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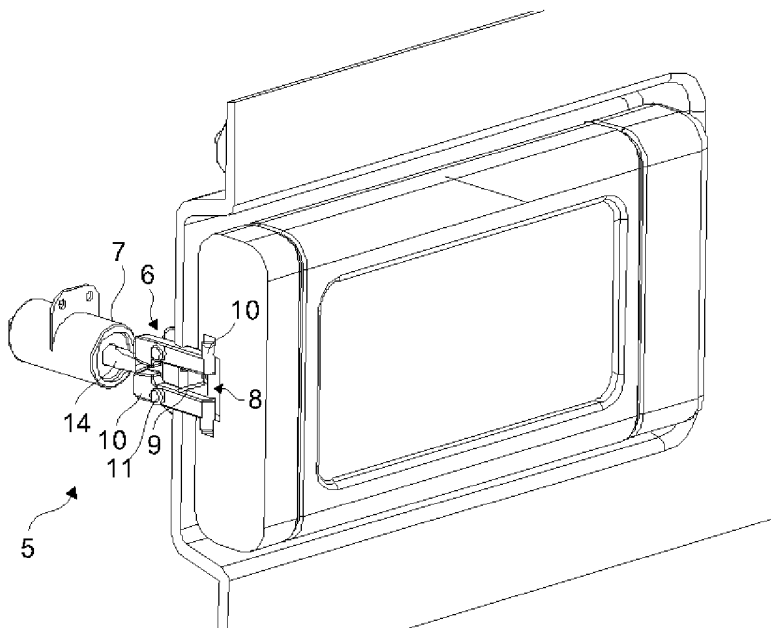
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(54) Title: A HOUSEHOLD APPLIANCE



(57) Abstract: The present invention relates to a household appliance (1) which enables the user to view the images on the control panel (2) clearly and comfortably by eliminating the negative effect of the reflections formed due to light sources in the medium.

Description

A HOUSEHOLD APPLIANCE

- [001] The present invention relates to a household appliance comprising a control panel which can easily be read and controlled.
- [002] In household appliances, especially in cooking devices, washer/dryers, dishwashers etc., control panels comprising data input units such as buttons, keyboards, keys, touch control displays etc. are utilized for controlling the operation of the household appliance and data output units such as monitors, displays, particularly LCD displays are used for displaying the operation conditions (such as temperature, humidity, pressure, ongoing process and the like features) of the household appliances to the user.
- [003] The state-of-the-art control panel is fixed on the household appliance. Reflections formed on the control panel, particularly on the display surface of the control panel, due to various light sources cause the images on the display to be invisible or misread by the user. The user changes her/his position in order to find a suitable viewing angle for a clear visibility of the images on the display or tries to block the light sources causing the reflections.
- [004] In the current state-of-the-art, various applications have been developed for providing a clear and satisfactory viewing of the images on the control panel or the display by the user by eliminating the negative effects of reflections on the display. In one of these applications, contrast and sharpness of the display are adjusted and in another the positioning angle of the display and the control panel is changed with a certain angle.
- [005] In state-of-the-art German Patent Application no. 3520272, a description is given of a control panel in front of the domestic appliance which can be rotated by the user about a horizontal axis allowing the surface to be completely within the viewing angle of the user.
- [006] Another state-of-the-art embodiment is described in the German Patent Application no. 3621260. A control panel in front of the domestic appliance, comprising a movement mechanism having a shift lever and a heart shaped guideway in which the shift lever is moved by the operator.
- [007] In the current state-of-the-art, in United States of America Patent no. 6692093, a description is given of an LCD display, the angle of which can be adjusted by way of a hinge, mounted particularly on the door of a refrigerator.
- [008] The object of the present invention is to design a household appliance comprising a control panel which can easily be viewed and controlled by enabling it to turn to different directions.

- [009] The household appliance designed to fulfill the object of the present invention is shown in the attached figures, where:
- [010] Figure 1 – is the schematic view of a household appliance.
- [011] Figure 2 – is the perspective view of a control panel.
- [012] Figure 3 – is the rear perspective view of the movement mechanisms when the control panel is in closed position.
- [013] Figure 4 – is the perspective view of the movement mechanism and the control panel when the control panel is in closed position
- [014] Figure 5 – is the perspective view of the movement mechanism and the control panel when the control panel is being moved from the closed position to the open position.
- [015] Figure 6 – is the perspective view of a control panel which is moved upwards.
- [016] Figure 7 – is the perspective view of a control panel which is moved downwards.
- [017] Figure 8 – is the perspective view of a control panel which is moved towards the left.
- [018] Figure 9 – is the perspective view of a control panel which is moved towards the right.
- [019] Figure 10 – is the perspective view of a data input and/or data output unit being moved upwards in a control panel which is moved towards the left.
- [020] Figure 11 – is the perspective view of a data input and/or data output unit being moved downwards in a control panel which is moved towards the right.
- [021] Figure 12 – is the sideways schematic view of the movement mechanism when the control panel is in closed position.
- [022] Figure 13 – is the sideways schematic view of the movement mechanism while the control panel is moved from the open position to the closed position.
- [023] Elements shown in the figures are numbered as follows:
1. Household appliance
 2. Control panel
 3. Data input unit
 4. Data output unit
 5. , 105 Movement mechanism
 6. Latch
 7. Solenoid
 8. Housing
 9. Spring
 10. Arm
 11. Pin
 12. Push-button

