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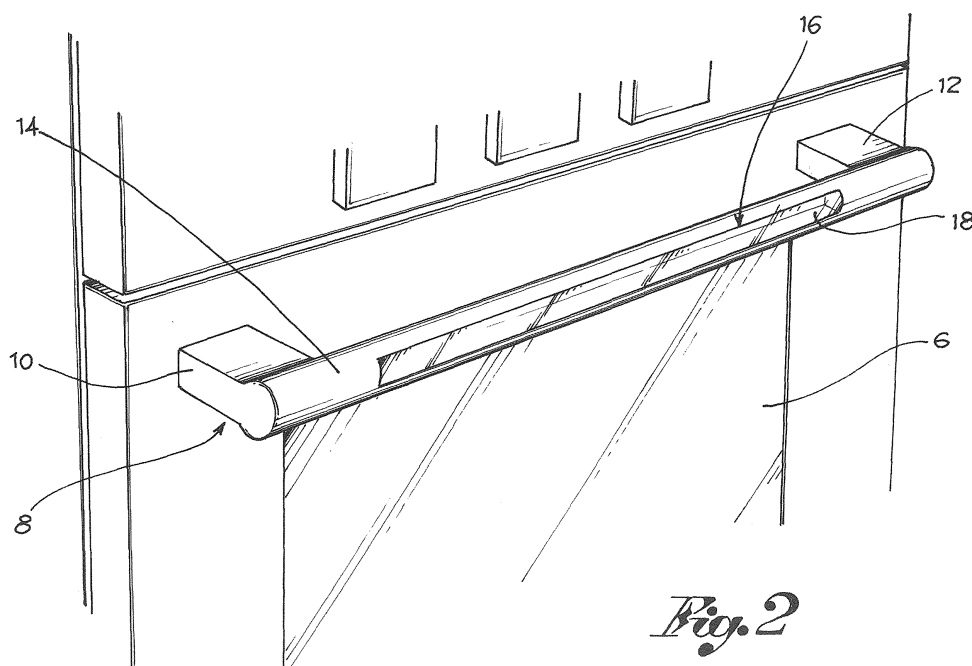
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(54) **Hand grip of domestic appliances, e.g. of an oven or of a refrigerator**

(57) A hand grip (8) of a domestic appliance comprises a LED light source, two fastening elements (10, 12) and a grip portion (14) having a window (16) and a cover (18) fitted in the window (16), transparent to the light rays emitted by the light source. The light source is housed in one of said fastening elements (10, 12) so as to project the rays towards the cover and the cover, for example in

Plexiglas, is suitable for creating an optical guide for the diffusion of the light rays. Furthermore, the domestic appliance has means of detection connected to the hand grip to command, in a controlled way, its switch-on, e.g., following the detection of gas. Furthermore, the hand grip window is turned towards the surface of the door of the domestic appliance or downwards, so as not to have direct light towards the user.



Description

[0001] The present invention refers to a hand grip for domestic appliances, and in particular for ovens, refrigerators and the like.

[0002] It is known how the kitchen domestic appliance sector is today constantly evolving; the research and development efforts are mainly centred on increasing safety, in order to prevent accidents in the home, reduce energy consumption and increase interaction with the user, so that operation answers the latter's needs.

[0003] Furthermore, such requirements must combine with an outward appearance consistent with contemporary taste.

[0004] The object of the present invention is to create a hand grip for domestic appliances that satisfies the above requirements.

[0005] Such object is achieved by a hand grip made in agreement with the following claim 1. The claims dependent on this describe embodiment variations.

[0006] The characteristics and the advantages of the hand grip according to the present invention will be clear from the description provided below, which is given by way of example and is not limitative, in agreement with the attached illustrations, wherein:

[0007] - the figure 1 shows a general view of a kitchen environment, with an oven comprising a hand grip according to an embodiment of the present invention;

[0008] - the figure 2 shows an enlarged view of the hand grip of figure 1;

[0009] - the figures 2a and 2b show section diagrams of the embodiment variations of the hand grip;

[0010] - the figure 3 shows a view of a refrigerator with a hand grip according to a further embodiment of the present invention;

[0011] - the figure 4 represents a view of a further refrigerator with a hand grip according to an even further embodiment of the present invention.

