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(54) **Low-voltage modular lighting apparatus for display units and/or display areas.**

(57) Lighting apparatus for display units or display areas, comprising: a fixed rail (100) formed by a profiled part (110) extending in the longitudinal direction (X-X) and with a substantially C-shaped cross-section, carrying a pair of cables (114a,114b) extending in the longitudinal direction for connection to the poles of an electric power supply; a lighting unit (200;1200) formed by two half-shells (210,220) which can be joined together in the vertical direction (Z-Z) so as to form a closed box-shaped body, where one of the half-shells (210) has seats (211a,

211b) for receiving respective level-voltage lamps (212a, 212b) extending in the longitudinal direction (X-X), said seats resulting in positioning of the two lamps (212) which is staggered in the transverse direction and parallel in the longitudinal direction, there being provided means (219,221) for mechanically engaging together in the transverse direction (Y-Y) said rail (100) and said light fixture (200) as well as means (222a,222b) for establishing electrical contact between the light fixture (200) and a respective electric power supply cable (114a;114b).

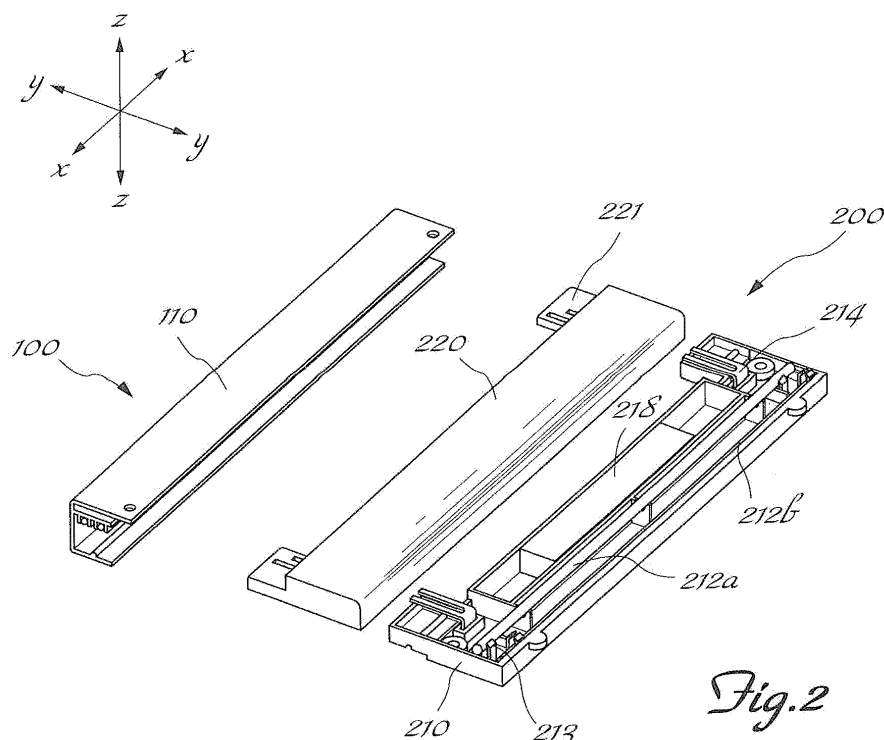


Fig. 2

Description

[0001] The present invention relates to a lighting apparatus for display units or display areas.

[0002] In the technical sector relating to the manufacture of display units for products of various kinds such as cosmetics, perfumes and the like it is known that there exist problems resulting from the need to illuminate the products which are arranged on the various shelves of the display unit, while ensuring at the same time the safety of the user who, when in the vicinity of the display unit and removing a product, must not come into contact - even accidentally - with live electric parts.

[0003] For this purpose, numerous devices able to ensure optimum insulation of the visible parts of the display unit, including also the use of low-voltage lighting means, have been developed.

