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(54) **LIQUID DISPENSER WITH ACTUATOR FOR TAPS OF BAG-IN-BOX TYPE CONTAINERS**

(57) The present invention relates to a dispenser for liquids stored in bag in box type containers (24) with a tap (26) consisting of a structure (1) with a front body (2) and a drive assembly (9) comprising a support (30) coupleable to the front body (2), a lever (16) tiltable with respect to the support (30) comprising a drive sector (17) that protrudes through the front body (2) and push arms (18) opposite to the drive sector (17) between which an opening (29) is defined that houses the tap (26). The push arms (18) push flanges (27) of the tap (26) when pressing the drive sector (17), opening the tap (26) without touching same directly, avoiding the use of additional parts in which liquid may remain trapped and ensuring the integrity of the liquid to be dispensed.

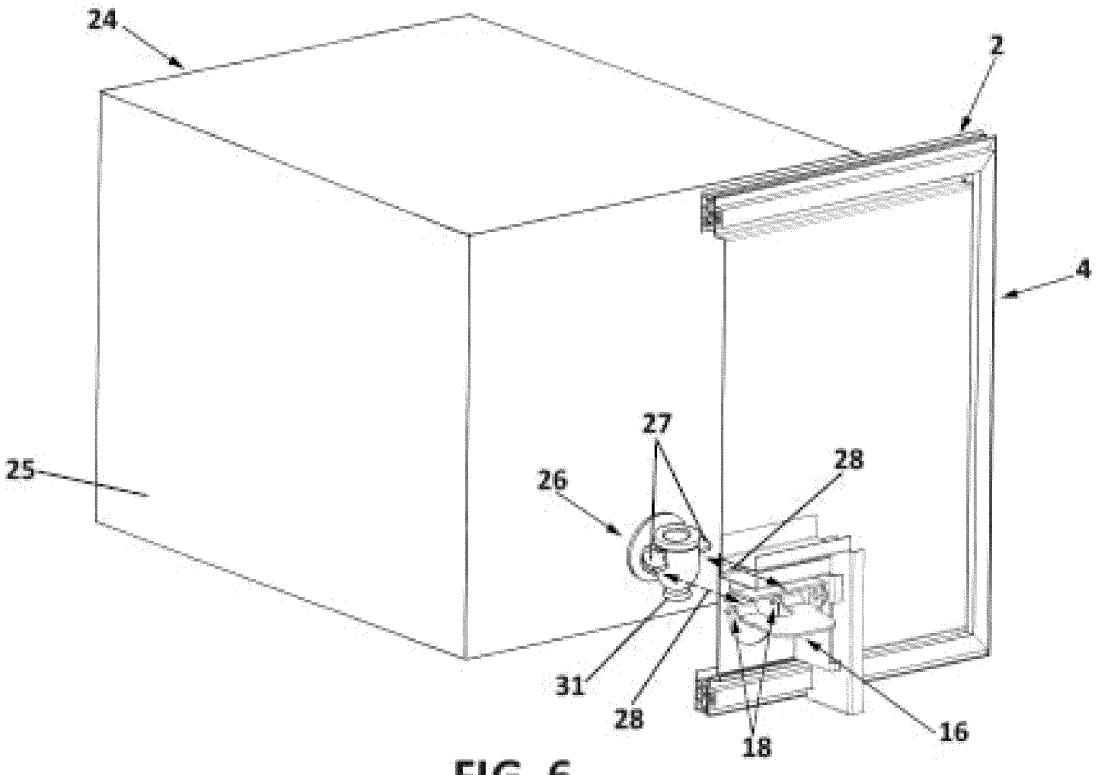

FIG. 6

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Description

OBJECT OF THE INVENTION

[0001] The present invention relates to a liquid dispensing device that is enabled for dispensing liquid stored in bag in box type containers.

[0002] The device object of the invention allows the bag tap to be operated without touching same with the hands, preventing contamination of the liquid stored in the bag in box. Furthermore, the device dispenses the liquid directly after it comes out of the tap without passing through conduits or other additional bodies connected to the tap, thus preventing any remains of the dispensed liquid from being held and in contact with the outside, additional bodies which can therefore be damaged and contaminate the liquid of the next dispensation, as well as constrict or occlude the outlet conduits.

BACKGROUND OF THE INVENTION

[0003] Bag in box is a product available on the market that is used to store and dispense a liquid, both for food use, such as water and juices, and for non-food use, such as detergents. It comprises an airtight bag (or alternatively a box) made of plastic the function of which is to contain the liquid and a sufficiently rigid and light external box that houses and protects the bag. The inside of the bag communicates with the outside through a tap or valve attached to the bag, which allows the flow to be regulated and the liquid to be dispensed, avoiding contact of the stored liquid with the outside, thus guaranteeing the properties and proper hygiene conditions thereof.

