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(54) Title: DOOR OPENING MECHANISM FOR COOLER DEVICES

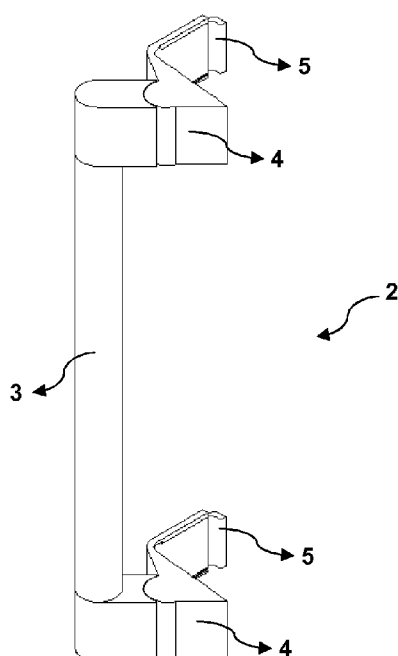


Figure - 2

(57) Abstract: The cooler device (A) of the invention comprises at least one door (1) which is used for accessing to the inner volume of the device body (12) and is connected to this body (12) and also at least one door opening mechanism (2) developed for opening of this door (1) easily. The door opening mechanism (2) comprises at least one body (4) fixed to device door; at least one skid (5) moving back and forth within the body (4) and extending from its one side to outside of the body (4); at least one arm (3) which is used for opening the device door (1) and activating the mechanism (2) (for moving the skid (5) and is in connection with the body (4)).

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DESCRIPTION

DOOR OPENING MECHANISM FOR COOLER DEVICES

5 Technical Field

This invention relates to the mechanisms which ensure easy opening of the doors of the cooler devices.

10 Prior Art

In the state of art, lower pressure occurs in outer environment compared with the inner parts of the cooler devices' doors due to the air circulation occurring during the cooling cycle. This makes the door difficult to open. In case the user has his/her hands full, it turns
15 much more difficult to open the door. As known, when the user would like to open the door, he/she exerts force on the door handle and the door is opened by rotating about the centre of a hinge. In this embodiment, the user can open the door only by pulling the door handle and exerting extra force on it. Various mechanisms are developed for ensuring the doors to be opened easily and the examples for these mechanisms are showed in the
20 published patent applications No JP200001 8803 and CN200989706.

Brief Disclosure of the Invention

A system in which the user can open the cooler device door for example by his/her elbow
25 even if he/she has his/her hands full is developed by this invention. The invention ensures that the user can open the door by exerting less force on the door according to the prior art.

In consideration of this, the cooler device of the invention comprises at least one door
30 which is connected to the body of the device and is used for the accession to the inner volume of its body, and at least one door opening mechanism on the door.

In the door opening mechanism, there are provided at least one mechanism body fixed to the device door, at least one skid which can move back and forth within the body and

extends from one side towards outside of the mechanism body, at least one arm which is in connection with the mechanism body and moves the skid.

The door opening mechanism comprises also one crank which is fixed to the arm, extends towards inside of the mechanism body, can rotate about a pivot within the mechanism body; a movement element in the mechanism body which can rotate about a pivot due to rotation of the crank and moves the skid by its rotation; and at least one spring which restores the positions (to its position before the arm is moved) of the arm, crank, movement element and skid when the arm is released.

Objective of the Invention

An aim of the invention is to create a cooler device, the door of which can be opened easily.

Another aim of the invention is to develop a mechanism in order to ensure the door of the said cooler door to be opened easily.

A further aim of the invention is to develop a door opening mechanism which is applicable to many cooler devices without difficulty.

Still a further aim of the invention is to create an easy to produce, cheap and secure cooler device and a door opening mechanism related to this device.

Description of the Drawings

An exemplary cooler device of the invention and the related door opening mechanisms are illustrated in the attached figures, in the figures

Figure 1 is the general perspective view of the cooler device.

