



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
12.02.2014 Bulletin 2014/07

(51) Int Cl.:
E05B 73/00 ^(2006.01) **E05B 65/00** ^(2006.01)
E05C 9/06 ^(2006.01)

(21) Application number: **13178963.8**

(22) Date of filing: **01.08.2013**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME

(71) Applicant: **Lastrucci, Federico**
15122 Valmadonna (AL) (IT)

(72) Inventor: **Lastrucci, Federico**
15122 Valmadonna (AL) (IT)

(74) Representative: **Mittler, Enrico et al**
Mittler & C. S.r.l.
Viale Lombardia, 20
20131 Milano (IT)

(30) Priority: **08.08.2012 IT MI20121410**

(54) **Anti-theft container.**

(57) An anti-theft container (100) is described, comprising a case (7) hinged to a base body (1) and movable relative thereto between an open position and a closed position, and a clamping device (200) mounted in said

base body (1). Said clamping device (200) comprises a rotating element (2) adapted to move locking means (3) with a linear translational motion by cam means (22, 31), (Figure 1).

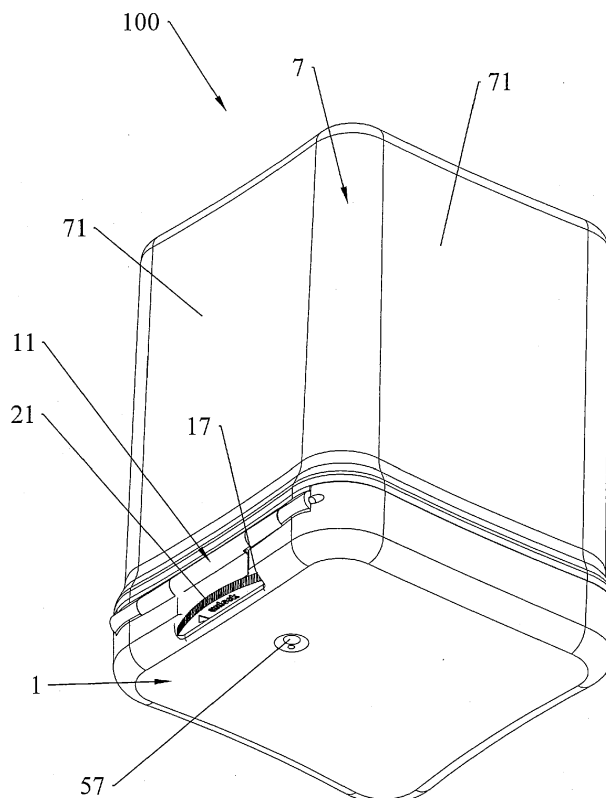


FIG.1

Description

[0001] The present invention relates to an anti-theft container.

[0002] Cases of theft may occur in shops and supermarkets in which customers are allowed to inspect goods by handing them directly for all the time deemed convenient by the customers themselves, without any assistance or immediate monitoring by a retailer. These acts, while episodic, are a risk that retailers accept because allowing customers to handle a product packaging before purchasing is considered extremely advantageous.

[0003] A solution to the problem of theft, used only for higher value products or small stores, is to place objects in showcases and to show them to customers by interacting with the retailer. Such a solution is not feasible for large stores or medium-to-low value products, because employing costly personnel would not be commercially advantageous.

[0004] Another solution to this problem is to reinforce commercial product packages, which are normally made of low value materials and can be easily opened by customers. A stronger package indeed decreases theft events but has the effect of increasing the sold product price, to the extent that it is not always commercially convenient.

[0005] In order to keep the method of sales in supermarkets and marginalize theft events, stronger anti-theft containers for packaging currently exist on the market and retailers may advantageously reuse them several times.

[0006] There are many types of anti-theft containers described, for example, in patents W00030939, US20060005587, W02006080882, CN201123600, W02011135594, ES2374777, and US2005185370A1.

[0007] Anti-theft containers have various shapes in order to be sufficiently larger than a product sold by the retailer and so as to be used in a flexible manner allowing to contain even other types of product or other packages of the same product, but of different make. The main feature of these containers is that of being difficultly opened by a customer with malicious intent, while allowing authorized personnel to rapidly and easily remove or replace the packaging by means of the specific electromagnetic and/or mechanical devices.

[0008] There are many closing and opening devices which work as locks with linear translational of at least part of a mechanism which ends with a tongue provided with at least one catch tooth against a recess of the packaging, as shown for example in patents W00212664 and US2005087109.

[0009] A feature of the containers must be to last for at least a sufficient number of packing/unpacking cycles of the product packages, to allow the retailer to satisfactorily appreciate the amortization of the cost of the investment for using these devices.

[0010] Unfortunately, the known opening and closing devices of the anti-theft containers break very easily even

just after a few packing/unpacking operations by authorized personnel, because inappropriate or prolonged handling deteriorates and then breaks the catch teeth of the tongues which are made of cheap material, such as plastic.

[0011] There are catch teeth solutions made of other, stronger materials, but this is to the detriment of the cost-effectiveness of the anti-theft containers, which must have the feature of not being particular costly due to reasons of commercial advantageousness.

[0012] In addition, a stronger material would not allow to easily detect forcing or breakage of the security packaging, thus creating a disadvantage for non-expert customers and for retail personnel who may have difficulty in ascertaining the breakage and taking the necessary countermeasures.

[0013] There are solutions, such as for example that described in patent ES2380220, in which a magnetic-type separation device, already present on the market, is used to simplify the opening of the anti-theft container devices and reduce the risk of breakage of the lock catches.

[0014] The accidental dropping of a container often causes the breakage of the catch teeth of the lock, thus allowing a customer with malicious intent to steal. In order to reduce the risk of accidental breakage of the catch teeth, in the example of patent ES2374777, cylinders made of a stronger, longer-lasting material are used, which once the device is closed, transversally cross both the lid and the box, fastening them safely to each other.

[0015] Other anti-theft devices which must disadvantageously be applied in cumbersome manner over and under a product packaging or an anti-theft safety package, such as in an example shown in patent W02008142713, further reduce the risk of breakage upon falling events, because two rows of saw teeth arranged as a dial on two toothed wheels are superimposed, and when the device is closed, mesh with each other to further reinforce the lock device. This device has the disadvantage of being expensive because it has various metal parts. A further disadvantage is that an accidental loosening of a cable of this device may cause a false alarm.

[0016] The anti-theft container may also contain further devices aimed at indicating a theft attempt, as shown for example in patent EP2154659, in which a speaker and a portable current generator powering it may be accommodated to start emitting noise if the fastening devices breaks.

[0017] Other devices aimed at indicating a theft attempt may be electromagnetic circuits, powered or not, which include the activation of an external anti-theft device located near the exit doors of the shop.

