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(54) ELECTROLUMINESCENT LIGHTING DEVICE
ELEKTROLUMINESZIERENDE BELEUCHTUNGSVORRICHTUNG
DISPOSITIF D'ECLAIRAGE ELECTROLUMINESCENT

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(73) Proprietor: Elumina Lighting Technologies, Inc.
Ontario L78 1G3 (CA)

(72) Inventors:
• DICKIE, Robert G.
  Newmarket, Ontario L3Y 4V8 (CA)
• TIERNEY, Kirkwood T.
  New Tecumseth, Ontario L0G 1T0 (CA)
• VAN TUYL, David J.
  Holland Landing, Ontario L9N 1C3 (CA)

(74) Representative: Garratt, Peter Douglas et al
Mathys & Squire
120 Holborn
London EC1N 2SQ (GB)

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Description

Background of the Invention

Field of the Invention

[0001] The present invention relates to supplementary lighting devices utilizing an electroluminescent lighting element and a control system. In particular, the present invention relates to an electronic and mechanical control system coupled to an electroluminescent lighting element in order to provide user-adjustable light intensity, automatic output compensation, and an automatic daytime shutoff feature.

Related Art

[0002] Supplementary lighting devices, such as night lights, are well known and commonly used for security and safety purposes. For example, supplementary lighting devices can be used to illuminate passageways and stairways to assist night travel or escape in an emergency. They are also commonly used to relieve night anxiety in children, decrease the probability of burglary, and may provide accent lighting.

[0003] Several different types of lighting elements can be used in supplementary lighting devices. For example, incandescent bulbs, fluorescent bulbs, neon-type gas discharge elements, and electroluminescent (EL) elements are possible lighting elements for supplementary lighting devices. When choosing a lighting element for a supplementary lighting device, several factors such as cost, safety, longevity, and illumination are generally taken into consideration.

[0004] Incandescent lighting elements offer low initial cost and are easily replaceable. Incandescent lighting elements also offer relatively bright light, which is preferable in security type applications. This bright light, however, is not desirable in night light type applications. Further, incandescent lights burn at very high temperatures. In a supplementary lighting type application, the bulbs are generally small such that the glass enclosure is close to the element. These supplementary lighting devices are generally located near the ground, within easy reach of small children. Therefore, incandescent lights create a safety risk to children. The point source emission of an incandescent light is less preferable than wide area emissions.

[0005] Neon type lighting elements could also be used in supplementary lighting devices. Neon lights are low cost. However, they are generally not user-replaceable, therefore the entire device must be discarded when the lighting element fails. Neon light elements, however, can last several years, although they initially have a precipitous rate of decline of output. Hence, the light they emit for most of their life is only a small fraction of their initial output. Neon lights are also generally dim. Neon lights are cool, thereby presenting less of a safety hazard than incandescent lights.

[0006] Fluorescent lighting elements are also used in supplementary lighting devices. Fluorescent lighting elements have a high initial cost, but can generally be replaced. However, because fluorescent lighting elements are generally difficult to find, supplementary lighting devices using them are generally throw-away type units. Fluorescent lighting elements produce a wide range of colors, and are generally very bright, without being a point source emission. Fluorescent lights are also generally cool, reducing the safety risk associated with hot lighting elements. Fluorescent lighting elements have a relatively long life span, but toward the end of their useful life, they often experience flickering of the lighting element.

[0007] Recently, electroluminescent (EL) lighting elements have become increasingly popular for use in supplementary lighting devices. EL lighting elements provide wide-area emission, are cool (i.e., will not burn to the touch), and have a very long life. Most EL lighting elements used in supplementary lighting devices are connected directly across the 110 volt, AC power from a common household outlet. However, these EL lighting elements have the disadvantage that they are generally dim, are not replaceable, and their intensity fades gradually over their life span. Additionally, EL lighting elements utilized in supplementary lighting devices also generally remain activated even during the day, when their relatively dim light is not required.

[0008] There exist well-known techniques for increasing the light intensity of EL lighting elements above that which is generated by connecting them across 110 AC power lines. Methods for increasing the output of EL lighting elements include altering the voltage, altering the oscillation frequency of the alternating electricity, varying the duty cycle, and/or varying the waveform. However, these methods for increasing the output EL lighting elements still suffer from some of the same drawbacks as conventional EL lighting elements. For example, power boosted EL lighting elements still suffer illumination declines over the life of the light. Further, the amount of light cannot be controlled for specific applications.

