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(54) **HOUSEHOLD APPLIANCE FOR VACUUM-PACKAGING PRODUCTS**

(57) The invention relates to a household appliance for vacuum-packaging products, comprising a casing (2) and a lid (1) provided with complementary sealing means (6) which can be opposite one another when the appliance is in the closed position, a vacuum pump (41), and heat-sealing means (43) for closing the bag containing the product to be packaged once the vacuum has been formed therein. The invention essentially has guiding means for the linear movement of the lid (1) with respect to the casing (2) between an open appliance position and a closed appliance position, the lid (1) being arranged substantially parallel to the closure plane in both positions; and push means which act on the guiding means for guiding the lid (1) and which tend to keep said lid (1) in the open appliance position.

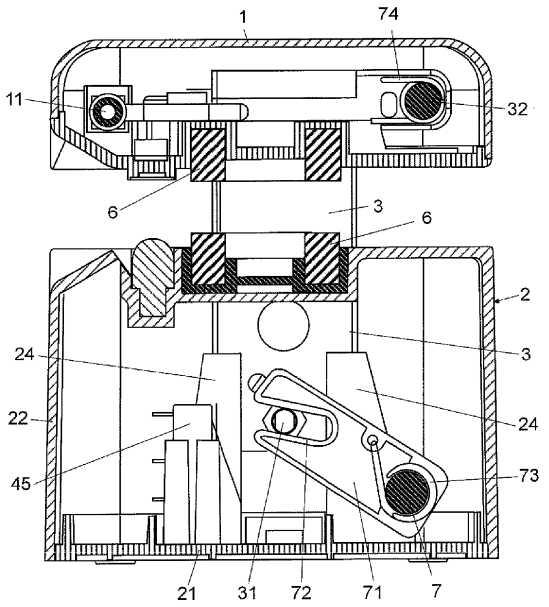

Fig. 6

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Description

Object of the Invention

[0001] The present invention relates to a household appliance for vacuum-packaging products which allows extracting the air from inside the plastic bag containing the product to be preserved and closing the opening of said bag by means of heat-sealing in a single operation.

Background of the Invention

[0002] There is currently a large amount of appliances for vacuum-packaging products for household use. These appliances mainly comprise a vacuum pump and heat-sealing means housed in a casing with a lid which can be coupled in the upper part. In the casing and in the lid there are complementary sealing means mainly configured as two elongated gaskets, one arranged in the lower casing and the other one in the lid, such that by means of approximating them, the opening of the bag containing the product to be sealed can be trapped against the air extraction point, inside the cavity defined in one of said sealing gaskets. Thus, once the opening of the bag is trapped between the two gaskets of the sealing means, the pump extracts a sufficient amount of air from inside the bag, through its opening, and then heat-seals the opening of the bag, assuring that the bag maintains the inner vacuum once it is removed from the appliance.

[0003] These heat-sealing means typically comprise heated wires arranged parallel to the sealing means.

[0004] An appliance of this type is described in patent US4941310.

[0005] In most of these household vacuum-packaging appliances, the mechanisms are located in the casing, and the lid is articulated on the casing by means of a hinge, the lid being swingable, like a book, over the positioning area for the bag containing the product to be packaged.

[0006] This lid presses the upper sealing means against the lower sealing means, which thus allows initiating the process of extracting the air and heat-sealing the opening of the bag or package.

[0007] The main problem with appliances of this type consists of the fact that when they are not in use, the gaskets of the sealing means and other elements are visible, providing an unattractive aesthetic aspect and being exposed to dirt and blows, which may cause their premature deterioration. Furthermore, the operation of sealing the package or bag can be complicated because it is necessary for the user to hold the lid in the closed position and at the same time actuate the suitable operating control knob, possibly leading to confusion.

[0008] Another drawback of vacuum-packaging appliances provided with a swingable lid is that they require having a considerable free space for handling them, specifically for opening the lid, so they are not especially indicated for household level use.

Description of the Invention

[0009] The household appliance for vacuum-packaging products object of this invention has constructive particularities that allow a simpler and more intuitive use, further allowing a more compact construction.

[0010] According to the invention, it comprises: guiding means for the linear movement of the lid with respect to the casing between an open appliance position and a closed appliance position, the lid being arranged substantially parallel to the closure plane in both the open and closed positions; and push means which act on the guiding means for guiding the lid and which tend to keep said lid in the open appliance position.