[0018] It is the object of the present invention to provide an anti-theft container which protects a commercial product from theft in a secure manner, while allowing a customer to handle a package to directly inspect the product.

[0019] A further object is to provide an anti-theft container which allows only an authorized retailer to access

the commercial product in a simple manner.

[0020] A still further object is to provide an anti-theft container reusable for several packing/unpacking cycles without accidentally breaking the lock mechanism.

[0021] A yet further object is to reduce the costs of the anti-theft container by reducing the number of its metal parts.

[0022] In accordance with the invention, such objects are achieved by an anti-theft container as set forth in claim 1.

[0023] These and other features of the present invention will become more apparent from the following detailed description of an embodiment thereof, shown by way of non-limitative example in the accompanying drawings, in which:

figure 1 shows a perspective view of an anti-theft container in closed position according to the present invention;

figure 2 shows a perspective view of the anti-theft container in figure 1 in open position;

figure 3 shows a perspective view of an anti-theft device of the container in figure 1 in locked position to prevent the opening of the container;

figure 4 shows a perspective view of the device in figure 3 in released position to allow the opening of the container;

figure 5 shows a top plan view of the device in figure 3;

figure 6 shows a top plan view of the device in figure 4;

figure 7 shows a sectional view taken along line VII-VII in figure 5;

figure 8 is a section view taken along line VIII-VIII in figure 6 with a magnetic-type opening device;

figure 9 shows a perspective exploded view of the anti-theft container according to the present invention.

[0024] With reference to the above-listed figures, reference numeral 100 refers to an anti-theft container comprising a transparent case 7 hinged to a base body 1 and movable relative thereto between an open position and a closed position (figures 1 and 2).

[0025] Case 7 is substantially parallelepiped-shaped and closed on top with four concave walls 71 and a lower opening with has an edge 73 on three of the four sides with two rectangular openings 72 on each side of said edge 73. The fourth side has a connection hinge 11 between case 7 and base body 1.

[0026] The rotation of case 7 on base body 1 allows to identify an opening and a closing position of the anti-theft container 100.

[0027] The base body 1 is shaped so to allow the edge 73 of case 7 to slide in a compartment 19 defined by an outer edge 18 and by inner walls 10 of the base body 1 which includes three inner walls 10 at the three sides 181, 182, 183 of the base body 1, which is substantially

square in shape. Each inner wall 10 has two rectangular openings 16 facing the openings 72 of case 7 when edge 73 is within compartment 19, i.e. container 100 is closed.

[0028] More in particular, observing figures 5 and 6, the outer edge 18, at the three sides 181-183 of the base body 1 in which the openings 16 are present, have slightly concave surfaces so as to easily couple with the edge 73 of case 7, which in turn has slightly concave surface in accordance with the concavity of said walls 71, which are limited on the bottom precisely by said edge 73. The concavity of the outer edge 18 of the base body 1 and of the edge 73 of case 7 favors the operations of opening and closing container 100 and allows a greater resistance in case of pressure from the outside during a theft attempt because it is already curved in the direction of the applied force.

[0029] The base body 1 has a rectangular opening 17 (figures 1 and 2) at the fourth side 184, from which a knurled flywheel 21 of a rotating element 2 of a clamping device 200 mounted in the base body 1 protrudes. The elongated shape of the knurled flywheel 21 allows to advantageously minimize the force applied by the operator to turn the rotating element 2: it is sufficient to operate the knurling of the flywheel 21 with a finger to rotate the rotating element 2 about a vertical axis.

[0030] Said rotating element 2 comprises a circular ring 20, with which said flywheel 21 is externally integral and from which it protrudes, and on the top of which three pins 22 and a cap 25, fitted at 90 degrees from one another, are fixed (figures 3-6 and 9).

[0031] The rotating element 2 is rotationally mounted by means of an inner circular wall 24 thereof on a hollow cylinder 14 arranged on the base body 1 (figure 9). The outer radius of the hollow cylinders 14 is slightly smaller than the inner radius of the circular ring 20 so as to rotate the rotating element 2 on the hollow cylinder 14.

[0032] The rotating element 2 further has a curved groove 23 positioned under the knurled flywheel 21 and appropriately shaped to slidably couple on a rail 13 of the base body 1, thus facilitating the rotation of the rotating element 2.

[0033] Cap 25 is placed at an elongated portion of the rotating element 2 which ends with the knurled flywheel 21. Said cap 25 is positioned over and at a cylinder 15 with a cavity 55 which protrudes from the base body 1 near the fourth side 184 provided with the opening 17 (figures 7-8). The upper base of cap 25 is as wide as the circular ring 20 and as wide as an arc of circumference which corresponds to a complete rotational movement of the knurled flywheel 21 which is produced from the opening 17 of base body 1.

[0034] The hollow cylinder 15 blocks cap 25, thus allowing the rotating element 2 to rotate only within a given angle range.

[0035] The upper base of cap 25 has a hole 26 of the same size as the cavity 55 of cylinder 15. A cylinder-shaped pin 5 made of iron (or other magnetically attractable material) is inserted into this cavity 55 (figures 7-9),

which cylinder-shaped pin 5 is provided with two catches 51 arranged at 180 degrees from each other, within which a spring 52 which embraces said pin 5 is fitted from the top. The lower part of the spring 52 rests instead on a step 56 of cavity 55, so as to reduce the diameter of the cavity 55 itself, thus identifying a resting position of spring 52 which keeps a portion of pin 5 on the exterior of cavity 55.

[0036] A protrusion 57 useful to advantageously identify from the outside the position where to use a known magnetic-type separation device 8 is provided at cavity 55 on the lower part of the base body 1 (figure 8).

[0037] The three pins 22 of the rotating element 2 are slidably engaged in openings 31 of respective locking elements 3 which each include a pair of blocks 32 adapted to be inserted in said openings 72 and 16 which in fact also acts as guide for said blocks 32. Each opening 31 is ovoid-shaped and its width is slightly greater than the diameter of pin 22, so that the rotation of the rotating element 2, i.e. the motion of pin 22 in opening 31, causes a translational movement of the locking element 3.

[0038] Blocks 32 are sufficiently large to ensure longer durability in time and greater shock resistance to falling events in an advantageous manner.

[0039] The base body 1 further comprises four perforated cylinders 12 in which the connection elements are inserted, for example hexagonal section pyramids, with four feet 61 of a lid 6, useful to protect the clamping device 200 from external interactions and keep all parts in the respective seats of the base body 1. Lid 6 has a resting base 62 on which the product to be sold can be positioned.

[0040] Functionally, starting from a closed configuration (figures 1, 3, 5, 7), in order to open the container 100 it is necessary to arrange the magnetic-type separation device 8 and place it under the base body 1 at the projection 57, as shown in figure 8, to attract pin 5 into cavity 55, which is reduced in diameter by step 56.