13. Control panel housing

14. Pusher arm

[024] The household appliance (1) of the present invention comprises a control panel (1) allowing the user to control and monitor the operation of the household appliance (1), and at least two movement mechanisms (5) providing the control panel (2) to be mounted on the household appliance (1) and also allowing to be moved in the desired direction suitable to the user's viewing angle, which can be put in an active position when the control panel (2) is connected to the household appliance (1) and a passive position when it is not connected, and a control panel (2) which can rotate around the axis formed by the movement mechanisms (5) in the active position, when at least one of the movement mechanisms (5) is put in active position and the others passive, and when desired can rotate in different directions when other movement mechanisms (5) are put in active position forming its rotating axis (Figure 1, Figure 2, Figure 6, Figure 7, Figure 8, Figure 9, Figure 1, and Figure 12).

[025] The household appliance (1) comprises one or more data input units (3), one or more data output units (4) that show the operating conditions to the user (temperature, humidity, pressure, ongoing process and like features) and a control panel housing (13) where the control panel (2) is mounted (Figure 3). The data input and/or output unit (3 and 4) are preferably positioned on the control panel (2). The movement mechanism (5) is preferably positioned behind the control panel housing (13).

[026] The movement mechanism (5) are preferably positioned one at each side of the control panel (2), each facing the other. Thus the control panel (2) can move around the axis formed by each movement mechanism (5), regarding each movement mechanism (5) as a rotating axis, according to the viewing angle of the user by way of the movement mechanisms (5) positioned on each of its sides. All the movement mechanisms (5) connecting the control panel (2) to the household appliance (1) are in the active position when the control panel (2) is in normal position. When the user wants to move the control panel (2), all the movement mechanisms (5) switch from active to passive position, except the movement mechanism (5) that is in the direction of the movement, only the movement mechanism (5) that is in the direction of the movement keeps its active position. Consequently the active movement mechanism (5) enables the control panel (2) to stay attached to the household appliance (1) and also forms the movement axis for the control panel (2) which is partly distanced from the household appliance (1) since all the other movement mechanisms (5) are in the passive position. At least one movement mechanism (5) should keep its active position so that the control panel (2) can move being attached to the household appliance (1).

[027] In the preferred embodiment of the present invention, the movement mechanism (5) comprises a latch (6) fixed on the household appliance (1), rotating pivotally

around its fixing point, a housing (8) on the control panel (2) having an inlet orifice, which fits into the latch (6) providing the attachment of the control panel (2) to the household appliance (1) when the movement mechanism (5) is in the active position, a solenoid (7) which actuates the latch (6) by opening closing it and a pusher arm (14) situated on the solenoid (7), which is pushed forwards or pulled backwards by the solenoid (7), and one or more push-buttons (12) which trigger the solenoid (7) that is part of the movement mechanism (5) that will preferably be electrically switched from the active position to the passive position.

[028] In the preferred embodiment of the present invention, the pusher arm (14) is pushed forwards by the solenoid (7) when the push-button is pressed, the pusher arm (14) is pulled back when the current is turned off.

[029] The latch (6) comprises a pin (11) by which it is fixed to the household appliance (1), and preferably two arms (10) that can rotate freely about the axis of the pin (11), opening closing like a scissor, preferably positioned parallel to each other.

[030] The movement mechanism (5) comprises a spring (9) between the two arms (10) that provide the arms (10) to return to their initial positions when the movement mechanism (5) is in the passive position and also provides the arms (10) to fully fit in the housing (8) when the movement mechanism (5) is in the active position.

[031] In the preferred embodiment of the present invention, the control panel (2) has preferably a quadrilateral shape and four movement mechanisms (5) are utilized.