[0011] The linear and parallel movement of the lid when it is opening and closing, in addition to allowing a more compact construction of the appliance, provides other additional advantages, which include the optimal coupling and low deterioration of the sealing means arranged in the lid and the casing due to their frontal and not angular approximation, as occurs in the case of swingable lids using a hinge, and the possibility of placing the opening of the bag containing the product to be packaged between the sealing means, keeping the lid parallel and close to the casing, with the subsequent reduction of the space necessary for comfortably handing the appliance.

[0012] An additional advantage consists of the fact that the proximity and parallelism of the lid with respect to the casing in the open appliance position provides better protection of the sealing means against environmental dirt and the blows that may cause its deterioration.

[0013] Another feature of the invention consists of the lid being assembled on the guiding means for the linear movement, with the possibility of swinging between an operative position, in which said lid is arranged substantially parallel to the closure plane of the appliance, and an inoperative position, in which said lid is swung back, leaving the access to the upper part of the casing free.

[0014] This feature allows swinging the lid to facilitate cleaning or replacing the sealing means and a liquid collection tray which is arranged on the casing and associated with the sealing means associated with the casing.

[0015] The lid comprises manually releasable retaining means for stably fixing it in the operative position with respect to the guiding means. These means allow fixing the lid in the operative position, preventing its uncontrolled swinging when the appliance is being used.

[0016] In one embodiment, these retaining means are formed by catches which are automatically locked in the guiding means when the lid swings towards the operative position. Said catches are associated with respective manual release buttons.

[0017] The lid additionally has at least one spring which causes it to swing towards the inoperative or cleaning position when the catches in charge of retaining it in the

operative position are released.

[0018] In one embodiment of the invention, the guiding means for guiding the lid with respect to the casing comprise parallel columns, associated with the lid and assembled with the possibility of linear movement on guides defined or fixed in said casing.

[0019] The mentioned columns and guides are oriented in a direction substantially perpendicular to the closure plane of the appliance to assure the frontal approximation of the aforementioned sealing means.

[0020] In this embodiment, the lid is assembled on the columns by means of respective end articulations.

[0021] According to the invention, the push means for pushing the lid towards the open position comprise: swinging arms assembled on a rotating shaft associated with the casing and which act on pivots fixed to the columns, and a spring which acts on the rotating shaft and tends to keep it in the position corresponding to the open position of the lid.

[0022] The mentioned swinging arms have grooves oriented in the longitudinal direction in which pivots of the columns are housed, said grooves allowing the rotating movement of the swinging arms to cause a linear movement of the pivots associated with the columns of the lid, and accordingly the opening or closing of the lid.

[0023] The mechanism provides comfort in use for the user when applying a closing force on the lid. The user can apply the force at any point of the lid, achieving the same closing effect.

[0024] The rotating shaft comprises activation means for activating the appliance when said shaft is arranged in the position corresponding to the closed position of the lid.

[0025] In one embodiment, said activation means are formed by a cam associated with the rotating shaft and acting on an activating microswitch connected to an appliance control circuit when the lid moves to the closed position.

[0026] Thus, when the user closes the lid it causes the appliance to start operating without needing to actuate any button, the lid being kept in the closed position due to the effect of the vacuum generated by the pump.

[0027] Once the vacuum has been formed in the bag and the bag has been heat-sealed, the lid automatically returns to the open position due to the action of the aforementioned push means, releasing the bag.

[0028] In a preferred construction, the casing comprises a base in which the guides are fixed and the rotating shaft is coupled by means of supports enabling the rotation thereof, whereby the guiding means and the push means use a single reference part for their assembly.

[0029] It has been envisaged that the lid comprises operating light signaling means, for example one or several LEDs, which light up when the appliance is operating, whereby handling is more intuitive.

[0030] In one embodiment, the heat-sealing means are arranged in the front part of the lid and act against the upper part of the casing, whereby in the event that the bag is slightly adhered to the heat-sealing means, the actual weight of the packaged product would cause the bag to be released from the heat-sealing means.

