a, which emits light in a spot-like manner; an escape-route-light-lens 44b, which emits light in a essentially line shaped manner providing guidance along a respective escape route; and/or an anti-panic-light-lens 44c, which emits light in a diffusing manner directed towards the underlying ground as well as adjacent walls, ensuring a safe and calming lighting. These different lenses 44a, 44b, 44c of the optical element 44 can be individually selected by switching the

respective lens 44a, 44b, 44c onto the respective LED 101. This is achieved by the adjustable position of the lenses 44a, 44b, 44c within the optical element 44. As displayed in Figures 3D and 3E the switching movement SW of the lenses 44a, 44b, 44c may be parallel to the sliding movement SL to insert the optical element into the attachment portion 800, respectively the groove 810. However, it is also conceivable that the lenses 44a, 44b, 44c are switched SW in a direction perpendicular to the inserting sliding movement SL of the optical element 44, whereas this implementation would save space and would further allow a higher LED density equipped with such optical elements 44.

**[0054]** With this configuration an utmost flexible and individual lighting characteristic of the luminaire 1 is achieved.

**[0055]** Furthermore, the luminaire 1 may further comprise a secondary housing, which is designed to receive the body molding 400 and can be snapped onto it. Hereby individual appearances of the luminaire 1 are conceivable.

**[0056]** The herein described examples, optional configurations and implementations of the presented luminaire component 10 and luminaire 1 are compatible with each other, whereas optional or preferred features are selectively interchangeable.

**[0057]** In this respect, a luminaire component 10 for a luminaire 1 with an utmost simple but safe installation but simultaneously providing an utmost flexible application for various scenarios is provided.

## Claims

1. Luminaire component (10) for forming a luminaire (1), in particular for emergency light or exit sign applications, said luminaire component (10) comprising:
  - lighting means (100) formed by one or more LEDs (110),
  - driver electronics (200), which is connectable to an external mains supply (31) and is adapted to drive the lighting means (100) based on power obtained from the external mains supply (31),
  - electrical connecting means (300) for connecting the driver electronics (200) with an external mains supply (31), and
  - a body molding (400) forming a housing component (401), which accommodates the lighting means (100), the driver electronics (200) and the electrical connecting means (300), wherein the lighting means (100), the driver electronics (200) and the electrical connecting means (300) are arranged on a common carrier element (500), which is formed by a printed circuit board, PCB, (501) and wherein the electrical connecting means (300)



- are combinable with at least two different external adapter elements (20) for connection with different power supply structures, and/or wherein the body molding (400) is combinable with at least two different light emitting elements (40, 41, 44), which emit the light of the lighting means (100).
2. Luminaire component according to claim 1, wherein the electrical connecting means (300) are adapted to combine with the at least two different external adapter elements (20) via a plug-connection (50). 10
  3. Luminaire component according to claim 1 or 2, wherein the luminaire component (10) additionally comprises power storage means (600) in the form of an accumulator (601), whereby the power storage means (600) are arranged on the PCB (501). 15
  4. Luminaire component according to claim 3, wherein the power storage means (600) in the form of an accumulator (601) are reversibly mounted on the PCB (501) within an accumulator holder element (650), which is fixedly mounted on the PCB (501). 20 25
  5. Luminaire component according to claim 3 or 4, wherein the electrical connecting means (300) are adapted to electrically connect the accumulator (601) with the driver electronics (200) only when the luminaire component (10) is connected to an external adapter element (20). 30
  6. Luminaire component according to any one of claims 1 to 5, wherein the body molding (400) comprises an attachment portion (800), which is arranged adjacent to the lighting means (100), said attachment portion (800) being adapted to releasably connect with a light emitting element (40, 41, 44). 35 40
  7. Luminaire component according to claim 6, wherein the attachment portion (800) comprises a longitudinal groove (810), whereas at least a portion of a light emitting element (40, 41, 44) is slid (SL) into the longitudinal groove (810). 45
  8. Luminaire component according to any one of claims 1 to 7, wherein the driver electronics (200) is adapted to operate the lighting means (100) in different operation modes depending on the type of light emitting element (40, 41, 44) attached to the body molding (400). 50
  9. Luminaire component according to claim 8, wherein the lighting means (100) comprise a plurality of LEDs (110), the operation modes differing from

each other with respect to the number and/or position of the LEDs (110) that are operated.

