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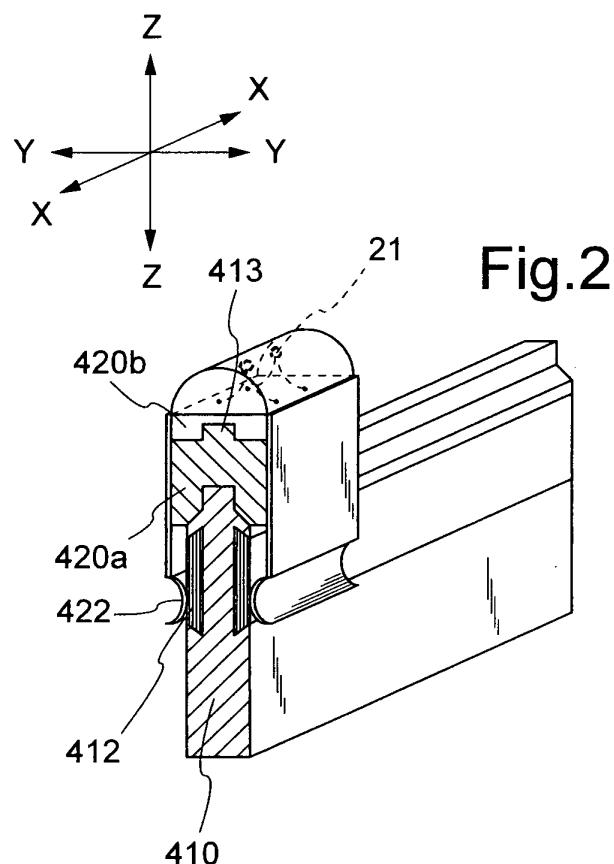
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(54) **Illumination device with modular and movable lamp holder for display cabinets and/or display spaces**

(57) Illumination device for display cabinets or display areas, comprising at least one base (410;510) to which conductors (412;512) are fixed and at least one lampholder body (20;420;520) inside which light sources

(21) are arranged, said lamp holder having, attached thereto, resilient means (422;522) arranged in a position opposite to that of the conductors (412;512) for relative mechanical and electrical connection.



Description

[0001] The present invention relates to an illumination device for display cabinets or display areas of both a public and private nature.

[0002] It is known that in the technical sector relating to the manufacture of display cabinets for products of various kinds, such as cosmetics, perfumes and the like, there exist problems arising from the need to illuminate the said products arranged on the various shelves of the display cabinet, while ensuring at the same time the safety of the user who, when approaching the display cabinet and removing an article, must not, even accidentally, come into contact with live electrical parts.

[0003] For this purpose, numerous devices able to achieve optimum insulation of the visible parts of the display cabinet, using also low voltage illumination means, have been developed.

[0004] These known display cabinets nevertheless require the installation of complicated and costly electrical wiring and/or electrical contact means of the sliding type, which increase considerably the costs of production and maintenance of the display cabinet.

[0005] The technical problem which is posed, therefore, is that of providing an illumination device for display cabinets and/or display spaces intended for products of various kinds, which allows diffusion of light over all the objects displayed, without the need for electrical wiring and/or electrical connections in respect of each surface/area to be illuminated.

[0006] In the context of this problem a further requirement is that the display cabinet should be easy and inexpensive to produce and assemble and allow variation of the relative arrangement of the light sources so that the latter are directed towards the product without the need for structural modifications of the display cabinet and/or the illumination system.

[0007] These results are obtained according to the present invention by an illumination device for display cabinets or display areas comprising at least one base to which conductors are fixed and at least one lamp-holder body inside which light sources are arranged, said lamp holder having, attached thereto, resilient means arranged in a position opposite to that of the conductors for relative mechanical and electrical connection.

[0008] Further details may be obtained from the following description of a non-limiting example of embodiment of the subject of the present invention provided with reference to the accompanying drawings in which:

- Figure 1 shows a partially exploded schematic perspective view of a first embodiment of the illumination device according to the present invention;
- Figure 2 shows a partially sectioned view of the device according to Fig. 1 assembled;
- Figures 3 shows a partially exploded schematic perspective view of a second embodiment of the illumination device according to the present invention;

- Figure 4 shows a partially sectioned view of the device according to Fig. 1 assembled; and
- Figure 5 shows a schematic cross-section of a preferred embodiment of the lamp holder of the device according to the invention.