[0009] U.S. Pat. No. 5,670,776 discloses an EL wall plate including a light sensor which detects the ambient light level and deactivates the EL panel when the ambient light reaches a certain pre-set level. The user can adjust the light intensity emitted from the EL panel by turning an adjusting stem of a variable resistor that regulates the current flowing through the drive circuit of the EL panel. U.S. Pat. No. 5,361,017 discloses an EL instrument panel with an anti-ageing feature, whereby the amount of light emitted EL lamp is maintained throughout the life of the lamp.

[0010] Supplementary lighting devices, regardless of the lighting element utilized, can also present a safety hazard to children due to their connection to a wall socket. These supplementary lighting devices are generally
the connection blades are inserted into a power source, removed from a power source. The protector retracts as connected to a power source. In particular, a protector covering the EL lighting device via a fastener which cannot be uncoupled. This provides a "daytime off" feature which the control system can completely shut off the EL lighting element; and Figure 5 is a cross-section of the supplementary lighting device of the present invention taken along lines 5-5 of Figure 3A; Figure 6 is a rear elevation view of a supplementary lighting device of the present invention; Figure 7 is a side elevation of a supplementary lighting device of the present invention and a conventional wall socket; Figures 8A and 8B are cross-section views of an embodiment of a dimmer of the present invention; Figures 9A-9C are isometric views of an alternative embodiment of a dimmer of the present invention; Figures 10A and 10B are a second alternative embodiment of a dimmer of the present invention; and Figure 11 is a block diagram of an embodiment of the control system of the present invention.

Detailed Description of the Preferred Embodiments

[0018] A preferred embodiment of the present invention is now described with reference to the figures where like reference numbers indicate identical or functionally similar elements. Also in the figures, the left most digit of each reference number corresponds to the figure in which the reference number is first used. While specific configurations and arrangements are discussed, it should be understood that this is done for illustrative purposes only. A person skilled in the relevant art will recognize that other configurations and arrangements can be used without departing from the spirit and scope of the invention.

[0019] A preferred embodiment of a supplementary lighting device 100 is shown in block form in FIG. 1. FIG. 1 shows that device 100 includes an illumination element 102, light sensor 104, a control system 106 and a dimmer 110. Light sensor 104 and illumination element 102 are both coupled to control system 106. Control system 106 is preferably an electronic system which receives input from light sensor 104 and controls illumina-
sion element 102. Dimmer 110 is user controlled and varies the output intensity of illumination element 102 working in conjunction with light sensor 104, illumination element 102 and/or control system 106, as will be more fully explained below.

[0020] Illumination element 102 is an electroluminescent (EL) lighting element which will be described in more detail below. Light sensor 104 is preferably a light detecting resistor (LDR) and is disposed in device 100 so as to receive input both from illumination element 102 and any ambient light 108. Light sensor 104 can also be configured as two light sensors, one for detecting light emitted from illumination element 102 and one for detecting ambient light 108. Light sensor 104 can also be a photo-diode, photo-resistor, photo-transistor, or other similar devices which can detect light intensity.

[0021] Control system 106 is designed to generate an adjustable intensity of brightness of illumination element 102. A preferred method of generating an adjustable intensity of brightness uses a combination of an astable oscillating circuit and a voltage multiplying circuit. The frequency of the oscillator is controlled by a pre-set signal as well as input received from light sensor 104. In the example where light sensor 104 is an LDR, the resistance of the LDR is a function of the amount of light it receives. As the light intensity of ambient light 108 or illumination element 102 increases, the resistance of the LDR increases, thereby slowing the oscillator of control system 106. As the oscillator slows, the intensity of illumination element 102 decreases. As would be apparent to one skilled in the relevant art, depending on the preset levels of control system 106, illumination element 102 can be controlled such that when ambient light 108 is detected by light sensor 104 which is consistent with daylight or artificially lighted conditions, the oscillator is slowed such that illumination element 102 is turned “off.”

[0022] It can be appreciated that because light sensor 104 also receives light emitting from illumination element 102, control system 106 acts as an intensity regulator to compensate for the decreased output of EL lighting elements due to ageing. Therefore, with a preset intensity for illumination element 102, as illumination element ages and its light intensity diminishes, light sensor 104 detects less light emitting from illumination element 102. This information is transmitted to control system 106, which increases the power to illumination element 102. This provides an automatic intensity regulation feature which compensates for the effects of ageing in illumination element 102.

