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(54) **PROTECTIVE CASING ASSEMBLY FOR REFRIGERATOR DISPLAY**

SCHUTZGEHÄUSEANORDNUNG FÜR EINEN KÜHLSCHRANK MIT ANZEIGE

ENSEMBLE BOÎTIER PROTECTEUR POUR AFFICHAGE DE RÉFRIGÉRATEUR

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Description

[0001] The present invention relates to a protective casing assembly for use in a refrigerator comprising a display unit, as well as a refrigerator characterised by said protective casing assembly.

[0002] Refrigeration appliances such as domestic refrigerators are commonly known in the art. For the convenience of the users, domestic refrigerators are generally provided with panel-mounted display units for viewing/setting the temperature of the refrigeration compartments. Thereby, the user is enabled to control the domestic refrigerator directly from the panel, in particular from the door panel. In order to increase the energy efficiency of the domestic refrigerator, the rear side of the panel, in particular the cavity between the inner lining and the panel is generally filled with a thermally insulating foam material, such as polyurethane. The panel-mounted display unit must be protected from the foam material, in particular at the stage of injecting the foam material into the cavity. In a commonly known domestic refrigerator, the display unit is enclosed at least from the rear side by a cover which can be attached onto the inner side of the panel and to the display unit. The display unit is generally installed into an aperture on the panel. In order to establish the electrical connection with the display unit, the cover is generally provided with a throughlet for the insertion of a releasable connector with its cables whereby the display unit can be connected to the control unit of the refrigerator. The throughlet is commonly sealed with a sponge material and/or an adhesive tape so as to prevent the intrusion of the curing foam material into the cover and therefrom to the display unit.

[0003] French Patent Application FR2734086 discloses a connector with a number of teeth provided on its exterior surface that rest on a refrigerator wall thus fixing it against the wall.

[0004] The utility model number of CN202993743 (U) discloses a control panel structure of a refrigerator door.

[0005] A problem with the above-mentioned prior art domestic refrigerator is that the sponge material and the adhesive tape increase the production costs both in material and labor. In particular, the assemblage of the cover with the releasable connector and the cables is inconvenient and takes an unnecessary amount of time of the assembly operator. Another problem with the prior art domestic refrigerator is that the sponge material and the adhesive tape are not sufficiently reliable as they are vulnerable to deformation and may give rise to leakage, in particular when the size of the throughlet is kept comparatively large so as to admit a correspondingly large connector with a plurality of cables. In case of leakage, the display unit receives damages and the refrigerator door becomes junk and thus the overall production costs increase further.

[0006] An objective of the present invention is to provide a protective casing assembly for use with a panel-mounted display unit of a refrigeration appliance, in particular a refrigerator characterised by said protective casing assembly which solves the aforementioned problems of the prior art in a cost effective way and which enables an easy, quick and reliable assemblage of the display unit.

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[0007] This objective has been achieved by the protective casing assembly as defined in Claim 1. Further achievements have been attained by the subject-matters respectively defined in the dependent claims.

10 **[0008]** The protective casing assembly of the present invention further comprises grooves for respectively receiving and aligning the cables which are inserted through the respective throughlet into the cover, wherein the grooves match the cables respectively; one or more lids each for opening/closing the respective throughlet and for securing the cables into the respective grooves and one or more locking means each for locking the respective lid in the closed position.

15 **[0009]** A major advantageous effect of the present invention is that the releasable connector and the respective cables of the display unit can be easily, quickly and reliably assembled with the protective casing assembly particularly by virtue of the alignment grooves and the lockable lid. Thereby, the need for using the aforementioned sponge material and the adhesive tapes has been obviated and thus the production costs can be reduced. Another major advantageous effect of the present invention is that the intrusion of the foam material into the cover can be prevented in a reliable and cost-effective way particularly by virtue of the alignment grooves and the lockable lid.

20 **[0010]** In an embodiment, the locking means has a retainer which locks the lid to the closed position. This embodiment is particularly advantageous as the lid can be safely locked in the closed position so as to prevent intrusion of the foam material. The retainer may be provided with either one of a snap connection, a clamp connection, interlock connection, a fit connection, a screw connection and an adhesive connection. Other type of connections known to those skilled in the art can be alternatively used. The retainer may be provided as a separate member that cooperates with lid and the casing. Alternatively, the retainer may be provided integrally with the lid and/or the casing.

25 **[0011]** According to the present invention, the number of grooves may be provided in excess of the number of cables. Thereby, various connectors with different pin numbers can be flexibly used in accordance with the requirements of the panel-mounted display unit. Therefore, according to the present invention, in order to prevent the foam material from intruding the empty grooves, the protective casing assembly has been provided with one or more plug-like protrusions for blocking the empty grooves against intrusion of the foam material. This is particularly advantageous as the empty grooves can be safely blocked by the plug-like protrusions. The plug like protrusions may be provided as separate members. Alternatively, the plug-like protrusions may be provided re-

movably on either one of the retainer, the lid and the casing. The protrusions may be aligned and positioned into the grooves by a guide. The guide may be provided on either one of the retainer, the lid and the casing. The guide may be further provided in form of holes which match the plug-like protrusions and open into the grooves. The plug-like protrusions may be rendered removable by manual breaking off. The plug-like protrusions may be further provided with a cut for facilitating the breaking off. Alternatively the protrusions may be provided with a detachable connection for their removal.

[0012] In another embodiment, the lids are hinged to the cover. This embodiment is particularly advantageous as it facilitates opening/closing of the throughlets. The hinges may be provided integrally with the lid and the cover.

[0013] In another embodiment, the cover has two opposing throughlets for the insertion of two connectors with the associated cables respectively. This embodiment is particularly advantageous as the two set of cables can be installed into the fixed passages in the left hinge assembly and the right hinge assembly of the door respectively so as to allow the change of the swing direction of the door.

[0014] In alternative embodiments of the present invention, the grooves may be formed onto the cover in various different structures. These structures may be level with the side wall of the cover or protrude inwardly and/or outwardly from the rear wall of the cover. In another embodiment, the grooves are formed into a cantilever structure such as a tongue which is located in close proximity to the respective throughlet. These embodiments are particularly advantageous as the cables can be orderly aligned and received by the matching grooves during the insertion of the connector.

[0015] Additional advantageous effects of the protective casing assembly and the refrigerator characterised by the protective casing assembly of the present invention will become more apparent with the detailed description of the embodiments with reference to the accompanying drawings in which:

Figure 1 - is a schematic perspective view of a protective casing assembly according to an embodiment of the present invention;

Figure 2 - is a schematic front view of a refrigerator which has the protective casing assembly according to an embodiment of the present invention;

Figure 3 - is a schematic sectional view of the refrigerator of Fig. 2, taken along the line A-A;

Figure 4 - is a schematic perspective view of the refrigerator of Fig. 2, when the door is open;

Figure 5 - is a schematic partially exploded perspective view of the refrigerator of Fig. 2, wherein the foam material in the cavity between the inner lining and the door panel has been omitted;

Figure 6 - is a schematic enlarged view of the detail B of Fig. 5;

Figure 7 - is another schematic partially exploded perspective view of the detail B of Fig. 5;

Figure 8 - is another schematic partially exploded perspective view of the detail B of Fig. 5;

Figure 9 - is another schematic partially exploded perspective view of the detail B of Fig. 5;

Figure 10 - is a schematic partial rear view of the detail B of Fig. 5;

Figure 11 - is a schematic sectional view of the detail B of Fig. 5, taken along the line C-C as shown in Fig. 10.