[0009] As shown in Fig. 1, with reference to the set of three directional axes assumed solely for the sake of convenience of the description, the illumination device for display cabinets according to the present invention comprises:

- a fixed base 410 consisting of a body made of insulating material and having a substantially parallelepiped extension with a longitudinal dimension X-X and vertical dimension Z-Z much greater than the transverse dimension Y-Y;

[0010] The vertical surfaces 410a of the insulating base 410 have, formed therein, seats 411 extending longitudinally substantially over the entire length of the said base and able to contain conductors 412 in the form of bars with a substantially parallelepiped or dovetail shape as shown, these bars being supplied with low-voltage direct current by means of corresponding power supply means connected to the electrical network, not shown in that they are conventional per se and able to determine the dual polarity (-) and (+) of the electrical circuit of the light sources;

the base 410 has a free edge 413 shaped so as to form the male element of a connection, the female element 423 of which is formed in the insulating body 420a of a lamp holder 420;

- a lamp-holder body 420 inside which the light sources 21, preferably consisting of power LEDs (Light Emitter Diodes), are arranged.

[0011] The lamp holder has in turn two plates 422a arranged on the opposite sides of an insulating body 420a and with opposite vertical edges suitably projecting in the direction Z-Z towards the outside of the said insulating body; the end edge of each blade designed for engagement with the base 410 has a concave shape 422 and is arranged in a position corresponding to and opposite to that of the conducting bars 412 of the base 410 with which the convex side of the said concave ends engages during use as a result of the resilient force of the blade 422a so as to form the mechanical retaining element of the lamp holder and the conduction of the electric circuit closed on the opposite side by the electrical contacts of the light sources 21 suitably inserted in an insulating body 420b able to engage with the said other projecting part of the blades 422a.

[0012] Said LEDs are suitably connected, by means of conductors 421a incorporated in the lamp-holder body 420, via which they receive the d.c. power supply.

[0013] Figs. 3 and 4 show a further embodiment of the

device according to the invention substantially complementing the previous embodiment. In this case, in fact, the base 510 has a substantially U-shaped insulating body with conductors 512 arranged in the associated seats 511 on the inside of the vertical arms 510a of the "U" and lamp-holder 520 consisting of an insulating body 520a, to which blades with a convex-shaped free end 522 are fixed, and a head piece 520b inside which the LEDs 521 are arranged as already described.

[0014] In this configuration the lamp holder 520 is inserted inside the base so that the resilient action of the convex blades produces the mechanical retaining action and electrical contact, resulting in electrical operation entirely similar to that already described.

[0015] According to a preferred embodiment, it is also envisaged that the lamp-holder of both the solutions generally indicated by 20 is divided into two parts 20a and 20b, respectively, which are joined together by means of the hinging means 25, as shown purely by way of example in Fig. 5, having a spherical body, able to allow a relative rotational and/or translatory movement of one part 20a and the other part 20b of the lamp holder, so as to allow directing of the light sources 21 according to the specific applicational requirements.

[0016] It is envisaged, moreover, that a heat-conducting element 26 able to dissipate the heat generated by the light sources is also associated with the lamp holder 20.

[0017] It is therefore clear how with the device according to invention it is possible to obtain effective illumination of display cabinets and/or display areas of widely varying forms without the need for complicated electrical wiring and with low-voltage light sources which cannot be accessed by the user who is therefore guaranteed maximum safety during installation and/or removal of the displayed product.

[0018] In addition to this, the possibility of modular composition by means of a plurality of individual lamp holders mounted on a common base allows easy replacement of any faulty light sources in a simple and rapid manner in exactly the same way as replacement of a blown lamp bulb.

Claims

1. Illumination device for display cabinets or display areas, **characterized in that** it comprises at least one base (410;510) to which conductors (412;512) are fixed and at least one lamp-holder body (20;420;520) inside which light sources (21) are arranged, said lamp holder having, attached thereto, resilient means (422;522) arranged in a position opposite to that of the conductors (412;512) for relative mechanical and electrical connection.
2. Device according to Claim 1, **characterized in that** said base (410;510) has, formed therein, seats (411;

511) for containing said conductors (412;512).