Description of the Drawings

[0031] To complement the description being made and for the purpose of aiding to better understand the features of the invention, a set of drawings is attached to the present specification in which the following has been depicted with an illustrative and non-limiting character:

- Figure 1 shows a perspective view of the appliance.
- Figure 2 shows a view of use of the appliance of the previous figure.
- Figure 3 shows a perspective view of the actuating mechanism for actuating the lid on the lower base.
- Figure 4 shows a perspective view of the appliance with the lid swung backwards.
- Figure 5 shows a longitudinally sectioned elevational view of the appliance.
- Figure 6 shows a cross section of the appliance.

Preferred Embodiment of the Invention

[0032] In the embodiment shown in Figure 1, the lid (1) arranged in the open position with respect to the casing (2) can be seen.

[0033] Said casing (2) is formed by a base (21) and a finishing part (22) provided with holes (23) through which there emerge vertical support columns (3) of the upper lid (1).

[0034] A vacuum pump (41) and control means (42) for the automatic operation of the appliance are housed in the lower casing (2), while heat-sealing means (43) are arranged in the upper lid (1) for closing the bags (5) containing the product to be vacuum-packaged.

[0035] Complementary sealing means (6) represented by O-ring seals, which in the case of the casing (2) are arranged around a liquid collection tray (61), are assembled in the facing surfaces of the casing (2) and of the lid (1).

[0036] The base (21) of the casing (2) has guides (24) at both ends for the linear movement of the support columns (3) of the upper lid (1) in the substantially vertical direction.

[0037] Supports (25) of a rotating shaft (7) are located in this base (21), arranged along said base (21). This rotating shaft (7) has laterally projecting parallel swinging arms (71) at its ends, which arms have mounting grooves (72) at their ends which in this case are open or slit, whereby the adjacent columns (3) are linked by means of a side projecting pivot (31). The rotating shaft (7) has associated therewith a torsion spring (73) which forces the swinging arms (71), and therefore the columns (3), upwards in the rest position.

[0038] The lid (1) is attached to the columns (3) by an articulation (32) in the rear upper part of said column and

catches (not depicted) which are released by a button (11) in the adjacent side of said lid (1), enabling the backward swung arrangement of said lid (1), facilitating the extraction and cleaning of the liquid collection tray (61).

[0039] Between the lid (1) and each column (3) there are return springs (74) which allow said lid (1) to be kept in the backward swung position until it is manually returned to the operative position.

[0040] The lid (1) has light signaling means (44) formed in this case by at least one white LED which lights up when the appliance is operating.

[0041] The appliance has activation means based on a cam contour associated with the swinging arm (71) and which acts on an activating microswitch (45), thus depicted in Figure 6, when the lid is arranged in the closed position of the appliance.

[0042] Having sufficiently described the nature of the invention as well as a preferred embodiment, it is hereby stated that the materials, shape, size and arrangement of the described elements can be modified provided that this does not involve an alteration of the essential features of the invention which are claimed below.

Claims

1. Household appliance for vacuum-packaging products, of the type comprising a casing (2) and a lid (1) provided with complementary sealing means (6) which can be opposite one another when the appliance is in the closed position, a vacuum pump (41) and heat-sealing means (43) for closing the bag containing the product to be packaged once the vacuum has been formed therein, **characterized in that** it comprises: guiding means for the linear movement of the lid (1) with respect to the casing (2) between an open appliance position and a closed appliance position, the lid (1) being arranged substantially parallel to the closure plane in both positions; and push means which act on the guiding means for guiding the lid (1) and which tend to keep said lid (1) in the open appliance position.

2. Appliance according to claim 1, **characterized in that** the lid (1) is assembled on the linear movement guiding means with the possibility of swinging between an operative position, in which said lid (1) is arranged substantially parallel to the closure plane of the appliance and an inoperative position, in which said lid (1) is swung back, freeing the access to the upper part of the casing (2).

3. Appliance according to claim 2, **characterized in that** the lid (1) comprises retaining means for fixing it in the operative position with respect to the guiding means.

4. Appliance according to claim 3, **characterized in that** the retaining means for fixing the lid (1) in the operative position with respect to the guiding means are formed by catches associated with respective manual release buttons (11).

5. Appliance according to any of the previous claims, **characterized in that** the guiding means for guiding the lid (1) with respect to the casing (2) comprise parallel columns (3) associated with the lid (1) and assembled with the possibility of linear movement on guides (24) of the casing (2).