[0012] With reference to the figures 1 and 2, by 1 has been indicated a kitchen environment comprising an oven 2, e.g. of the built-in type, meaning contained in a furnishing unit of the kitchen environment.

[0013] The oven 2 comprises an oven body having an inside cooking compartment; the oven body also comprising side panels on three sides, a lower base and an upper base; the oven 2 also comprising a door 4, suitable for closing the access to the inside cooking compartment.

[0014] Preferably, the door 4 is hinged to the oven body, so that it can be opened like a dappleaf or swinging door.

[0015] In the closed configuration, the side panels, the lower base, the upper base and the door define the inside cooking compartment.

[0016] The door 4 comprises a front panel 6, preferably at least partially made of glass, and a hand grip 8, fastened to the front panel to open and close the door 2.

[0017] According to a preferred embodiment, the hand grip 8 comprises a pair of fastening elements 10, 12,

spaced out in the direction of the oven width, and fastened to the front panel 6, and a grip portion 14, joined to the two fastening elements 10, 12.

[0018] According to a preferred embodiment, the fastening elements 10, 12 and the grip portion 14 are made in a single piece; preferably, the hand grip 8 is internally hollow. Preferably, the hand grip 8 is made of aluminium.

[0019] The hand grip 8 comprises a window 16, e.g. obtained in the form of a slot along the grip portion 14, and a light source, housed inside the hand grip.

[0020] According to an embodiment variation, the window is obtained behind the grip portion, i.e., facing onto the outer surface of the front panel of the door (figure 2a).

[0021] According to an even further embodiment variation, the window is obtained below the grip portion, i.e., turned downwards (figure 2b).

[0022] In such variations, in other words, the light coming out of the window is not directed towards the user.

[0023] Preferably, the window 16 is closed by a cover 18 transparent to the rays of light emitted by the light source.

[0024] For example, the cover 18 is made of Plexiglas.

[0025] In the embodiment shown, the light source is housed in an extremity of the grip portion 14, near to or inside the fastening element 10, 12, positioned so as to project the light rays towards the cover 18; advantageously, the structural characteristics of the Plexiglas cover 18 permit distributing the light rays emitted by the light source along the entire window 16. In other words, the cover 18 produces an optical guide that guides the light rays emitted by the light source so the light appears uniformly diffused from the window 16 as a whole.

[0026] According to a preferred embodiment, the light source comprises at least one LED. Preferably, the light source comprises one or two LED triads, each LED being suitable for emitting light of a different colour.

[0027] According to a further embodiment, the light source is the termination of an optic fibre.

[0028] According to an embodiment variation, the hand grip 8 comprises control means suitable for receiving and processing a signal and for controlling said light source according to the received signal.

[0029] For example, the control means are electrically connected to the oven switch-on controls.

[0030] Consequently, when the oven is on, the control means receive a switch-on signal and command the switch-on of the light source, e.g., a red LED.

[0031] When the oven is off, the control means receive a switch-off signal or no signal and command the switch-off of the light source or the switch-on of the light source in a different colour, e.g., a blue LED.

[0032] In a further embodiment, the oven 2 comprises temperature reading means suitable for reading the temperature inside the cooking compartment or on the front panel 6; the temperature reading means are connected to the hand grip control means, which command the switch-on of the light source when the temperature reading exceeds a preset threshold temperature.

[0033] For example, the threshold temperature could be pre-set at 60°C and the reading means set to read the temperature on the front panel.

[0034] As long as the temperature on the front panel is more than 60°C, the hand grip control means receive an activation signal which they interpret by commanding the switch-on of a red LED of the light source.

[0035] It is therefore clear to the user that the temperature of the front panel 6 exceeds 60°C in a certain instant, thanks to the red light on the hand grip, in a clearly visible position.

[0036] When the temperature on the front panel is below 60°C, the hand grip control means receive a deactivation signal which they interpret by commanding the switch-on of a blue LED of the light source or by commanding the switch-off of the source.

[0037] It is therefore clear to the user that the temperature of the front panel 6 is below 60°C in a certain instant, thanks to the blue light or the absence of light.