[032] In the normal position, the control panel (2) is attached to the household appliance (1) by four movement mechanisms (5), one on each side. In this position, the parts of the arms (10) on the side of the control panel (2) are fully fitted in the housing (8) on the control panel (2) and are in open position, the parts on the other side are in closed position (Figure 4). When the user wants to move the

[033] control panel (2) in one direction, the push-button is pressed which will enable at least one of the movement mechanisms (5) to switch to the active position, and the others to passive position, and when the push-button is pressed, the pusher arm (14) is pushed forward by the solenoid (7) that is triggered as a result of the flowing electric current and enters between the arms (10) that were initially in closed position, the arms (10) move around the pin (11) and the parts that were normally closed, start opening by moving apart from each other, and as a result of this movement the parts of the arms (10) fitted in the housing (8) close by moving closer to each other such that they move away from the housing (8). So the parts of the arms (10) fitting in the housing (8) are freed from the housing (8) and the latch (6) forming the only attachment of the control panel (2) to the household appliance (1), leaves the control panel (2), and the movement mechanism (5) goes from the active position to the passive position (Figure 5). All these processes are valid for all the other movement mechanisms (5) except the

movement mechanism (5) on the control panel (2) side that is desired to be moved. The control panel (2) changes into a free position because of the three movement mechanisms (5) that change into the passive position. The movement mechanism (5) that keeps its initial active position without changing to the passive position, forms the only connection of the control panel (2) to the household appliance (1). This movement mechanism (5) provides the control panel (2) to be attached to the household appliance (1) and also provides the control panel (2) to move on its axis.

[034] When the control panel (2) is desired to be attached again on the household appliance (1) with all the movement mechanisms (5) being in the active position by positioning it in the control panel housing (13), force is applied on the control panel (2) by the user, the control panel (2) moves towards the household appliance (1) and the arms (10) that moved away from the housing (8) rest on the preferably inclined surface of the inlet orifice that will facilitate the arms (10) to comfortably fit in the housing (8) by moving towards each other. The arms (10) resting on the inlet orifice, move towards each other due to this inclined structure. The arms (10) that come closer are fitted in the housing (8) by entering in the housing (8) and later opening after entrance with the help of the spring (9). Consequently the control panel (2) is again attached on the household appliance (1) by way of the movement mechanism (5) passing into the active position (Figure 13).

[035] The user moves the control panel (2) on the axis of the movement mechanism (5) that is in the active position because of the movement mechanisms (5) that switch to the passive position, providing the control panel (2) to be in the viewing angle most suitable for her/him, and staying in the adjusted angle, monitors and controls the data input and/or the data output units (3 and 4).

[036] Sometimes moving the control panel (2) up-down or right-left may not help the user in finding the most suitable viewing angle. In an alternative embodiment of the present invention, the control panel (2) comprises a second movement mechanism (105). The data input and/or the output units (3 and 4) can be moved by utilizing this movement mechanism (105). Consequently the control panel (2) and the data input and/or the output units (3 and 4) situated on the control panel (2) can be moved independently enabling the user to find the most suitable position for viewing and operating the control panel (2) and the data input and/or the output units (3 and 4), especially the display, situated on the control panel (2) (Figure 10 and Figure 11).

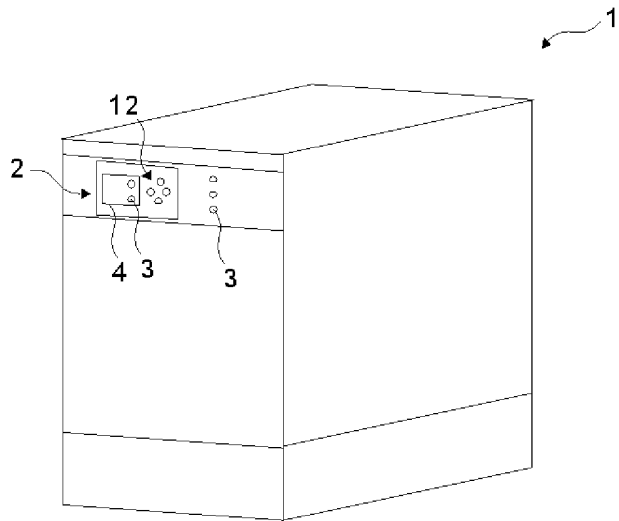
[037] With the embodiment of the present invention, the user is enabled to view the images on the control panel (2) clearly and comfortably and to control them by eliminating the negative effect of the reflections due to the light sources in the medium.

