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• **Robertshaw S.r.l.**  
**20092 Cinisello Balsamo (MI) (IT)**

(72) Inventors:  
• **Aronica, Alessandro**  
**21025 Comerio (IT)**  
• **Cerizza, Giovanni**  
**20092 Cinisello Balsamo (IT)**

(71) Applicants:  
• **Whirlpool Corporation**  
**Benton Harbor, MI 49022 (US)**

(74) Representative: **Guerci, Alessandro**  
**Whirlpool Europe S.r.l.**  
**Patent Department**  
**Viale G. Borghi 27**  
**21025 Comerio (VA) (IT)**

(54) **CHEST FREEZER**

(57) A chest freezer has a lid hinged to a cabinet and a lighting device comprising at least one light source located on a lower surface of the lid; it further comprises a sensor configured to detect the position of the lid and to

adjust the lighting intensity depending on such position, particularly to increase the intensity along with the opening movement of the lid.

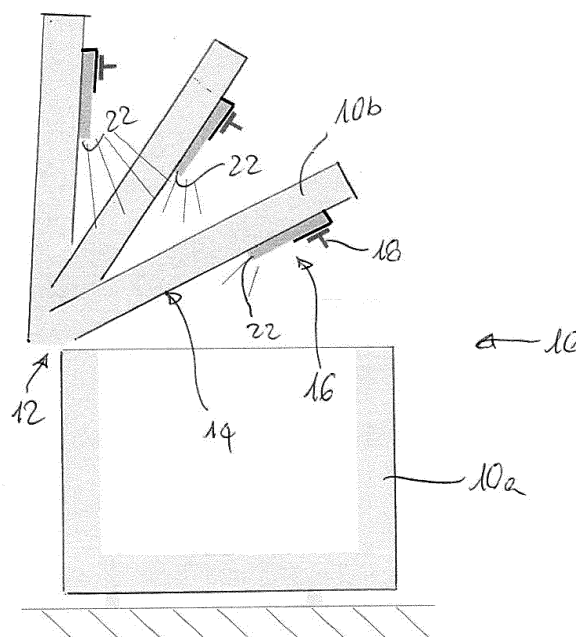


Fig. 2

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## Description

[0001] The present invention relates to a chest freezer having a lid hinged to a cabinet and a lighting device comprising at least one light source located on a lower surface of the lid. Chest freezers, known also as horizontal freezers, have a lighting system currently consisting of a lamp holder with integrated gravity switch. During door opening a ball or reed sensor inside the lamp holder closes an electric circuit and activates the lamp.

[0002] An example of this kind of chest freezers is disclosed by EP 826938.

[0003] In the known solutions, lamp position, switch-on angle of the lid and light intensity are fixed. At different open angles light could be perceived as too low by the user (chest freezers are commonly placed in rooms where artificial lighting is reduced) or directed in a way to disturb the user. Moreover, the switch on at maximum intensity of the light when the lid is open could temporarily make blind the user, particularly when the freezer is placed in room with a low general illumination (cellars or the like).

[0004] Led lighting exists but it is not applied currently in horizontal freezer because it disturbs user if not properly oriented, the direction of lighting depending on door opening angle. Moreover, if gravity switch inside the lamp holder is blocked in circuit closing position, then high temperature inside the parts could create fire risk if in contact with flammable materials.

[0005] It is therefore an object of the present invention to provide a chest freezer of the above type which does not present the above problems and is easy and inexpensive to be manufactured.

[0006] According to the invention, the above object is reached thanks to the features listed in the appended claims.

[0007] The technical solution according to the invention comprises a lighting module, preferably a led lighting module, with a dedicated sensor by which light intensity increases by door opening angle. The circuit board associated to said sensor and to the lighting module can also integrate the user interface and all product functions like temperature setting, lamps indicating functions and visual or acoustic alarms. The solution according to the invention releases light at higher level depending on door position with continuous increasing and does not present risk for user eyes. The solution according to the invention increases safety because led light source is fed at low voltage reducing also risks in case of defects or contact with food overstock.

[0008] Further advantages and features according to the present invention will become clear from the following detailed description, provided by way of not limiting example, with reference to the attached drawings in which:

- Figure 1 is a schematic cross section of a chest freezer according to the invention;
- Figure 2 is a cross section along line II-II of figure 1

in which the lid is shown are different positions; and

- Figure 3 is an enlarged view of a detail of figure 1.