[0038] In a further embodiment, the oven 2 comprises means for detecting gas in the outside environment; the gas detection means are connected to the hand grip control means, which command the switch-on of the light source when the presence of gas is detected in the environment.

[0039] In a further embodiment, the oven 2 comprises means for determining the luminosity of the environment; the means for determining the luminosity are connected to the hand grip control means, which command the switch-on of the light source or its modulation according to the luminosity of the surrounding environment.

[0040] In an even further embodiment, the oven 2 comprises means for detecting the absence of electricity in the power mains and auxiliary power supply means; the means for detecting the electricity are connected to the hand grip control means, which command the switch-on of the light source in the situation of absence of electricity, supplying the hand grip by means of the auxiliary power supply means.

[0041] In a further embodiment variation of the present invention, the hand grip 8 is associated with a refrigerator 100 of the side-by-side type or with a refrigerator 200 of the traditional type.

[0042] The refrigerators 100, 200 are equipped respectively with a door 104, 204 for accessing the refrigerated inside compartment.

[0043] For example, in the case of the refrigerators 100, 200, the hand grip control means are connected to refrigerator temperature reading means, suitable for reading the temperature in the inside compartment of the refrigerator.

[0044] When the temperature read by the reading means is below a preset threshold temperature, the reading means send an activation signal to the control means; the control means interpret the signal and command the switch-on of the light source, thereby indicating to the user that a minimum temperature is being maintained inside the refrigerator compartment.

[0045] When the temperature read by the reading means is higher than the preset threshold temperature, the reading means send a deactivation signal to the control means; the control means interpret the signal and command the switch-off of the light source or the switch-on of the source with a different colour, e.g., red, indicating to the user that inside the refrigerator the temperature is above that required.

[0046] The further embodiment variations described for the oven are to be deemed also usable for the refrigerator.

[0047] Innovatively, the hand grip according to the present invention allows the immediate display of the operating condition of the domestic appliance to which it is fitted, upgrading interaction with the user.

[0048] Advantageously, furthermore, it allows an energy saving, inasmuch as it makes clear to the user the operation of a domestic appliance which the user thought was off.

[0049] According to a further advantageous aspect, the hand grip allows upgrading the safety of the domestic appliance, inasmuch as it makes clear to the user when a number of parts of the domestic appliance are above a danger temperature.

[0050] According to a further advantageous aspect, the hand grip permits upgrading the safety of the domestic appliance inasmuch as it makes clear to the user the presence of gas in the environment.

[0051] Advantageously, furthermore, the hand grip satisfies the aesthetic requirements of the moment, inasmuch as the signals do not require additional indicators on the control panel, which often make the appearance heavier.

[0052] According to a further advantageous aspect, the hand grip diffuses the light uniformly, with a pleasant aesthetic impact.

[0053] Clearly, a technician in the field, in order to cater for contingent requirements, could make changes to the above-described hand grip, all of which contained within the protection scope as defined by the following claims.

Claims

1. Hand grip (8) of a domestic appliance, such as an oven or refrigerator, comprising:

- a light source.
- two fastening elements (10, 12) suitable for fastening to a wall (6) and spaced out along a longitudinal direction, and a grip portion (14) that extends between said fastening elements (10, 12), having window (16);
- a cover (18) fitted in the window (16), transparent to the light rays emitted by the light source;

wherein the light source is housed in one of said fastening elements (10, 12) so as to project the rays

towards the cover and the cover is suitable for providing an optical guide for the diffusion of the light rays.