[0004] Different accessories are also available for use with the bag in box. One of them is a connector inside of which the tap is housed. The connector comprises a control for opening and closing the tap and a nipple for connecting a conduit, which may be a flexible tube. The liquid, after coming out of the tap, flows through the connector until the outlet thereof through the nipple.

[0005] Depending on the dispensing requirements, a dispensing pump is connected to the outlet end of the conduit, which controls the flow rate of the liquid. Additionally, other parts such as manifolds, diffusers and aerators can be connected.

[0006] The airtight bag and tap ensure that the liquid remains in perfect condition for use. However, the tap, alone or combined with the aforementioned accessories, can cause contamination, malfunction or failure problems, in addition to requiring complex maintenance.

[0007] If the tap is used without any accessories, since it is accessible for manual operation, the user may touch any portion of the tap, especially the mouth of the tap, which may contaminate the liquid.

[0008] If the tap is mounted on a connector, when the tap is closed, standing liquid may remain between the tap outlet and the nipple of the connector. The same problem arises if conduits and other bodies are added downstream of the tap through which the liquid flows. This standing liquid can pose a health and safety hazard because when it is in contact with the air and the environment it can be oxidised, become contaminated with microbes and cause undesirable phenomena, such as a decrease in the diameter of the conduits or the occlusion thereof.

DESCRIPTION OF THE INVENTION

[0009] The object of the invention is a dispenser for liquids stored in bag in box type containers. The liquid dispensing device comprises a rigid structure equipped with a housing intended to house a liquid container (especially a bag in box type container) and a tap drive assembly of the container intended to receive the tap.

[0010] The structure may have a parallelepiped shape or any other convenient shape to house the container. To provide more rigidity to the structure, the person skilled in the art understands that the bodies thereof can be attached to a frame that forms the edges of the structure, and may add the required elements to provide more rigidity or more stability to the liquid dispensing device, such as a lower base that rests on the surface where the liquid dispensing device is placed or a base where the container to be filled rests.

[0011] The structure comprises a lower support body on which the container rests and at least two lateral bodies attached to the support body and which prevent the lateral movement of the container. The support body and the lateral bodies may be, but are not limited to, a grid, a sheet or a profile.

[0012] In one configuration, a front body is provided, that is, located on the face where the tap is located once the bag in box is placed on the support body. This body either pivots with respect to the rest of the structure on an axle located in a horizontal or vertical position and on any edge of said face, or it is removably attached to the rest of the structure on said face and remains immobile. The front body is made up of a single plate or two plates. If it is a single plate, the drive assembly is attached to the inner face of the front body. If there are two plates, one inner plate and one outer plate parallel to each other, the drive assembly is attached to the inner space formed between the two plates.

[0013] Continuing with the previous configuration, the drive assembly is attached to the front body at the same height as the tap.

[0014] In another configuration without a front body, the drive assembly is positioned on the front face at the same height as the tap and is attached to a drive assembly support. This support is a crossbar or any other structure that supports the drive assembly. In this case, the drive assembly support is attached to the frame or to other bodies of the structure or pivots by means of axles located in the frame or structure.

[0015] The drive assembly consists of a support coupleable to the front body and a lever coupled to the

support so that it can be moved with respect to an axle defined in the support. The axle can pass through a hole made in a perpendicular portion of the lever formed for this purpose, or be inserted into a hole made in the body of the lever without having to form a specific portion for the axle.

[0016] The support is provided with one or more surfaces intended to serve as support for the tap, preventing the movement thereof and excessive mechanical stress at the joint between the tap and the bag in box.

[0017] The tap with which the object of the invention is used is provided with lugs so that, when sliding relative to the body of the tap, the tap opens. The body of the lever comprises a drive sector, configured to receive a force that moves the lever, and one or more push portions, such as fins, which may be flat, curved or form various surfaces that are a combination of flat and curved, with different orientations from each other, which are configured so that, when placing the drive assembly in its position of use, these fins are positioned in contact with the lugs and when the lever is moved, the fins press on the lugs, displacing same and opening the tap.

[0018] Alternatively, the movement of the lever can be linear on rails or grooves.

[0019] In order to operate the lever, the front body has an lever opening configured so that the drive sector of the lever protrudes through the lever opening and pivots at a sufficient angle so that the tap opens.

[0020] According to an additional feature of the invention, the drive assembly is provided with a stop against which the lever makes contact in its position of complete opening of the tap, that is, in its position of maximum rotation, to avoid excessive mechanical stress in the lugs of the tap, as well as a stop in its maximum displacement position in the opposite direction to that mentioned.

[0021] According to another additional feature of the invention, the body of the lever is provided with gripping elements that prevent movement between the tap and the drive assembly when the lever is in dispensing and mounting positions.

[0022] The dispensed liquid comes out of the drive assembly through a liquid outlet opening made in a surface of the support or front body.

[0023] The construction described above allows the tap to be operated without the hazard of touching same directly and eliminates the use of additional parts in which liquid may remain trapped, ensuring the integrity of the liquid to be dispensed and being able to work with the health record of the liquid manufacturer.