3. Device according to Claim 1, **characterized in that** said seats (411;511) extend in the longitudinal direction and said conductors are in the form of bars (412;512) with a substantially parallelepiped shape.
4. Device according to Claim 1, **characterized in that** said conducting bars (412;512) have a cross-section with a dovetail shape.
5. Device according to Claim 3, **characterized in that** said bars (412;512) are supplied with low-voltage direct current by means of corresponding power supply means connected to the electrical network.
6. Device according to Claim 1, **characterized in that** said lamp holder (420;520) is movable relative to the fixed base (410;510).
7. Device according to Claim 1, **characterized in that** said light sources (21) consist of power LEDs.
8. Device according to Claim 1, **characterized in that** said light sources (21) are connected by means of conductors (21a;421a) incorporated in the lamp-holder body (420;520) to the retaining means (422;522) by means of which they receive the d.c. power supply.
9. Device according to Claim 1, **characterized in that** said lamp-holder (20) is divided into two parts (20a, 20b) connected together by means (25) able to allow a relative rotational and/or translatory movement.
10. Device according to Claim 1, **characterized in that** a heat-conducting element (26) able to dissipate the heat generated by the light sources (21) is associated with the lamp holder (20).
11. Device according to Claim 1, **characterized in that** said base (410) has a substantially parallelepiped extension with a longitudinal dimension (X-X) and vertical dimension (Z-Z) much greater than the transverse dimension (Y-Y).
12. Device according to Claim 11, **characterized in that** the conductors (412) are inserted in the outer vertical surfaces (410a) of the insulating base (410).
13. Device according to Claim 11, **characterized in that** said base (410) has a free edge (413) shaped so as to form the male element of a connection, the female element (423) of which is formed in the insulating body (420a) of the lamp holder (420).
14. Device according to Claim 11, **characterized in that** the lamp holder (420) has two plates (422a) arranged

on opposite sides of an insulating body (420a) and with opposite vertical edges suitably projecting towards the outside of the said insulating body in the vertical direction (Z-Z).

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15. Device according to Claim 14, **characterized in that** the end edge of each blade (422a) designed to engage with the base (410) has a concave shape (422) able to adhere to the conductors (412).

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16. Device according to Claim 11, **characterized in that** the light sources (21) are suitably inserted in a body (420b) suitable for mechanical and electrical connection with the corresponding projecting end edge of each blade (422a).

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17. Device according to Claim 1, **characterized in that** the base (510) has a substantially U-shaped insulating body with conductors (512) arranged in associated seats (511) on the inside of the vertical arms (510a) of the said "U".

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18. Device according to Claim 1, **characterized in that** the lamp holder (520) consists of an insulating body (520a), to which blades (522a) with a convex-shaped free end (522) are fixed, and a head-piece (520b) inside which the LEDs (21) are arranged.

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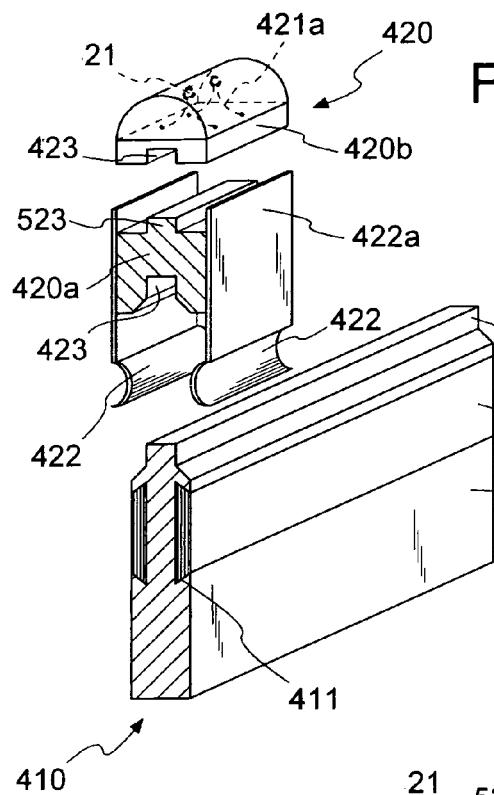


Fig. 1

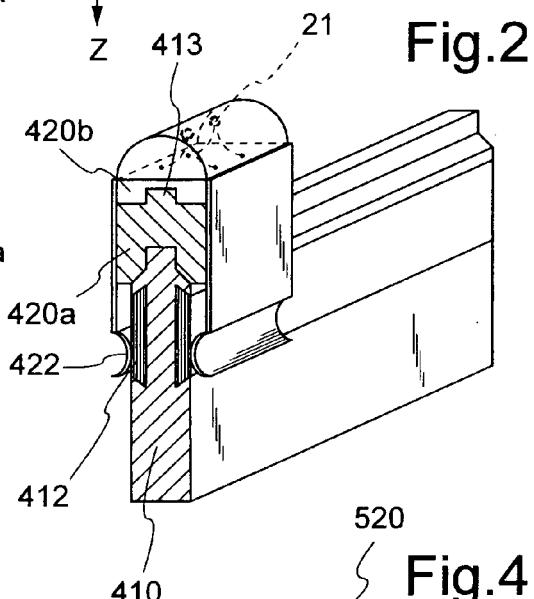
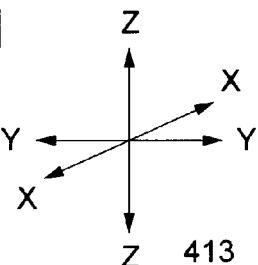