2. Hand grip according to claim 1, wherein the light source includes at least one LED. 5
3. Hand grip according to claim 2, wherein the light source comprises at least a LED triad, each LED being suitable for emitting light of a different colour. 10
4. Hand grip according to any of the claims from 1 to 3, wherein the cover (18) is in plexiglas.
5. Hand grip according to any of the preceding claims, comprising control means able to receive a signal, interpret it and command the light source. 15
6. Hand grip according to any of the preceding claims, wherein the window (16) extends longitudinally along said grip portion (14). 20
7. Oven (2) comprising a door (4) and a hand grip (8) fastened to said door, wherein the hand grip is made according to any of the preceding claims. 25
8. Oven according to the claim 7, comprising means for reading the temperature or means for detecting gas in the environment or means for determining the luminosity of the environment or means for detecting the absence of electricity in the power mains, operatively connected to said hand grip to activate/deactivate or modulate the light source. 30
9. Oven according to the claim 7 or 8, wherein the window of the hand grip faces the outer surface of the door (4) or is turned downwards. 35
10. Refrigerator (100,200) comprising a door (104,204) and a hand grip (8) attached to said door, wherein the hand grip is made according to any of the preceding claims from 1 to 6. 40
11. Refrigerator according to claim 10, comprising means for reading the temperature or means for detecting gas in the environment or means for determining the luminosity of the environment or means for detecting the absence of electricity in the power mains, operatively connected to said hand grip to activate/deactivate or modulate the light source. 45 50
12. Refrigerator according to the claim 10 or 11, wherein the hand grip window faces the outer surface of the door (104,204), i.e., it is turned downwards. 55
13. Oven or refrigerator comprising a door and a hand grip (8) fastened to the door, wherein the hand grip comprises:

- a light source;
- two fastening elements (10,12) suitable for fastening to a wall (6) and spaced out along a longitudinal direction, and a grip portion (14) extending between said fastening elements (10,12), having a window (16);
- a cover (18) fitted in the window (16), transparent to the light rays emitted by the light source;
- means for detecting gas in the environment or means for determining the luminosity of the environment or means for detecting the absence of electricity in the power mains, operatively connected to said hand grip to activate/deactivate or modulate the light source.

14. Oven or refrigerator comprising a door and a hand grip (8) fastened to the door, wherein the hand grip comprises:

- a light source;
- two fastening elements (10,12) suitable for fastening to a wall (6) and spaced out along a longitudinal direction, and a grip portion (14) extending between said fastening elements (10,12), having a window (16);
- a cover (18) fitted in the window (16), transparent to the light rays emitted by the light source;

wherein the hand grip window faces the outer surface of the door, i.e., it is turned downwards.