[0023] FIG. 2 shows a preferred embodiment of supplementary lighting device 100. Device 100 includes a housing 202, a window 204, and a dimmer control 206. Dimmer control 206 allows the user to vary the pre-set intensity of illumination element 102. Dimmer control 206 can allow user selection in a variety of ways, as will be more fully described below. FIG. 3A shows a front elevation view of device 100, showing housing 202, window 204, and dimmer control 206. Light sensor 104 is also shown in phantom. FIG. 3B shows a front elevation of device 100 with window 204 removed. It can be seen that illumination element 102 is located behind window 204. Light sensor 104 can also been seen in FIG. 3B. Further, aperture 302 is located near light sensor 104 to allow detection of ambient light 108.

[0024] A preferred embodiment of illumination element 102 is shown in FIG. 4. Illumination element 102 includes a substantially planar illumination area 402 and an elongated connection tail 404 extending from illumination area 402. Conductor strips 406 are disposed on connection tail 404. Conductor strips 406 connect to control system 106 to provide power to illumination element 102, as will be explained in more detail below.

[0025] FIG. 5 shows a side cross-section view of device 100, taken along line 5-5 of FIG. 3A. As can be seen, housing 202 and window 204 serve as an enclosure for device 100. Window 204 is preferably coupled to housing 202 by a fastener 502 located at a rear surface 504 of housing 202. Fastener 502 can be a screw or other similar type of fastening device. Window 204 may also be press fit into housing 202. However, a fastener is a preferred attachment device. In particular, it is preferable that the fastener be located at rear surface 504 of housing 202, because it requires removal of device 100 from the power source (wall socket) before window 204 can be removed. This safety precaution prevents one from attempting to replace illumination element 102 while device 100 is connected to the power source.

[0026] Window 204 preferably press fits illumination area 402 of illumination element 102 against a flat interior cavity 503 of housing 202. Elongated tail 404 of illumination element 102 fits into a guide-way 505. Guide-way 505 leads to connector 506 which connects to control system 106. When elongated tail 404 is inserted through guide-way 505 and into connector 506, conductor strips 406 make contact with connector 506, such that control system 106 provides power to illumination element 102. Guide-way 505 is the only path from the user-accessible area behind window 204 to control system 106.

[0027] Also shown in FIG. 5 is an additional safety feature to prevent minor electrical shocks or burns to small children attracted to supplementary lighting device 100 due to its proximity to the ground and attractive light. Device 100 is normally plugged into a common household wall socket via electrical contact blades 508 which protrude from rear surface 504 of housing 202. In a preferred embodiment of device 100, a recess or cavity 510 is formed in rear surface 504 of housing 202 surrounding electrical contact blades 508. A protector 512 is disposed in cavity 510 and extends the length of blades 508. Protector 512 is collapsible such that it collapses into cavity 510 as blades 508 are inserted into the wall socket. When blades 508 are removed from the wall socket, protector 512 extends from cavity 510 to prevent contact with blades 508 until device 100 is completely
removed from the wall socket. Protector 512 therefore prevents fingers, screwdrivers, toys, etc., from contacting blades 508 while blades are still in contact with the electrical power source. Protector 512 is preferably made of nonconductive and resilient material such as rubber, and is preferably constructed in the form of bellows, as shown, for easy expansion and contraction.

**[0028]** FIG. 6 shows an elevation view of rear surface 504 of device 100, including cavity 510, electrical connection blades 508, and fasteners 502. FIG. 7 shows a side elevation of device 100 coupled to a standard household outlet 702 as a power source.

**[0029]** Explanation will now be provided for various embodiments of dimmer 110. Dimmer 110 can vary the illumination intensity of illumination element 102 by directly acting with control system 106, as shown in Figure 1. Preferably, however, dimmer 110 works in conjunction with light sensor 104 to mechanically and/or optically adjust the intensity of light output from illumination element 102, which is detected by light sensor 104. As discussed above, the intensity of light outputted from illumination element 102 is increased or decreased by control system 106 depending on the amount of light detected from light sensor 104. Therefore, dimmer 110 is constructed such that the amount of light detected by light sensor 104 can be artificially adjusted by the user.