10. Luminaire component according to one of claims 8 and 9, 5

wherein the operation mode is selectable via a user input device (700, 708, 709, 710) mechanical input device (708, 709) or via an electronic input device (710), whereas preferably the mechanical input device (708, 709) is a switch (709) or a jumper link (708) mechanical selection, and whereas preferably the electronic input device (710) is a Bluetooth, a Wifi, a NFC communication, and/or is connected to a wired communication bus (32).

11. Luminaire (1), comprising 20

- the luminaire component (10) of any one of the preceding claims 1 to 10, and
- an adapter element (20), which is combinable with the luminaire component (10),

wherein the adapter element (20) comprises means for a mechanical connection (23) with the body molding (400) of the luminaire component (10) and means for an electrical connection (25) with the electrical connections means (300) of the luminaire component (10).

12. Luminaire according to claim 11, 35

wherein the adapter element (20) is directly connected with lines of an external mains supply (31) and preferably also with lines of a communication bus (32), or wherein the adapter element (20) comprises a track adapter (22), which is adapted to reversibly connect with a track of a lighting track system (60) and comprises means for an electrical interface means (28) and mechanical interface means (27), whereas preferably the electrical and mechanical interface means (27, 28) are formed by the same component, whereas further preferably when the adapter element (20) comprises a track adapter (22): the mechanical interface means (27, 28) locks a position of the luminaire (1) on the lighting track system (60). 40 45 50

13. Luminaire according to claim 11 or 12, further comprising a light emitting element (40, 41, 44) attached to the body molding (400). 55

14. Luminaire according to claim 13,

wherein the light emitting element (40, 41, 44) is:

- a plate-like light guiding element (41) forming a light emitting surface (42), which preferably comprises a pictogram (43), or
- an optical element (44) comprising at least one lens (44a, 44b, 44c) adapted for a spot-like light emission.

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- 15.** Luminaire according to one of claims 11 to 14, further comprising a secondary housing, which is designed to receive the body molding (400) and can be snapped onto it.