[0016] The reference signs appearing on the drawings relate to the following technical features.

1. Protective casing assembly
2. Refrigerator
3. Display unit
4. Panel
5. Aperture
6. Connector
7. Cable
8. Cover
9. Throughlet
10. Groove
11. Lid
12. Locking means
13. Retainer
- 13a. Body
14. Hook
15. Catch
16. Protrusion (Plug)
- 16a. Cut
17. Foam
18. Guide
19. Hole
20. Hinge
21. Pin
22. Bearing
23. Rear wall
24. Sidewall
25. Sidewall
26. Tongue
27. Flange
28. Compartment
29. Door
30. Input means
31. Lining
32. Cavity

[0017] The protective casing assembly (1) is suitable for use in a refrigeration appliance (2), in particular a domestic refrigerator (2).

[0018] The refrigerator (2) comprises a compartment (28) for refrigerating food products; a door (29) for opening/closing the compartment (28), wherein the door (29) has a panel (4); a display unit (3) and an aperture (5) on the panel (4) for receiving the display unit (2). The display

unit (3) comprises one more releasable connectors (6) each with respective cables (7) and an input means (30) for allowing a user to set the temperature of the compartment (28).

[0019] The protective casing assembly (1) comprises a cover (8) for enclosing at least the rear side of the display unit (3) and an attachment means (not shown) for attaching the cover (8) onto the inner side of the panel (4) and to the display unit (3). The cover (8) comprises one or more throughlets (9) each for the insertion of the respective connector (6) with its cables (7).

[0020] The protective casing assembly (1) according to the present invention further comprises a plurality of grooves (10) for respectively receiving and aligning the cables (7) which are inserted through the respective throughlet (9) into the cover (8), wherein the grooves (10) match the cables (7) respectively; one or more than one lid (11) each for opening/closing the respective throughlet (9) and for securing the cables (7) into the respective grooves (10) and one or more locking means (12) each for locking the respective lid (11) in the closed position, wherein the protective casing assembly (1) comprises one or more plug-like protrusions (16), each for blocking a respective empty groove (10) against intrusion of foam material (17).

[0021] The refrigerator (2) according to the present invention is characterised by the protective casing assembly (1).

[0022] In an embodiment, the locking means (12) comprises a retainer (13) which comprises one or more snap hooks (14). In this embodiment, the cover (8) comprises one or more catches (15) which cooperate with the one or more snap hooks (14) respectively.

[0023] In another embodiment, the protrusions (16) are removably disposed onto the retainer (13). In this embodiment, the lid (11) comprises a guide (18) for aligning and positioning the plug-like protrusions (16) into the grooves (10) respectively. The guide (18) cooperates with the plug-like protrusions (16).

[0024] In another embodiment, the guide (18) comprises through holes (19) which are disposed onto the lid (11) for receiving the plug-like protrusions (16) respectively. The through holes (19) match the plug-like protrusions (16) respectively. The through holes (19) cooperate with the plug-like protrusions (16).

[0025] In another embodiment, each plug-like protrusion (16) is adapted for removal from the retainer (13) through manually breaking off from the body (13a) of the retainer (13).

[0026] In another embodiment, each plug-like protrusion (16) has a narrow cut (16a) which facilitates the manual breaking off.

[0027] In another embodiment, the protective casing assembly (1) further comprises one or more than one hinge (20) each for pivotably supporting the respective lid (11).

[0028] In another embodiment, each hinge (20) comprises two trunnion pins (21) which are disposed onto

the lid (11) and two respective trunnion bearings (22) which are disposed onto the cover (8).

[0029] In another embodiment, the cover (8) comprises a rear wall (23) and four sidewalls (24, 25). In this embodiment, the opposing lateral sidewalls (25) each has one throughlet (9) for the insertion of the respective connector (6) with its cables (7).

[0030] In another embodiment, the protective casing assembly (1) comprises one or more than one tongue (26) each disposed in close proximity to the respective throughlet (9). In this embodiment, the grooves (10) are disposed into the tongues (26) respectively. In a version of this embodiment, the catches (15) are also formed onto the respective tongue (26).

[0031] In another embodiment, the cover (8) comprises a flange (27) for abutting from the inside onto the periphery of the aperture (5) in the panel (4).

[0032] In another embodiment, the attachment means comprises a screw-connection (not shown) and/or a snap-connection (not shown) for attaching the cover (8) to the display unit (3) and onto the inner side of the panel (4).

[0033] In another embodiment, the refrigerator (2) further comprises an inner lining (31) for the attachment onto the inner side of the door (29). The protective casing assembly (1) is enclosed by a thermal insulating foam material (17) which fills at least part of the cavity (32) between the inner lining (31) and the panel (4).

[0034] In the subsequent description, the assemblage of the display unit (3) with the protective casing assembly (1) will be briefly explained by way of example.

[0035] First, the releasable connector (6) and the respective cables (7) are inserted through the respective throughlet (9) into the cover (8). The same procedure is repeated for the other releasable connectors (6) and the respective cables (7), where available. The cables (7) are aligned into the respective grooves (10) and the respective lid (12) is locked in the closed position to the cover (8) through the locking means (12). For instance, the lid (11) may be optionally locked in the closed position to the cover (8) through the respective retainer (13). If there are any empty grooves (10), these are blocked with the respective plug-like protrusions (16) against the intrusion of the foam material (17). Then, display unit (3) is connected with each releasable connector (6) and placed onto the aperture (5) of the panel (4). Then, the cover (8) is attached through the attachment means onto the inner side of the panel (4) and to the display unit (2). Then, the foam material (17) is injected into the cavity (32) between the inner lining (31) and the panel (4) of the door (29) as the latter is maintained in the horizontal position.

[0036] A major advantageous effect of the present invention is that the releasable connector (6) and the respective cables (7) of the display unit (3) can be easily, quickly and reliably assembled with the protective casing assembly (1), particularly by virtue of the lockable lid (11) and the grooves (10). Thereby, the need for using the

sponge material (not shown) and the adhesive tapes (not shown) have been obviated and thus the production costs can be reduced. Another major advantageous effect of the present invention is that the intrusion of the foam material (17) into the cover (8) can be prevented in a reliable and cost-effective way, particularly by virtue of the lockable lid (11) and the grooves (10), and the plug-like protrusions (16) each for blocking a respective empty groove (10) against intrusion of foam material (17). Other additional advantageous effects of the present invention can be taken from the aforementioned embodiments.

Claims

1. A protective casing assembly (1) for use in a refrigerator (2) comprising a display unit (3), the protective casing assembly (1) comprising:

- a cover (8) for enclosing at least the rear side of the display unit (3) and an attachment means for attaching the cover (8) to the display unit (3), wherein the cover (8) comprises one or more throughlets (9) each for the insertion of a respective connector (6) with its cables (7) into the cover (8);
- a plurality of grooves (10) for respectively receiving and aligning the cables (7) which are inserted through the respective throughlet (9) into the cover (8), wherein the grooves (10) match the cables (7) respectively,
- one or more lids (11) each for opening/closing the respective throughlet (9) and securing the cables (7) into the respective grooves (10);
- one or more locking means (12) each for locking the respective lid (11) in the closed position;

characterized by one or more plug-like protrusions (16) each for blocking a respective empty groove (10) against intrusion of foam material (17).