**[0030]** One embodiment of a dimmer 110 is shown in FIGs. 8A and 8B. In this preferred embodiment, dimmer 110 comprises dimmer control 206 constructed as a small wheel which can be adjusted by the user. Light sensor 104 is disposed within wheel dimmer control 206 such that when dimmer control 206 is moved, light sensor 104 is angled towards or away from illumination element 102. When light sensor 104 is angled away from illumination element 102, as shown in Fig. 8B, it detects less light from illumination element 102, thereby causing control system 106 to increase power to illumination element 102, to make increase the intensity of illumination element 102 while the system regulates itself. Conversely, when dimmer control 206 is moved in the other direction, as shown in FIG. 8A, light sensor 104 is angled towards illumination element 102, thereby detecting more light from illumination element 102. Consequently, control system 106 reduces power to illumination element 102 which dims the output. It would be apparent to one skilled in the relevant art from this description that light sensor 104 also moves slightly closer to and away from illumination element 102 when dimmer control 206 is moved. This further increases or decreases the amount of light detected by light sensor 104. It can further be appreciated that if light sensor 104 is moved away from the center of dimmer control 206, turning dimmer control 206 towards or away from illumination element 102 has a greater effect on the distance that light sensor 104 moves towards or away from illumination element 102.

**[0031]** Another embodiment of dimmer 110 is shown in FIGs. 9A-9C. In this embodiment, dimmer 110 comprises dimmer control 206 and a mechanical dimmer element constructed as a sloped section 904. Dimmer control 206 allows the user to slide sloped section 904 such that light sensor 104 is progressively unblocked (FIG. 9A), partially blocked (FIG. 9B), or completely blocked (FIG. 9C). The amount of sloped section 904 blocking light sensor 104 adjusts the quantity of light detected by light sensor 104. Therefore, if dimmer control 206 is moved such that sloped section 904 completely blocks light sensor 104, light sensor 104 detects no light from illumination element 102, thereby causing control system 106 to increase power to illumination element 102. Similarly, as dimmer control 206 is moved such that sloped section 904 begins to uncover light sensor 104, light sensor 104 detects more light from illumination element 102. This causes control system 106 to decrease power to illumination element 102, thereby decreasing the intensity of light emitted from illumination element 102.

**[0032]** FIGs. 10A and 10B show another alternative embodiment of dimmer 110. In this embodiment, dimmer 110 comprise a dimmer control 206 and a partially mirrored reflective section 1002. Reflective section 1002 has a sloped reflective surface across its face. Dimmer control 206 allows the user to slide reflective section 1002 such that light emitted from illumination element 102 is variably reflected as a function of the amount of reflective material on the part of reflective section 1002 which is positioned so as to conduct light to light sensor 104 via aperture 1004. The sliding position of dimmer control 206 therefore adjusts the quantity of light detected by light sensor 104. As described above, if dimmer control 206 is moved such that reflective section 1002 reflects effectively no illumination from illumination element 102, light sensor 104 detects no light from illumination element 102, thereby causing control system 106 to increase power to illumination element 102. Similarly, as dimmer control 206 is moved such that reflective section 1002 reflects a greater amount of light from illumination element 102, light sensor 104 detects more light from illumination element 102. This causes control system 106 to decrease power to illumination element 102, thereby decreasing the intensity of light emitted from illumination element 102.

**[0033]** Several other possible embodiments of dimmer 110 exist. For example, dimmer control 206 could be coupled to illumination element 102 such that moving dimmer control 206 moves illumination element 102 towards or away from light sensor 104. This has the same effect as moving light sensor 104 towards or away from illumination element 102, as described above with respect to FIGs. 8A and 8B. Similarly, an adjustable reflecting device could be positioned between illumination source 102 and light sensor 104. Dimmer control 206 adjusts the angle or position of the reflecting device such that light sensor 104 detects more or less light from illumination element 102. Several other similar devices could be designed that increase or decrease the amount...
of light detected by light sensor 104 from illumination element 102.

[0034] Note that dimmer 110 can be designed to completely shut off light from illumination source 102 to light detector 104, as discussed above. This would allow maximum light output from illumination source 102, and also provides for the greatest amount of variability in output power (i.e., from 0% to 100%). It is also possible to design dimmer 110 such that it cannot completely prevent light from illumination source 102 from reaching light detector 104. In this embodiment, the system could not produce maximum output of the illumination source, however, it could provide automatic decay adjustment over a longer period of the illumination element’s life span. For example, the system could be designed such that when dimmer 110 is adjusted for maximum output, control system 106 would only provide 30% of its maximum power supplying capability to illumination element 102. Although the maximum light output of such a system is initially less than if 100% of the power supplying capability were utilized, as illumination element 102 ages, the remaining 70% of control system’s 106 power supplying capability would steadily come into effect. This would allow illumination element 102 to keep it artificial “maximum” output for a longer period of time.