[0041] This releasing operation allows the movement of the knurled flywheel 21 by a finger of an operator to move the rotating element 2, which, following the interaction of pins 22 with openings 31, controls the linear translation towards the interior of the block elements 3 thus releasing the blocks 32 from openings 16 and 72.

[0042] The device 200 substantially transforms the rotational movement of the rotating control member 2 (by means of the knurled flywheel 21) into a translational motion of three locking elements 3 associated with said rotating element 2 by means of a cam system comprising pins 22 and openings 31.

[0043] In the releasing position (figure 6), the blocks 32 advantageously remain within the guides identified by the openings 16 of walls 10, without entering into the openings 72 of edge 73, thus allowing to release case 7 from the base body 1, and thus open container 100 (figure 2). The product to be sold may be either positioned on or removed from the resting base 62 of lid 6.

[0044] Once case 7 has been closed on the base body

1, the operator makes the knurled flywheel 7 slide with a finger to the closing position (figure 5), thus allowing both the blocks 32 to retract into the openings 16 of the walls 10 and the openings 72 of the casing 7 itself, to allow to secure casing 7 to the base body 1, and pin 5 to return into the hole 26, thus ensuring the blocking of the 200.

[0045] The clamping device 200 advantageously allows to clamp container 100 with three locking elements 3 which work at the same time and may be simultaneously removed by simply controlling the knurled flywheel 21.

[0046] In similarly advantageous manner, the clamping device 200 is protected and not accessible except by opening container 100 and removing lid 6 from the base body 1.

Claims

1. Anti-theft container (100) comprising a case (7) hinged to a base body (1) and movable relative thereto between an open position and a closed position, and a clamping device (200) mounted in said base body (1) and comprising a rotating element (2) act to move locking means (3) in linear translational motion by cam means (22, 31), **characterized in that** said rotating element (2) comprises a circular ring (20) to which a flywheel (21) is externally rigidly coupled and protruding from it (20), and on the top of it (21) are fixed pins (22) which slidably engage in openings (31) of respective locking elements (3).
2. Anti-theft container (100) according to claim 1, **characterized in that** each locking element (3) provides means (32) act to be inserted in openings (72) of a lower edge (73) of the case (7) and in openings (16) of walls (10) of the base body (1).
3. Anti-theft container (100) according to claim 2, **characterized in that** a cap (25) is fixed on the top of the rotating element (2) and in correspondence with a cylinder (15) which has a cavity (55) that arises from the base body (1).
4. Anti-theft container (100) according to claim 3, **characterized in that** said cap (25) is positioned in correspondence with an elongated portion of the rotating element (2) which ends with the flywheel (21) protruding from the base body (1) through an opening (17).
5. Anti-theft container (100) according to claim 4, **characterized in that** the upper base of the cap (25) has a hole (26) of the same size of the cavity (55) of the cylinder (15) so that a pin (5) that locks the rotating element is inserted within this cavity (55).

6. Anti-theft container (100) according to claim 5, **characterized in that** the pin (5) is cylinder- shaped equipped with catches (51) within which on the top of them (51) is fixed a spring (52) which embraces said pin (5), the lower part of the spring (52) standing on a step (56) of the cavity (55), so to reduce the diameter of the cavity (55) itself, thus identifying a rest position of the spring (52) which maintains a portion of the pin (5) on the outside of the cavity (55). 5 10
7. Anti-theft container (100) according to any one of the preceding claims, **characterized in that** the rotating element (2) is rotatably mounted using its own circular inner wall (24) on a hollow cylinder (14) arranged on the base body (1). 15
8. Anti-theft container (100) according to claim 7, **characterized in that** the rotating element (2) also includes a curved groove (23) positioned below the flywheel (21) and suitably shaped in order to slidably coupling with a rail (13) of the base body (1). 20
9. Anti-theft container (100) according to claim 2, **characterized in that** the base body (1) provides an outer edge (18) which together with said inner walls (10) forms a compartment (19) within which the lower edge (73) of the case (7) can be inserted, said openings (16) of said inner walls (10) facing on the openings (72) of the case (7) when the lower edge (73) is inside the compartment (19), namely the container (100) is closed. 25 30
10. Anti-theft container (100) according to claim 9, **characterized in that** the walls (71) of the case (7) and at least three sides (181-183) of the outer edge (18) of the base body (1) are concave. 35