6. Appliance according to claim 5, **characterized in that** the columns (3) and the guides (24) are oriented in a direction substantially perpendicular to the closure plane of the appliance.

7. Appliance according to any of the previous claims, **characterized in that** the lid (1) is assembled on the columns (3) by means of respective end articulations (32).

8. Appliance according to claim 7, **characterized in that** it comprises springs (74) between at least one column (3) and the lid (1) for automatically swinging the lid (1) when the release of said lid (1) is actuated.

9. Appliance according to any of the previous claims, **characterized in that** the push means for pushing the lid (1) towards the open position comprise: swinging arms (71) assembled on a rotating shaft (7) associated with the casing (2) and which act on pivots (31) fixed to the columns (3), and a spring (73) which acts on the rotating shaft (7) and tends to keep it in the position corresponding to the open position of the lid (1).

10. Appliance according to claim 9, **characterized in that** the swinging arms (71) have grooves (72) elongated in the longitudinal direction in which the pivots (31) of the columns (3) are housed.

11. Appliance according to claim 9, **characterized in that** the rotating shaft comprises activation means for activating the appliance in the position corresponding to the closed position of the lid (1).

12. Appliance according to claim 11, **characterized in that** the activation means are formed by a cam associated with the rotating shaft (7) and acting on an activating microswitch (45) connected to an appliance control circuit in the position of the shaft corresponding to the closed position of the lid (1).

13. Appliance according to claims 5 and 9, **characterized in that** the casing (2) comprises a base (21) in which the guides (24) are fixed and the rotating shaft (7) is coupled by means of supports (25).

14. Appliance according to any of the previous claims, **characterized in that** the lid (1) comprises operating light signaling means (44).

15. Appliance according to any of the previous claims, **characterized in that** the lid (1) comprises the heat-sealing means (43) in its lower front part.