[0004] These known display units however require the installation of complicated and costly electric cables and/or electrical sliding-contact means which increase considerably the costs for production and maintenance of the display unit.

[0005] The technical problem which is posed, therefore, is to provide a lighting apparatus for display units and/or display areas for products of various kinds, which allows the diffusion of light over all the objects on display on each self or in each area to be illuminated, allowing variation in the relative arrangement of the light fixtures so that they are arranged opposite the products without the need for structural modifications of the display unit and/or the lighting system.

[0006] These results are achieved according to the present invention by an apparatus for illuminating display units or display areas according to the characteristic features of Claim 1.

[0007] 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 an exploded view of the lighting apparatus according to the present invention;
- Figure 2 shows a perspective view of the apparatus partially assembled;
- Figure 3 shows a perspective view of the apparatus according to the invention with the light fixture separated from the guide rail;
- Figure 4 shows a perspective view of the apparatus according to the invention with the light fixture inserted inside the current-conveying guide rail;
- Figure 5 shows a schematic perspective view of a first variation of embodiment of the apparatus; and
- Figure 6 shows a schematic perspective view of a second variation of embodiment of the apparatus.

[0008] As shown in Fig. 1 and assuming solely for the sake of simplification of the description and without a limiting meaning a set of three reference axes in a longitudinal direction X-X, transverse direction Y-Y and vertical direction Z-Z, respectively, the lighting device for display units according to the present invention comprises:

- a fixed rail 100, which is formed by a profiled part 110 extending in the longitudinal direction X-X and with a substantially C-shaped cross-section; a first transverse arm 111 of the C is provided with two seats 111a extending over the entire length of the rail 100 and able to contain a respective cable 114a, 114b for connection to the low-voltage power supply, so as to produce the two
 - live and neutral - poles of the power supply. the other transverse arm 112 of the C is instead provided with a relief 112a extending in the longitudinal direction X-X and able to form a mechanical stop in the transverse direction Y-Y as will be explained more fully below.
- The rail has moreover holes 113 intended for fixing it to a vertical surface and/or to a horizontal surface forming for example the sides or a shelf of a display unit (not shown) and/or the wall or the ceiling of a closed area.
- a lighting unit 200 formed by two half-shells 210 and 220, respectively, which can be joined together in the vertical direction Z-Z so as to form a closed box-shaped body.

[0009] The half-shell 210 has seats 211a, 211b respectively aligned in the longitudinal direction and staggered in the transverse direction, for receiving respective low-voltage lamps 212a, 212b extending in the longitudinal direction, said seats resulting in positioning of the two lamps which is staggered in the transverse direction and parallel in the longitudinal direction.

[0010] In this way each lamp may be inserted inside respective resilient conducting parts 213 which are connected, by means of spring clips 214 provided with arms 214a, 214b extending with varying length in the transverse direction Y-Y, to the two different poles 114a, 114b of the electric power supply.

[0011] The half-shell 210 also has a receiving seat 217 for the device 218 for adapting the low-voltage power supply to the current necessary for switching on the lamps.

[0012] The bottom half-shell 210 has moreover two end feet 219a extending in the transverse direction with a bottom surface having a recess 219b suitable for engagement with the said projection 112a on the rail 110, so as to prevent the light fixture 200 from accidentally coming out of the rail 100.

[0013] The longitudinal side opposite to the rail is also provided with two gripping parts 219 which are suitably shaped and designed to allow extraction of the lamp once

it has been inserted in the transverse direction inside the rail 110.

[0014] The top half-shell 220 has two corresponding extensions 221 in the transverse direction Y-Y provided with respective openings 222a, 222b of different length in the same transverse direction, designed to allow the arms 214a, 214b of the spring clip 214 to project outside for contact with the respective phase 114a, 114b of the power supply.