DESCRIPTION OF THE DRAWINGS

[0024] As a complement to the description provided herein, and for the purpose of helping to make the features of the invention more readily understandable, in accordance with a preferred practical exemplary embodiment thereof, said description is accompanied by a set of drawings constituting an integral part of the same, wherein by way of illustration and not limitation, the following has been represented:

Figure 1 shows a perspective view of the liquid dispensing device with a cutout wherein the bag in box is observed.

Figure 2 shows a perspective view of the front body and the tap drive assembly, wherein the outer plate of the front body has been exploded to allow the tap drive assembly to be viewed.

Figure 3 shows a perspective view, from behind, of the front body.

Figure 4 shows a perspective view, from behind, of a portion of the tap drive assembly.

Figure 5 shows a perspective view of the lever.

Figure 6 shows a view of a bag in box type container and a cross-section of the front body.

PREFERRED EMBODIMENT OF THE INVENTION

[0025] In a preferred embodiment of the invention, according to Figures 1, 4, 5 and 6, the dispensing device for liquids stored in bag in box type containers comprises:

- a structure (1) equipped with a housing (32) intended to house a bag in box type container (24) equipped with a bag or box (25) intended to house a liquid and a tap (26) solidly attached to the bag or box (25) which has flanges (27) and a mouth (31), and
- a front body (2) that defines said housing,
- a drive assembly (9) that enables the liquid to come out,

characterised in that the drive assembly (9) comprises:

- a support (30) coupleable to the front body (2),
- a lever (16) tilting with respect to the support (30) comprising
  - a drive sector (17) that protrudes through the front body (2), and
  - push arms (18) opposite to the drive sector (17) between which an opening (29) intended to receive the tap (26) is defined, wherein the push arms (18) are intended to push the flanges (27) of the tap (26) in order to enable the tap to be opened by pressing on the drive sector (17).

[0026] Reference 28 of Figure 6 shows the relationship between the flanges (27) and the push arms (18). The container (24) is shown separated from the front body so that the tap (26) and the lever (16) may be better appreciated.

[0027] As shown in Figures 1 and 2, the front body (2) comprises:

an outer plate (4), equipped with a lower wall (6) that has a liquid outlet opening (7) intended to be in correspondence with the mouth (31) of the tap (26), an inner plate (5) coupleable to the outer plate (4) that is equipped with an inner partition (10) that incorporates a window (8) that enables the tap (26) to pass through.

[0028] Figure 3 shows a rear view of the front body in which the inner partition (10) has been concealed to allow the lever (16) to be seen.

[0029] As illustrated in Figure 2, the tap drive assembly (9) is positioned between the outer (4) and inner (5) plates. The tap drive assembly (9) is positioned so that the window (8) of the inner partition (10) is at the same height as the tap (26).

[0030] As illustrated in Figures 2 and 4, the support (30) comprises:

two lateral outer profiles (11) coupleable to the lower wall (6) and an upper outer profile (12), which joins the lateral outer profiles,
two inner lateral profiles (13) attached to the inner partition (10) and an upper inner profile (14) that joins the inner lateral profiles (13), each inner lateral profile (13) being provided with two axles (33) about which the lever (16) tilts,
a support profile (15), attached to the lateral profiles (13) horizontally below the upper inner profile (14), the support profile (15) being intended to limit the vertical movement of the tap.

[0031] In addition, the tap drive assembly (9) is provided with a U-shaped lever (16), as detailed in Figure 5. The U defines an inner space (29) that is configured to receive the tap (26).

[0032] The lever (16) comprises:

- a drive sector (17), configured to protrude through a lever opening provided in the outer plate (4) and to receive an upward and downward force that rotates the lever (16).
- push arms (18), at the ends of which several sections (19) with different orientations and an intermediate section (20) have been formed, configured to contact the flanges (27) of the tap (26) and exert a vertical force on same.
- two lateral lugs (21), formed perpendicularly to the drive sector (17) provided with two holes crossed by the axles (33) of each lateral inner profile (13), configured to rotate about said axles (33).

[0033] Additionally, the lateral lugs (21) are provided with projections (22) that abut against the support profile (15) and are configured to limit the angular movement of the lever (16).

[0034] Additionally, gripping elements (23) for holding the tap (26) are provided in a portion of the sections (19). These gripping elements (23) are intended to engage the body of the tap (26) when the drive sector (17) is both in an approximately horizontal position and displaced downwards, so that the opening of the front body is locked (2) and the movement of the drive assembly (9) with respect to the tap (26) is prevented, and it is prevented from disengaging from the body of the tap (26) to allow the opening of the front body (2) when the drive sector (17) is inclined upwards.

[0035] Figure 6 shows the bag with tap (26) comprising the bag (25), which in this embodiment is parallelepiped-shaped, and the tap (26). The tap (26) comprises flanges (27) configured so that, by sliding them upwards, the tap (26) opens.