2. The protective casing assembly (1) according to Claim 1, **characterized in that** the locking means (12) comprising a retainer (13) which has one or more snap hooks (14) and the cover (8) comprising one or more catches (15) which cooperate with the one or more snap hooks (14) respectively.
3. The protective casing assembly (1) according to Claim 1 or 2, **characterized in that** the plug-like protrusions (16) are removably disposed onto each retainer (13) and the lid (11) comprises a guide (18) for aligning and plug-like positioning the protrusions (16) into the grooves (10) respectively.
4. The protective casing assembly (1) according to Claim 3, **characterized in that** the guide (18) comprises through holes (19) which are disposed onto

the lid (11) for receiving the plug-like protrusions (16) respectively, wherein the through holes (19) match the plug-like protrusions (16) respectively.

5. The protective casing assembly (1) according to Claim 3 or 4, **characterized in that** each plug-like protrusion (16) is removable from the retainer (13) through manually breaking off from the body (13a) of the retainer (13).
6. The protective casing assembly (1) according to Claim 5, **characterized in that** each plug-like protrusion (16) has a narrow cut (16a) which facilitates the manual breaking off.
7. The protective casing assembly (1) according Claim 1, **characterized by** one or more hinges (20) each for pivotably supporting the respective lid (11).
8. The protective casing assembly (1) according to Claim 7, **characterized in that** each hinge (20) comprises two trunnion pins (21) which are disposed onto the lid (11) and two respective trunnion bearings (21) which are disposed onto the cover (8).
9. The protective casing assembly (1) according to Claim 1, **characterized by** the cover (8) comprising a rear wall (23) and four sidewalls (24, 25), wherein the opposing lateral sidewalls (25) each has one throughlet (9) for the insertion of the respective releasable connector (6) with its cables (7).
10. The protective casing assembly (1) according to Claim 1, **characterized by** one or more tongues (26) each disposed in close proximity to the respective throughlet (9), wherein the grooves (10) are disposed into the tongues (26).
11. The protective casing assembly (1) according to Claim 1, **characterized by** the cover (8) comprising a flange (27) for abutting from the inside onto the periphery of the aperture (5) in the panel (4).
12. The protective casing assembly (1) according to Claim 1, **characterized in that** the attachment means comprises a screw-connection and/or a snap-connection for attaching the cover (8) to the display unit (2) and onto the inner side of a panel (4).
13. A refrigerator (2) comprising a compartment (28) for refrigerating food products, a door (29) for opening/closing the compartment (28), wherein the door (29) has a panel (4), a display unit (3) which comprises one more releasable connectors (6) each with respective cables (7) and an input means (30) for allowing a user to set the temperature of the compartment (28) and an aperture (5) on the panel (4) for receiving a display unit (3), **characterized by** the

protective casing assembly (1) as defined in Claim 1.

14. The refrigerator (2) according to Claim 13, **characterized by** an inner lining (31) for the attachment onto the inner side of the door (29), wherein the protective casing assembly (1) is enclosed by a thermal insulating foam material (17) which fills at least part of the cavity (32) between the inner lining (31) and the panel (4).

Patentansprüche

1. Eine Schutzgehäuseanordnung (1), für die Verwendung in einem Kühlschrank (2) mit einer Anzeigeeinheit (3), umfasst:

- eine Abdeckung (8) zum Umschließen mindestens der Rückseite der Anzeigeeinheit (3) und eine Befestigungseinrichtung zum Befestigen der Abdeckung (8) an der Anzeigeeinheit (3); wobei die Abdeckung (8) jeweils eine oder mehrere Durchführungen (9) zum Einführen eines jeweiligen Verbindungssteckers (6) mit seinen Kabeln (7) in die Abdeckung (8) umfasst;
- mehrere Nuten (10) zum Aufnehmen bzw. Ausrichten der Kabel (7), die durch die jeweilige Durchführung (9) in die Abdeckung (8) eingeführt werden, wobei die Nuten (10) jeweils mit den Kabeln (7) übereinstimmig sind;
- jeweils einen oder mehrere Deckel (11) zum Öffnen / Schließen der jeweiligen Durchführung (9) und zum Befestigen der Kabel (7) in den jeweiligen Nuten (10);
- jeweils ein oder mehrere Verriegelungen (12) zum Verriegeln des jeweiligen Deckels (11) in der geschlossenen Position;

gekennzeichnet ist sie durch einen oder mehrere steckerartige Vorsprünge (16) zum Blockieren einer jeweiligen leeren Nut (10) gegen das Eindringen von Schaummaterial (17).

2. Die Schutzgehäuseanordnung (1), wie in Anspruch 1 aufgeführt, **ist dadurch gekennzeichnet, dass** die Verriegelungseinheit (12) einen Halter (13) umfasst, der einen oder mehrere Karabinerhaken (14) aufweist, wobei die Abdeckung (8) einen oder mehrere Riegel (15) umfasst, die mit dem einen oder den mehreren Karabinerhaken (14) zusammenwirkend sind.
3. Die Schutzgehäuseanordnung (1), wie in Anspruch 1 oder 2 aufgeführt, **ist dadurch gekennzeichnet, dass** die steckerartigen Vorsprünge (16) entfernbar auf jedem Halter (13) angeordnet sind und der Deckel (11) eine Führung (18) umfasst, die das Ausrichten und steckartige Positionieren der Vorsprün-

ge (16) in den Nuten (10) bewirkt.

4. Die Schutzgehäuseanordnung (1), wie in Anspruch 3 aufgeführt, **ist dadurch gekennzeichnet, dass** die Führung (18) Durchgangslöcher (19) umfasst, die auf dem Deckel (11) angeordnet sind, um die steckerartigen Vorsprünge (16) aufzunehmen, wobei die Durchgangslöcher (19) jeweils mit den steckerartigen Vorsprüngen (16) übereinstimmend sind.

5. Die Schutzgehäuseanordnung (1), wie in Anspruch 3 oder 4 aufgeführt, **ist dadurch gekennzeichnet, dass** jeder steckerartige Vorsprung (16) durch manuelles Abbrechen vom Körper (13a) des Halters (13) vom Halter (13) abnehmbar ist.

6. Die Schutzgehäuseanordnung (1), wie in Anspruch 5 aufgeführt, **ist dadurch gekennzeichnet, dass** jeder steckerartige Vorsprung (16) einen schmalen Schnitt (16a) aufweist, damit das manuelle Abbrechen erleichtert wird.

7. Die Schutzgehäuseanordnung (1), wie in Anspruch 1 aufgeführt, **ist dadurch gekennzeichnet, dass** es eine oder mehrere Scharniere (2) aufweist, für das schwenkbare Abstützen des jeweiligen Deckels (11).

8. Die Schutzgehäuseanordnung (1), wie in Anspruch 7 aufgeführt, **ist dadurch gekennzeichnet, dass** jedes Scharnier (20) zwei Zapfenstifte (21) umfasst, die auf dem Deckel (11) angeordnet sind, und zwei entsprechende Zapfenlager (21), die auf dem Deckel angeordnet sind (8).