Claims

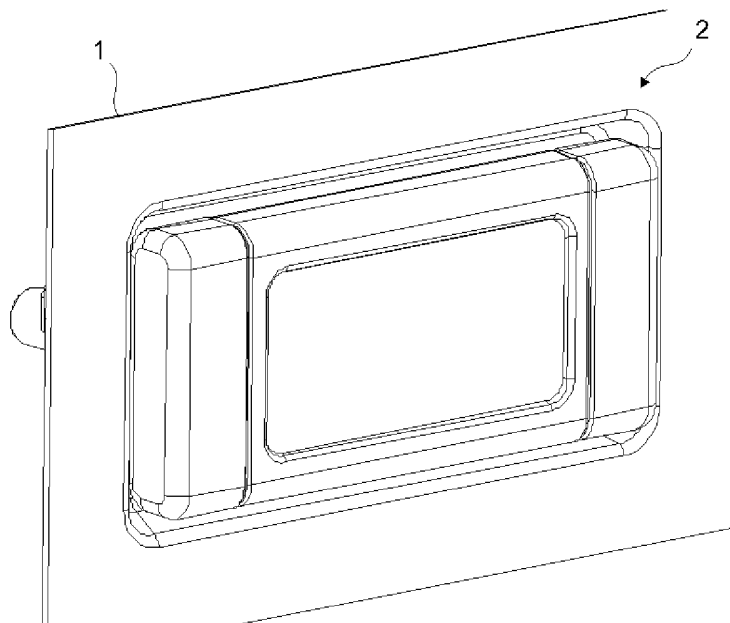
- [001] A household appliance (1) comprising a control panel (1) allowing the user to control and monitor the operation of the household appliance (1), characterized by - at least two movement mechanisms (5) providing the control panel (2) to be mounted on the household appliance (1) and also allowing it to be moved in the desired direction suitable to the user's viewing angle, which can be put in an active position when the control panel (2) is connected to the household appliance (1) and a passive position when it is not connected and - a control panel (2) which can rotate around the axis formed by the movement mechanisms (5) in the active position, when at least one of the movement mechanisms (5) is put in the active position and the others passive, and when desired can rotate in different directions when other movement mechanisms (5) are put in the active position forming its rotating axis .
- [002] A household appliance (1) as in Claim 1, characterized by a movement mechanism comprising a latch (6) fixed on the household appliance (1) and rotating pivotally around its fixing point, a housing (8) on the control panel (2) having an inlet orifice, into which the latch (6) fits providing the attachment of the control panel (2) to the household appliance (1) when the movement mechanism (5) is in the active position, a solenoid (7) which actuates the latch (6) by opening closing it and a pusher arm (14) situated on the solenoid (7), which is pushed forwards or pulled backwards by the solenoid (7), and one or more push-buttons (12) which trigger the solenoid (7) that is part of the movement mechanism (5) which will be switched from the active position to the passive position.
- [003] A household appliance (1) as in Claim 2, characterized by a movement mechanism (5) comprising a latch (6) having a pin (11) by which it is fixed to the household appliance (1), and one or more arms (10) that open and close and can rotate freely about the axis of the pin (11).
- [004] A household appliance (1) as in Claim 3, characterized by a movement mechanism (5) comprising a spring (9) between the two arms (10) that provide the arms (10) to return to their initial positions when the movement mechanism (5) is in the passive position and also provides the arms (10) to fully fit in the housing (8) when the movement mechanism (5) is in the active position.
- [005] A household appliance (1) as in any one of the above claims, comprising a data input and/or the output unit (3 and 4) situated on the control panel (2) and characterized by a second movement mechanism (105) which enables the data input and/or the output units (3 and 4) to move.

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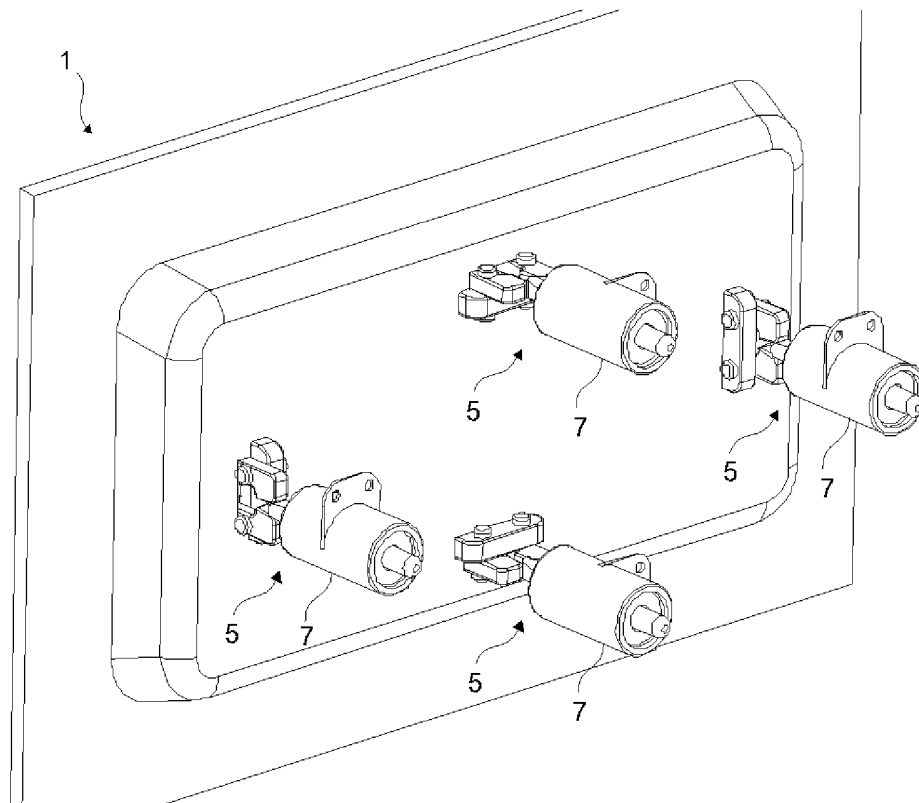
[Fig. 001]