[0035] An exemplary embodiment of control system 106 is shown in block diagram form in FIG. 11. As would be apparent to one of ordinary skill in the relevant art, this is only a particular embodiment of control system 106. Several other designs could be utilized to achieve the same or similar result. Control system 106 receives input from AC power source 1102 and from light sensor 104. AC power is then treated through a rectifier 1104 and a power conditioner 1106. Rectifier 1104 can be a full wave rectifier, a half wave rectifier, a voltage doubler, or several other common design alternatives. Power conditioner 1106 can be comprised of capacitors, or resistors and capacitors, or inductors and capacitors, or various other common implementations. The purpose of power conditioner 1106 is to provide some amount of stabilization for the rectified power source. An oscillator 1108 receives the rectified and conditioned A/C power. Oscillator 1108 can generate a sinusoidal wave via an RC shift network, a Wien bridge, or an inductor-capacitor arrangement. Alternatively, oscillator 1108 can generate a modified square wave or a composite wave-form via flip-flops, or an astable network, or via a free-running multi-vibrator, or via several other common circuit implementations, as would be apparent to one of ordinary skill in the relevant art. Oscillator 1108 could also use crystal or ceramic oscillators, or even the output of a microprocessor. Oscillator 1108 can be designed as either a fixed- or variable-controlled oscillator. If the design is a variable-controlled oscillator, then the conditioned signal from light sensor 104 can vary the rate of oscillation as a function of the amount of light sensed, and thus it would affect the intensity of the EL element.

[0036] The output of the oscillator 1108 is then sent to a power adjuster 1110 which conditions the output so that it is within the operating norms of illumination element 102. The resulting power is then output from control system 106 and applied to the contacts of the EL lighting element, producing an appropriate glow. Power adjuster 1110 can be either a fixed- or variable-controlled regulator design, configured so as to adjust either the voltage or the current (or both). If the design is a variable-controlled regulator, then the conditioned signal from light sensor 104 varies the amount of power output during each oscillation as a function of the amount of light sensed, and thus would affect the intensity of illumination element 102.

[0037] The second input into control system 106 is from light sensor 104. The input from light sensor 104 is conditioned by conditioner 1112 to adjust it to the needs of the other circuitry in control system 106. The output from conditioner 1112 is then applied as a controlling signal for either oscillator 1108 or power adjuster 1110, or both. Thus, the signal from light sensor 104 affects the intensity of illumination element 102.

[0038] As the intensity of illumination element 102 varies, the changed intensity from illumination element 102 is detected by light sensor 104 transferred to control system 106, as described above. This allows for constant adjustment of the intensity of illumination element 102 to a desired setting, even when illumination element 102 begins to fade. As fading begins to occur, light sensor 104 will detect less light from illumination element 102, and power adjuster 1110 or oscillator 1108 of control system 106 will thereby increase the intensity of illumination element 102 until it reaches the intensity preset by the user using dimmer control 206. Similarly, as dimmer control 206 is adjusted, light sensor 104 detects less or more light from illumination element 102. Control system 106 automatically adjusts for this change, and power adjuster 1110 provides more or less power to illumination element 102. This allows for user control of the intensity of illumination element 102 simply by adjusting dimmer control 206.

[0039] In addition, when light sensor 104 is designed to detect ambient light 108 from the area surrounding device 100, an increase in ambient light 108 will cause control system 106 to decrease the intensity of illumination element 102. Therefore, control system 106 can be designed such that the amount of ambient light 108 detected by light sensor 104 will be sufficient to completely shut off illumination element 102 in daylight type conditions. This provides a “daytime off” feature which extends the serviceable life of illumination element 102. Similarly, light sensor 104 can be designed such that it receives both ambient light and light emitted from illumination element 102. Control system 106 can be designed such that the amount of ambient light 108 detected by light sensor 104 exceeds the amount of light detected from illumination element 102. Further, dimmer 110 can be designed to affect only that amount of light
detected by light sensor 104 which is emitted by illumination element 102. This combination of design element allows the anti-ageing feature, the daytime-off feature, and the adjustable dimmer feature to be efficiently incorporated into a supplementary lighting device.