9. Die Schutzgehäuseanordnung (1), wie in Anspruch 1 aufgeführt, **ist dadurch gekennzeichnet, dass** die Abdeckung (8) eine Rückwand (23) und vier Seitenwände (24, 25) umfasst, wobei die gegenüberliegenden seitlichen Seitenwände (25) jeweils eine Durchgangsbuchse (9) zum Einführen des jeweiligen lösbaren Verbinders (6) mit seinen Kabeln (7) aufweisen.

10. Die Schutzgehäuseanordnung (1), wie in Anspruch 1 aufgeführt, **ist dadurch gekennzeichnet, dass** eine oder mehrere Zungen (26) jeweils in unmittelbarer Nähe zum jeweiligen Durchgang (9) angeordnet sind, wobei die Nuten (10) in den Zungen (26) angeordnet sind.

11. Die Schutzgehäuseanordnung (1), wie in Anspruch 1 aufgeführt, **ist dadurch gekennzeichnet, dass** die Abdeckung (8) einen Flansch (27) zum Aufstoßen von innen auf den Umfang der Öffnung (5) in der Platte (4) umfasst.

12. Die Schutzgehäuseanordnung (1), wie in Anspruch 1 aufgeführt, **ist dadurch gekennzeichnet, dass** das Befestigungsmittel eine Schraubverbindung und / oder eine Schnappverbindung zum Befestigen der Abdeckung (8) an der Anzeigeeinheit (2) und an der Innenseite einer Platte (4) umfasst.
13. Ein Kühlschrank (2) umfasst einen Fach (28), zum Kühlen von Lebensmitteln, eine Tür (2) zum Öffnen / Schließen des Fachs (28), wobei die Tür (29) eine Platte (4) und eine Anzeigeeinheit (3) aufweist, die einen weiteren lösbaren Verbinder (6) mit jeweils entsprechenden Kabeln (7) und ein Eingabemittel (30) umfasst, damit ein Benutzer die Temperatur des Fachs (28) einstellen kann, sowie eine Öffnung (5) auf der Platte (4) zum Empfangen einer Anzeigeeinheit (3), gekennzeichnet ist es durch die Schutzgehäuseanordnung (1), die in Anspruch 1 aufgeführt ist.
14. Der Kühlschrank (2), wie in Anspruch 13 aufgeführt, **ist dadurch gekennzeichnet, dass** eine Innenverkleidung (31) zur Befestigung an der Innenseite der Tür (29) angeordnet ist, wobei die Schutzgehäuseanordnung (1) von einem wärmeisolierenden Schaummaterial (17) umgeben ist, das mindestens einen Teil des Hohlraums (32) zwischen der Innenauskleidung (31) und der Platte (4) ausfüllt.

Revendications

1. Un ensemble de boîtier de protection (1) destiné à être utilisé dans un réfrigérateur (2) comprenant une unité d'affichage (3), l'ensemble de boîtier de protection (1) comprenant :
- un couvercle (8) pour enfermer au moins la face arrière de l'unité d'affichage (3) et un moyen de fixation pour fixer le couvercle (8) à l'unité d'affichage (3), dans lequel le couvercle (8) comprend une ou plusieurs ouvertures (9), chacune pour l'insertion d'un connecteur correspondant (6) avec ses câbles (7) dans le couvercle (8) ;
 - une pluralité de rainures (10) pour respectivement recevoir et aligner les câbles (7) qui sont insérés à travers le passage correspondant (9) dans le couvercle (8), dans lequel les rainures (10) correspondent aux câbles (7) respectivement,
 - un ou plusieurs couvercles (11) permettant chacun d'ouvrir/fermer le passage correspondant (9) et de fixer les câbles (7) dans les rainures correspondantes (10) ;
 - un ou plusieurs moyens de verrouillage (12) permettant chacun de verrouiller le couvercle respectif (11) en position fermée ;

est caractérisé en ce qu'il comporte une ou plusieurs protubérances en forme de bouchon (16) destinées à bloquer chacune une rainure vide correspondante (10) contre l'intrusion de matériau en mousse (17).

2. L'ensemble de boîtier de protection (1) selon la déclaration 1, **est caractérisé en ce que** le moyen de verrouillage (12) comprenant un dispositif de retenue (13) comporte un ou plusieurs mousquetons (14) et le couvercle (8) comprenant un ou plusieurs cliquets (15) qui coopèrent avec le ou les mousquetons (14) correspondants.
3. L'ensemble de boîtier de protection (1) selon la déclaration 1 ou 2, **est caractérisé en ce que** les saillies en forme de bouchon (16) sont disposées de manière amovible sur chaque élément de retenue (13) et le couvercle (11) comprend un guide (18) pour aligner et positionner en forme de bouchon les saillies (16) dans les rainures (10) correspondantes.
4. L'ensemble de boîtier de protection (1) selon la déclaration 3, **est caractérisé en ce que** le guide (18) comprend des trous traversants (19) qui sont disposés sur le couvercle (11) pour recevoir respectivement les saillies en forme de bouchon (16), dans lequel les trous traversants (19) correspondent respectivement aux saillies en forme de bouchon (16).
5. L'ensemble de boîtier de protection (1) selon la déclaration 3 ou 4, **est caractérisé en ce que** chaque saillie (16) en forme de bouchon peut être retirée du support (13) en se détachant manuellement du corps (13a) du support (13).
6. L'ensemble de boîtier de protection (1) selon la déclaration 5, **est caractérisé en ce que** chaque saillie en forme de bouchon (16) présente une entaille étroite (16a) qui facilite la rupture manuelle.
7. L'ensemble de boîtier de protection (1) selon la déclaration 1, **est caractérisé en ce qu'il** comporte une ou plusieurs charnières (20) chacune pour supporter de manière pivotante le couvercle correspondant (11).
8. L'ensemble de boîtier de protection (1) selon la déclaration 7, **est caractérisé en ce que** chaque charnière (20) comprend deux tourillons (21) qui sont disposés sur le couvercle (11) et deux paliers de tourillon (21) correspondants qui sont disposés sur le couvercle (8).
9. L'ensemble de boîtier de protection (1) selon la déclaration 1, **est caractérisé en ce que** le couvercle (8) comprend une paroi arrière (23) et quatre parois latérales (24, 25), les parois latérales opposées (25)

ayant chacune un passage (9) pour l'insertion du connecteur détachable correspondant (6) avec ses câbles (7).

10. L'ensemble de boîtier de protection (1) selon la déclaration 1, **est caractérisé en ce qu'une** ou plusieurs languettes (26) sont disposées chacune à proximité immédiate du passage correspondant (9), les rainures (10) étant disposées dans les languettes (26). 5
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11. L'ensemble de boîtier de protection (1) selon la déclaration 1, **est caractérisé en ce que** le couvercle (8) comprend une bride (27) pour buter de l'intérieur sur la périphérie de l'ouverture (5) dans le panneau (4). 15

12. L'ensemble de boîtier de protection (1) selon la déclaration 1, **est caractérisé en ce que** les moyens de fixation comprennent une connexion à vis et/ou une connexion à encliquetage pour fixer le couvercle (8) à l'unité d'affichage (2) et sur le côté intérieur d'un panneau (4). 20