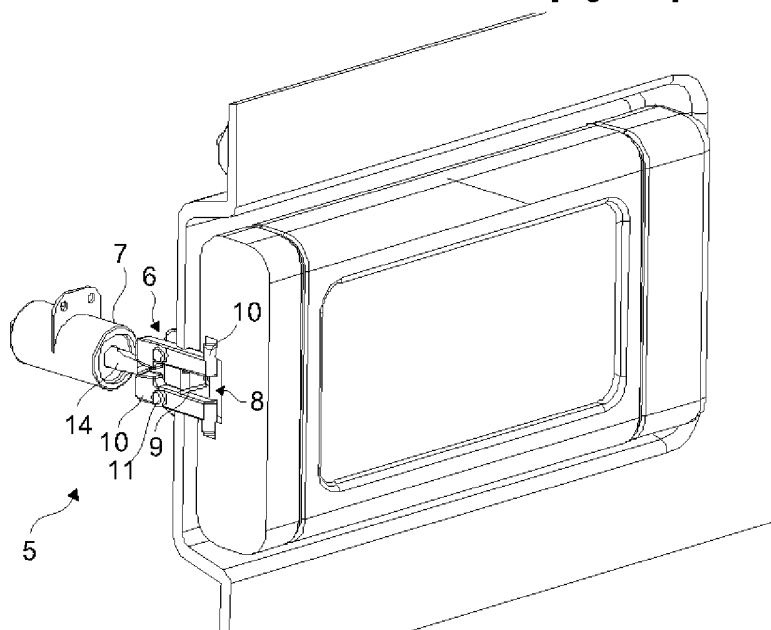
[Fig. 002]



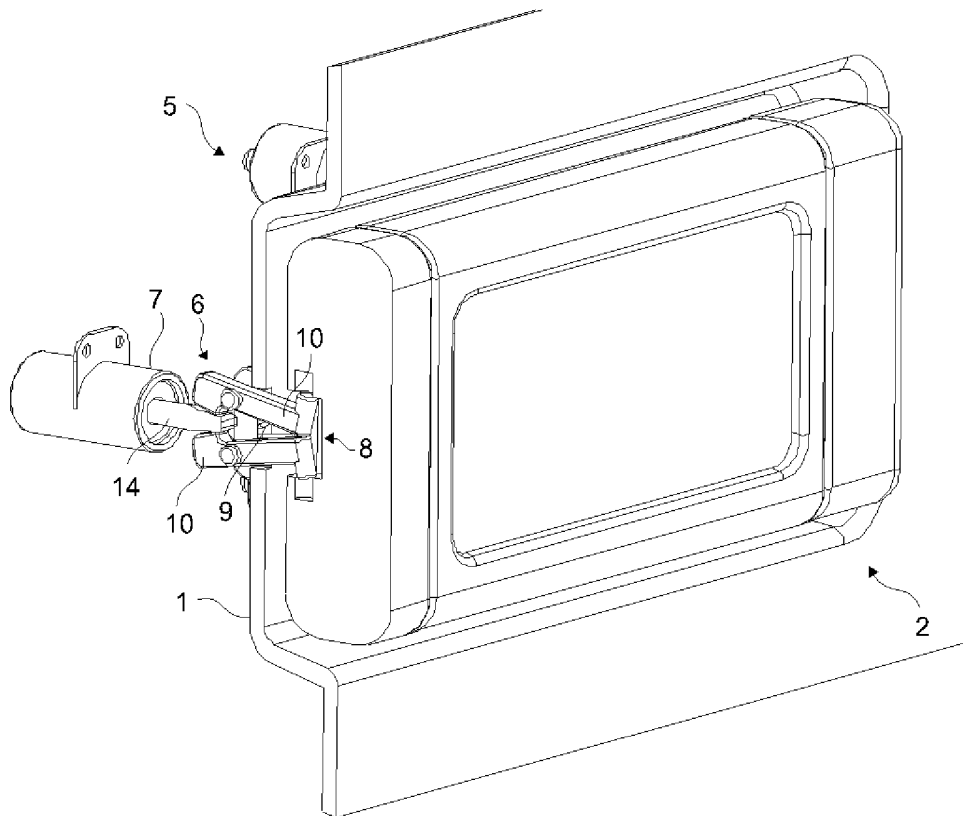
[Fig. 003]