Claims

1. A supplementary lighting device (100) comprising an electroluminescent lighting element (102) having a light intensity, a control system (106) coupled to said electroluminescent lighting element; wherein said control system (106) varies the light intensity of said electroluminescent lighting element (102), a user-adjustable dimmer (110) coupled to said control system, electrical connection blades for coupling the supplementary lighting device (100) to a standard alternating current, characterized in that:

   the supplementary lighting device (100) includes a light sensor (104) coupled to said control system (106) and disposed in the device so as to detect light emitted from said electroluminescent lighting element (102), wherein said control system (106) varies the light intensity of said electroluminescent element (102) so that said control system (106) receives an input from said light sensor (104) which effectively matches a pre-set level; and

   said user-adjustable dimmer (110) includes a mechanical dimmer element (206, 904, 1004) positioned to optically and/or mechanically adjust the amount of light which is detected by said light sensor (104) from said electroluminescent lighting element (102).

2. The supplementary lighting device of claim 1, wherein said mechanical dimmer element comprises a shutter which progressively blocks or unblocks light emitted from said electroluminescent lighting element from being detected by said light sensor according to the adjustment of said dimmer control.

3. The supplementary lighting device of claim 1, wherein said mechanical dimmer element comprises a reflector which progressively reflects more or less light emitted from said electroluminescent lighting element onto said light sensor, according to the adjustment of said dimmer control.

4. The supplementary lighting device of claim 1, wherein said mechanical dimmer element comprises a lens which progressively focuses more or less light emitted from said electroluminescent lighting element onto said light sensor, according to the adjustment of said dimmer control.

5. The supplementary lighting device of claim 1, wherein said mechanical dimmer element comprises a light-pipe which progressively directs more or less light emitted from said electroluminescent lighting element onto said light sensor according to the adjustment of said dimmer control.

6. The supplementary lighting device of claim 1, wherein said dimmer control is mechanically coupled to said electroluminescent lighting element and user adjustment of said dimmer control moves at least a portion of said electroluminescent lighting element towards or away from said light sensor.

7. The supplementary lighting device of claim 1, wherein said dimmer control is mechanically coupled to said light sensor and user adjustment of said dimmer control moves at least a portion of said light sensor towards or away from said electroluminescent lighting element.

8. The supplementary lighting device of claim 1, wherein said dimmer control is mechanically coupled to said light sensor and user adjustment of said dimmer control varies the angle of said light sensor such that said light sensor detects more or less light emitted from said electroluminescent lighting element.

9. The supplementary lighting device of claim 1, wherein said dimmer control is mechanically coupled to said electroluminescent lighting element and user adjustment of said dimmer control varies the angle of at least some portion of said electroluminescent lighting element such that said light sensor detects more or less light emitted from said electroluminescent lighting element.

10. The supplementary lighting device of claim 1, wherein said light sensor also detects ambient light around the device and said control system reduces or eliminates the light intensity of said electroluminescent lighting element when the input received from said light sensor effectively reaches a pre-set level.

11. The supplementary lighting device of claim 1, further comprising a second light sensor coupled to said control system which detects ambient light around the device and said control system reduces or eliminates the light intensity of said electroluminescent lighting element when the input received from said second light sensor reaches a pre-set level.
Patentansprüche

1. Zusatz-Beleuchtungsvorrichtung (100) mit einem elektroluminiszierenden Beleuchtungselement (102) mit einer Lichtstärke, einem Steuersystem (106), das an das elektroluminiszierende Beleuchtungselement gekoppelt ist, wobei das Steuersystem (106) die Lichtstärke des elektroluminiszierenden Beleuchtungselements (102) variiert, einem bedieneinstellbaren Dimmer (110), der mit dem Steuersystem gekoppelt ist, elektrischen Verbindungsschienen zum Koppeln der Zusatz-Beleuchtungsvorrichtung (100) mit einem Standard-Wechselstrom, dadurch gekennzeichnet, dass die Zusatz-Beleuchtungsvorrichtung (100) einen Lichtsensor (104) aufweist, der mit dem Steuersystem (106) gekoppelt und in der Vorrichtung so angeordnet ist, dass er von dem elektroluminiszi-}