13. Un réfrigérateur (2) comprenant un compartiment (28) pour réfrigérer des produits alimentaires, une porte (29) pour ouvrir/fermer le compartiment (28), dans lequel la porte (29) a un panneau (4), une unité d'affichage (3) qui comprend un ou plusieurs connecteurs détachables (6) chacun avec des câbles correspondants (7) et un moyen d'entrée (30) pour permettre à un utilisateur de régler la température du compartiment (28) et une ouverture (5) sur le panneau (4) pour recevoir une unité d'affichage (3), **est caractérisé par** l'ensemble de boîtier protecteur (1) tel que défini dans la déclaration 1. 25
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14. Le réfrigérateur (2) selon la déclaration 13, **est caractérisé en ce qu'il** comporte un revêtement intérieur (31) pour la fixation sur le côté intérieur de la porte (29), dans lequel l'ensemble du boîtier de protection (1) est entouré d'un matériau de mousse d'isolation thermique (17) qui remplit au moins une partie de la cavité (32) entre le revêtement intérieur (31) et le panneau (4). 40
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Fig. 1

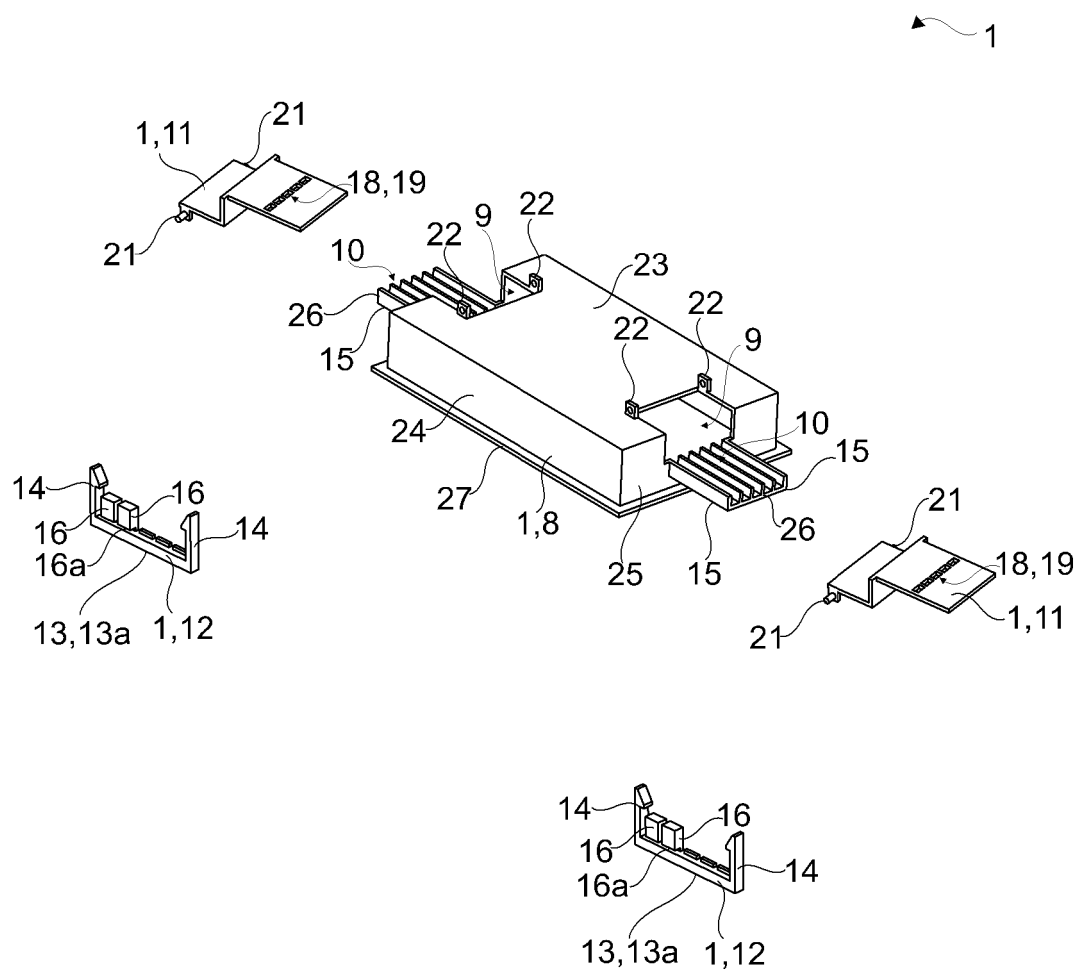


Fig. 2

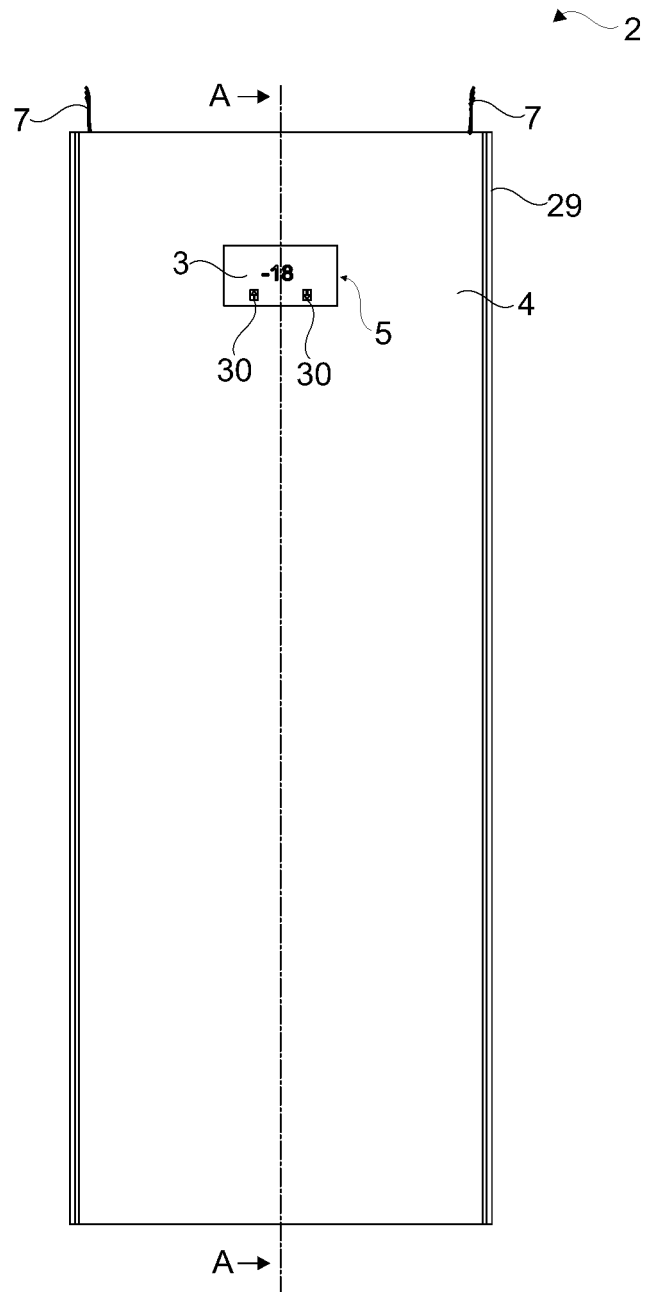


Fig. 3

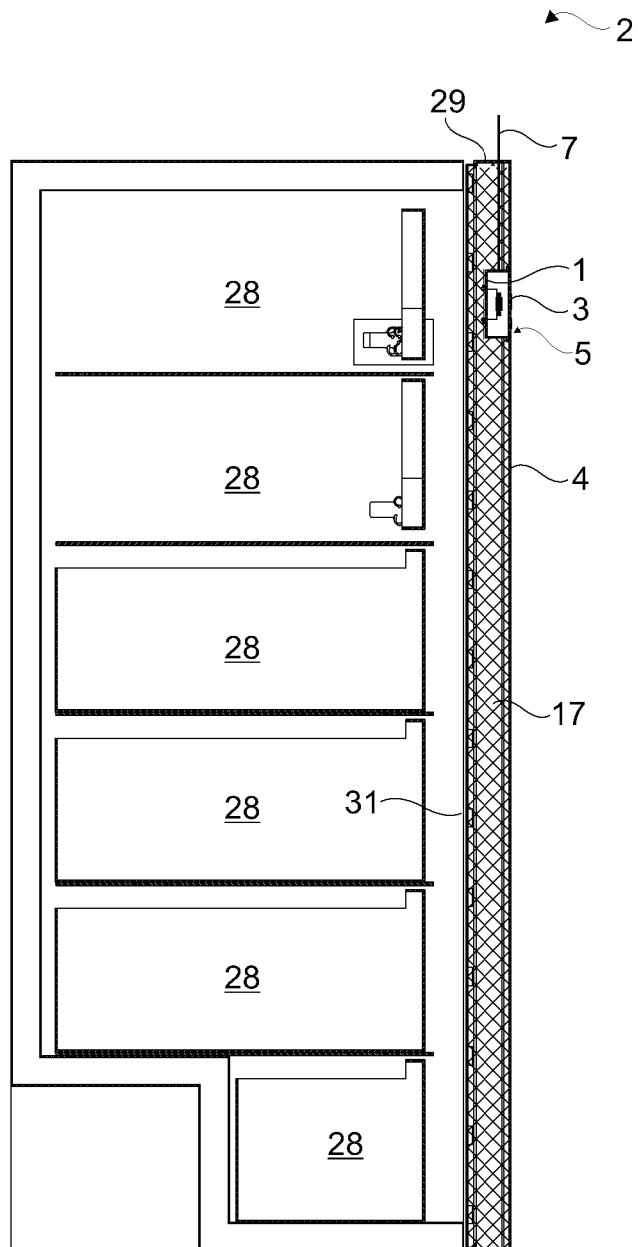


Fig. 4

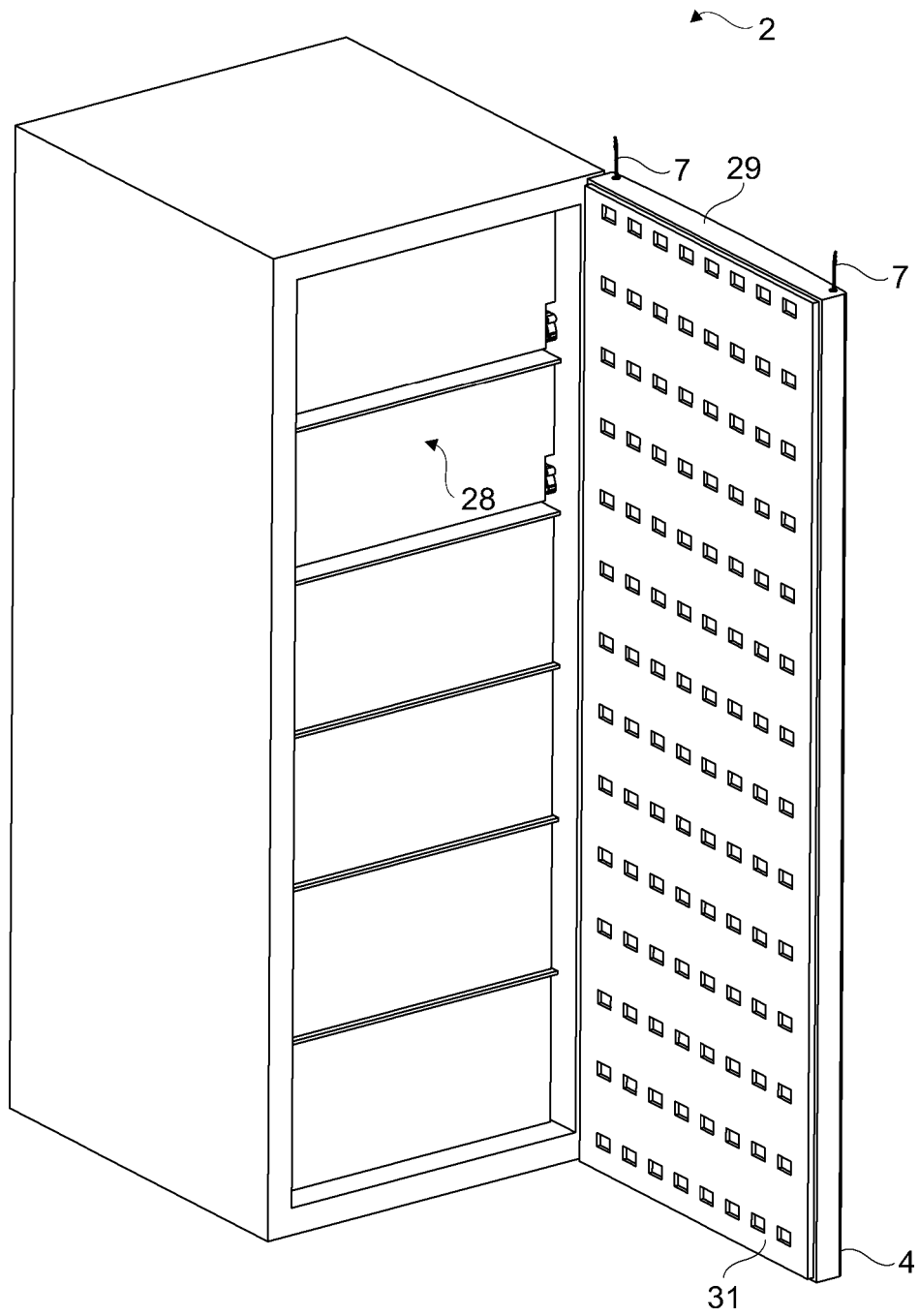


Fig. 5