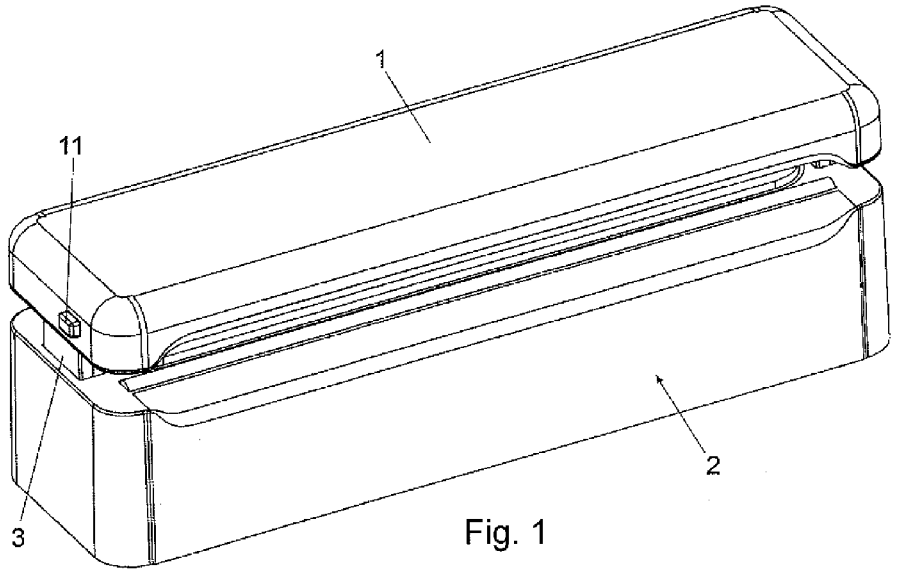

Fig. 1

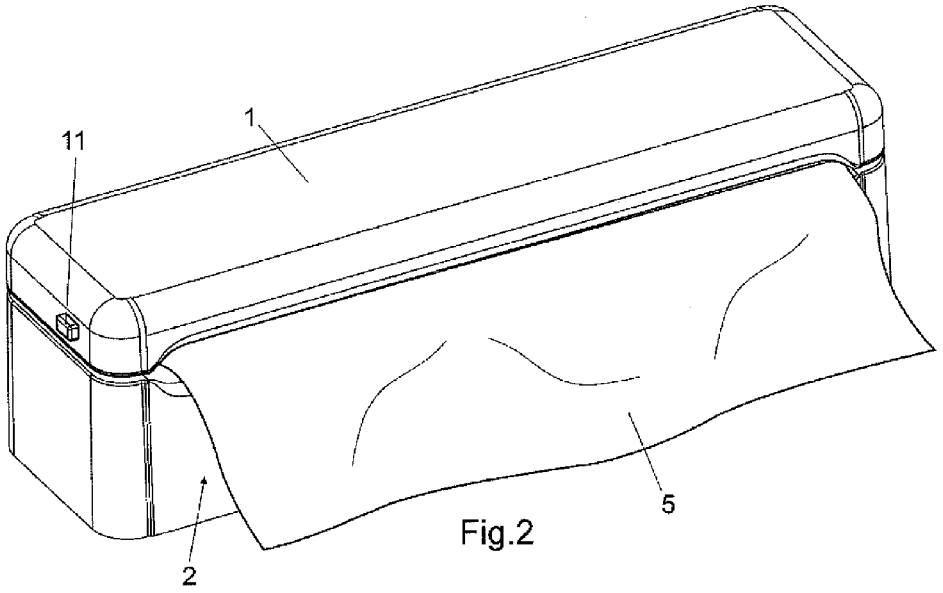

Fig.2

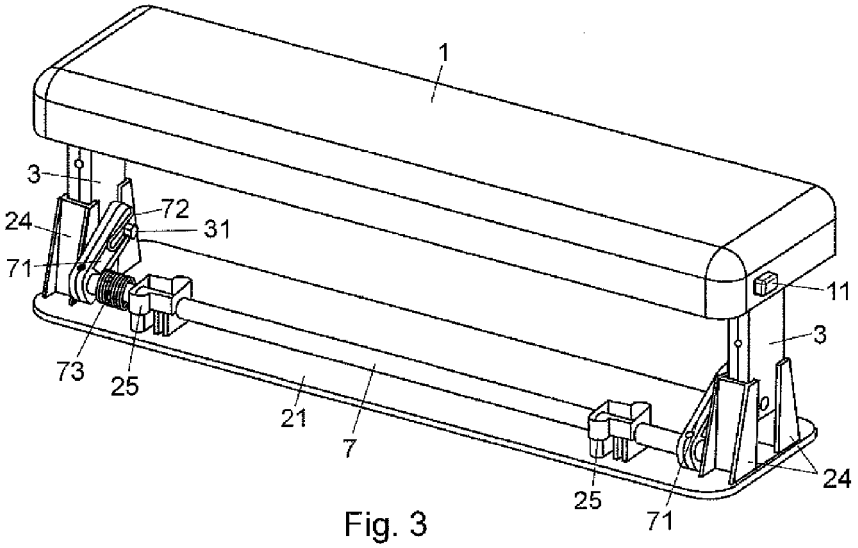

Fig. 3

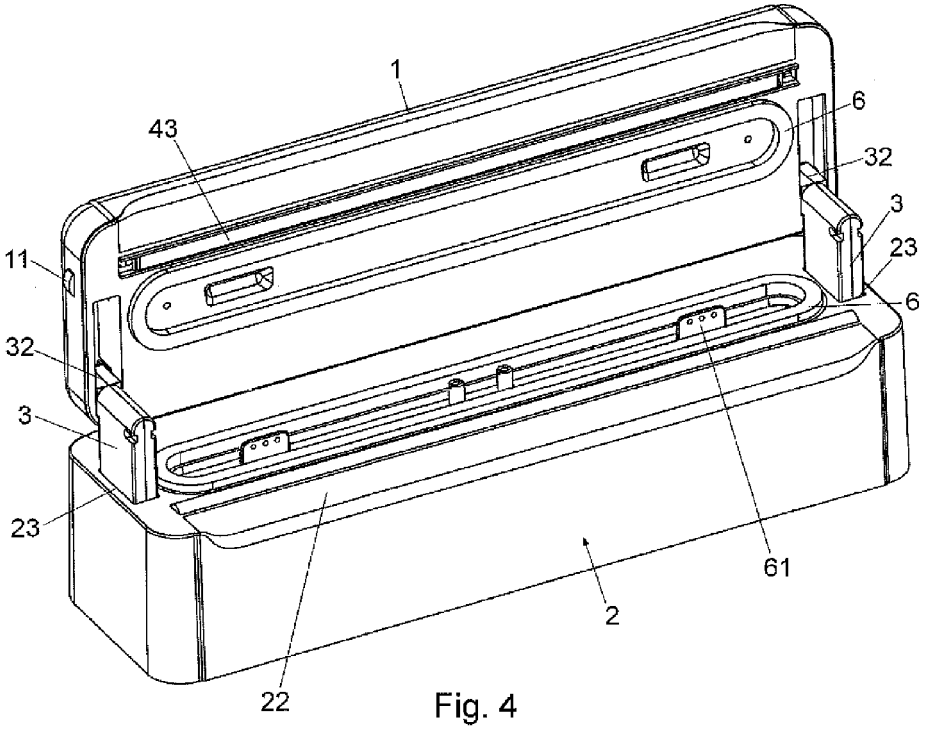

Fig. 4

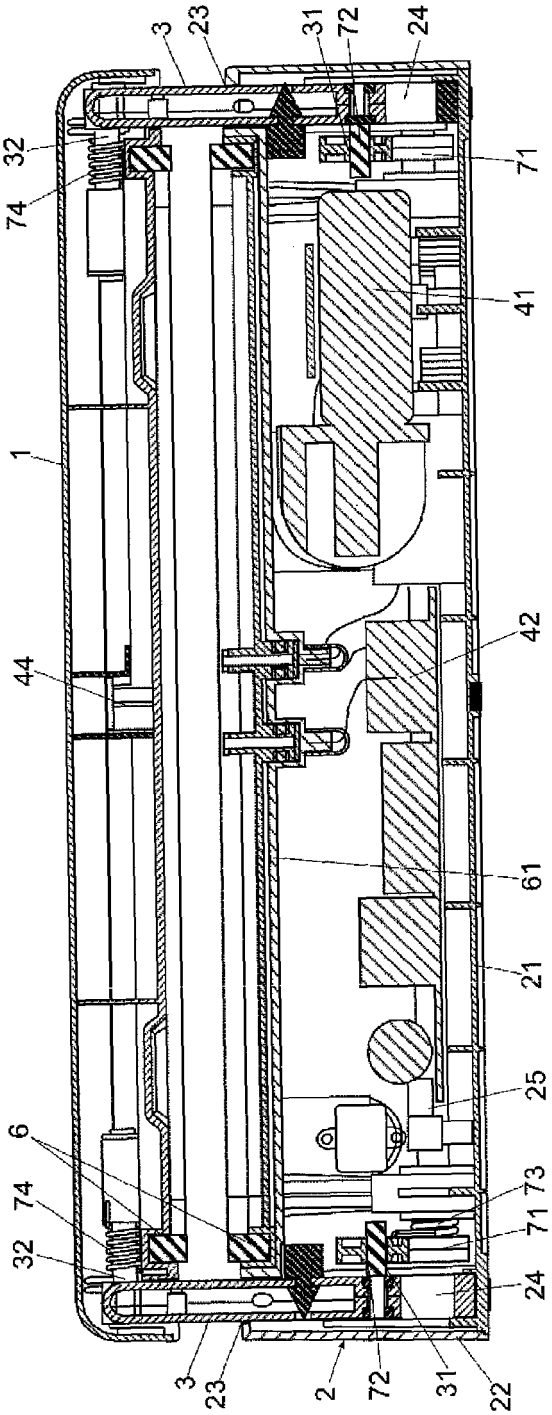

Fig. 5

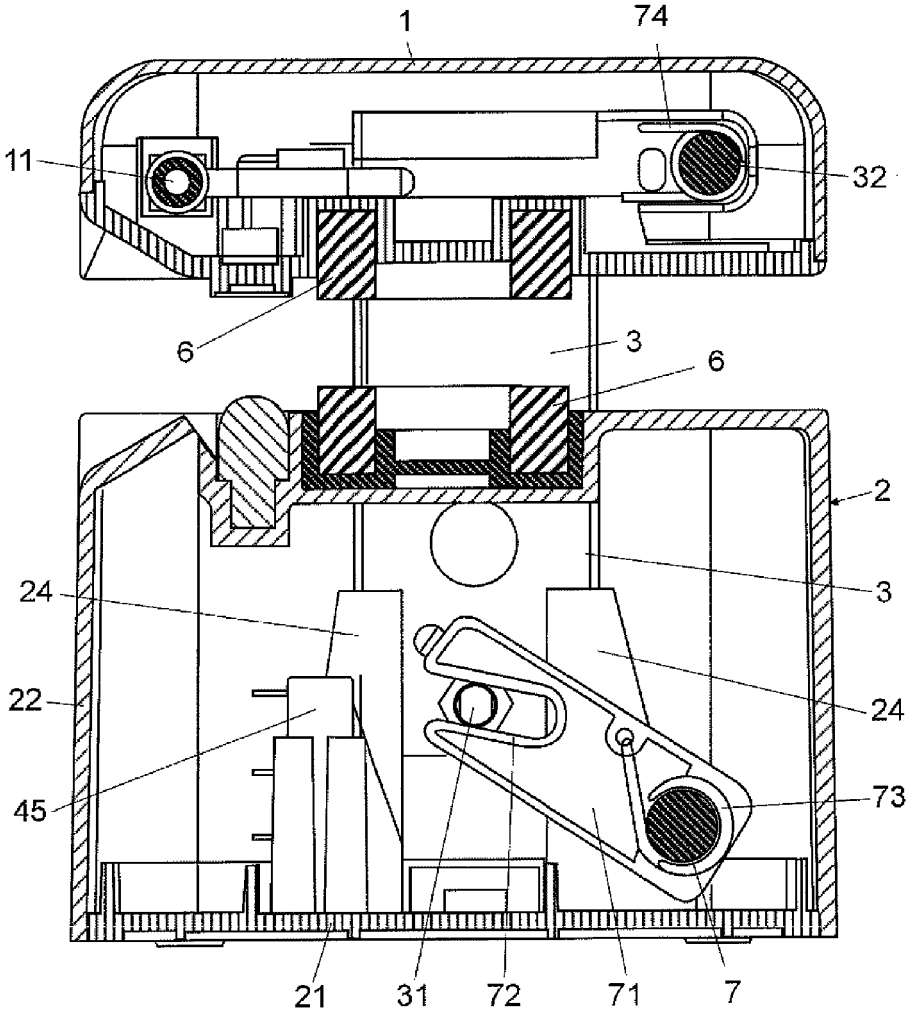

Fig. 6

INTERNATIONAL SEARCH REPORT

International application No.
PCT/ ES 2009/070179

A. CLASSIFICATION OF SUBJECT MATTER

B65B 31/02 (2006.01)
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
B65B31/02E,B65B31/04E1

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

INVENES,EPODOC,WPI

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 2005123512 A1 (Flaem Nuova S.P.A) 29.12.2005, the whole document.	1,3,4,9,14, 15