40

45

50

55

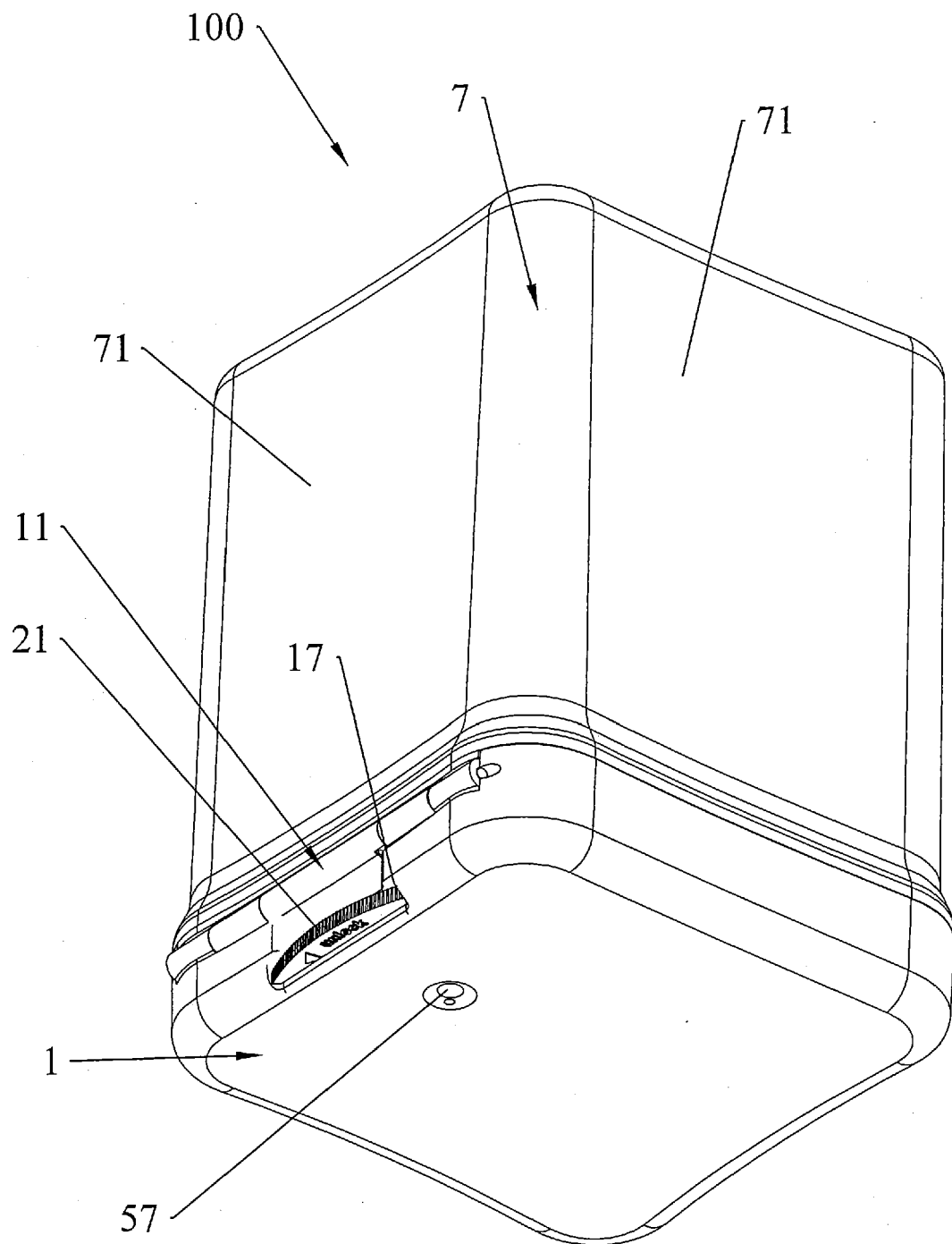


FIG.1

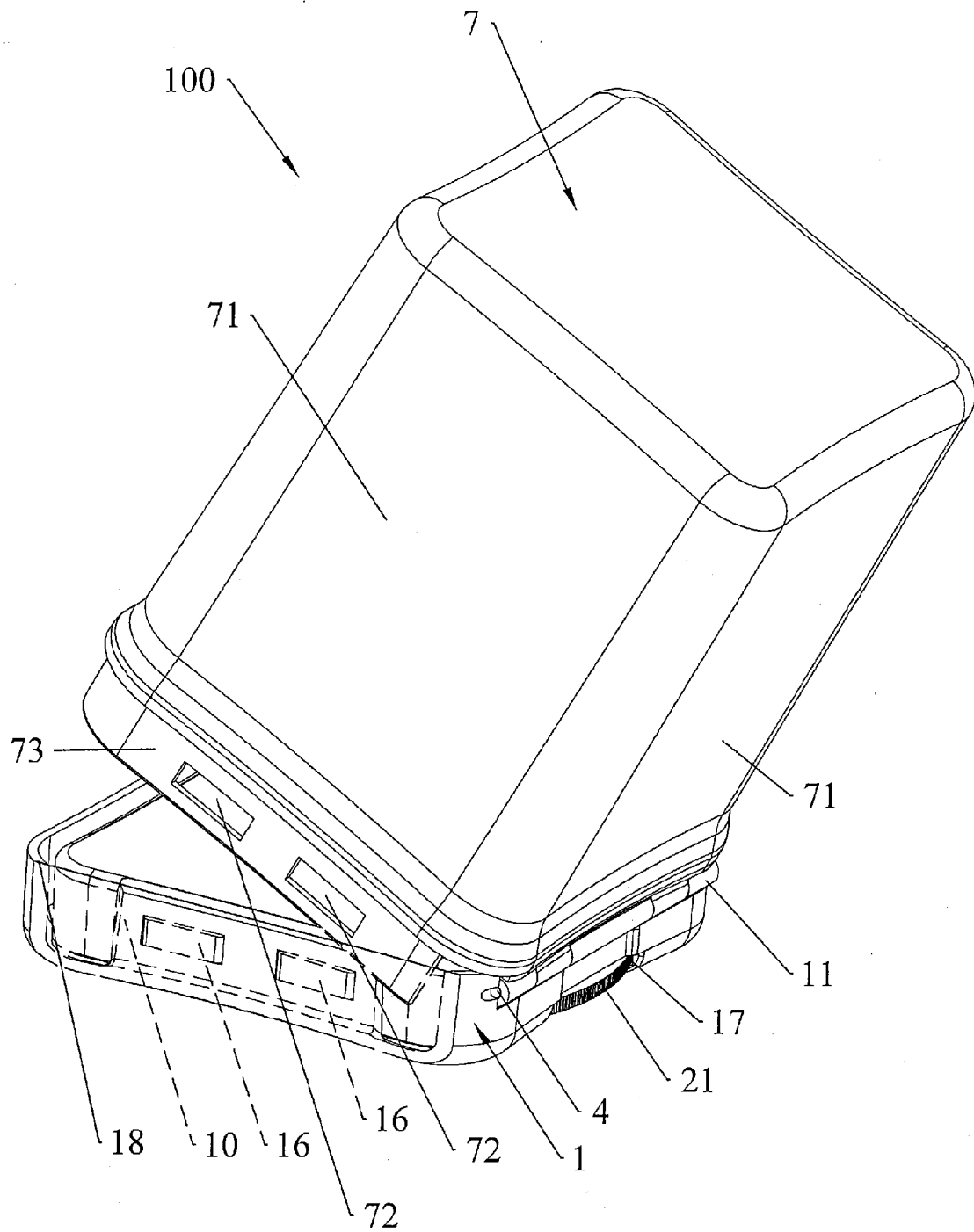


FIG.2

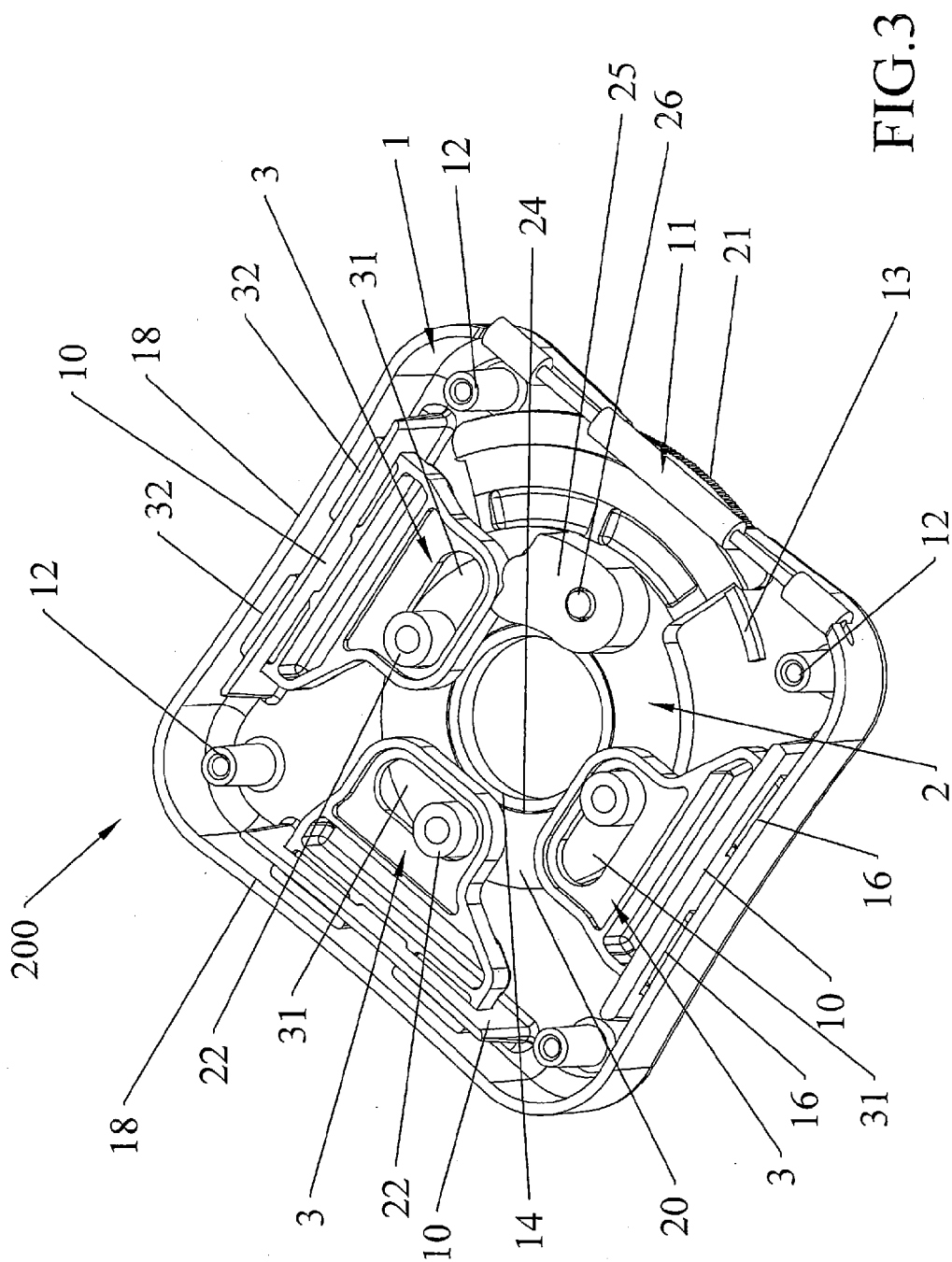


FIG.3

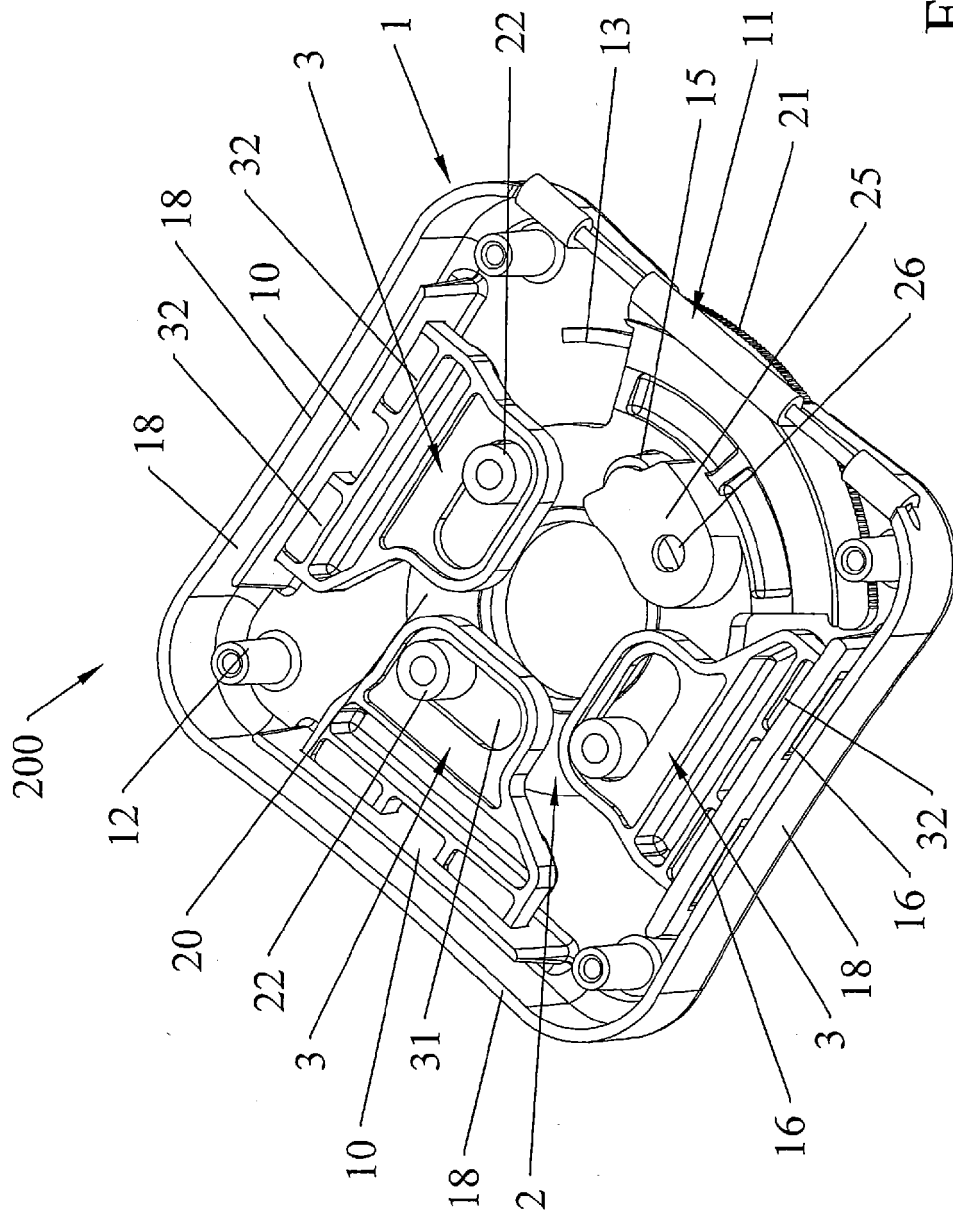


FIG.4

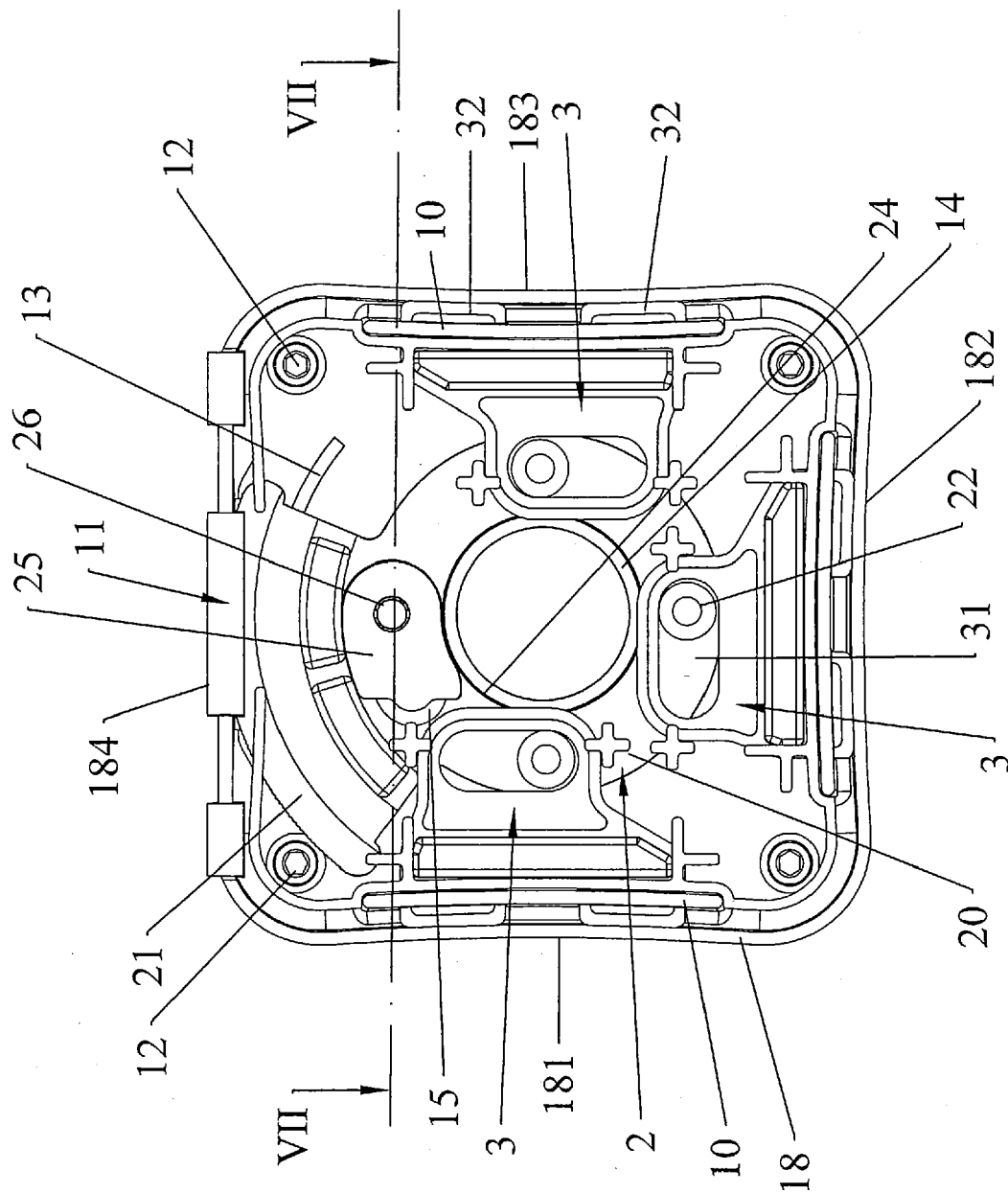


FIG. 5

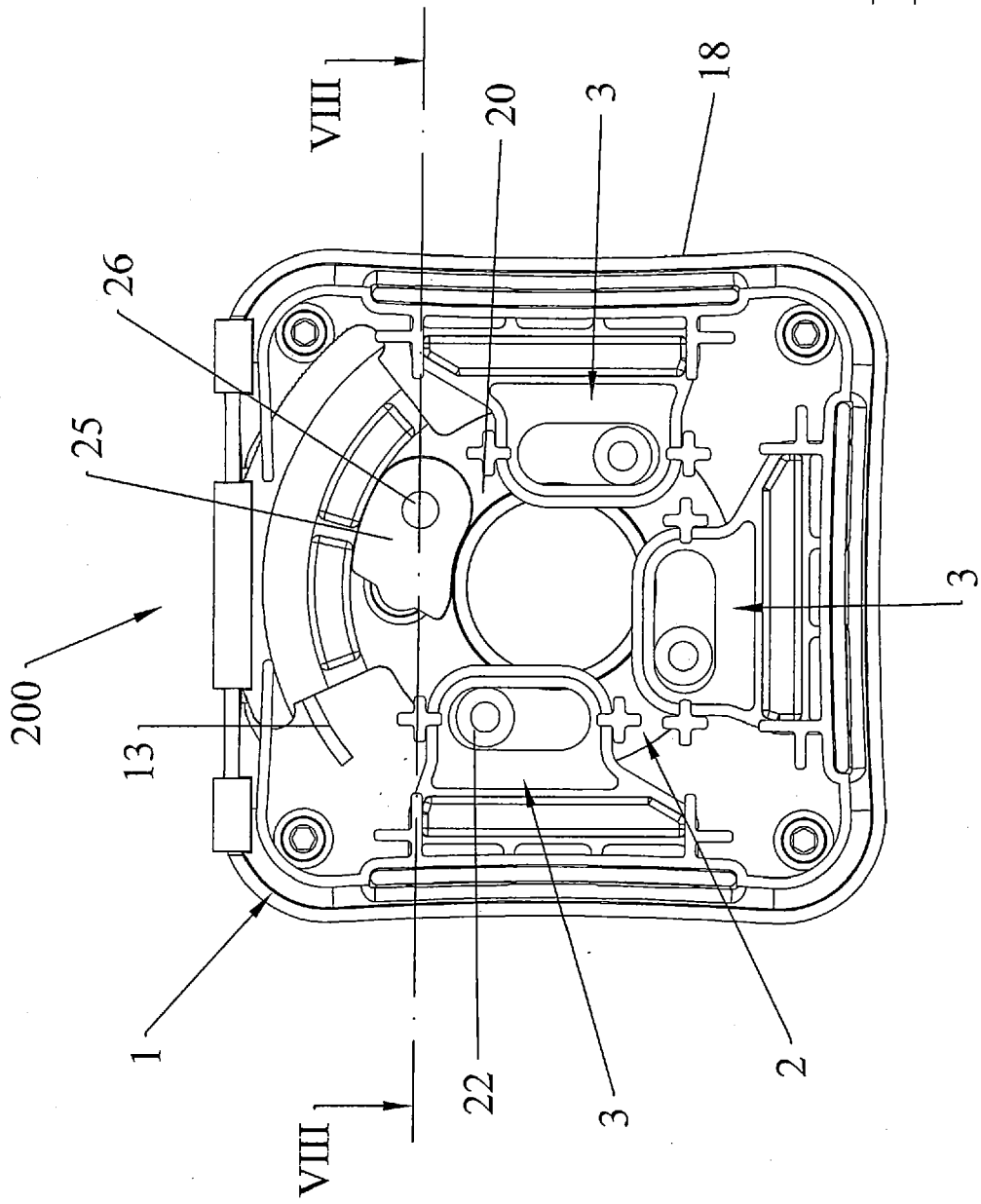


FIG.6

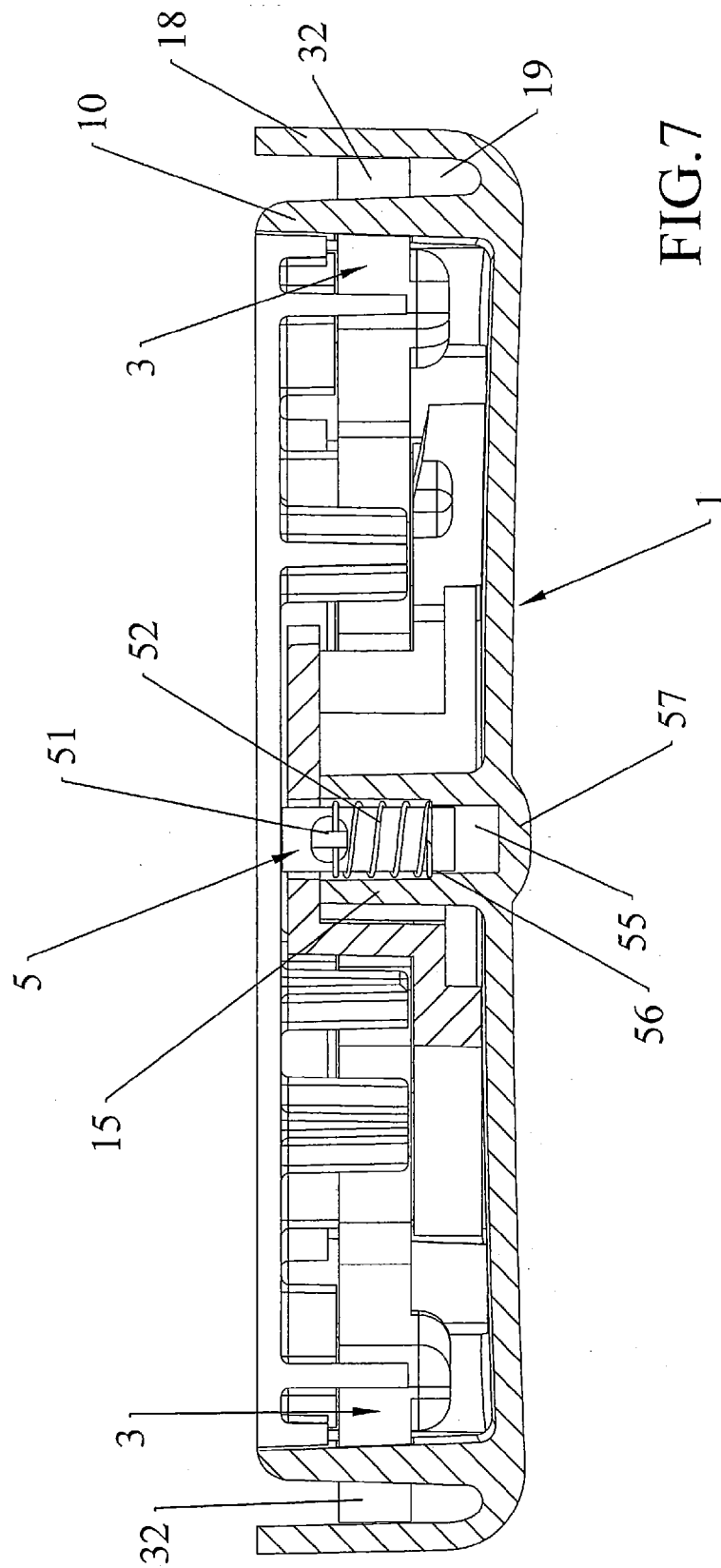


FIG. 7

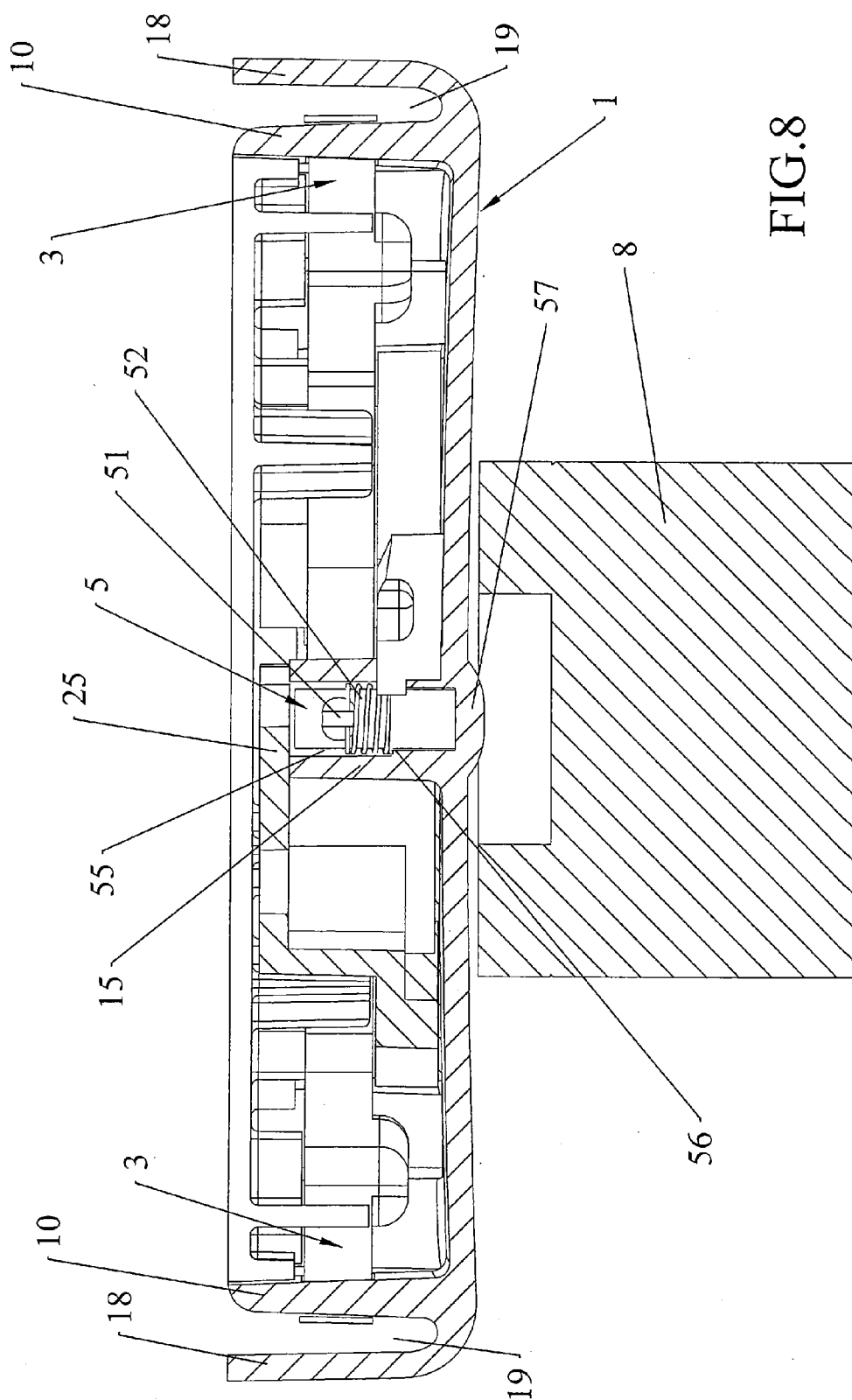


FIG. 8