Figure 2 is the general perspective view of the door opening mechanism.

Figure 3 is the top sectional view of the interior structure of the door opening mechanism.

Figure 4 is the top sectional view of the interior structure of another door opening mechanism.

All the parts illustrated in the figures are individually assigned a reference numeral and the corresponding terms of these numbers are listed as follows:

- Cooler device (A)
- 5 Device door (1)
- Mechanism (2)
- Arm (3)
- Body (4)
- Skid (5)
- 10 Crank (6)
- Movement element (7)
- Pivot (8)
- Pivot (8)
- Movement transmission region (10)
- 15 Movement transmission region (11)
- Device body (12)
- Opening (13)
- Spring (14)
- Pin (15)
- 20 Channel (16)
- Guide (17)
- Pin (18)
- Channel (19)

25 **Disclosure of the Invention**

The cooler device (A) shown in the Figure 1 comprises at least one door (for example with hinge) which is used for accessing to the inner volume of the body (12) and is connected to this body (12), and also at least one door opening mechanism (2) which is developed for opening the door (1) easily.

The door opening mechanism (2) shown in more detail in the Figure 2 comprises at least one body (4) which is fixed to device door (1), at least one skid (5) which can move within the body (4) by sliding and extends from one side towards the outside of the body (4), at

least one arm (3) which is used for opening the device door (1) and activating the mechanism (2) (for moving the skid (5)) and is in connection with the body (4).

5 In the main embodiment of the invention, after the arm (3) is moved towards one side on the body (4), the skid (5) moves out from the other side of the body (4) or moves in the body (4). After the skid (5) moves out, the skid (5) pushes the device body (12) and the door (1) is opened by moving off the device body (12). In an another alternative embodiment, when the arm (3) is moved, the skid (5) is moved towards inside of the body (4) and it budes the seal (not shown in figures) between the device body (12) and device
10 door (1) and pressure of the interior and exterior environment of the device (A) is get balanced, and then the door (1) is opened. In brief, after these embodiments, by a slight movement of the arm (3), the device door (1) can be opened easily.

15 In Figure 3 and 4, the interior structure of the mechanism (2) is shown. In this structure, there is a crank (6) which is fixed to the arm (3). The crank (6) extends towards into the body (4) from an opening (13) in the part on which the arm (3) is provided and it can rotate about the pivot (8) within the body (4). For this reason, the arm (3) can rotate about (within the angle in which the opening (13) limits the crank (6)) said pivot. The crank (6) is in connection with a skid (5) in the body (4) from its other side. Movement element (7) has
20 the feature of rotating about a pivot (9), so it rotates about the pivot (9) and activates the skid (5) following the rotation of crank (6). In other words, after the arm (3) is moved, the crank (6) rotates and said crank (6) also causes the movement element (7) to rotate. In case the arm (3) is released by the user, at least one spring (14), (in the example in figure 3, one end of the spring (14) is connected to a fixed part of the body (4) and its other end
25 is connected to the crank (6)) which restores the positions of the arm (3) and thus the crank (6) and the skid (5), is used.

30 In exemplary embodiment in Figure 3, the movement element (7) is shown as in form of gear. Accordingly, connecting part of the crank (6) with the movement element (7) is also in form of gear. These two gears roll each other by means of movement transmission region (10) between them. In the movement transmission region (11) of the movement element (7) in connection with the skid (5), this part of skid (5) is created in form of kramayer gear. Then, rotation of the movement element (7) causes the skid (5) to move in linear way in movement transmission region (11). There is provided a guide (17), in which

the skid (5) in the body (4) is placed and slides, in order to ensure the skid (5) to move in linear way.

In exemplary embodiment in Figure 4, movement element (7) is shown as in form of bar.