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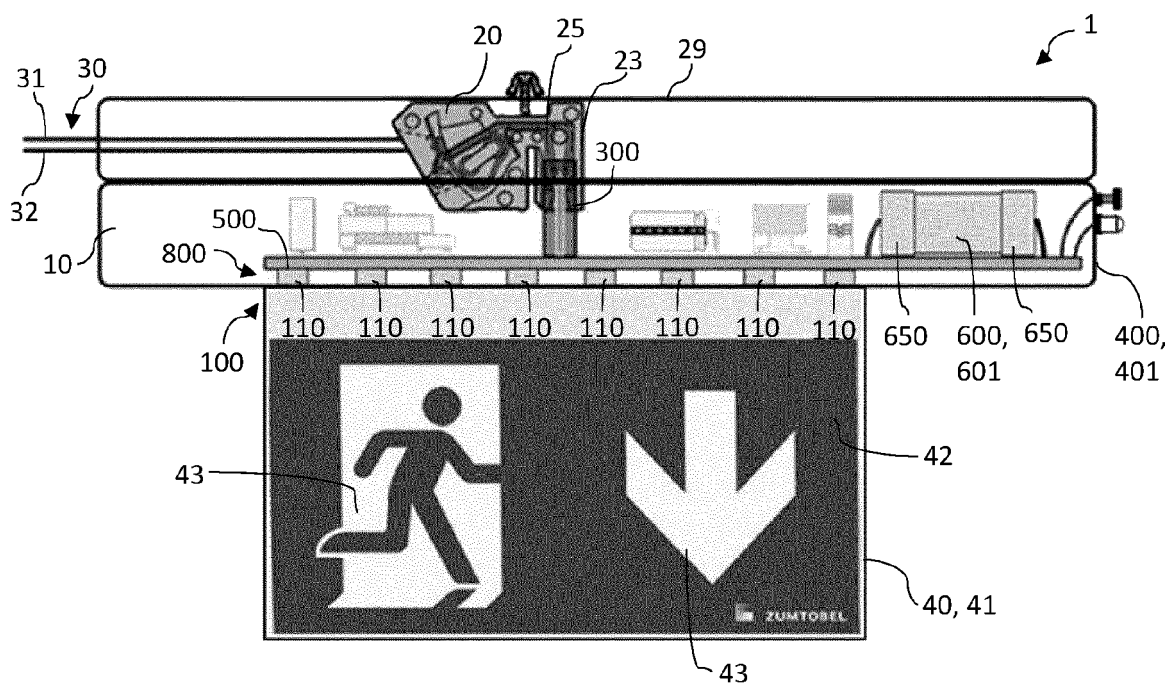
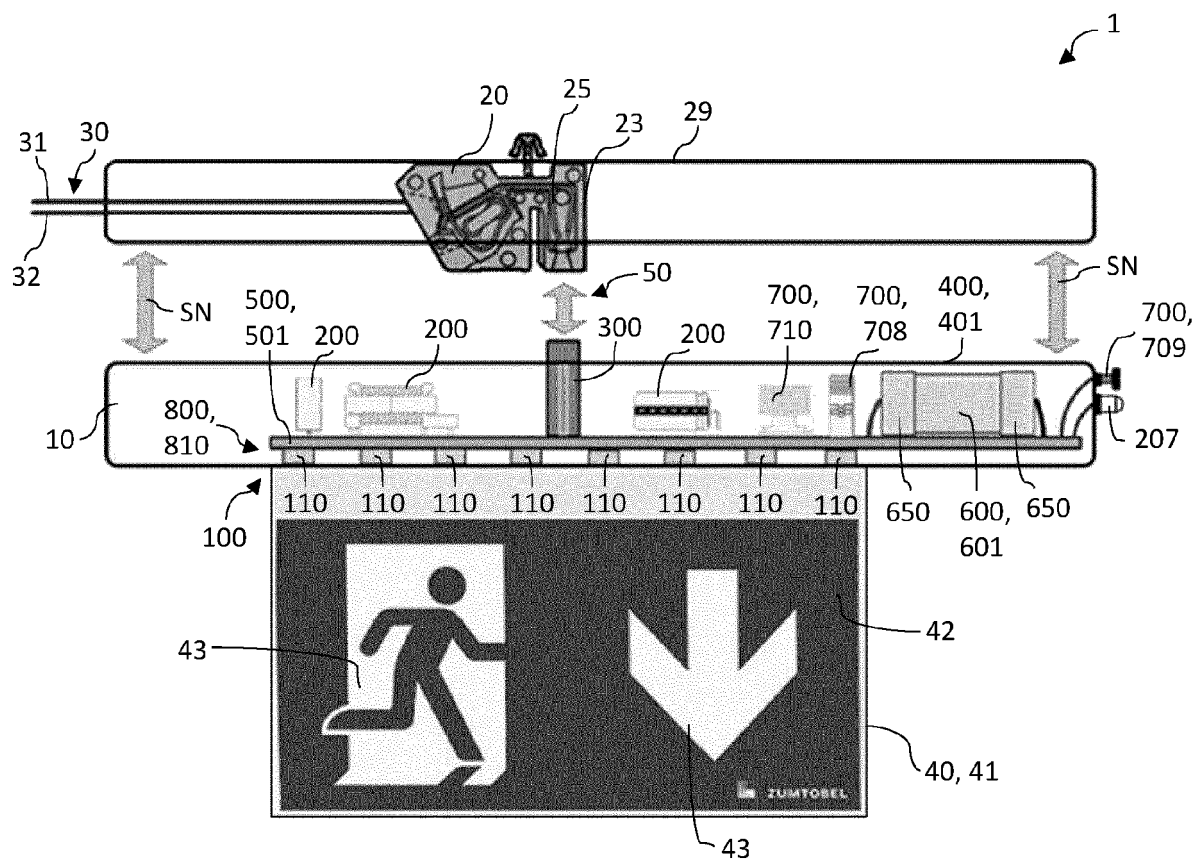