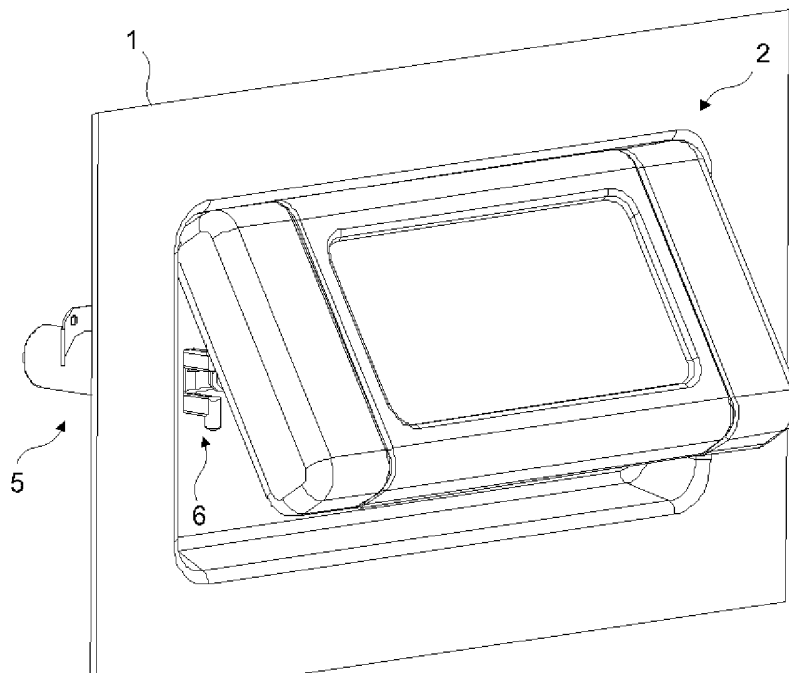
[Fig. 004]



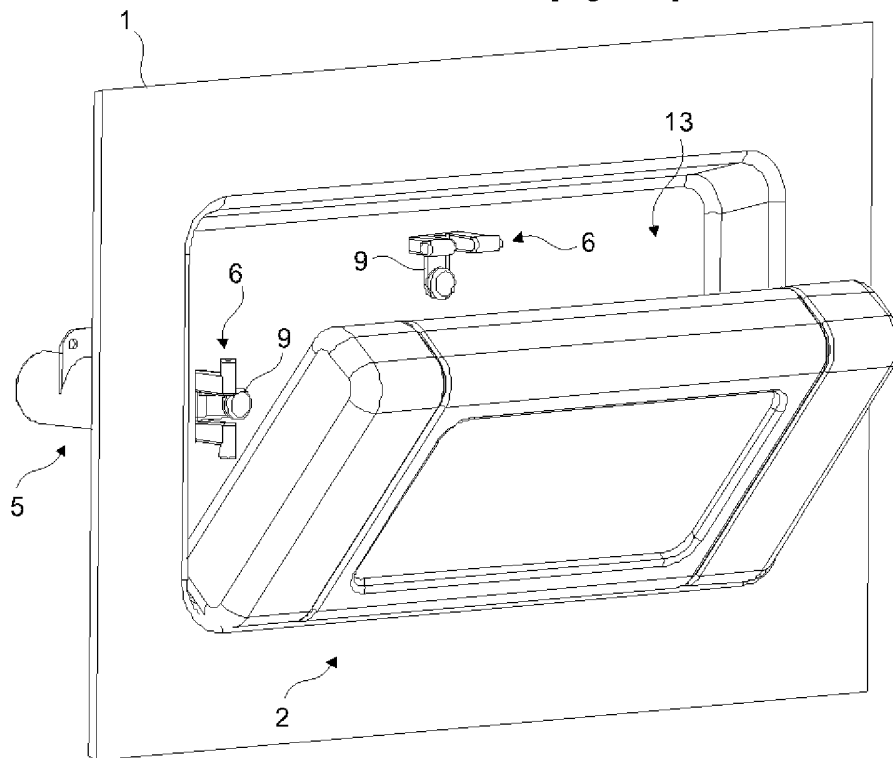
[Fig. 005]