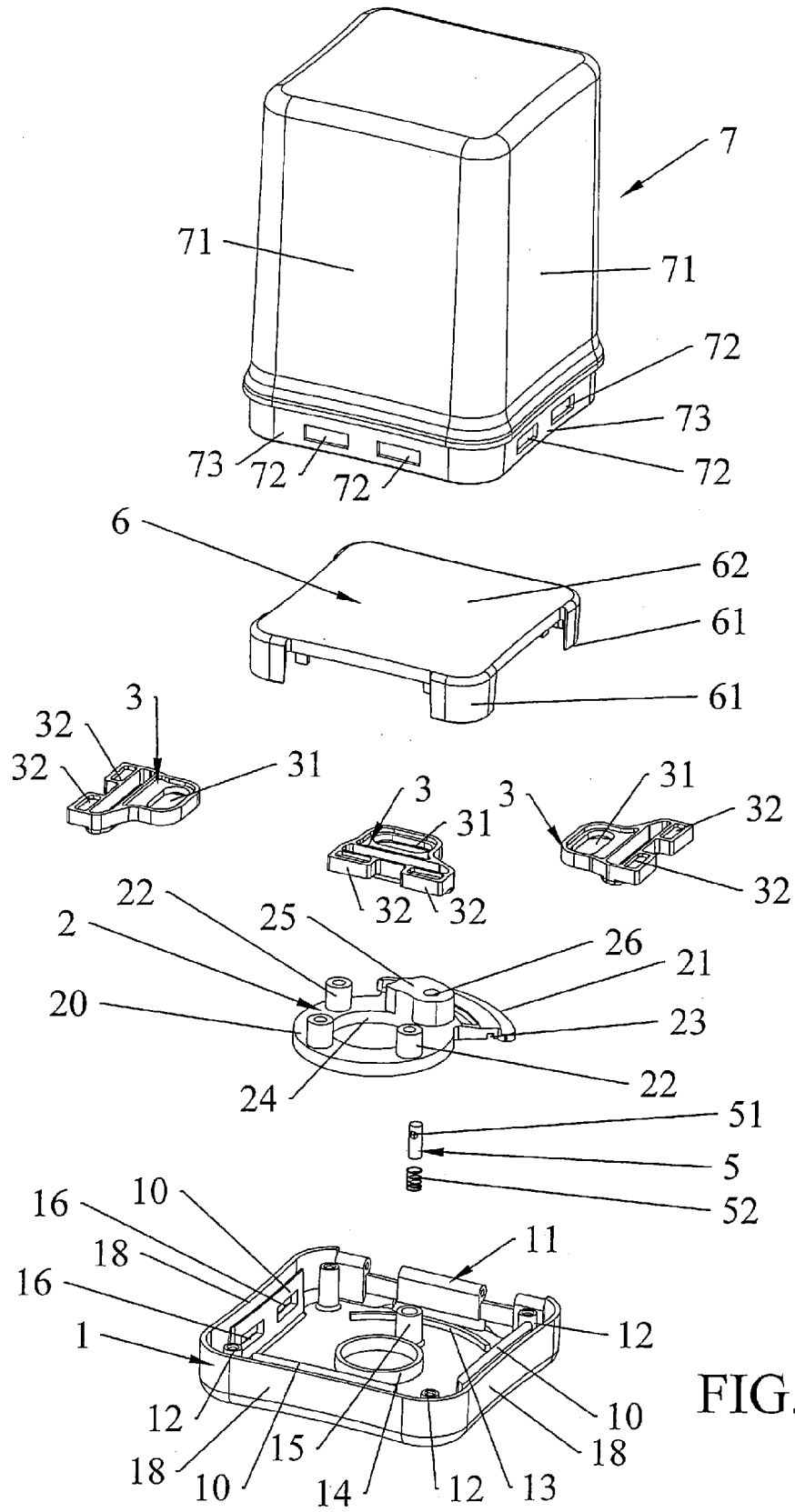


FIG.9



EUROPEAN SEARCH REPORT

Application Number
EP 13 17 8963

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	US 2005/185370 A1 (CHUNG CHENG-KUANG [TW]) 25 August 2005 (2005-08-25) * the whole document *	1-10	INV. E05B73/00
A	US 2010/327716 A1 (LI CHEN-YU [TW]) 30 December 2010 (2010-12-30) * paragraphs [0016] - [0021]; figure 1 *	1-10	ADD. E05B65/00 E05C9/06