5 In order to ensure the crank (6) rotates the movement element (7), in the movement transmission region (10) provided between them, there are at least one pin (15) and at least one channel (16) into which the pin (15) gets (the pin (15) and the channel (16) can slide within each other and rotate according to each other). In Figure 4, the pin (15) is shown on the crank (6) and the channel (16) is shown on the movement element (7).
10 Alternatively, the pin (15) can be on the movement element (7) and the channel (16) may be on the crank (6). Similarly, in the movement transmission region (11) of the movement element (7) in connection with the skid (5), this part of the skid (5) may comprise pin (18) (or channel (19) and the movement element (7) may comprise channel (19) (or pin (18) (the pin (15) and the channel (16) can slide within each other and rotate according to each other). Thus, rotation of the movement element (7) causes the skid (5) to move in linear way in the movement transmission region (11). There is provided a guide (17) in which the skid (5) in the body (4) is placed and slides in order to ensure the skid (5) to move in linear way.

20 By adjusting and the position of the pivots (8, 9) and sizes of the moving members (for example, the arm (3), the crank (6), the movement element (7) and the skid (5)) in the door opening mechanism (2) used in cooler device (A) of the invention, the door (1) can be opened easily by a slight movement of the arm (5). In other words, in movement transmissions, force transmission is also regarded and thus, the door (1) can be opened
25 by desired force.

CLAIMS

1. A cooler device (A) comprising at least one door (1) which is used for accessing to the inner volume of the device body (12) and is connected to this body (12);
5 at least one door opening mechanism (2) on which there are provided at least one body (4) fixed to device door (1); at least one skid (5) moving back and forth within the body (4) and extending from its one side to outside of the body (4); at least one arm (3) moving the skid (5) and being in connection with said body (4) **characterized in that** the door opening mechanism (2) comprises
10 at least one crank (6) which is fixed to arm (3), extends towards inside of the body (4), can rotate about one pivot (8) inside (6) of the body (4) by the movement of the arm (3);
one movement element (7) within the body (4), which can rotate about a pivot (9) following the rotation of crank (6) and moves the skid (6) by its
15 rotation;
at least one spring (14) which restores the positions of the arm (3), the crank (6), the movement element (7) and the skid (5) when the arm (3) is released.
- 20 2. A device (A) according to Claim 1, characterized in that the movement element (7) is in form of gear.
3. A device (A) according to Claim 2, characterized in that part, which is in connection with the movement element (7), of the crank (6) is in form of gear.
25
4. A device (A) according to Claim 2, characterized in that part, which is in connection with the moving element (7), of the skid (5) is in form of kramayer gear.
5. A device (A) according to Claim 1, characterized in that it comprises a guide (17)
30 in which the skid (5) within the body (4) is placed and slides.
6. A device (A) according to Claim 1, characterized in that there are provided at least one pin (15) and at least one channel (16), into which the pin (15) gets, in the movement transmission region (10) between the movement element (7) and the

crank (6); the pin (15) and the channel (16) slide within each other and rotate according to each other.

7. A device (A) according to Claim 6, characterized in that the pin (15) is provided on the crank (6) and the channel (16) is on the movement element (7).

8. A device (A) according to Claim 6, characterized in that the pin (15) is provided on the movement element (7) and the channel (16) is on the crank (6).

9. A device (A) according to Claim 1, characterized in that in a movement transmission region (11) between the movement element (7) and the skid (5), there are at least one pin (18) and at least one channel (19), into which the pin (18) gets; the pin (18) and the channel (19) can slide within the pin (18) and the channel (19) can slide within each other and rotate according to each other.

10. A device (A) according to Claim 9, characterized in that the pin (18) is provided on the skid (5) and the channel (19) is on the movement element (7).

11. A device (A) according to Claim 9, characterized in that the pin (18) is provided on the movement element (7) and the channel (19) is on the skid (5).

12. A device (A) according to Claim 1, characterized in that one end of the spring (14) is connected to a fixed part in the body (4), and the other end is connected to the crank (6).