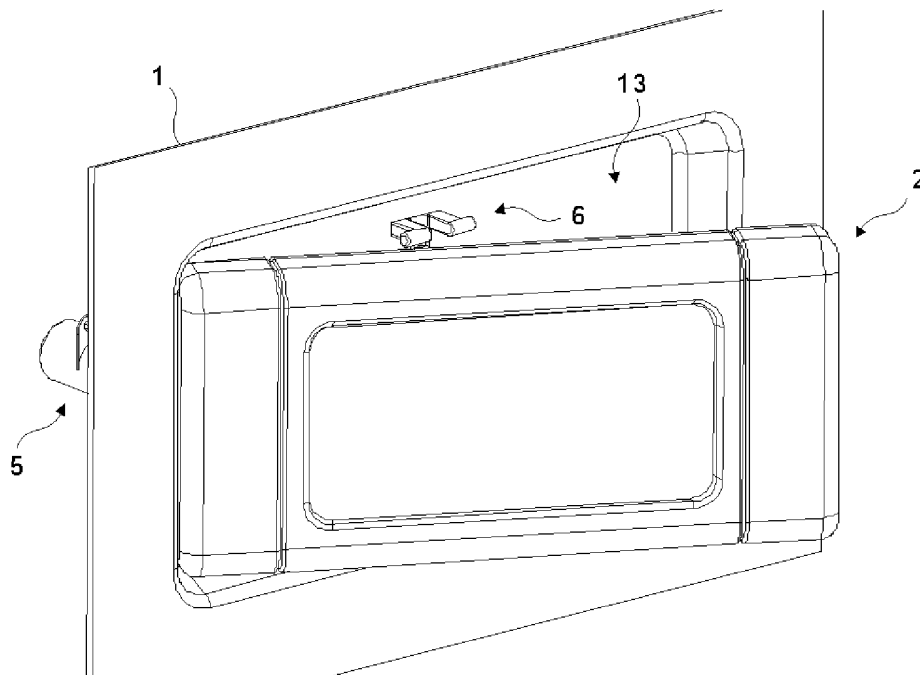
[Fig. 006]



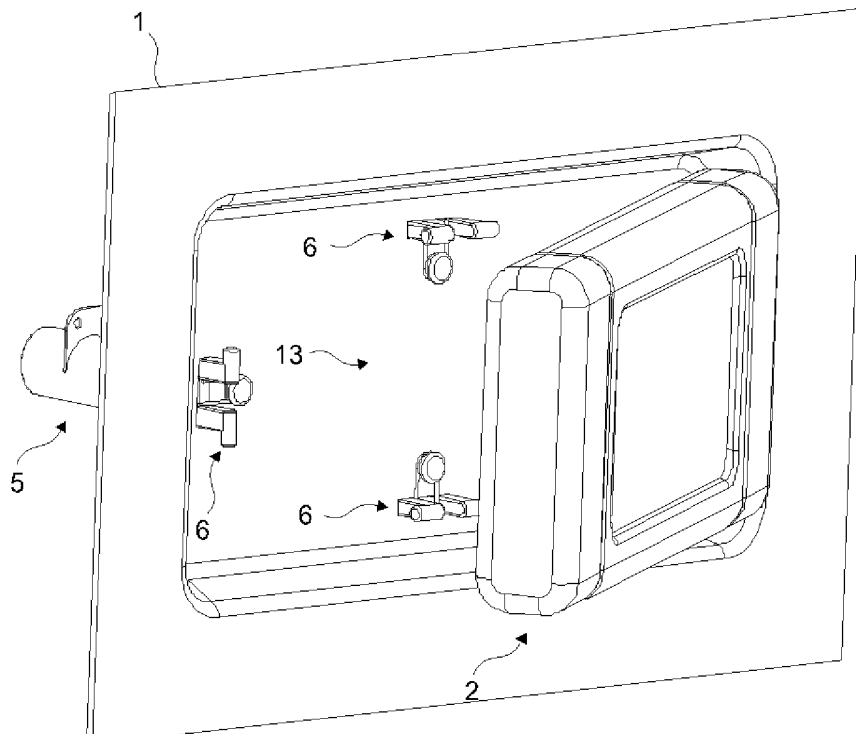
[Fig. 007]