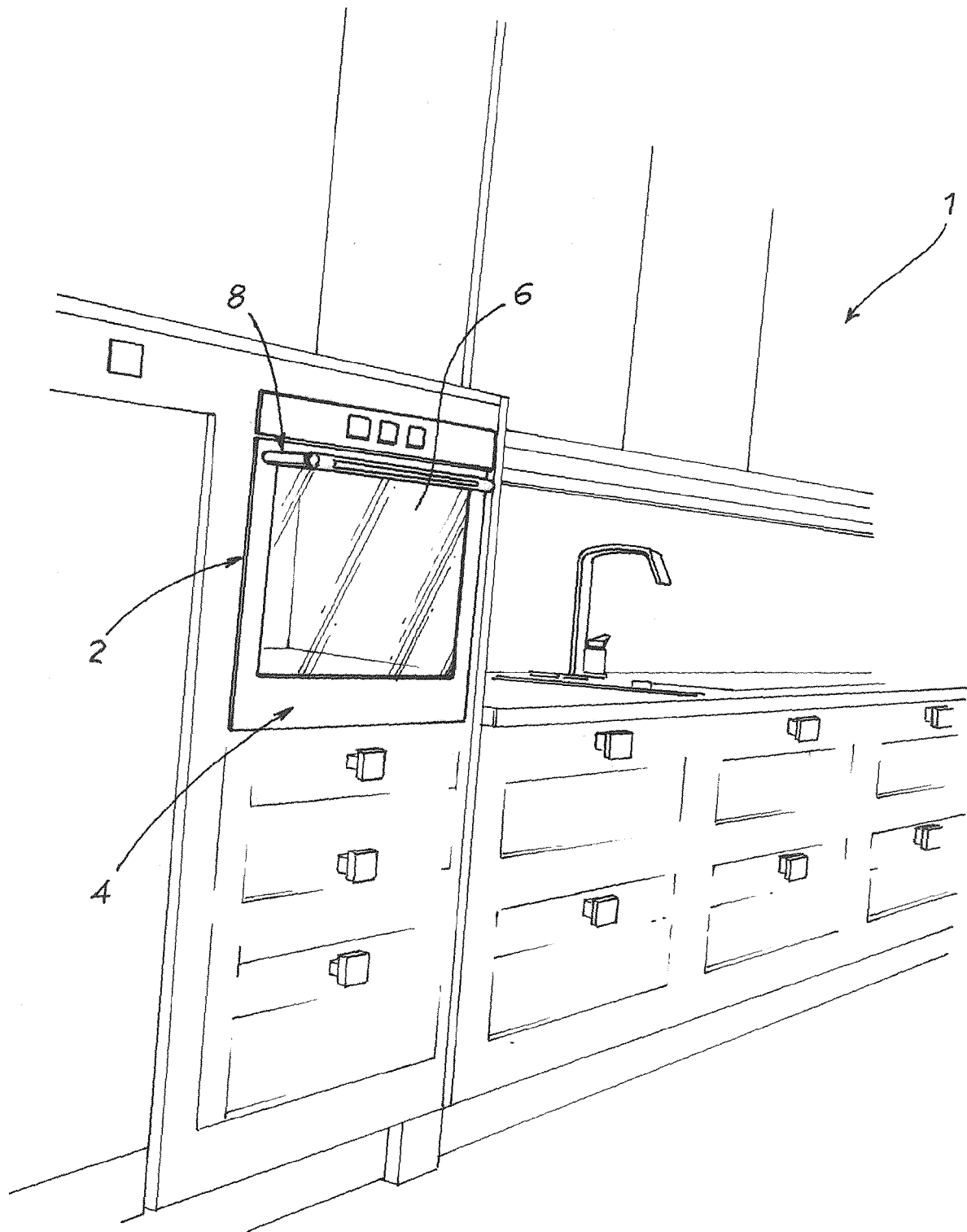