13. A device (A) according to Claim 1, characterized in that it comprises an opening (13) in part, where the crank (6) gets into the body (4) and the arm (3) is provided.

14. A device (A) according to Claim 1, characterized in that the skid (5) has the feature of pushing the device body (12).

15. A device (A) according to Claim 1, characterized in that the skid (5) has the feature of moving the sealing element provided between the device body (12) and the door (1).

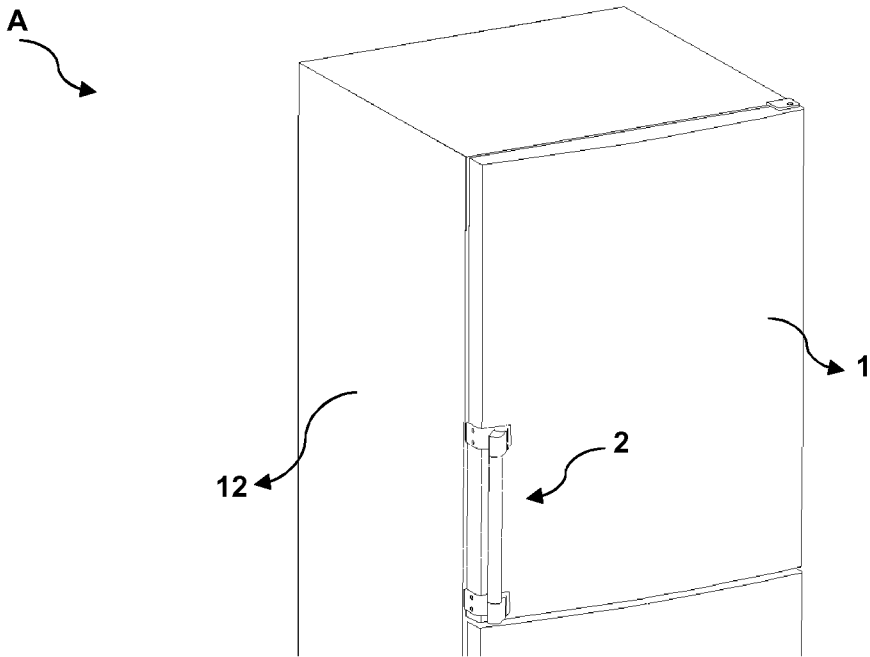


Figure – 1

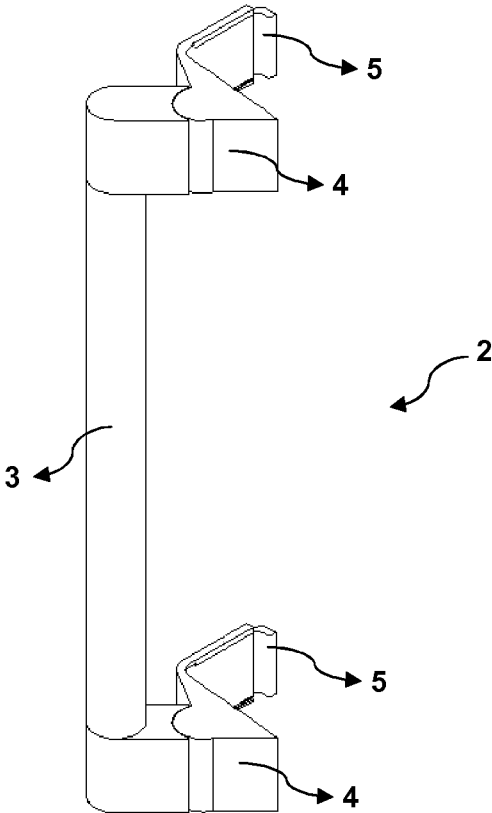


Figure – 2

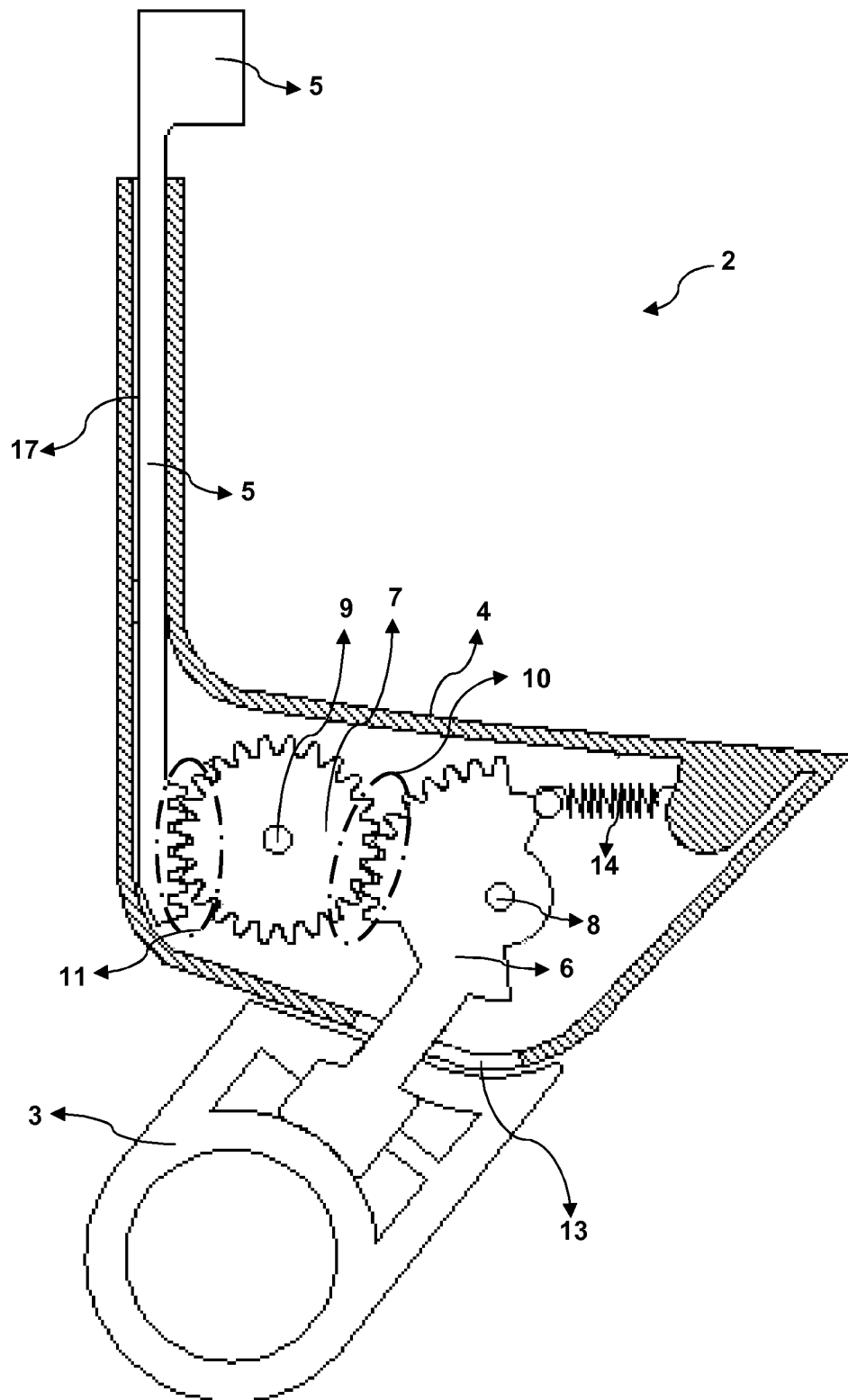


Figure - 3

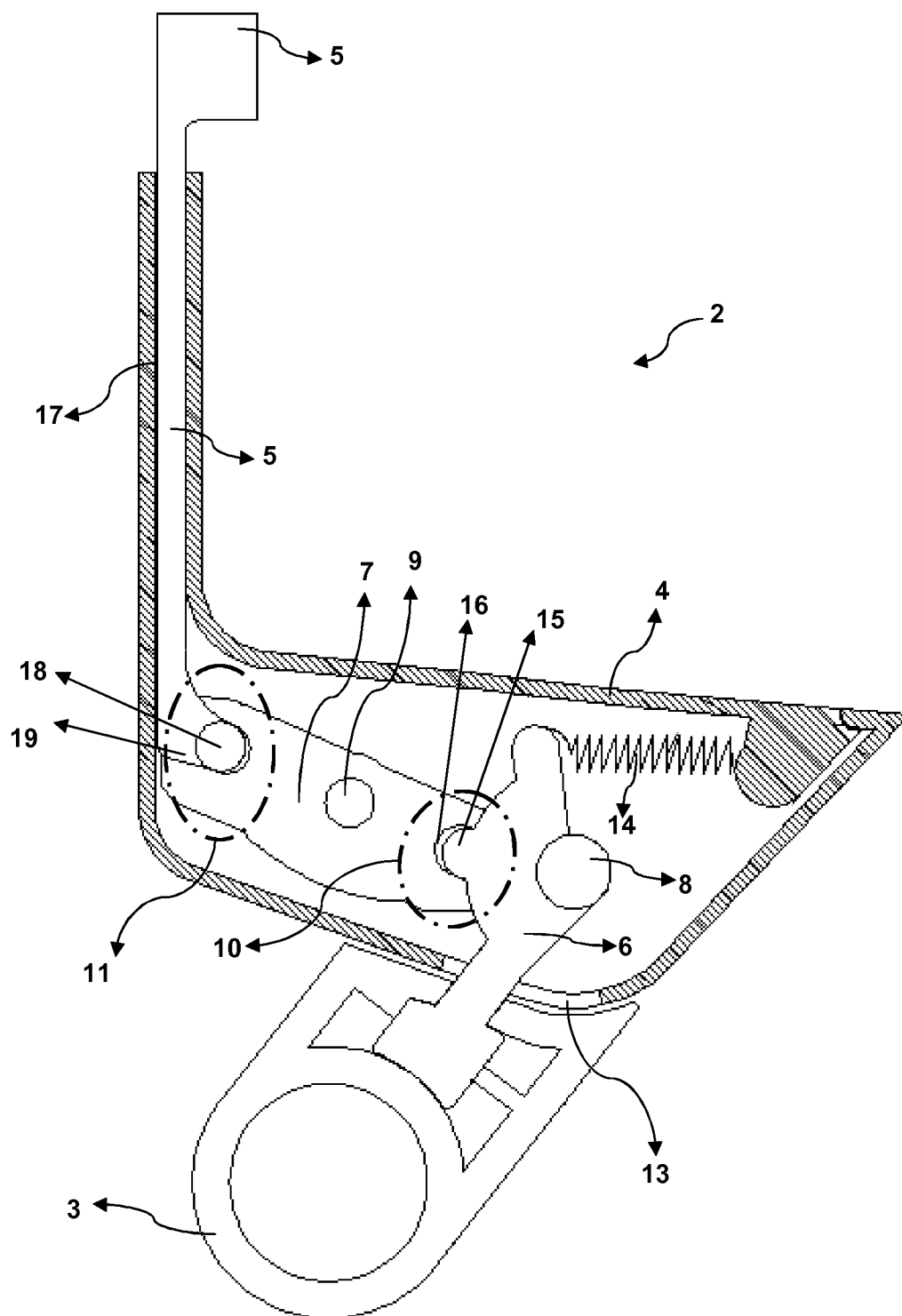


Figure – 4