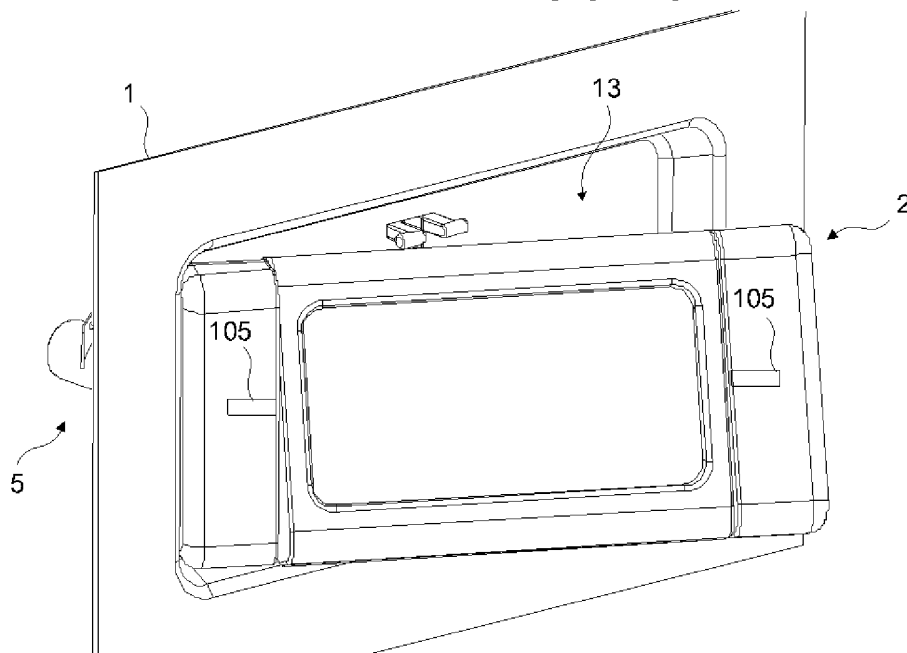
[Fig. 008]



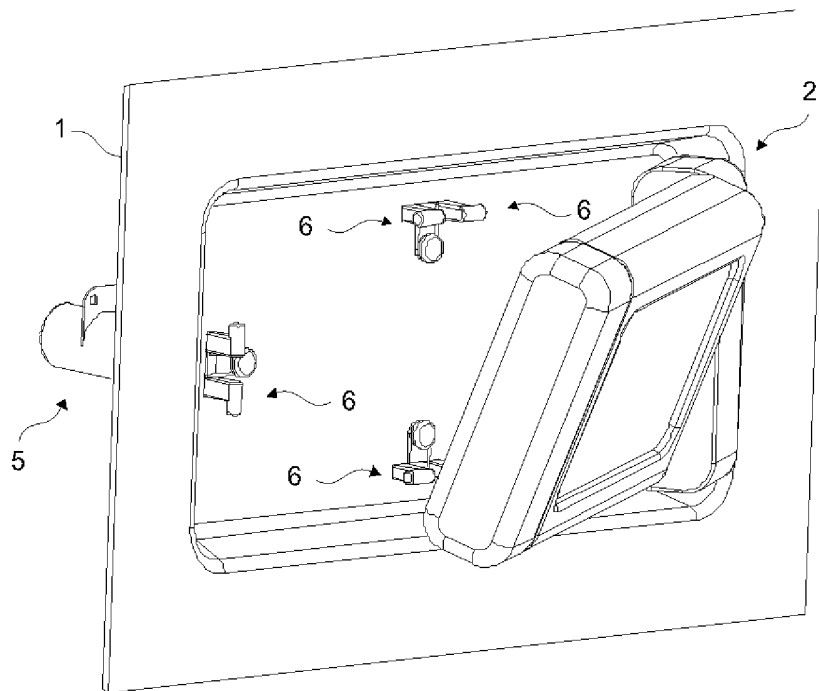
[Fig. 009]



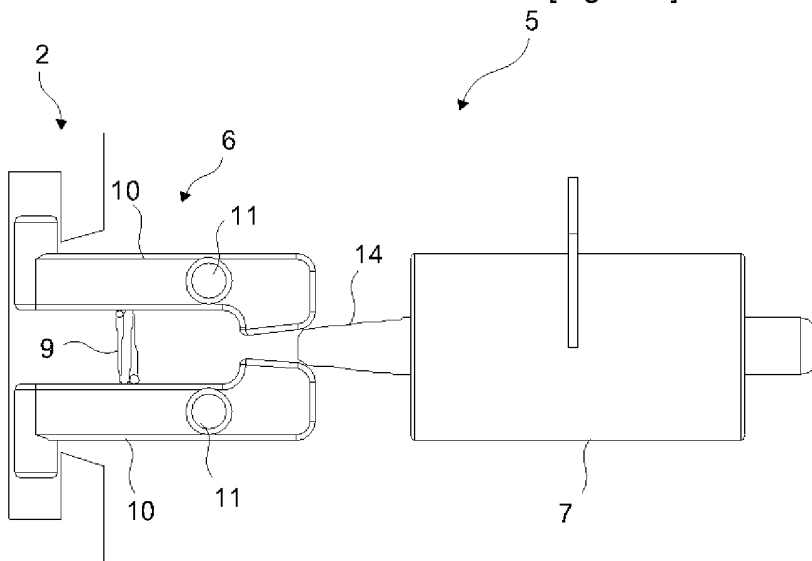
[Fig. 010]



[Fig. 011]



[Fig. 012]



[Fig. 013]