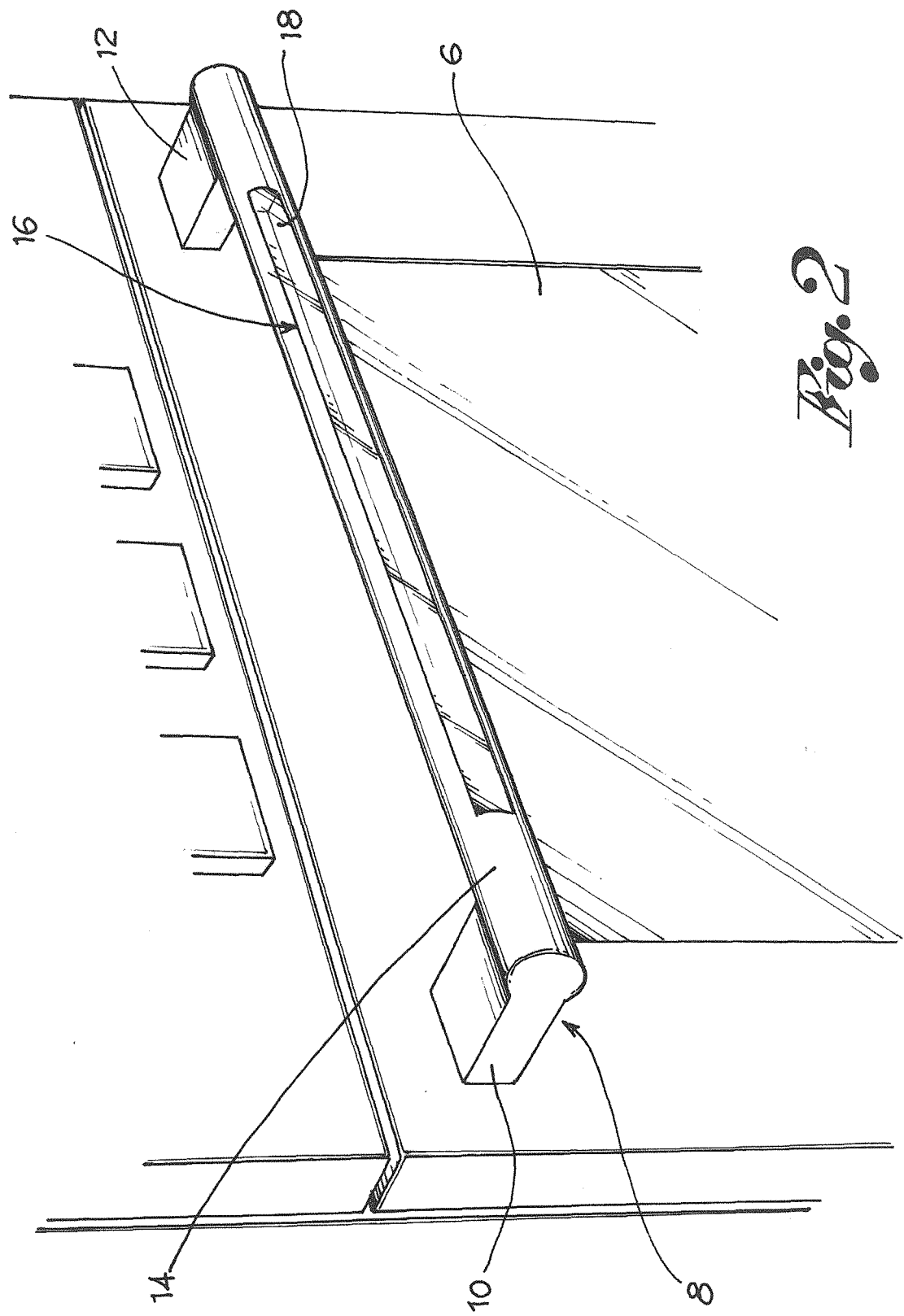