[0036] To close the housing (32) with the front body (2), the lever (16) is in a first position called access position, which in this embodiment is higher (that is, with the drive sector (17) moved upwards). The body of the tap (26) fits into the inner space (29) of the lever (16) formed by the push arms (18).

[0037] Next, the lever (16) is rotated to a second position, called mounting position, which in this embodiment is approximately horizontal (that is, the drive sector (17) being approximately horizontal). In this way, the body of the tap (26) fits into the inner space (29) of the lever (16) formed by the push arms (18) and the gripping elements (23) trap and immobilise the body of the tap (26). In this position, the front body cannot be opened, as explained above. With the lever (16) in this second position, the liquid dispensing device is ready to dispense.

[0038] To dispense, the drive sector (17) is pressed downwards to a third position called dispensing position, so that the push arms (18) press the flanges (27) of the tap (26), opening same and dispensing the liquid.

Claims

1. A dispenser for liquids stored in bag in box type containers comprising

a structure (1) equipped with a housing (32) intended to house a bag in box type container (24) equipped with a bag or box (25) intended to house a liquid and a tap (26) solidly attached to the bag or box (25) which has flanges (27) and a mouth (31), and
a front body (2) that defines said housing (32),
a drive assembly (9) that enables the liquid to come out,

characterised in that the drive assembly (9) comprises:

a support (30) coupleable to the front body (2), a lever (16) tilting with respect to the support (30) comprising

a drive sector (17) that protrudes through the front body (2), and
push arms (18) opposite to the drive sector (17) between which an opening (29) intended to receive the tap (26) is defined, wherein the push arms (18) are intended to push the flanges (27) of the tap (26) in order to enable the tap (26) to be opened by pressing on the drive sector (17).

2. The dispenser of claim 1 wherein the front body (2) comprises:

an outer plate (4), equipped with a lower wall (6) that has a liquid outlet opening (7) intended to be in correspondence with the mouth (31) of the tap (26),
an inner plate (5) coupleable to the outer plate (4) that is equipped with an inner partition (10) that incorporates a window (8) that enables the tap (26) to pass through.

3. The dispenser of claim 1 wherein the support (30) comprises:

two lateral outer profiles (11) coupleable to the lower wall (6), and an upper outer profile (12), which joins the lateral outer profiles (11),
two inner lateral profiles (13) attached to the inner partition (10) and an upper inner profile (14) that joins the inner lateral profiles (13), each inner lateral profile (13) being provided with two axles (33) about which the lever (16) tilts,
a support profile (15), attached to the lateral profiles (13) horizontally below the upper inner profile (14), the support profile (15) being intended to limit the vertical movement of the tap (26).

4. The dispenser of claim 3, wherein the push arms (18) have at the end thereof several sections (19) with different orientations and an intermediate section (20) intended to contact the flanges (27) of the tap (26) and exert a force on same.

5. The dispenser of claim 4, wherein the push arms (18) are provided with one or more gripping elements (23) that are intended to

engage with the body of the tap (26) when the drive sector (17) is in an approximately horizontal position and moved upwards, blocking the opening of the front body (2), and
to be disengaged from the body of the tap (26) to allow the front body (2) to open when the drive sector (17) is tilted upwards.

6. The dispenser of claim 5, wherein the lever (16) comprises lateral lugs (21), formed perpendicularly to the drive sector (17) provided with two holes crossed by the axles (33) of each lateral inner profile (13) and configured to rotate around said axles (33), the lateral lugs (21) being provided with projections (22) configured to abut against the support profile (15) and limit the movement of the lever (16).