Fig. 2

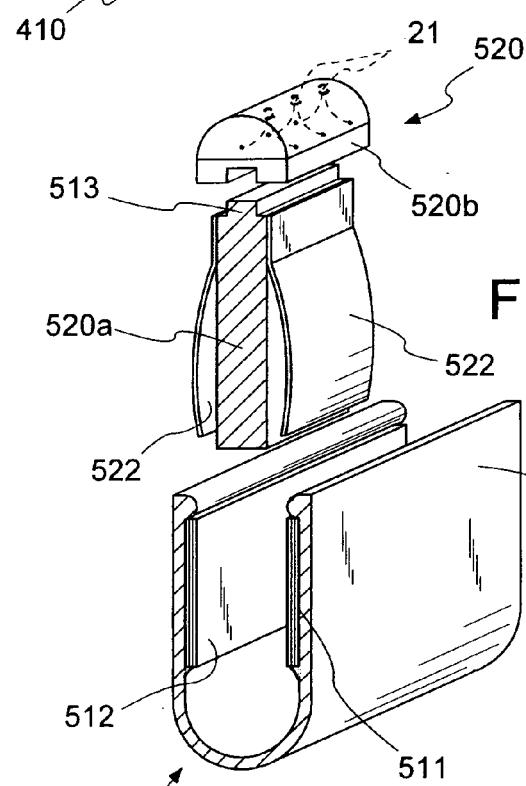


Fig. 3

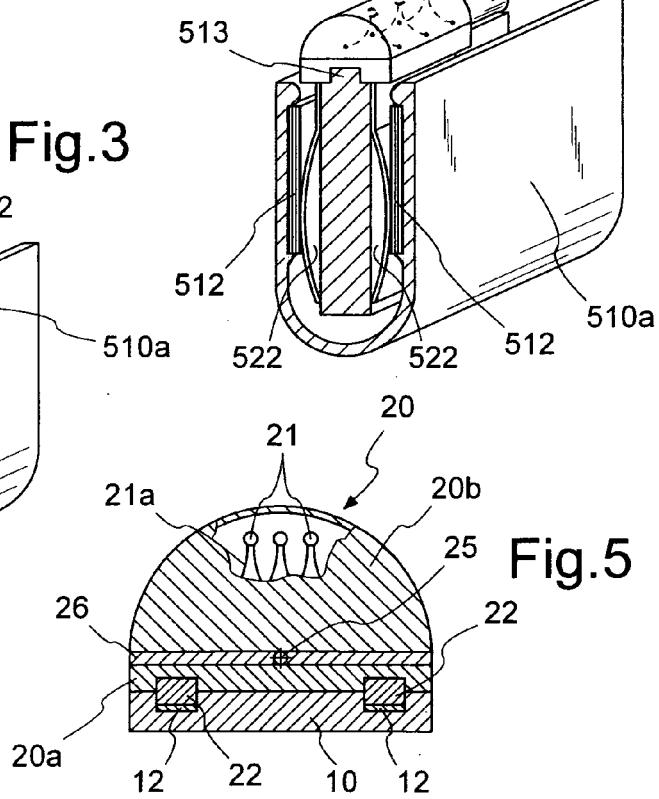


Fig. 4

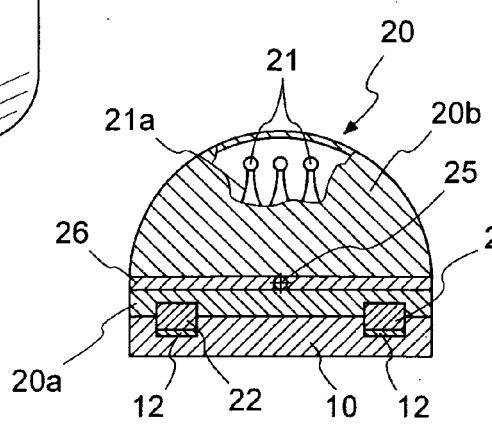


Fig. 5