[0009] With reference to the drawings, a chest freezer 10 comprises a cabinet 10a and a lid 10b hinged at 12 to the cabinet 10a. On a lower surface 14 of the lid 10b a lighting assembly 16 is placed which further integrates the user interface of the chest freezer 10. The lighting assembly 16 is box-shaped and presents a front face 16a, parallel with the lid 10b and having one or more setting knobs 18 and lights 20 indicating the functioning of the appliance. On a side of the assembly 16 facing the hinged side of the lid 10b, it is placed one or more led 22. A angle sensor (not shown) is integrated with the hinge 12 and is connected to a central control unit of the freezer 10 (mounted inside the lighting assembly 16) for adjusting the intensity of the light emitted by the led 22 from zero (closed lid, position shown in figure 1) to a maximum level corresponding to a substantially vertical position of the lid 10b.

[0010] When the user open the lid 10b, after a small predetermined angle the sensor associated with the hinge 12 switches on the led 22 and provides in a continuous or step-wise mode an increase of the light intensity emitted by the led 22.

[0011] Even if in the above example the light intensity emitted by the lighting assembly 16 increases from a horizontal to a vertical position of the lid 10b, it is also possible to adjust the lighting intensity in different pattern, depending on the dimension of the freezer, on the position thereof and on preference of the user. It is also possible to provide on the lighting assembly a further knob for choosing the maximum intensity of the led 22.

## Claims

1. Chest freezer (10) having a lid (10b) hinged to a cabinet (10a) and a lighting device (16) comprising at least one light source (22) located on a lower surface (14) of the lid (10b), **characterized in that** it further comprises a sensor configured to detect the position of the lid (10b) and to adjust the lighting intensity depending on such position.
2. Chest freezer according to claim 1, wherein the light source (22) is positioned in order to generate a light beam in the direction of the hinged side of the lid (10b).
3. Chest freezer according to claim 1 or 2, wherein the sensor is configured to increase the lighting intensity from a substantially horizontal position to a substantially vertical position of the lid (10b)
4. Chest freezer according to any of the preceding claims, wherein the light source is a led (22).

5. Chest freezer according to any of the preceding claims, wherein the light source (22) is supported by a housing (16) where a user interface (18, 20) of the chest freezer (10) is placed.

