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(54) Additional lighting device for small objects

(57) A lightening device for small objects includes a low voltage light source (1), which is placed inside an object (31,32). The object (31,32) can be opened, so as to allow the access to its inside, and then closed. The device includes also a battery (3) for supplying power to the light source (1), which is placed inside the object (31,32). Moreover, the device includes a switch (4) for the power supply battery (3), situated between the light source (1) and the battery (3), and operated to turn on and off the light source (1).

FIG.2

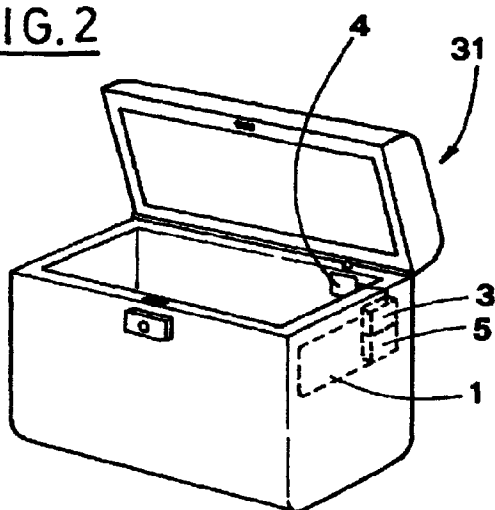
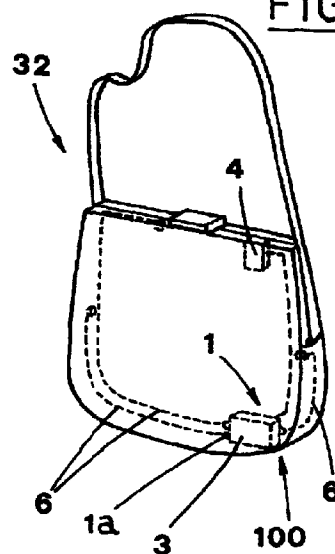


FIG.3



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Description

[0001] The present invention relates to a lightening device for small objects, in particular to portable objects, such as small containers, bags, mirrors and the like.

[0002] Many small operations carried out every day need light, and it can happen that the light is scarce or not sufficient for these operations to be carried out.

[0003] Particular, but significant examples of situations of scarce or not sufficient light are those in which an object is looked for inside a bag at night, or ransacking jewel case or another small container situated in a scarcely lighted corner of the house.

[0004] Almost everybody has experienced the difficulties finding objects in the above mentioned situations and irritating hitches created thereby.

[0005] Likewise, it is possible that someone wants to use a mirror to control a fastidious pimple or contact lens, while being in the cinema or in another scarcely lighted place.

[0006] In all these situations, small operations, otherwise banal, can be extremely difficult, if not impossible.

[0007] The present invention has been evolved with the object to propose a lightening device, which can be connected to small objects of common use, which allows to eliminate completely the above mentioned problems.

[0008] Another object of the present invention is to propose a lightening device, whose manufacturing is simple and reliable and which is versatile and can be adapted to different types of objects, and which is also easy to install and maintain.

[0009] The above mentioned objects are obtained in accordance with the contents of the claims.

[0010] The characteristic features of the invention are pointed out in the following description with reference to the drawings, in which:

- Figure 1 is a block diagram of the proposed device;
- Figures 2, 3 and 4 are views of different embodiments of the proposed device;
- Figure 5 is a section view taken along line V-V of Figure 4;
- Figure 6 is a schematic lateral view of a casing containing the proposed device.

[0011] With reference to Figure 1, the reference numeral 1 generally designates an electric light source which is activated by relatively low power supply voltage.

[0012] A light source of this type can include a plurality of light emitting diodes, i.e. LEDs, a small incandescent lamp, or a laminar light source of any shape, with light emission stimulated by a changeable electric field, whose operation is substantially known and therefore will not be described in detail.

[0013] Power supply means 3, e.g. rechargeable or non rechargeable, storage batteries, commercially

available, are connected to the light source 1 for supplying power thereto.

[0014] A switch 4, situated between the light source 1 and the battery 3, controls turning off and on of the light source 1.

[0015] The proposed device, indicated with 100, can be used in association with an object 31, 32, 33 to be lightened (see Figures 2, 3 and 4).

[0016] In particular, the object in which light is necessary can be a bag 32.

[0017] In this case, the device 100 is placed inside the bag 32 with the switch 4 placed near the bag closure.

[0018] The switch can be formed by an electromechanical push switch, which is operated when the bag 32 is opened and closed, or by a known proximity sensor, operated likewise when the bag is opened and closed.

[0019] In this case the source of light 1, connected to the bag, includes a plurality of light emitting diodes, i.e. LEDs, situated near the battery 3.

[0020] Each LED is connected to one optic fiber 6, which conveys light generated by the LED toward a predetermined position inside the bag 32, for improving lightening conditions.

[0021] Likewise, the device 100 can be used with a case 31 (Figure 2).