[0015] As shown in Fig. 3 and Fig. 4, once the two half-shells, i.e. top half-shell 220 and bottom half-shell 210, have been engaged together in the vertical direction Z-Z, forming the closed lighting unit 200, the latter is inserted in the transverse direction Y-Y inside the rail 110 so as to bring the electric contacts 214a, 214b of the lamps 212 into contact with the respective phase 114a, 114b and cause the seat 219b of the foot 219a to engage over the relief 112a of the rail 110.

[0016] In this way the lighting unit 200 may slide on the rail 100 without any interruption of the electric power supply to the lamps, thereby allowing the latter to be displaced so as to light up different areas of a display unit and/or a space (not shown).

[0017] As shown in Figure 5 a variation of embodiment of the lighting unit 1200 is shown, whereby the associated feet 1219a have respective pins 1219c or longitudinal holes 1219d for joining together in series several adjacent lighting units in the longitudinal direction X-X, so as to extend the lighting area in the same direction.

[0018] Figure 6 shows a further variation of embodiment of the apparatus in which the C-shaped body 1110 of the rail 1100 has a third arm 1113 extending in the transverse direction Y-Y so as to form a seat designed to allow insertion of a surface 1510 parallel to the transverse axis Y-Y and with an inclined flange 1520 projecting beyond the light fixture 200.

[0019] Said surfaces 1510 and 1520 form together a light-guiding body 1550 which is able to absorb/reflect the light emitted by the lamps and carry an interchangeable support showing information about the illuminated product and/or the product itself, said support/products in turn being illuminated by the same lighting unit.

[0020] If the inclined surface is to be used to carry the products, it is envisaged that the free end thereof has a raised edge 1521 (shown in broken lines in Fig. 6) designed to prevent the products from falling.

[0021] It is therefore clear how, with the lighting apparatus according to the invention, it is possible to achieve effective lighting of display units and/or display areas of widely varying forms without the need for complicated electrical wiring and using low-voltage light sources which cannot be accessed by the user who is therefore guaranteed maximum safety when arranging in position and/or removing a displayed product.

[0022] In addition, owing to the possibility of providing a modular arrangement using several single lampholders mounted on a common base, any damaged lamps can be easily replaced and the position of the light fixture

varied and/or several light fixtures may be lit simultaneously.

5 Claims

1. Lighting apparatus for display units or display areas, **characterized in that** it comprises:

- a fixed rail (100) formed by a profiled part (110) extending in the longitudinal direction (X-X) and with a substantially C-shaped cross-section, carrying a pair of cables (114a, 114b) extending in the longitudinal direction for connection to the poles of an electric power supply;
- a lighting unit (200; 1200) formed by two half-shells (210, 220) which can be joined together in the vertical direction (Z-Z) so as to form a closed box-shaped body, where one of the half-shells (210) has seats (211a, 211b) for receiving respective low-voltage lamps (212a, 212b) extending in the longitudinal direction (X-X), said seats resulting in positioning of the two lamps (212) which is staggered in the transverse direction and parallel in the longitudinal direction; there being provided means (219, 221) for mechanically engaging together in the transverse direction (Y-Y) said rail (100) and said light fixture (200) as well as means (222a, 222b) for establishing electrical contact between the light fixture (200) and a respective electric power supply cable (114a; 114b).

2. Apparatus according to Claim 1, **characterized in that** a first transverse arm (111) of the C is provided with two seats (111a) extending over the entire length of the rail (100) and able to contain a respective cable (114a, 114b) for connection to the electric power supply.

3. Apparatus according to Claim 2, **characterized in that** the other transverse arm (112) of the C has a relief (112a) extending in the longitudinal direction (X-X) and able to form a mechanical stop in the transverse direction (Y-Y) for the light fixture (200).

4. Apparatus according to Claim 1, **characterized in that** the rail (100) has moreover holes (113) intended for fixing it to a vertical surface and/or to a horizontal surface.