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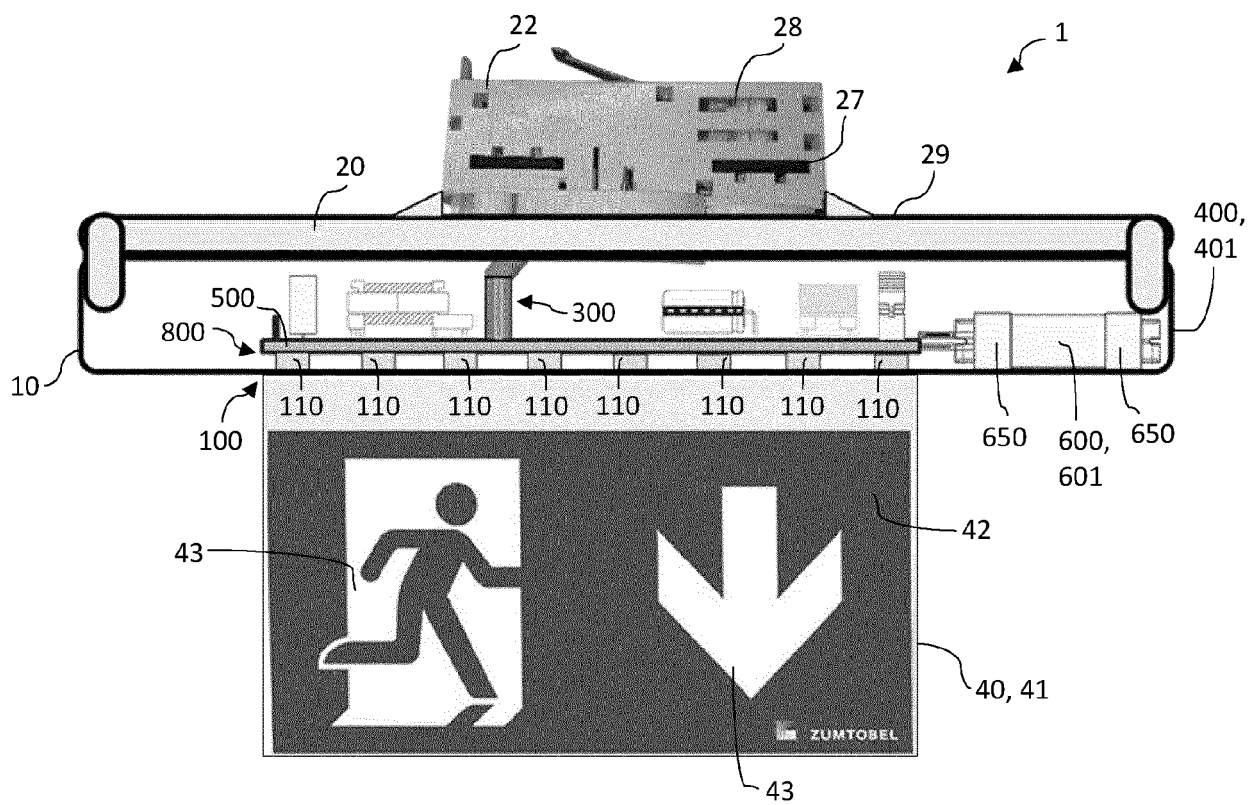