[0022] According to a second embodiment, the case 31 is equipped with a light source 1 formed by a laminar light emitting source, having its surface stimulated by a variable electric field. The laminar light emitting source is known and available on market.

[0023] The laminar light source has also, connected thereto, electronic means 5 for power supply modulation (Figure 1). In this way, the laminar light source supply can modulated according to the operation and start up characteristics of the laminar light source.

[0024] In particular, the electronic means 5 include an inverter, which allows to suitably change the voltage supplied to the light source.

[0025] Obviously, the source lights 1 obtained according to the above described embodiments, can be indiscriminately used either with the bag 32 or the case 31 or other types of objects to be lightened.

[0026] According to another embodiment, shown in Figures 4 and 5, the device 100 is connected to a circular mirror 33.

[0027] In this case, the light source 1 is formed by a ring-like laminar source 10, of the type described previously, fastened to the external surface 34 of the edge 33a of the mirror 33.

[0028] In this case, the battery 3, the inverter 5 and the switch 4 are fastened to the rear surface 33b of the mirror 33.

[0029] Moreover, the switch is preferably operated manually.

[0030] Figure 6 shows a casing 70 containing the proposed device; the casing has made therein two holes 70A, through which means pass for fastening the casing

to an object to be lightened.

[0031] Advantageously, the switch is a proximity-sensitive switch, a touch-sensitive switch, and is possibly connected to a timer.

[0032] The main advantage of the present invention derives from the fact that the device 100 allows to avoid the drawbacks described in the introductory statement, in an extremely simple, practical and, if desired, automatic, way.

[0033] Moreover, the device is extremely simple, versatile and requires no maintenance, except for periodical substitution of the battery.

Claims

1. Lightening device for small objects, characterized in that it includes:

at least one low voltage light source (1), which is placed inside a hollow object (31,32), that can be opened, so as to allow the access to its inside, and then closed;
power supply means (3) for said light source (1), which are placed inside said hollow object (31,32) near said light source;
switch means (4) for said power supply means (3), situated between said light source (1) and power supply means (3), and operated to turn on and off the light source (1).

2. Lightening device for small objects, characterized in that it includes:

a laminar light source (10), with the light emission stimulated by a variable electric field, said laminar source being fastened to the edge (34) of a mirror (33); power supply means (3) for said laminar light source (10);
switch means (4) for said power supply means (3), situated between said laminar light source (10) and said power supply means (3), and operated to turn on and off the laminar light source (10);
electronic means (5) for modulating the power supply to said laminar light source (10) and defining the mode in which the laminar light source is turned on.

3. Device according to claim 1, characterized in that said light source includes a plurality of light emitting diodes (1a), situated in predetermined positions inside the object (32).

4. Device according to claim 3, characterized in that said light emitting diodes are situated near said power supply means (3), and in that it includes light waves conveyors (6), which convey the light generated by said light emitting diodes (1a) toward said

predetermined positions inside said object (32).

5. Device according to claim 4, characterized in that said light waves conveyors (6) include a plurality of optical fibers.
6. Device according to claim 1, characterized in that said light source (1) is a laminar light source with the light emission stimulated by a variable electric field, said device including electronic means (5) for power supply modulation, connected to said laminar light source (1) and defining the mode in which said laminar light source is turned on.
7. Device according to claim 1, characterized in that said switch means (4) include a mechanical push switch, which is operated when the object (31,32) is opened and closed.
8. Device according to claim 1, characterized in that said switch means (4) include formed by a proximity sensor, which is operated when the object (31,32) is opened and closed.
9. Device, according to claim 1, characterized in that said switch means (4) include a touch-sensitive switch connected to a timer.
10. Device, according to claim 1, characterized in that said light source (1), said power supply means (3) and said switch means (4) are contained in a casing (70).