A	US 6 549 618 B1 (GRUDZINSKI DAVID E [US]) 15 April 2003 (2003-04-15) * the whole document *	1-10	
A	US 2010/140270 A1 (BECKLIN DENNIS M [US]) 10 June 2010 (2010-06-10) * the whole document *	1-10	
A	ES 2 374 777 A1 (ALUMETRICA 2000 S L [ES]) 22 February 2012 (2012-02-22) * figures 1-3 *	1-10	
			TECHNICAL FIELDS SEARCHED (IPC)
			E05B E05C B65D
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 20 September 2013	Examiner Cruyplant, Lieve
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

1
EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 13 17 8963

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

20-09-2013

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2005185370 A1	25-08-2005	TW M253195 U US 2005185370 A1	11-12-2004 25-08-2005
US 2010327716 A1	30-12-2010	TW 201101965 A US 2010327716 A1	01-01-2011 30-12-2010
US 6549618 B1	15-04-2003	NONE	
US 2010140270 A1	10-06-2010	NONE	
ES 2374777 A1	22-02-2012	NONE	

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- WO 0030939 A [0006]
- US 20060005587 A [0006]
- WO 2006080882 A [0006]
- CN 201123600 [0006]
- WO 2011135594 A [0006]
- ES 2374777 [0006] [0014]
- US 2005185370 A1 [0006]
- WO 0212664 A [0008]
- US 2005087109 A [0008]
- ES 2380220 [0013]
- WO 2008142713 A [0015]
- EP 2154659 A [0016]