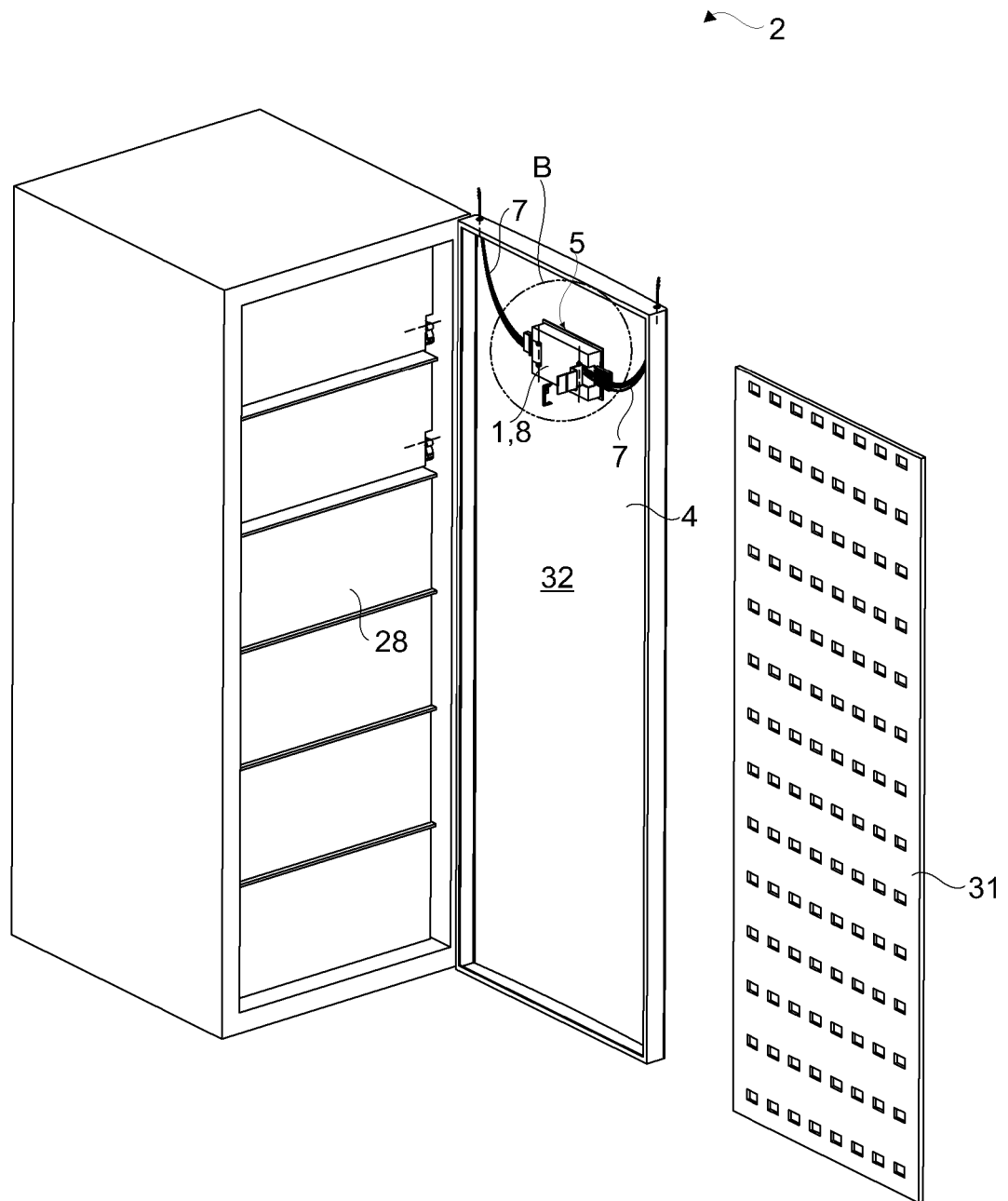


Fig. 6

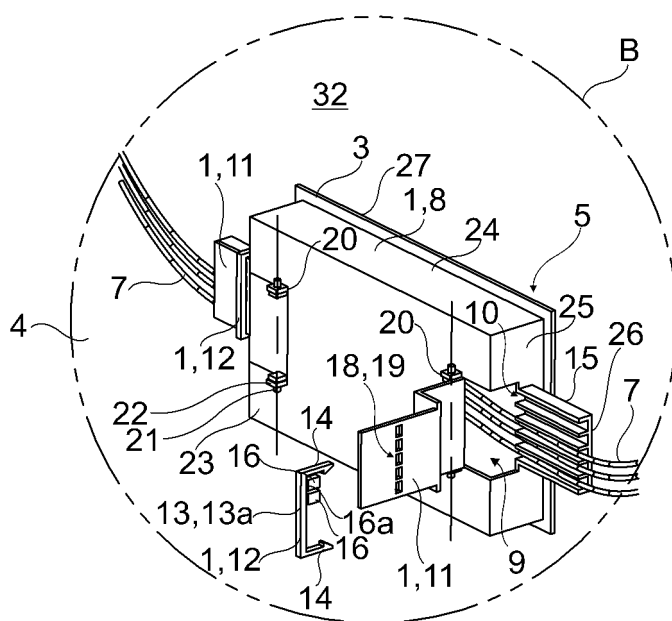


Fig. 7

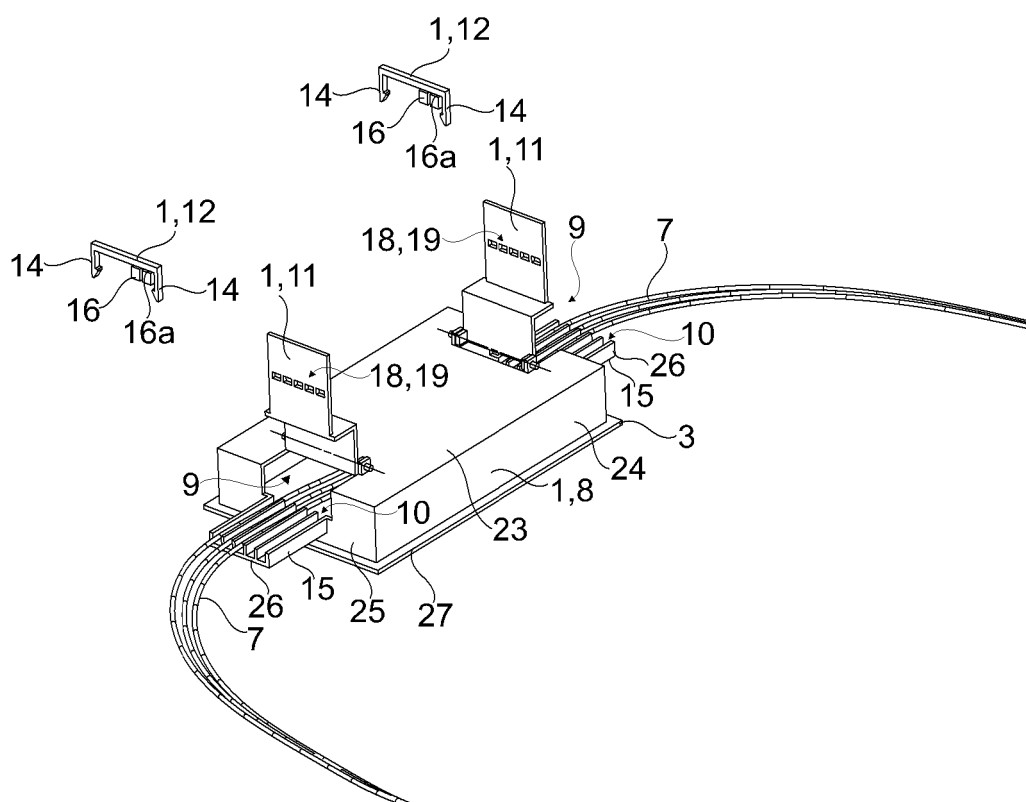


Fig. 8

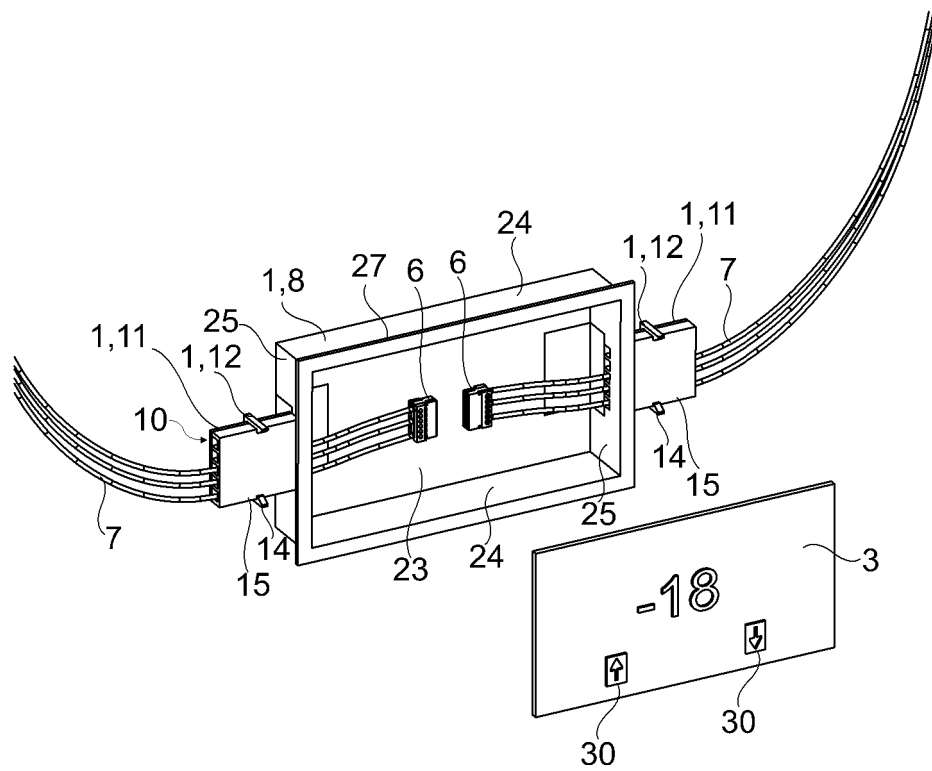


Fig. 9

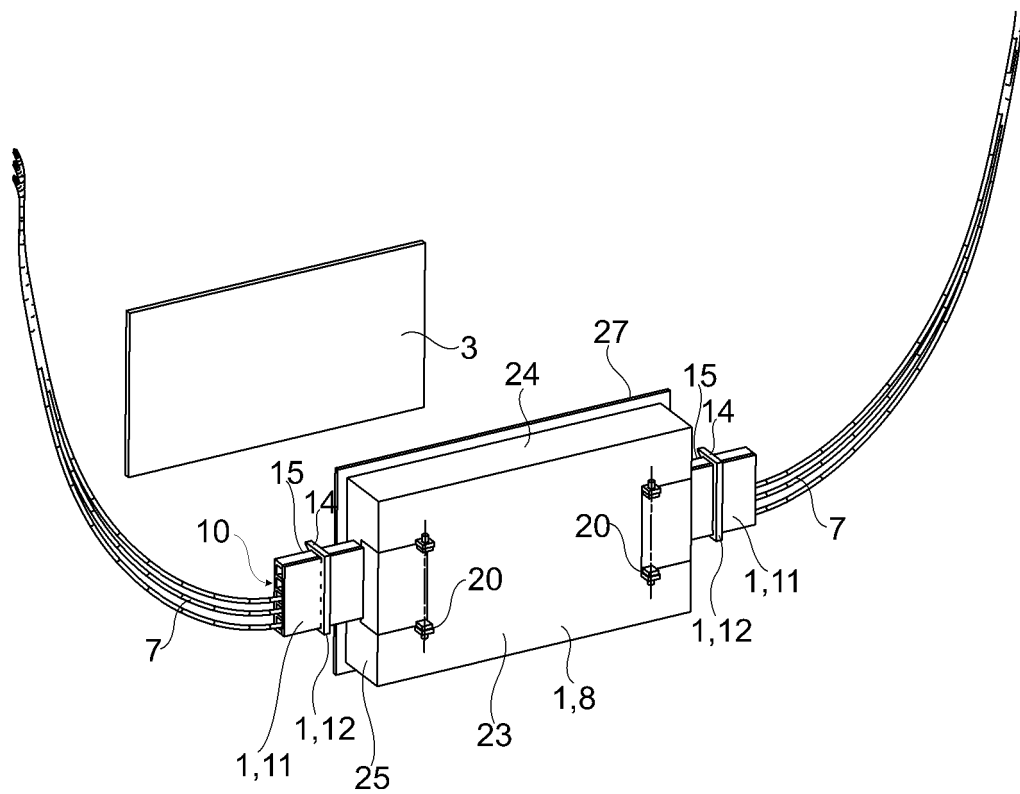


Fig. 10

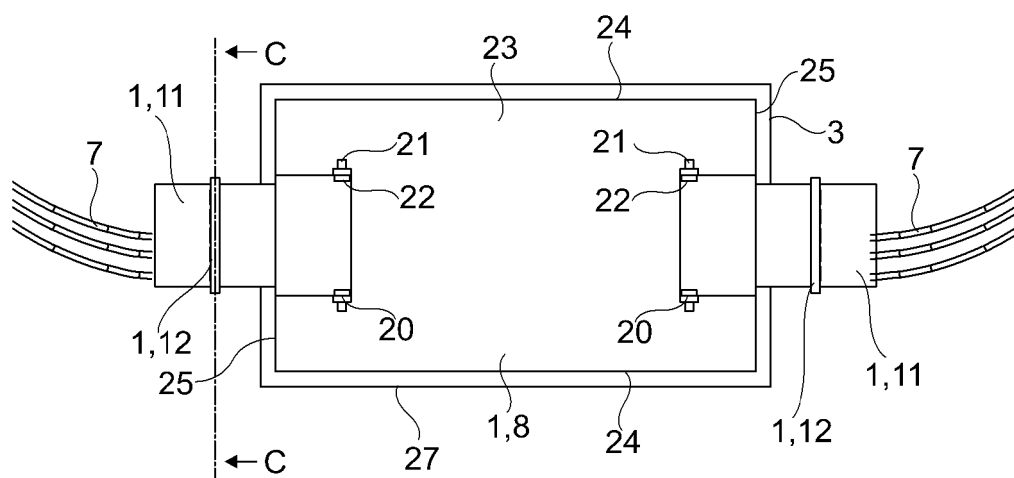
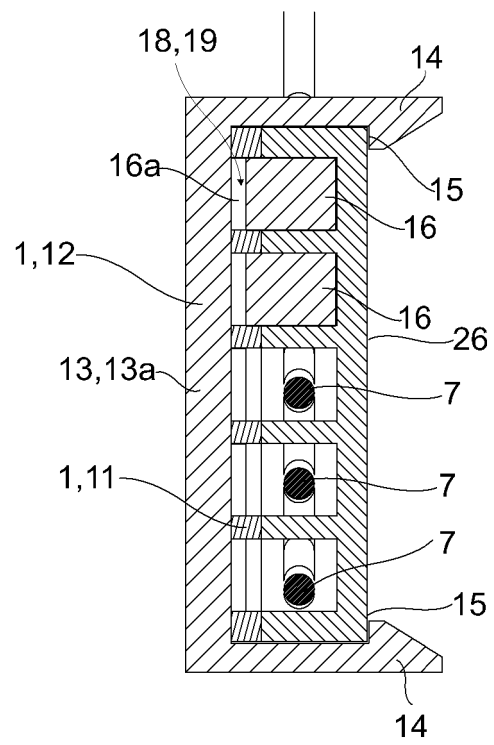


Fig. 11



REFERENCES CITED IN THE DESCRIPTION

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