5. Apparatus according to Claim 1, **characterized in that** said half-shell (210) has seats (211a, 211b) respectively aligned in the longitudinal direction and staggered in the transverse direction, for receiving respective low-voltage lamps (212a, 212b) extending in the longitudinal direction.

6. Apparatus according to Claim 1, **characterized in that** said electrical contact means comprise resilient conducting parts (213) connected, by means of spring clips (214) having arms (214a,214b) extending with varying length in the transverse direction (Y-Y), to the two different poles (114a,114b) of the electric power supply. 5
7. Apparatus according to Claim 1, **characterized in that** one (210) of the two half-shells also has two end feet (219a) extending in the transverse direction with a bottom surface having a recess (219b) suitable for engagement with the said projection (112a) of the rail (110). 10 15
8. Apparatus according to Claim 7, **characterized in that** the other half-shell (220) of said half-shells has two extensions (221) in the transverse direction (Y-Y) corresponding to the feet (219) of the first half-shell and provided with respective openings (222a, 222b) of different length in the same transverse direction, designed to allow the arms (214a,214b) of the spring clip (214) to project outside for contact with the respective power supply phase (114a, 114b). 20 25
9. Apparatus according to Claim 1, **characterized in that** the associated feet (1219a) have respective pins (1219c) or longitudinal holes (1219d) for joining together in series in the longitudinal direction (X-X) several adjacent lighting units. 30
10. Apparatus according to Claim 1, **characterized in that** the C-shaped body (1110) of the rail (1100) has a third arm (1113) extending in the transverse direction (Y-Y) so as to form a seat designed to allow insertion of a surface (1510) parallel to the transverse axis (Y-Y) and with an inclined flange (1520) projecting beyond the light fixture (200). 35 40
11. Apparatus according to Claim 1, **characterized in that** said surface (1510) and said flange (1520) form together a light-guiding body (1500) which is able to absorb/reflect the light emitted by the lamps and carry an interchangeable support showing information about the product. 45

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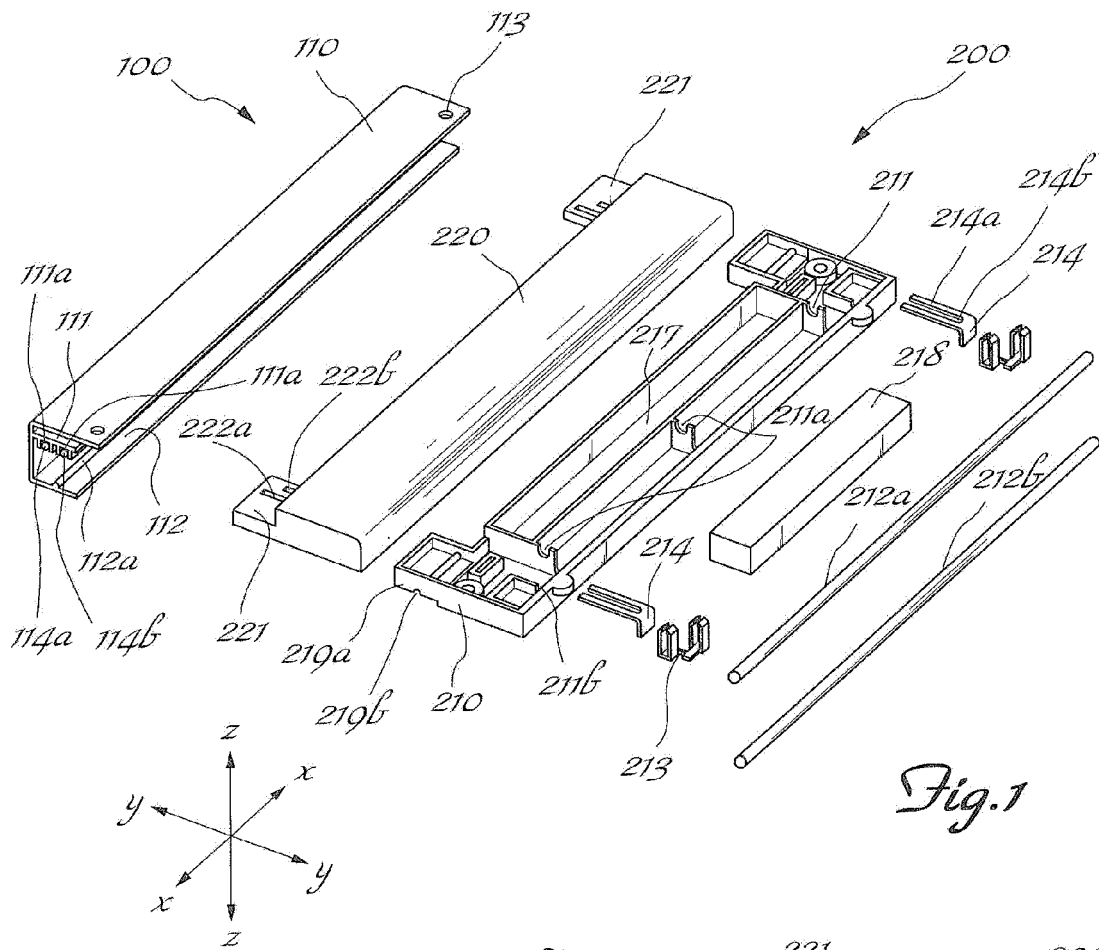