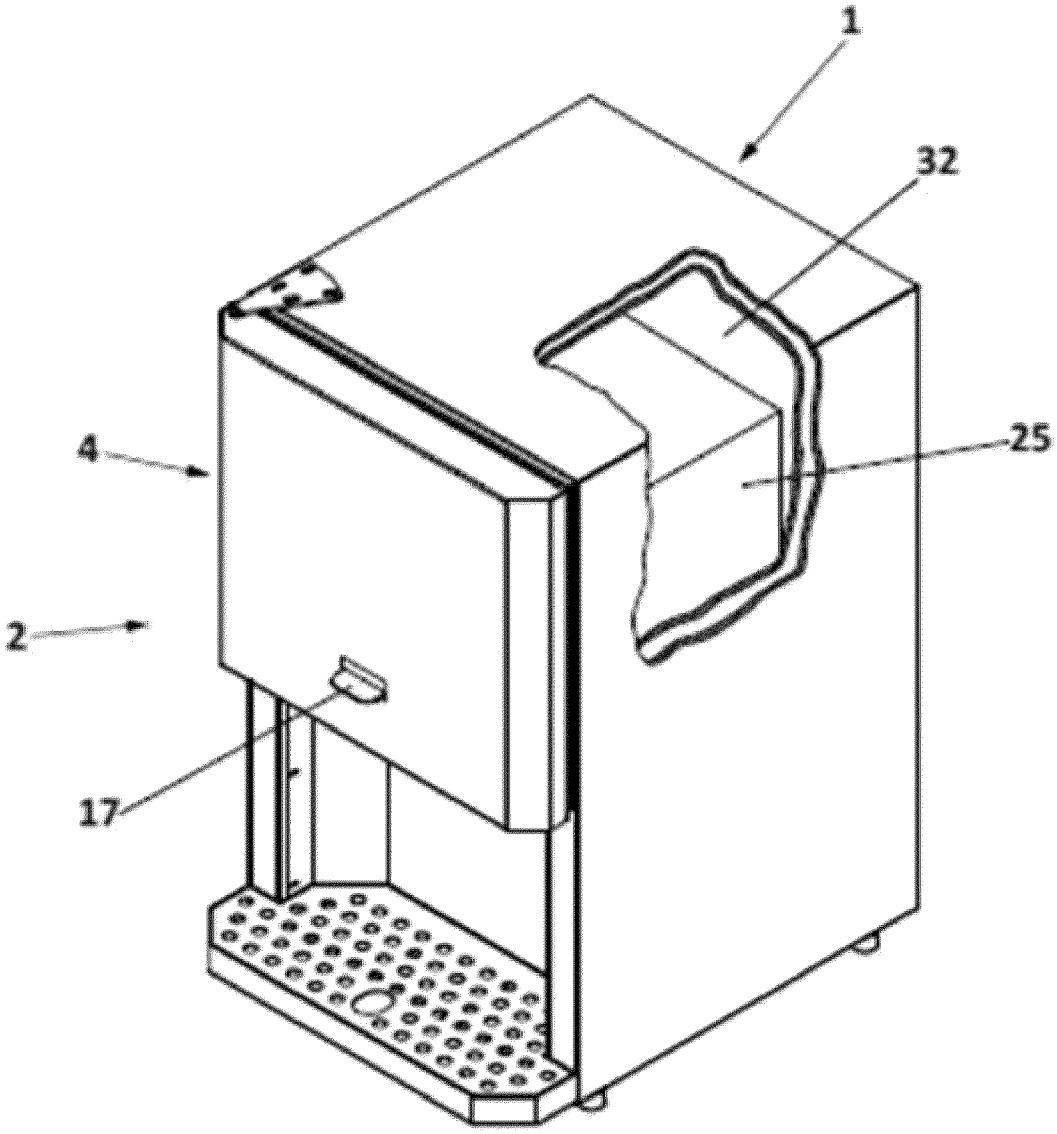

FIG. 1

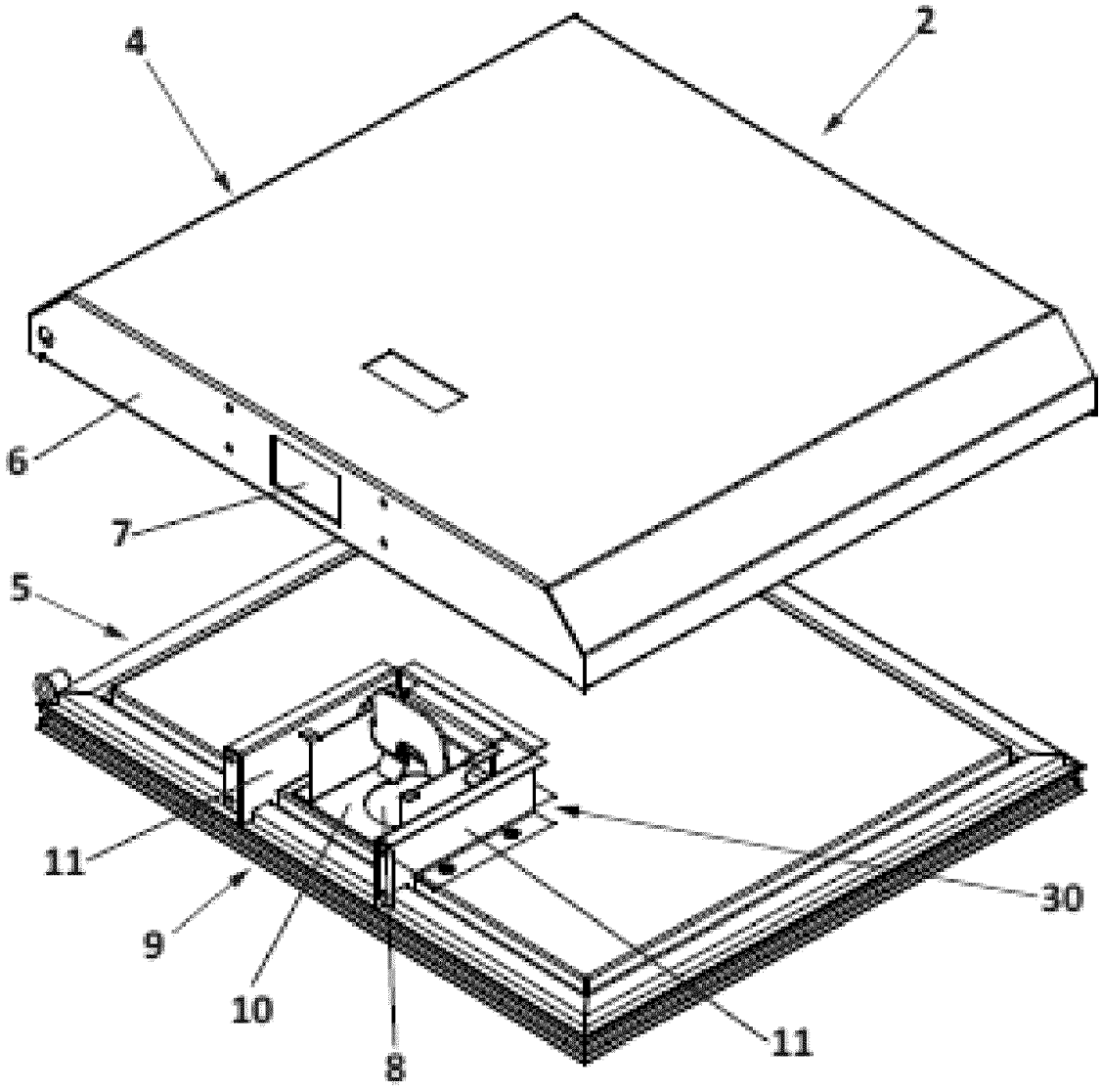

FIG. 2

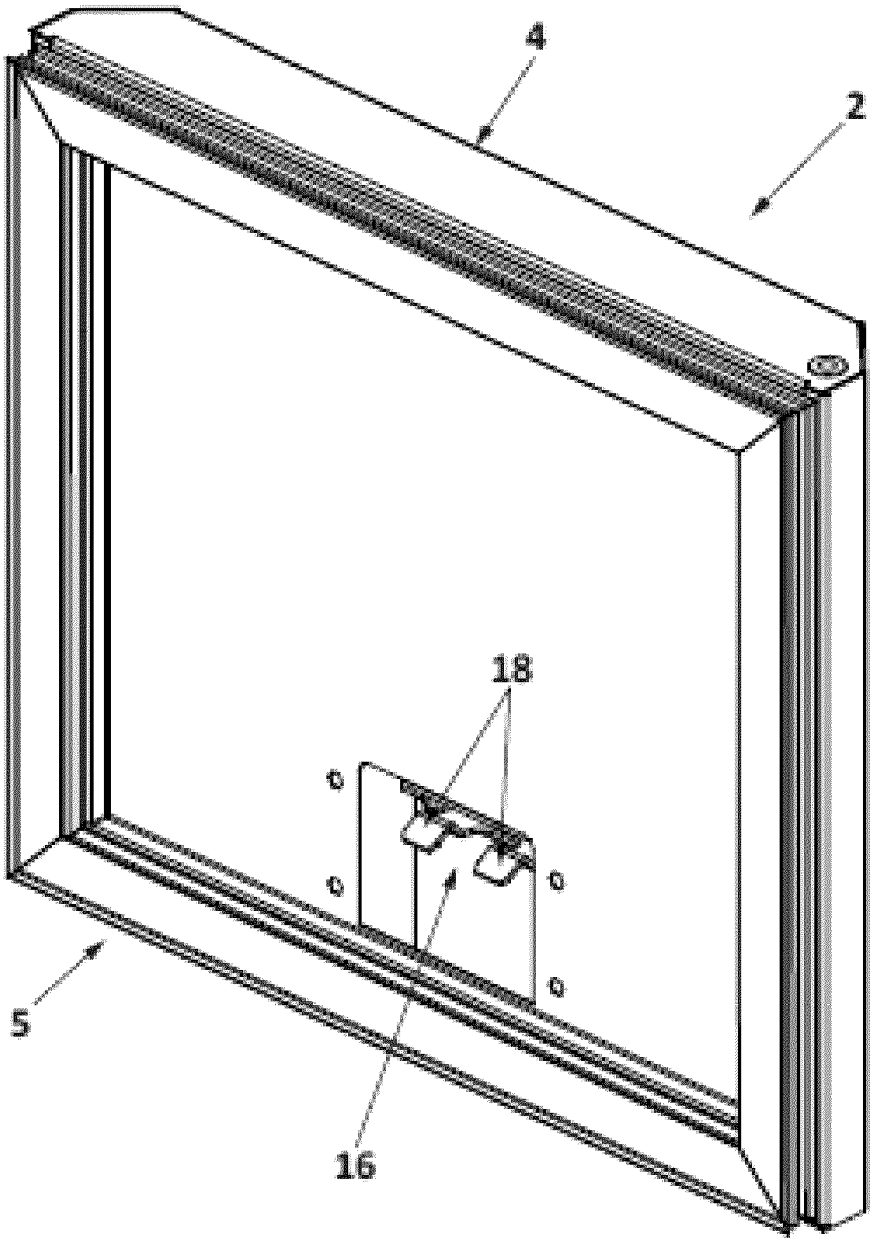

FIG. 3

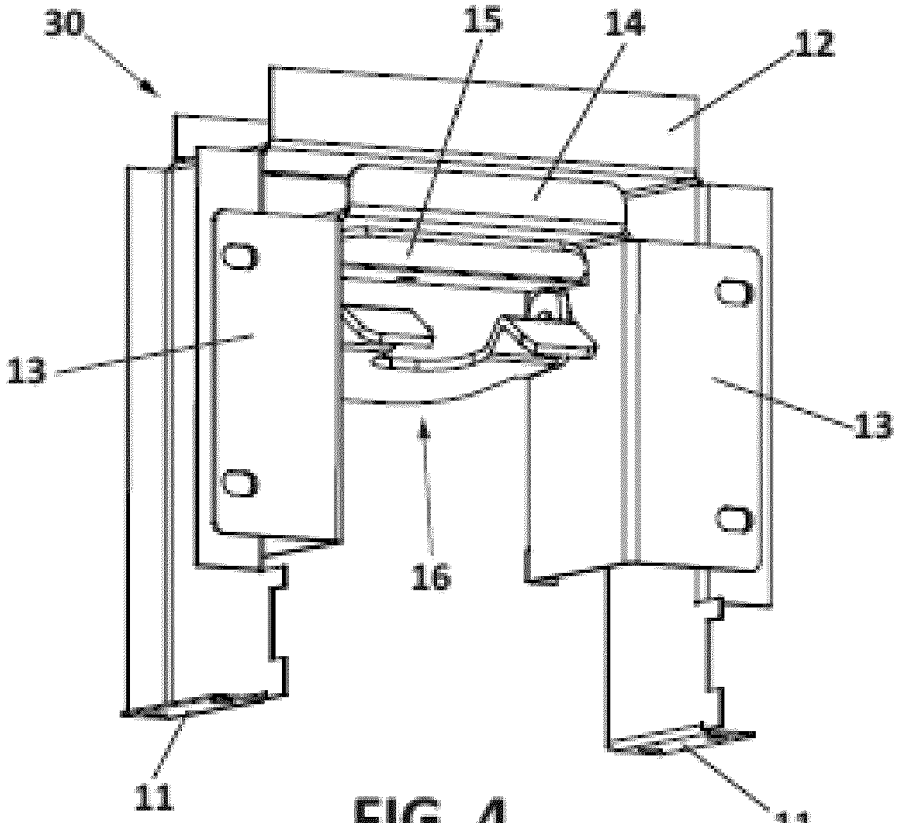

FIG. 4

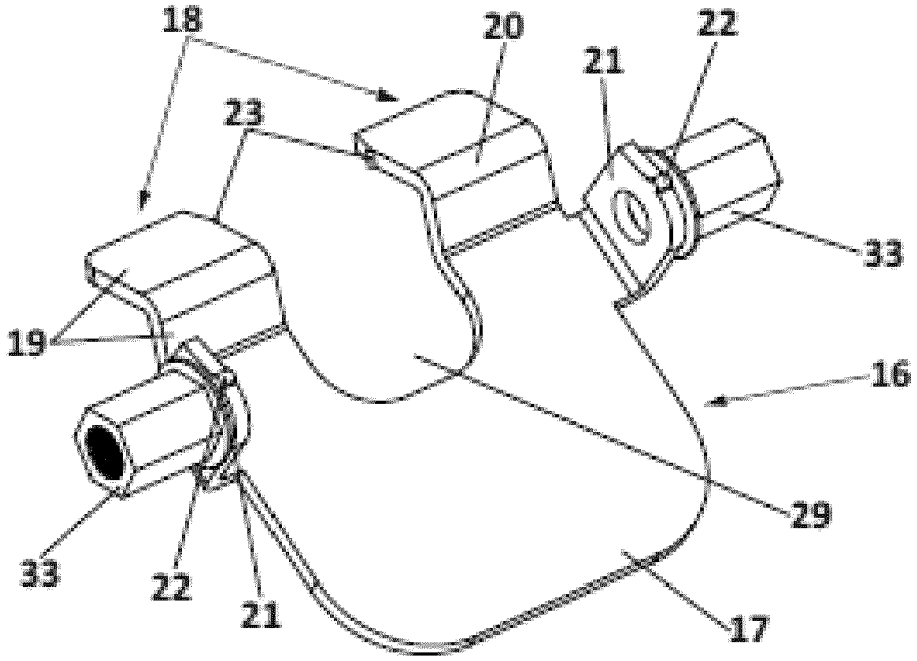

FIG. 5

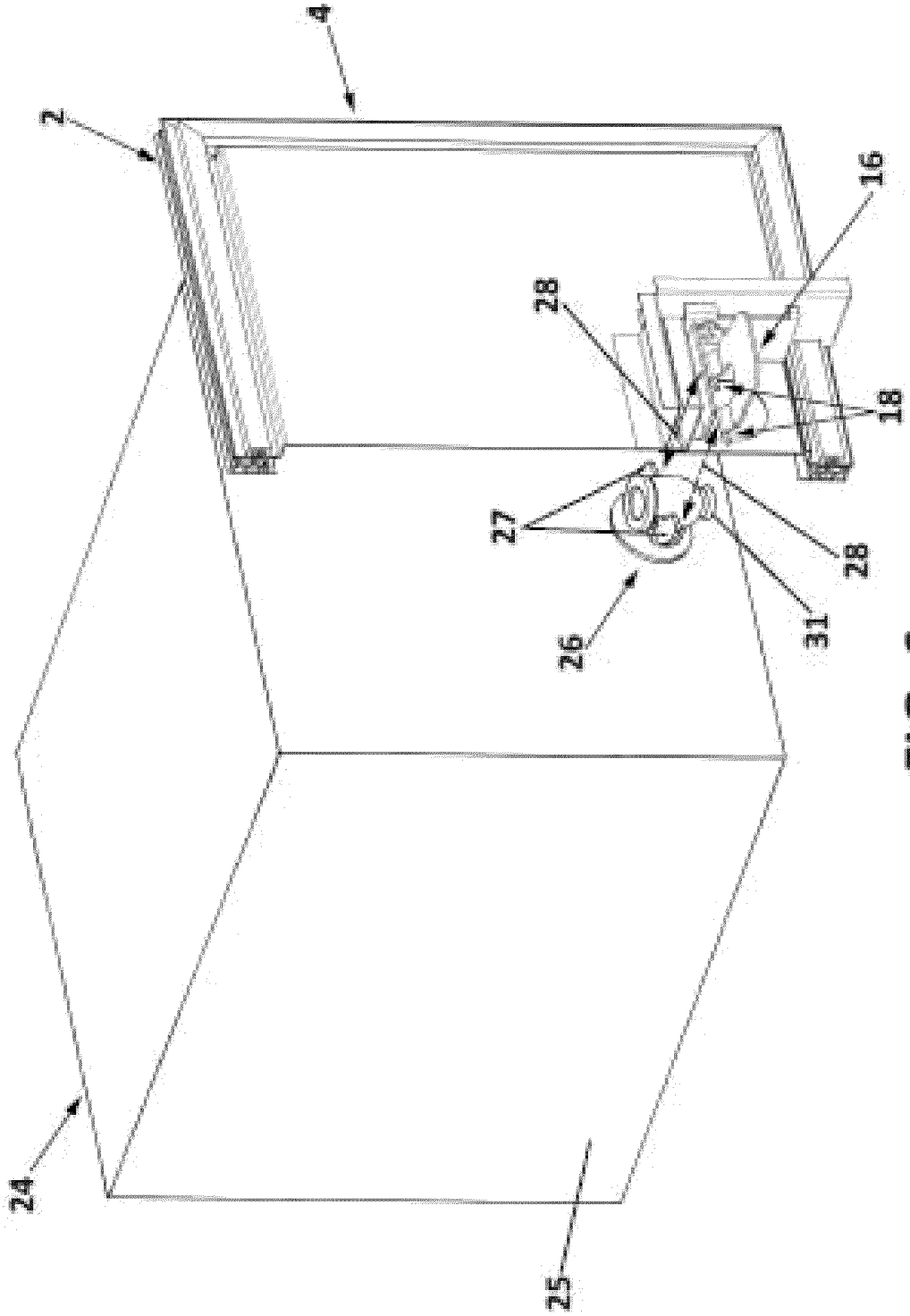

FIG. 6

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EUROPEAN SEARCH REPORT

Application Number
EP 23 38 2942

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	EP 2 489 628 A1 (SCHULTEN MATTHIAS [DE]) 22 August 2012 (2012-08-22)	1	INV. B67D3/00
A	* paragraphs [0028], [0031], [0033], [0041], [0042] *	2-6	B67D3/02 B67D3/04
Y	US 2016/304331 A1 (ENCH ROBERT MICHAEL [US]) 20 October 2016 (2016-10-20)	1	
A	* paragraph [0021] *	2-6	
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A	* column 3, line 62 - column 4, line 18 *	2-6	
Y	FR 2 744 996 A1 (VITOP [FR]) 22 August 1997 (1997-08-22)	1	
A	* page 3, line 21 - page 4, line 2 *	2-6	

TECHNICAL FIELDS SEARCHED (IPC)

B67D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	4 March 2024	Desittere, Michiel

CATEGORY OF CITED DOCUMENTS

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