Fig. 1



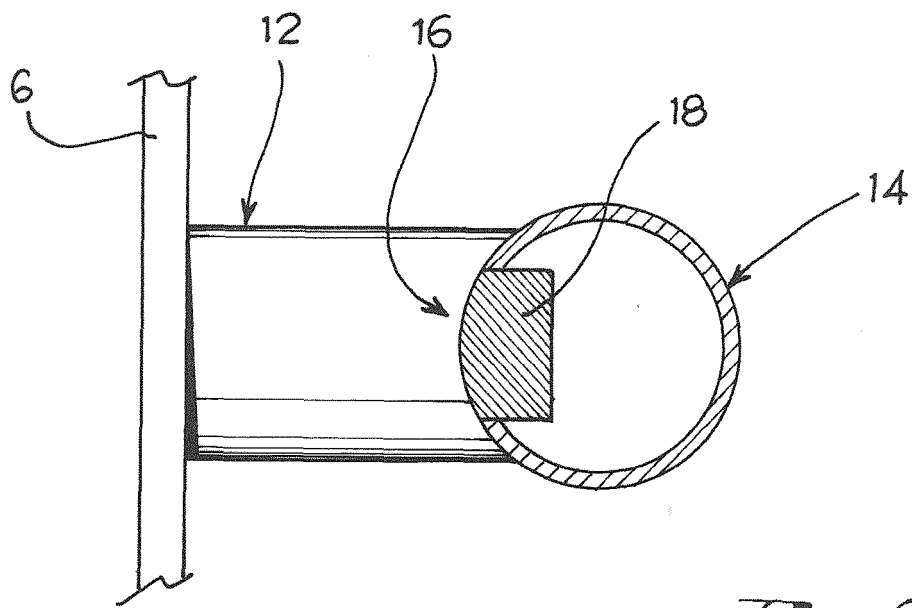


Fig. 2a

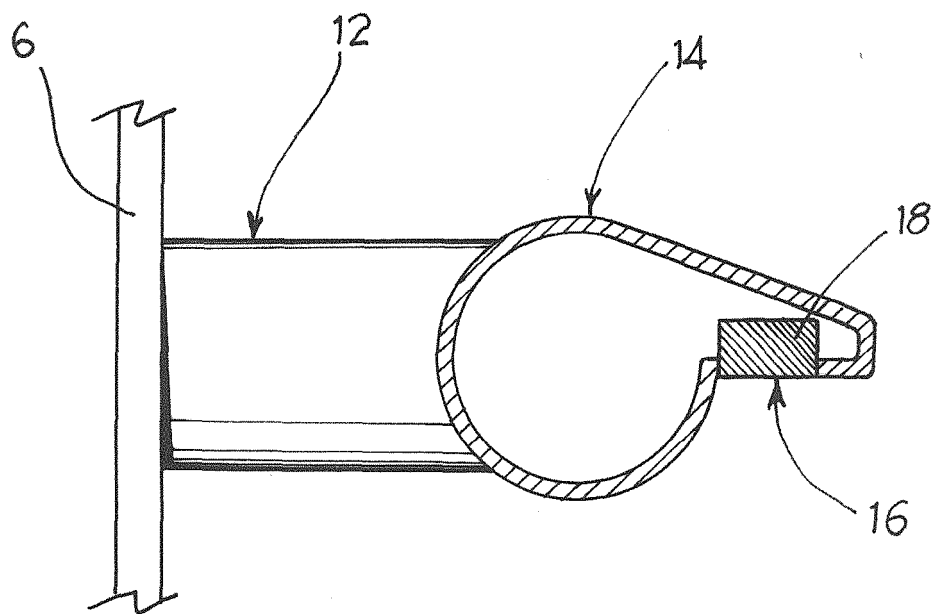


Fig. 2b

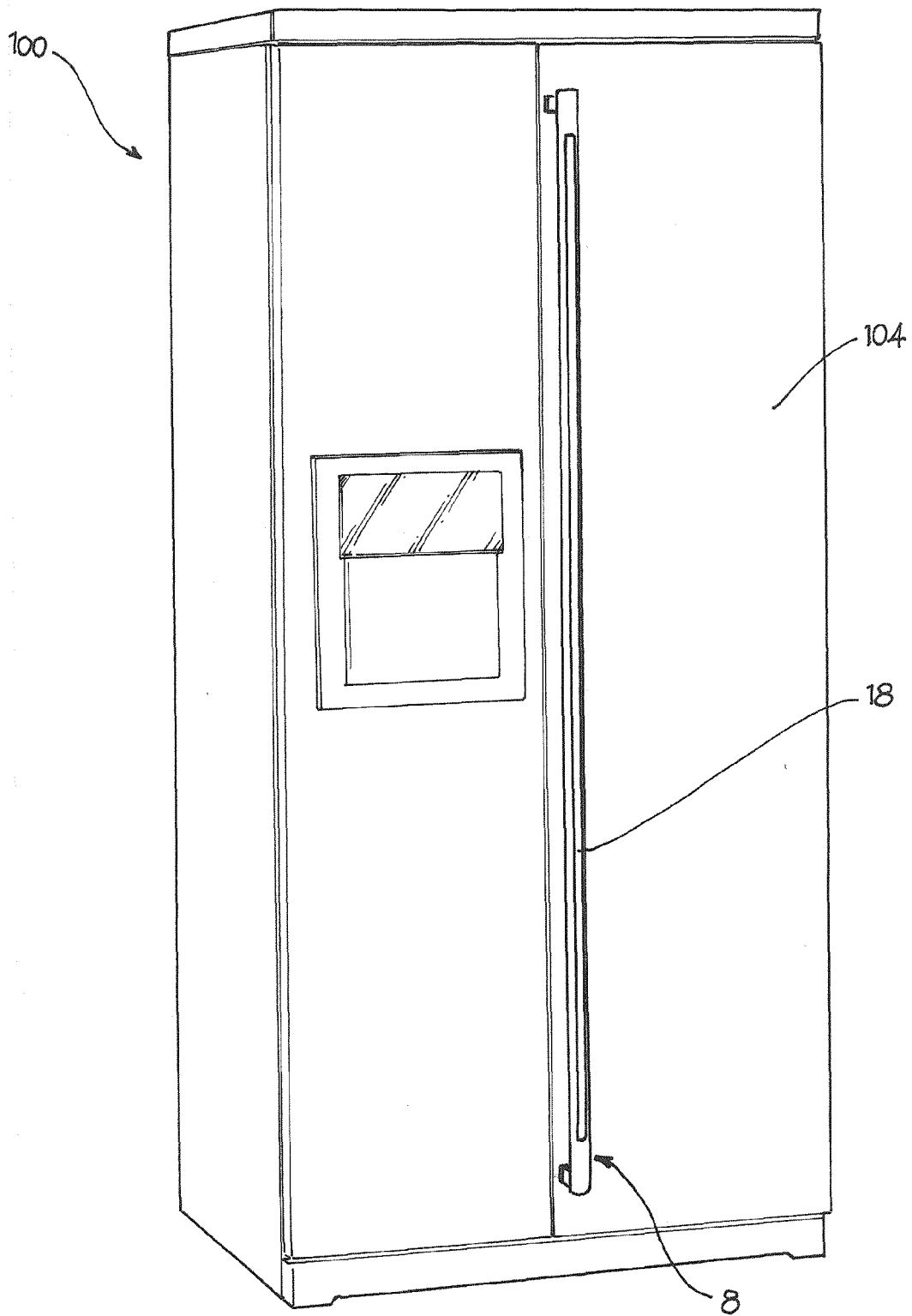


Fig. 3

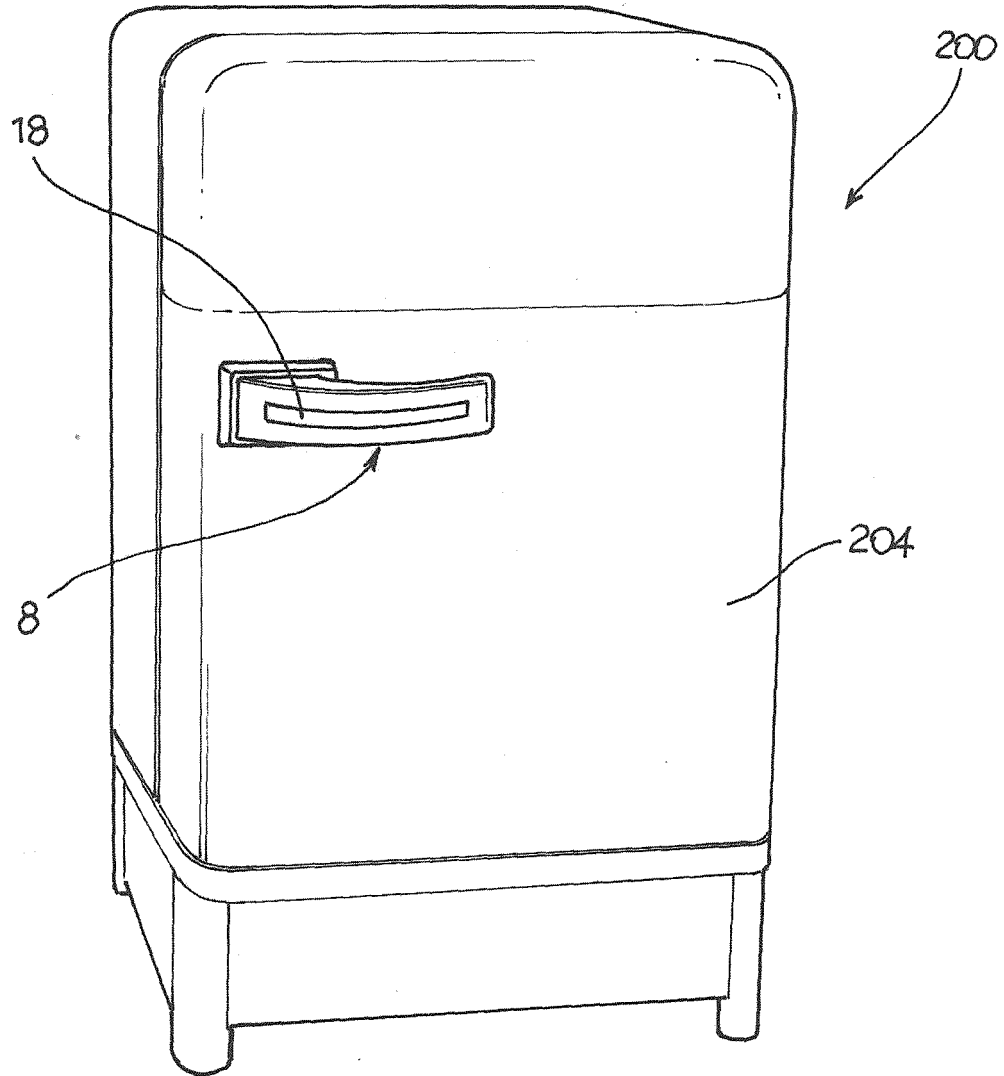


Fig. 4



EUROPEAN SEARCH REPORT

Application Number
EP 09 17 6599

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**ANNEX TO THE EUROPEAN SEARCH REPORT
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