2. Zusatz-Beleuchtungsvorrichtung nach Anspruch 1, wobei das mechanische Dimmerelement einen Verschluss aufweist, der mit dem Steuersystem (106) gekoppelt und in der Vorrichtung so angeordnet ist, dass er von dem elektroluminiszierenden Beleuchtungselement abgegebenes Licht detektiert, wobei das Steuersystem (106) die Lichtstärke des elektroluminiszierenden Beleuchtungselements (102) so variiert, dass das Steuersystem (106) einen Input von dem Lichtsensor (104) empfängt, der effektiv einer vorgegebenen Höhe entspricht; und der bedieneinstellbare Dimmer (110) ein mechanisches Dimmerelement (206, 904, 1004) aufweist, das so angeordnet ist, dass es die Lichtmenge von dem elektroluminiszierenden Beleuchtungselement, die von dem Lichtsensor (104) detektiert wird, optisch und/oder mechanisch einstellt.

3. Zusatz-Beleuchtungsvorrichtung nach Anspruch 1, wobei das mechanische Dimmerelement einen Reflektor aufweist, der gemäß der Einstellung der Dimmersteuerung stufenweise von der Detektierung durch den Lichtsensor abblockt oder für diese freigibt.

4. Zusatz-Beleuchtungsvorrichtung nach Anspruch 1, wobei das mechanische Dimmerelement eine Linse aufweist, die gemäß der Einstellung der Dimmersteuerung mehr oder weniger des von dem elektroluminiszierenden Beleuchtungselement abgegebenen Lichts stufenweise auf den Lichtsensor fokussiert.

5. Zusatz-Beleuchtungsvorrichtung nach Anspruch 1, wobei das mechanische Dimmerelement einen Hohllichtleiter aufweist, der gemäß der Einstellung der Dimmersteuerung mehr oder weniger des von dem elektroluminiszierenden Beleuchtungselement abgegebenen Lichts auf den Lichtsensor richtet.

6. Zusatz-Beleuchtungsvorrichtung nach Anspruch 1, wobei die Dimmersteuerung mechanisch mit dem elektroluminiszierenden Beleuchtungselement gekoppelt ist und die Bedieneriestellung der Dimmersteuerung wenigstens einen Teil des elektroluminiszierenden Beleuchtungselements auf den Lichtsensor zu oder davon weg bewegt.

7. Zusatz-Beleuchtungsvorrichtung nach Anspruch 1, wobei die Dimmersteuerung mechanisch mit dem Lichtsensor gekoppelt ist und die Bedieneriestellung der Dimmersteuerung wenigstens einen Teil des Lichtsensors auf das elektroluminiszierende Beleuchtungselement zu oder davon weg bewegt.

8. Zusatz-Beleuchtungsvorrichtung nach Anspruch 1, wobei die Dimmersteuerung mechanisch mit dem Lichtsensor gekoppelt ist und die Bedieneriestellung der Dimmersteuerung den Winkel des Lichtsensors so variiert, dass der Lichtsensor mehr oder weniger des von dem elektroluminiszierenden Beleuchtungselement abgegebenen Lichts detektiert.

9. Zusatz-Beleuchtungsvorrichtung nach Anspruch 1, wobei die Dimmersteuerung mechanisch an das elektroluminiszierende Beleuchtungselement gekoppelt ist und die Bedieneriestellung der Dimmersteuerung den Winkel des Lichtsensors so variiert, dass der Lichtsensor mehr oder weniger des von dem elektroluminiszierenden Beleuchtungselement abgegebenen Lichts detektiert.

10. Zusatz-Beleuchtungsvorrichtung nach Anspruch 1, wobei der Lichtsensor auch Umgebungslicht um die Vorrichtung herum detektiert und das Steuersystem die Lichtstärke des elektroluminiszierenden Beleuchtungselements reduziert oder eliminiert, wenn der von dem Lichtsensor empfangene Input effektiv eine vorgegebene Höhe erreicht.

11. Zusatz-Beleuchtungsvorrichtung nach Anspruch 1, die des Weiteren einen zweiten Lichtsensor aufweist, der mit dem Steuersystem gekoppelt ist und Umgebungslicht um die Vorrichtung herum detektiert, wobei das Steuersystem die Lichtstärke des elektroluminiszierenden Beleuchtungselements reduziert oder eliminiert, wenn der von dem zweiten Lichtsensor empfangene Input eine vorgegebene Höhe erreicht.
Dispositif d'éclairage auxiliaire (100) comprenant un élément d'éclairage électroluminescent (102) ayant une intensité de lumière, un système de commande (106) relié audit élément d'éclairage électroluminescent, ledit système de commande (106) faisant varier l'intensité de lumière dudit élément de lumière électroluminescent (102), un variateur réglable par l'utilisateur (110) relié audit système de commande, des lames de connexion électrique servant à relier le dispositif d'éclairage auxiliaire (100) à un courant alternatif standard, caractérisé en ce que :