FIG.2

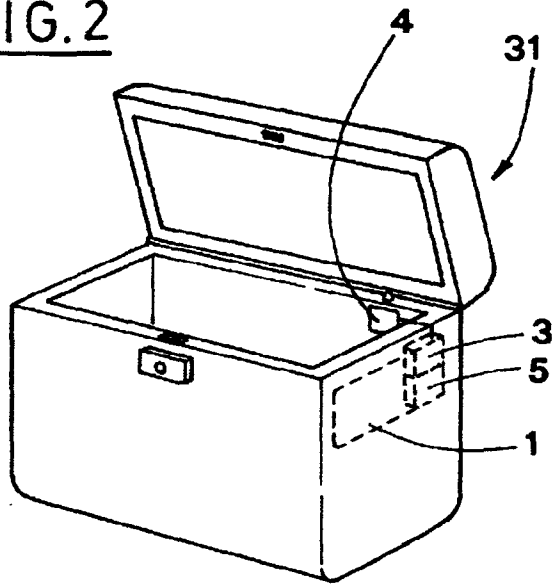


FIG.3

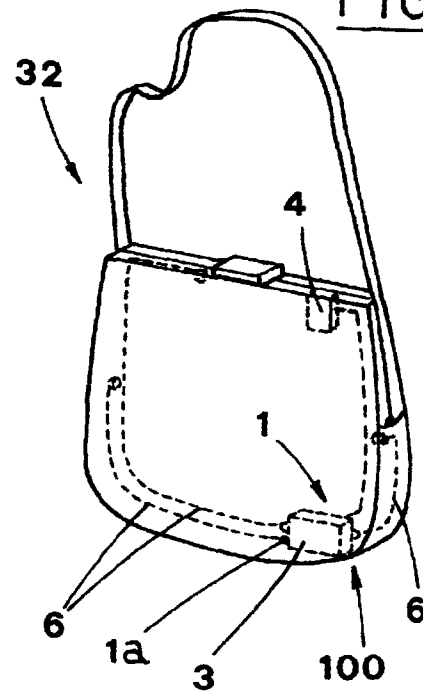


FIG.4

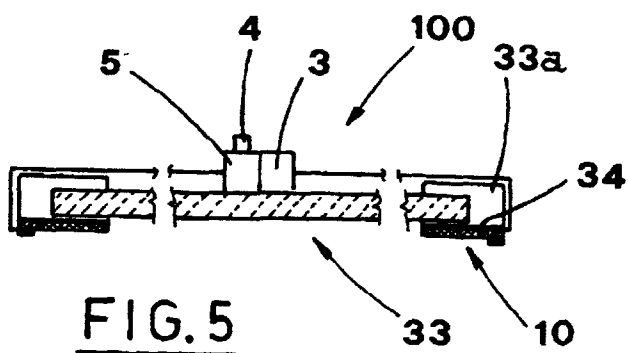
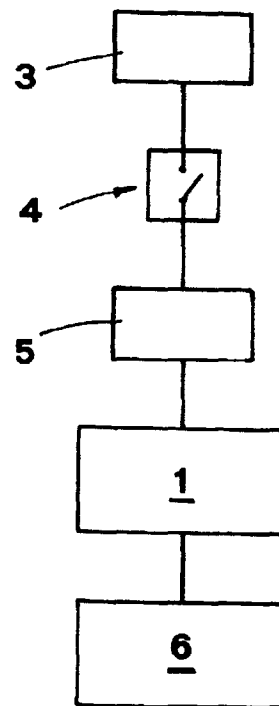
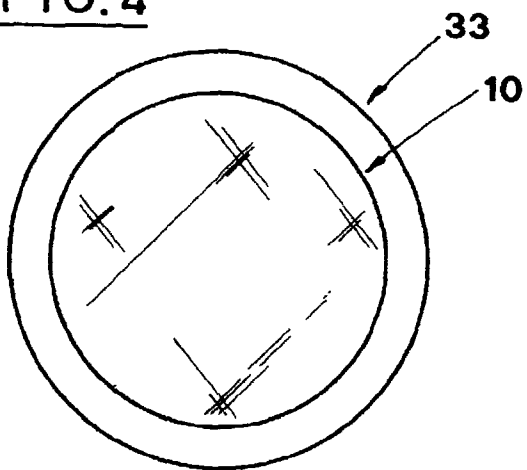


FIG.1

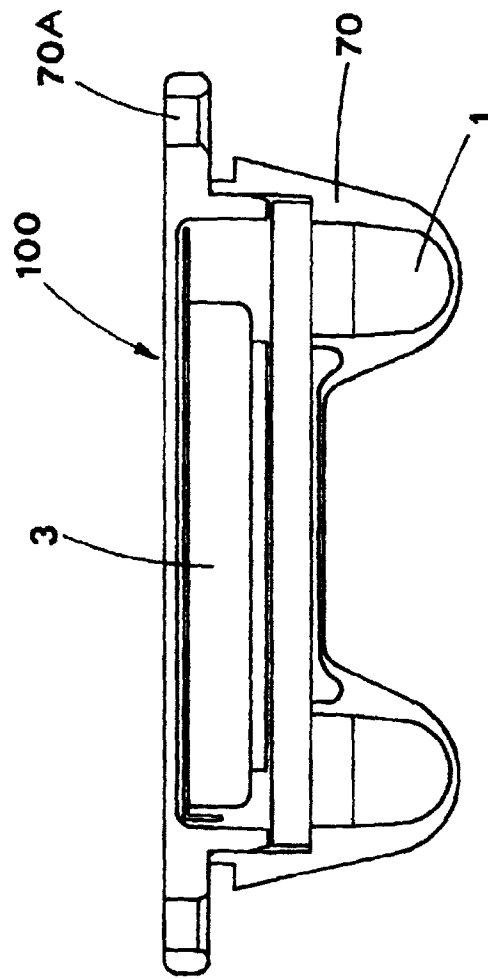


FIG. 6



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EUROPEAN SEARCH REPORT

Application Number
EP 99 10 9679

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The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 1 September 1999	Examiner Sigwalt, C
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			

EPO FORM 1503 03.82 (P04C01)

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