Fig. 1

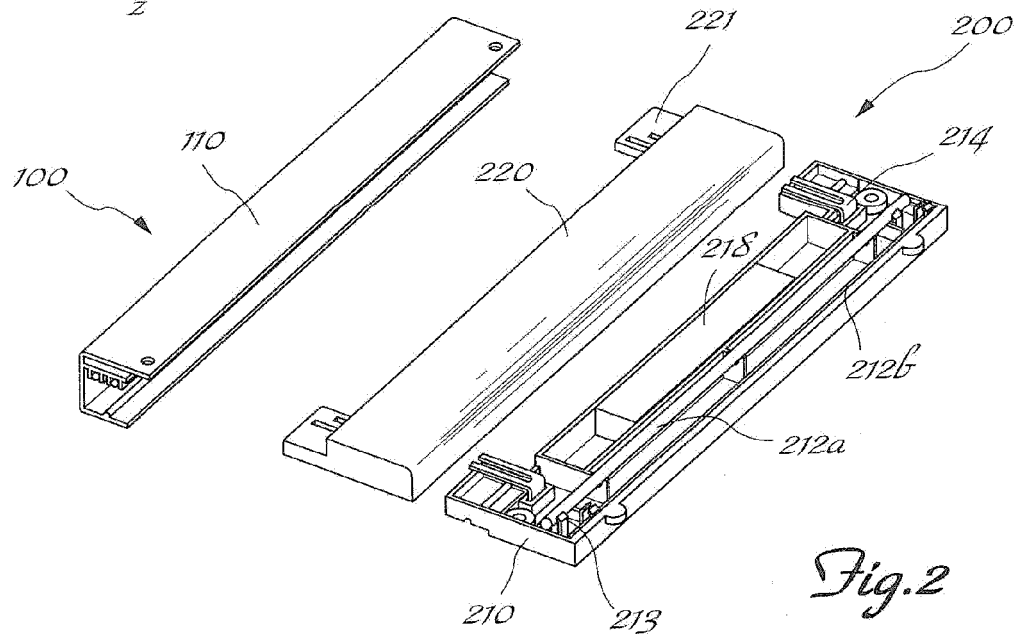
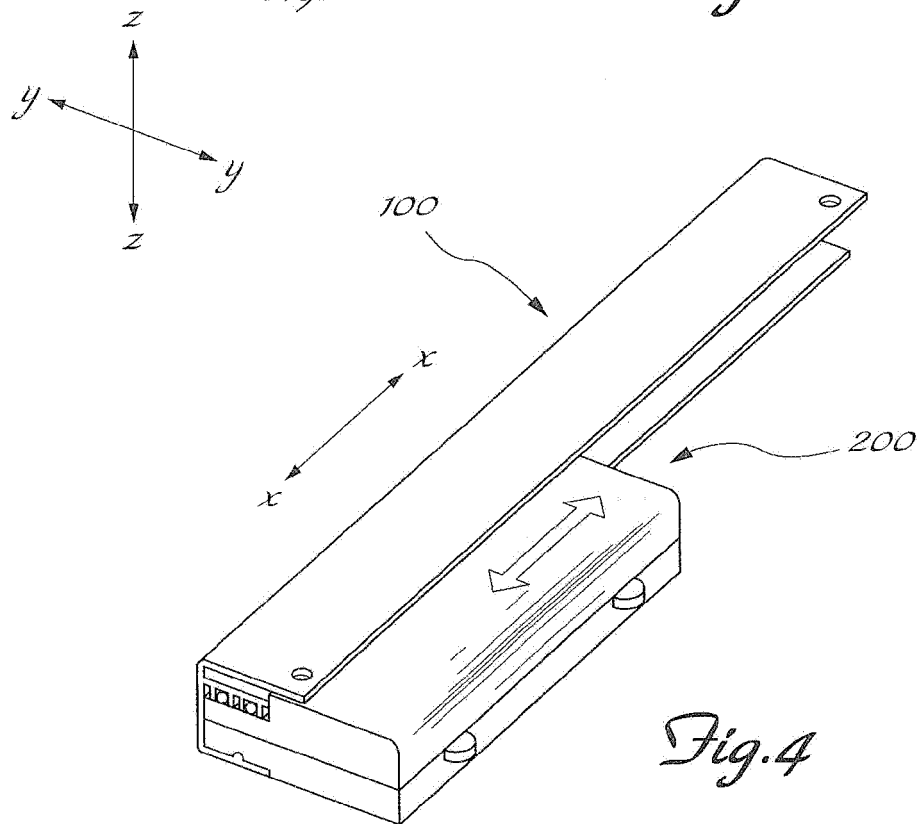
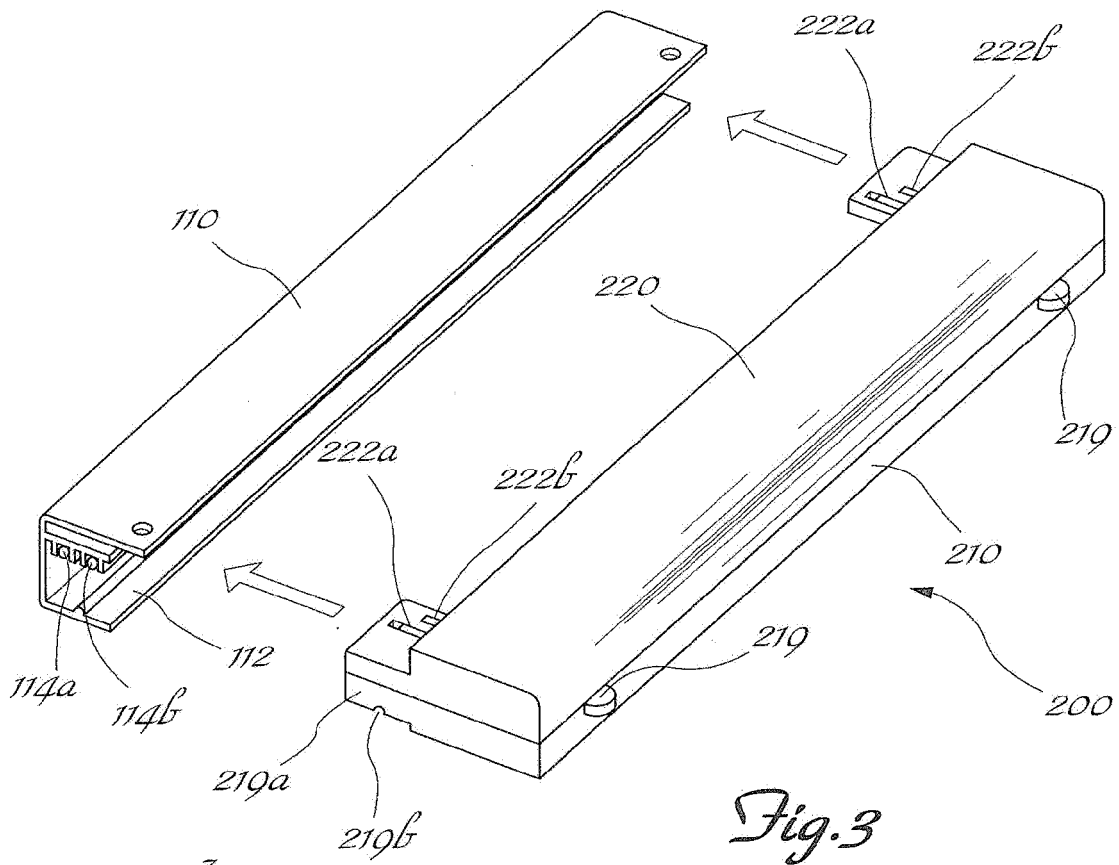
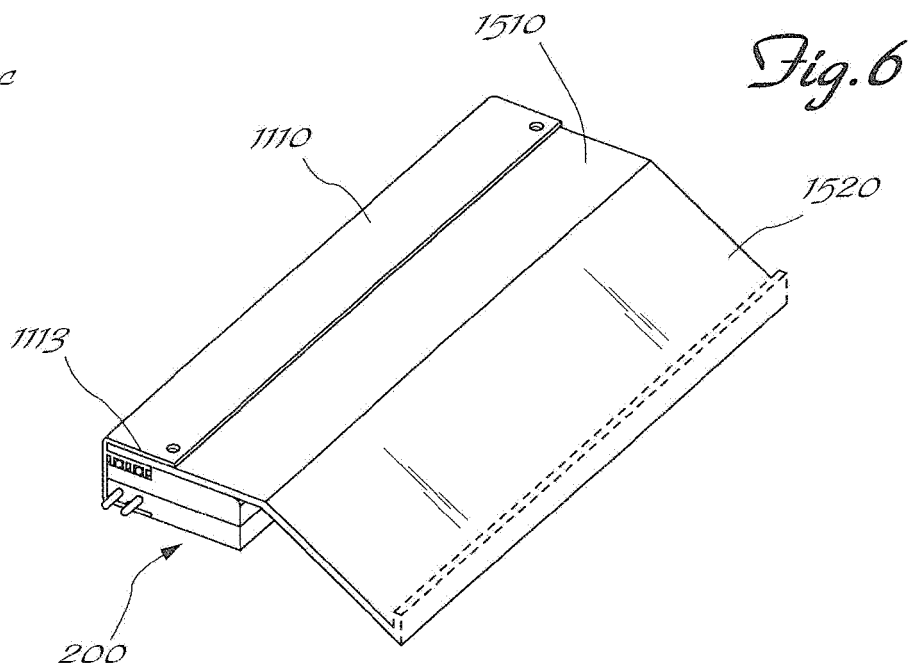
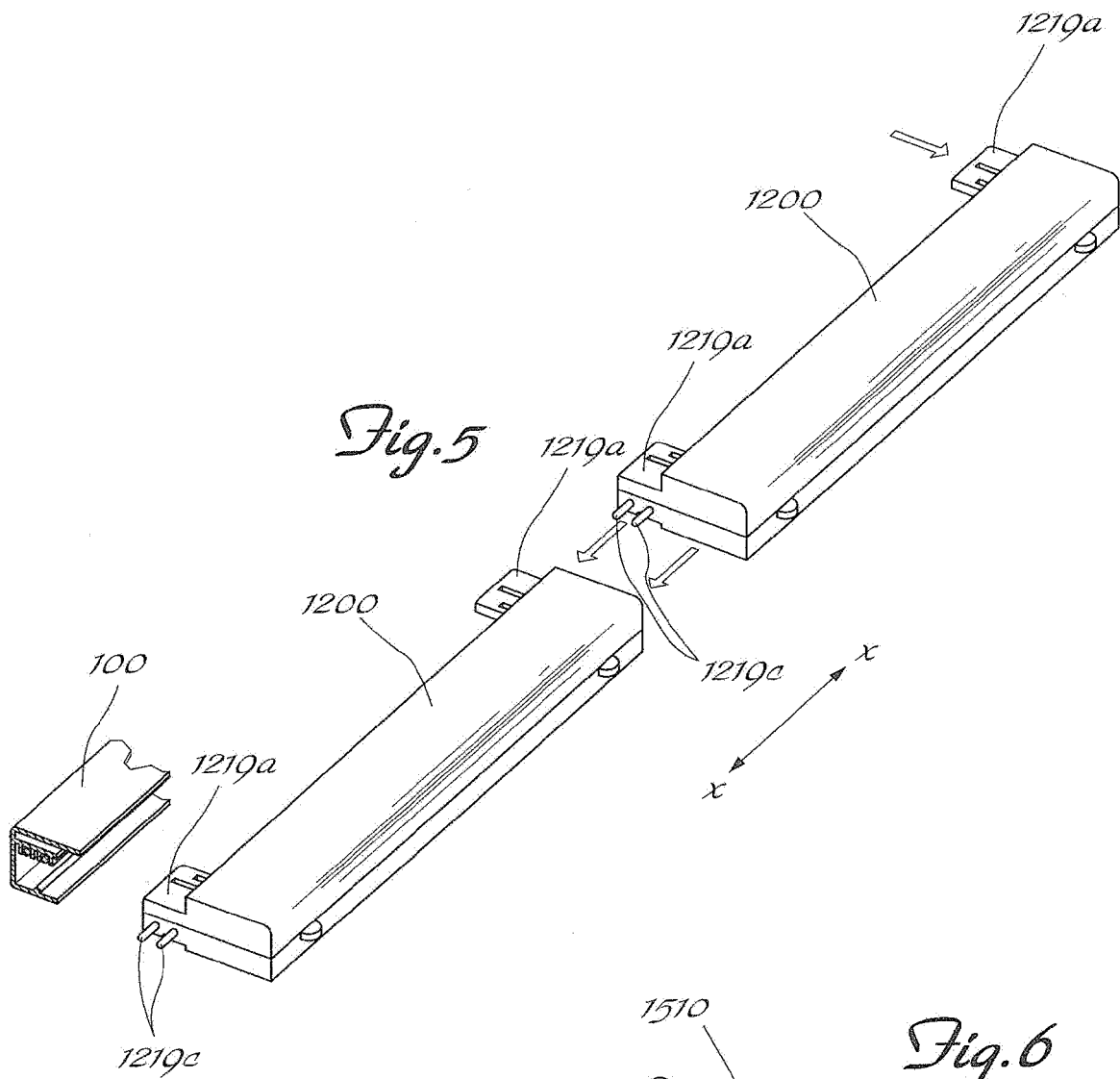


Fig. 2







EUROPEAN SEARCH REPORT

Application Number
EP 09 15 7867

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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A	* paragraph [0017] - paragraph [0027]; figures 1,2 *	7-8	
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The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (IPC)
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Place of search		Date of completion of the search	Examiner
Munich		21 August 2009	Klintebäck, Daniel
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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EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
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EP 09 15 7867

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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