le dispositif d'éclairage auxiliaire (100) comprend un capteur de lumière (104) relié audit système de commande (106) et disposé dans le dispositif de façon à détecter la lumière émise par ledit élément d'éclairage électroluminescent (102), dans lequel ledit système de commande (106) fait varier l'intensité de lumière dudit élément électroluminescent (102) de façon à ce que ledit système de commande (106) reçoive une entrée en provenance dudit capteur de lumière (104) qui correspond effectivement à un niveau préréglé ; et ledit variateur réglable par l'utilisateur (110) comprend un élément de variateur mécanique (206, 904, 1004) positionné de façon à ajuster de manière optique et/ou mécanique la quantité de lumière qui est détectée par ledit capteur de lumière (104) à partir dudit élément d'éclairage électroluminescent (102).

Dispositif d'éclairage auxiliaire selon la revendication 1, comprenant, en outre, un second capteur de lumière (104) relié audit système de commande, bloque ou débloque progressivement, pour sa détection par ledit capteur de lumière, la lumière émise par l'élément d'éclairage électroluminescent.

Dispositif d'éclairage auxiliaire selon la revendication 1, dans lequel ledit élément de variateur mécanique comprend un obturateur qui, en fonction du réglage de ladite commande de variateur de lumière, déplace au moins une partie dudit élément d'éclairage électroluminescent pour la rapprocher ou l'éloigner dudit capteur de lumière.

Dispositif d'éclairage auxiliaire selon la revendication 1, dans lequel ledit élément de variateur mécanique comprend un conduit de lumière qui orienté progressivement vers ledit capteur de lumière une quantité plus ou moins grande de la lumière émise par ledit élément d'éclairage électroluminescent, en fonction du réglage de ladite commande de variateur.

Dispositif d'éclairage auxiliaire selon la revendication 1, dans lequel ledit élément de variateur mécanique comprend un réflecteur qui réfléchit progressivement vers ledit capteur de lumière une quantité plus ou moins grande de la lumière émise par ledit élément d'éclairage électroluminescent, en fonction du réglage de ladite commande de variateur.

Dispositif d'éclairage auxiliaire selon la revendication 1, dans lequel ledit élément de variateur mécanique comprend un capteur de lumière (104) à partir dudit élément d'éclairage électroluminescent lorsque l'entrée reçue dudit capteur atteint effectivement un niveau préréglé ; et

Dispositif d'éclairage auxiliaire selon la revendication 1, dans lequel ledit capteur de lumière détecte une quantité plus ou moins grande de la lumière émise par ledit élément d'éclairage électroluminescent lorsqu'il ou débloque progressivement, pour sa détection par ledit capteur de lumière, la lumière émise par l'élément d'éclairage électroluminescent.

Dispositif d'éclairage auxiliaire selon la revendication 1, dans lequel ledit capteur de lumière détecte une quantité plus ou moins grande de la lumière émise par ledit élément d'éclairage électroluminescent lorsqu'il ou débloque progressivement, pour sa détection par ledit capteur de lumière, la lumière émise par l'élément d'éclairage électroluminescent.

Dispositif d'éclairage auxiliaire selon la revendication 1, dans lequel ledit capteur de lumière détecte une quantité plus ou moins grande de la lumière émise par ledit élément d'éclairage électroluminescent lorsqu'il ou débloque progressivement, pour sa détection par ledit capteur de lumière, la lumière émise par l'élément d'éclairage électroluminescent.

Dispositif d'éclairage auxiliaire selon la revendication 1, dans lequel ledit capteur de lumière détecte une quantité plus ou moins grande de la lumière émise par ledit élément d'éclairage électroluminescent lorsqu'il ou débloque progressivement, pour sa détection par ledit capteur de lumière, la lumière émise par l'élément d'éclairage électroluminescent.
lumière relié audit système de commande, qui dé-
tecte la lumière ambiante autour du dispositif et ledit
système de commande réduit ou élimine l'intensité
de lumière dudit élément d'éclairage électrolumi-
nescent lorsque l'entrée reçue dudit second capteur
de lumière atteint un niveau préréglé.