Fig. 2A

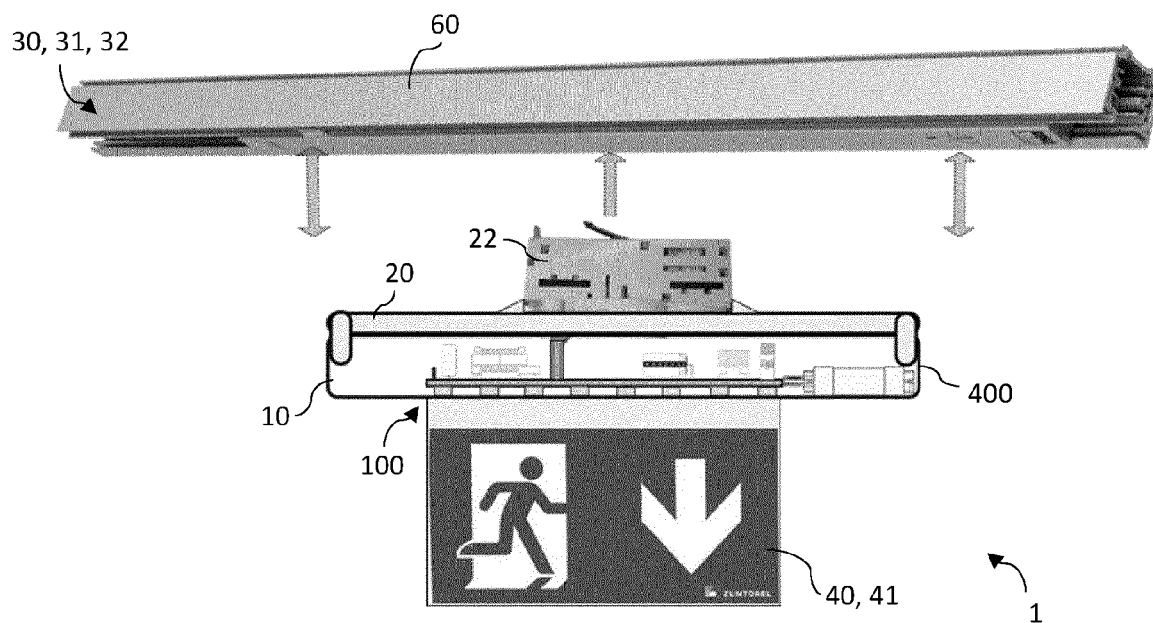


Fig. 2B

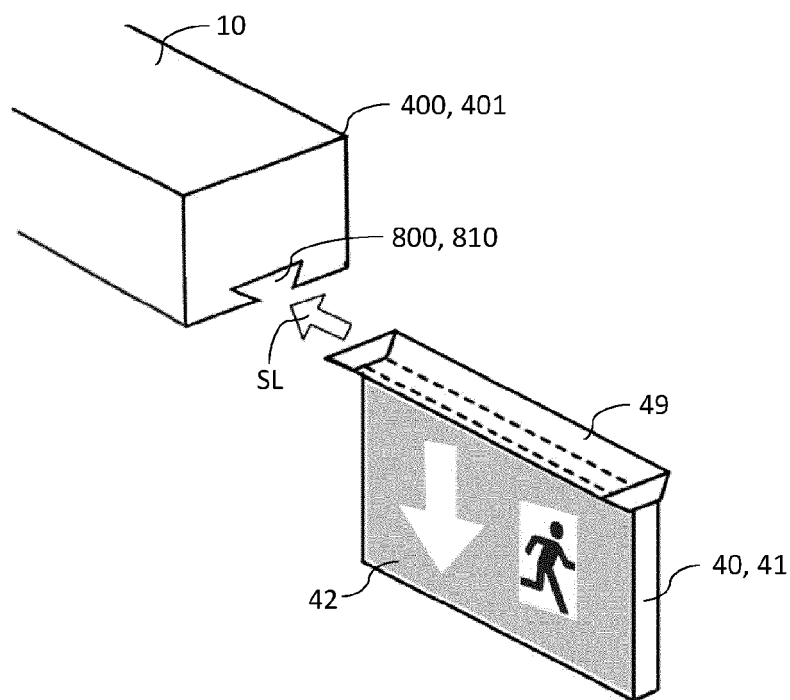


Fig. 3A

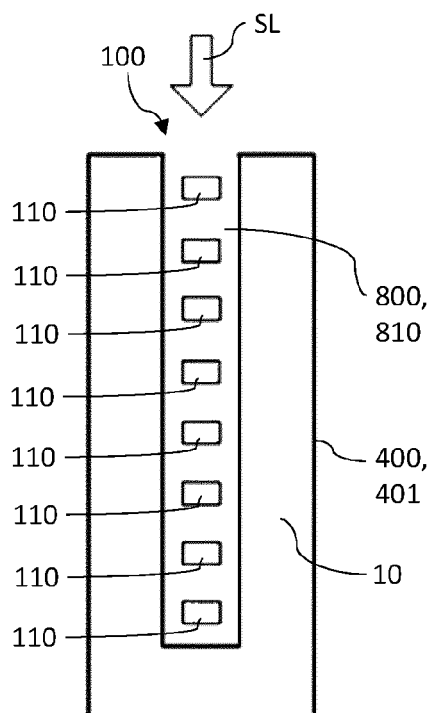


Fig. 3B

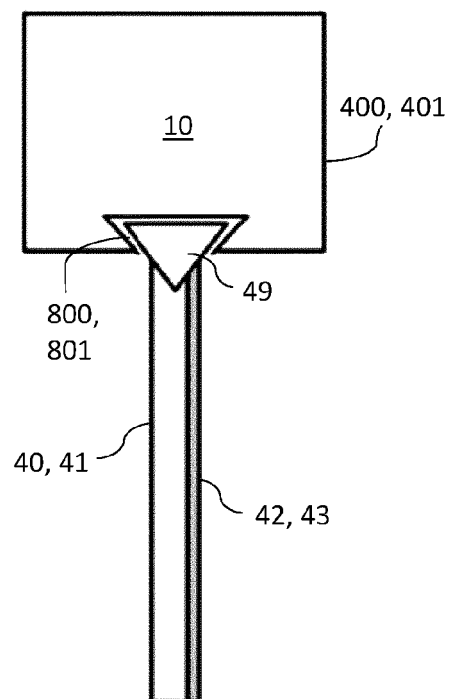


Fig. 3C

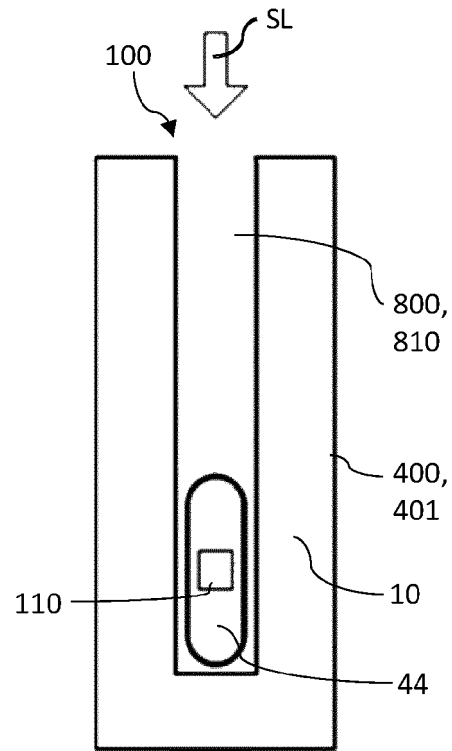


Fig. 3D

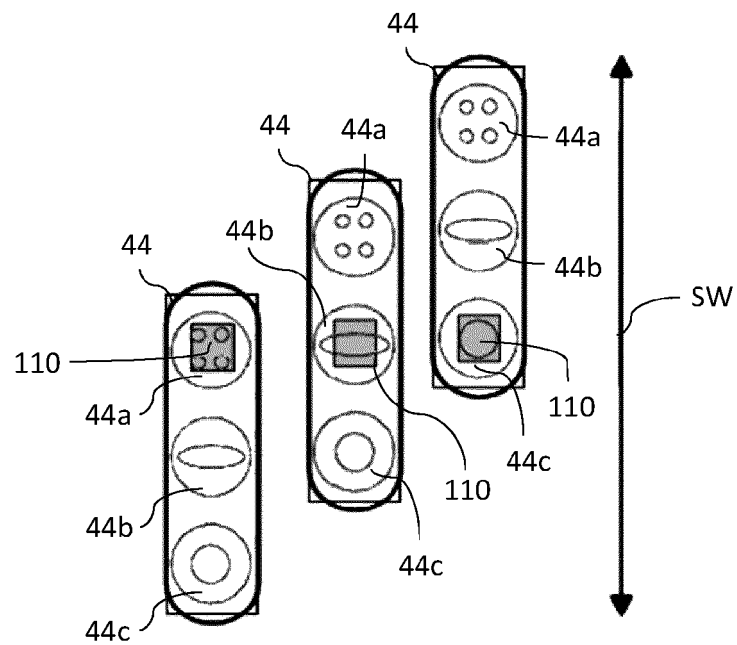


Fig. 3E



## EUROPEAN SEARCH REPORT

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	* column 4, line 8 - line 14 * -----		
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	* abstract; figure 1 * -----		
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The present search report has been drawn up for all claims			
Place of search <b>The Hague</b>		Date of completion of the search <b>10 October 2023</b>	Examiner <b>Prévot, Eric</b>
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Application Number

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The present search report has been drawn up for all claims			
Place of search <b>The Hague</b>		Date of completion of the search <b>10 October 2023</b>	Examiner <b>Prévot, Eric</b>
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		T : 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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