A	WO 2005094488 A2 (Tilia International, Inc.) 13.10.2005, the whole document.	1,3,4,9,14, 15
A	US 5893822 A (Deni et al.) 13.04.1999, the whole document.	1

☐ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

* Special categories of cited documents:
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"O" document referring to an oral disclosure use, exhibition, or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other documents , such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
18.September.2009 (18.09.2009)	**(21/09/2009)**
Name and mailing address of the ISA/ O.E.P.M. Paseo de la Castellana, 75 28071 Madrid, España. Facsimile No. 34 91 3495304	Authorized officer V. Anguiano Mañero Telephone No. +34 91 349 55 38

Form PCT/ISA/210 (second sheet) (July 2008)

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.
PCT/ ES 2009/070179

Patent document cited in the search report	Publication date	Patent family member(s)	Publication date
WO 2005123512 A	29.12.2005	ITBS 20040028U	16.09.2004
		AU 2004320761 A	29.12.2005
		US 2007027012 A	01.02.2007
		US 7392641 B	01.07.2008
		EP 1755956 AB	28.02.2007
		EP 20040799413	12.11.2004
		JP 2008502546 T	31.01.2008
		AT 435820 T	15.07.2009
			15.07.2009
WO 2005094488 A	13.10.2005	US 2005217101 A	06.10.2005
		US 7124557 B	24.10.2006
		US 7310924 B	25.12.2007
		TW 286525 B	11.09.2007
			11.09.2007
US 5893822 A	13.04.1999	NONE	----------

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REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- US 4941310 A **[0004]**