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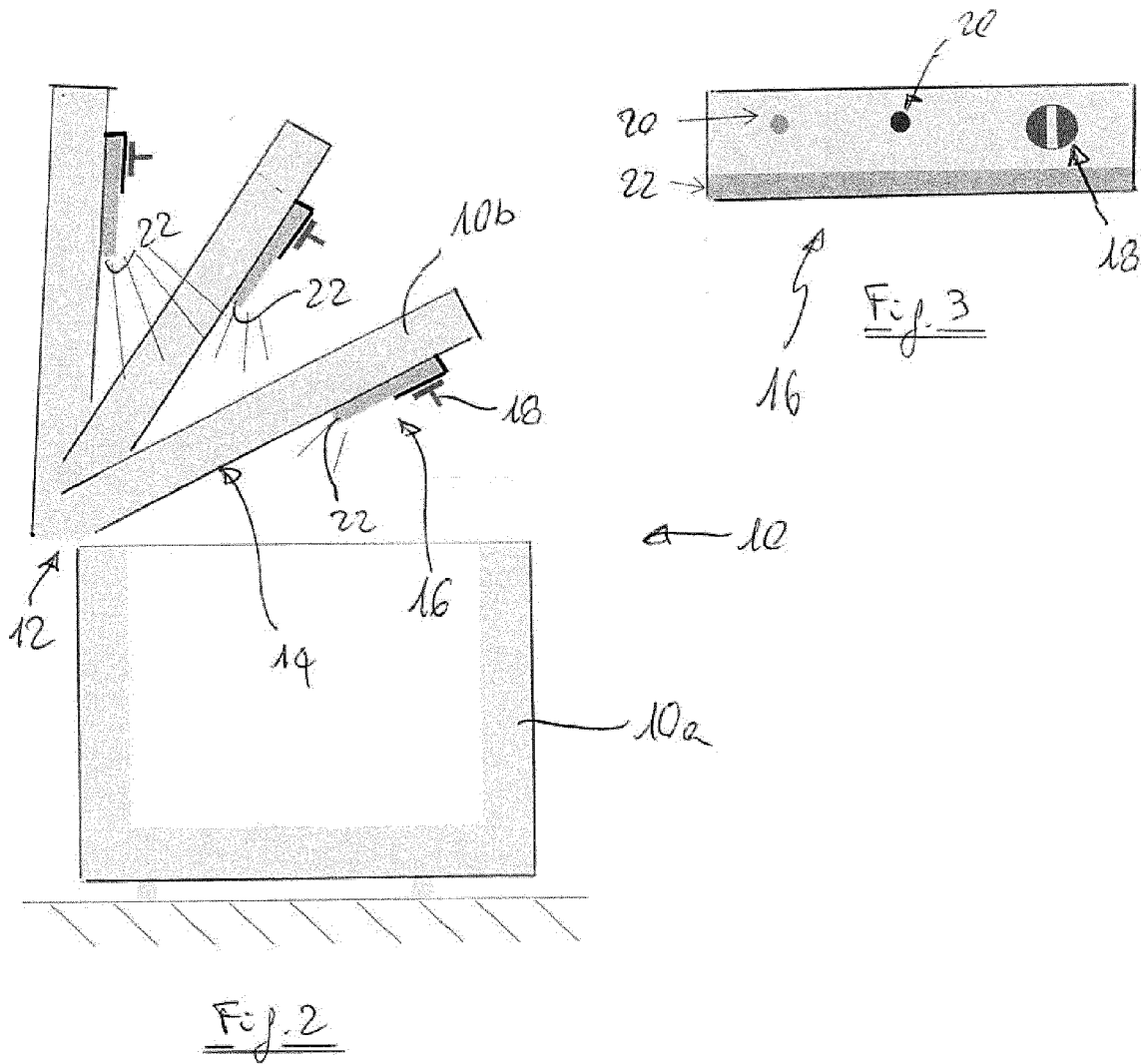
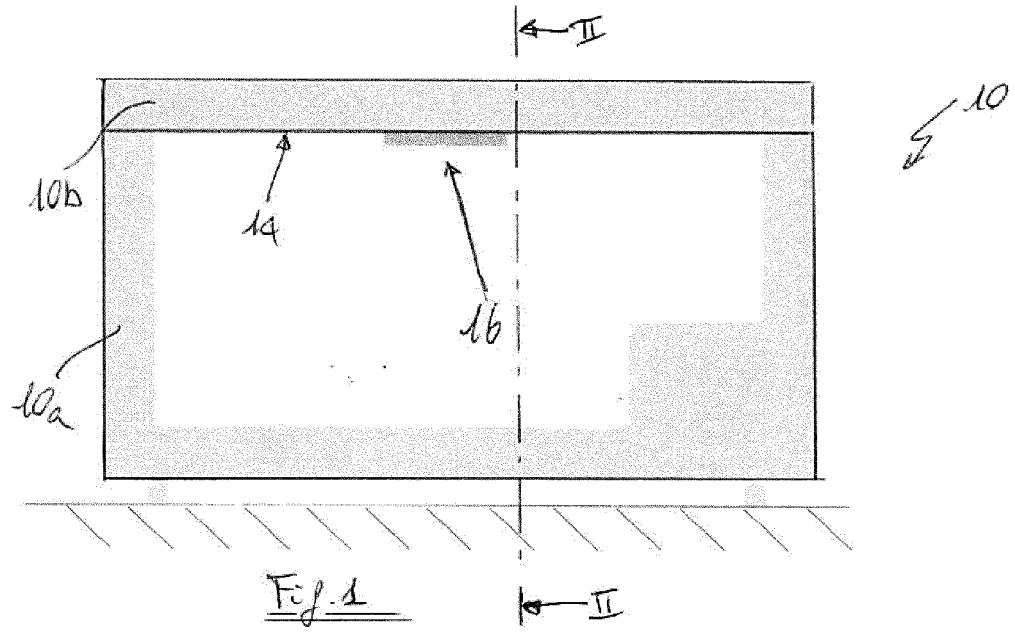
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## EUROPEAN SEARCH REPORT

Application Number  
EP 15 16 4562

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| DOCUMENTS CONSIDERED TO BE RELEVANT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                        |                                                              |                                         |
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| The present search report has been drawn up for all claims                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                        |                                                              |                                         |
| Place of search<br><b>The Hague</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                        | Date of completion of the search<br><b>23 September 2015</b> | Examiner<br><b>de Graaf, Jan Douwe</b>  |
| CATEGORY OF CITED DOCUMENTS<br>X : particularly relevant if taken alone<br>Y : particularly relevant if combined with another document of the same category<br>A : technological background<br>O : non-written disclosure<br>P : intermediate document<br>T : theory or principle underlying the invention<br>E : earlier patent document, but published on, or after the filing date<br>D : document cited in the application<br>L : document cited for other reasons<br>& : member of the same patent family, corresponding document |                                                                                                                        |                                                              |                                         |

EPO FORM 1503 03.82 (P04C01)

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

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