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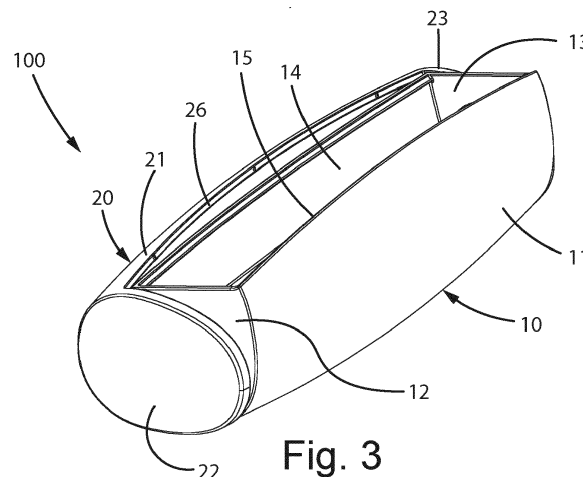
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(54) **STORAGE CASE**

(57) A case (100) is described, extending in length along a longitudinal direction (Y) and comprising a first half-shell (10) at least partially open having two first end portions (12, 13) opposite each other and transverse to the longitudinal direction (Y), and a first wall (11) substantially U-shaped; the first wall (11) extending between the first end portions (12, 13) along the longitudinal direction (Y) and defining a housing chamber (14); a second half-shell (20) at least partially open having two second end portions (22, 23) opposite to each other and transverse to the longitudinal direction (Y), and a second wall (21) extending between the second end portions (22, 23) along the longitudinal direction (Y) defining a containment seat (24); the first half-shell (10) being inserted into the containment seat (24) defining a closed space (24') of

varying dimensions; coupling means (25, 30, 31) placed at the first end portions (12, 13) and the second end portions (22, 23), the coupling means (25, 30, 31) rotatably coupling the first half-shell (10) and the second half-shell (20) in such a manner that the first half-shell (10) and the second half-shell (20) can rotate with each other about a common axis of rotation (X) substantially parallel to the longitudinal direction (Y) to switch the case (100) between an opening configuration, in which the housing chamber (14) faces outward and the closed space (24') is separated from the housing chamber (14), and a closing configuration, in which the housing chamber (14) is closed by the second wall (21) and is contained in the closed space (24').



**Fig. 3**

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## Description

**[0001]** The present invention relates to a case, suitable for holding objects of various kinds for example, but not limited to, a pair of eyeglasses.

**[0002]** The present invention finds useful use in various fields, for example in the field of eyewear as an eyeglass case.

**[0003]** Various types of cases are known. Some known types of cases, for example for eyeglasses, comprise a main body provided with a housing chamber, in which eyeglasses, for example, but also other objects can be stored, and a movable part and/or a rigid "shell" coupled to the main body. Such movable part is in particular openable and closable to access the housing chamber to take out one or more objects contained in it, and also to close such chamber in such a way that any objects placed inside it do not escape from the main body, remaining protected.

**[0004]** In addition, known cases comprise a fastening mechanism to secure the movable part to the main body in such a way that the latter does not open unintentionally. For example, such fastening mechanisms may comprise a button or a hook and loop closure system. Disadvantageously, known type cases require that a user who intends to open the movable part must necessarily employ both hands. In fact, the user must simultaneously hold the main body with one hand and open the movable part with the other so as to unlock the fastening mechanism. As a result, it is difficult, inconvenient and sometimes impossible for the user to open the movable part in order to pick up or store the one or more objects contained therein in the housing chamber when he or she cannot employ both hands.

**[0005]** It is the object of the present invention to overcome the above-mentioned inconveniences and in particular to conceive a case that can be easily opened with one hand.

**[0006]** These and other purposes according to the present invention are achieved by making a case as set forth in claim 1.

**[0007]** Further features of the case are the subject of the dependent claims.

**[0008]** The features and advantages of a case according to the present invention will become more apparent from the following description, illustrative and not limiting, referring to the attached schematic drawings in which:

- figure 1 is a perspective view of a case according to the present invention in a closing configuration;
- figure 2a is a first side view of the case of figure 1;
- figure 2b is a top view of the case of figure 1;
- figure 2c is a second side view of the case of figure 1;
- figure 3 is a perspective view of the case according to the present invention in an opening configuration;
- figure 4a is a first side view of the case of figure 3;
- figure 4b is a top view of the case of figure 3;
- figure 4c is a second side view of the case of figure 3;

- figure 5 is a side view in transparency of a particular embodiment of the case according to the present invention in the closing configuration;
- figure 6 is a side view in transparency of the case of figure 5 in the opening configuration;
- figure 7 is an exploded perspective view of the case of figures 5 and 6;
- figure 8 is a perspective view of a portion of the case of figures 5-7;
- figure 9 is a perspective view of the case according to the present invention in the opening configuration with a pair of glasses inside.

**[0009]** With reference to the figures, a case, referred to overall as 100, is shown. The case 100 is a storage case, suitable for holding objects of various kinds. In other words, case 100 is a case conformed to house and/or protect one or more objects enclosed within it. For simplicity and clarity of exposition, for illustrative and non-limiting purposes, reference will be made in this description to a longitudinal direction Y and an orientation of the case 100 as in Figures 1 and 7.

**[0010]** The case 100 extends in length along the longitudinal direction Y.

**[0011]** In particular, the longitudinal direction Y is a main direction of development of the case 100.

**[0012]** The case 100 comprises a first half-shell 10 at least partially open having two first end portions 12, 13 that are opposite to each other and transverse to the longitudinal direction Y.

**[0013]** In addition, the first half-shell 10 comprises a first wall 11 preferably conformed to a "U" shape. Specifically, conformed to a "U" shape means that the section of the first wall 11 with a plane perpendicular to the longitudinal direction Y has a "U" shape.

**[0014]** The first wall 11 extends between the first end portions 12, 13 along the longitudinal Y direction.

**[0015]** The first wall 11 defines a housing chamber 14. Housing chamber 14 is suitable for holding one or more objects. In more detail, housing chamber 14 is defined by first wall 11 and first end portions 12, 13.

**[0016]** The case 100 comprises a second half-shell 20 that is at least partially open having two second end portions 22, 23 that are opposite to each other and transverse to the longitudinal direction Y.

**[0017]** In addition, the second half-shell 20 comprises a second wall 21 extending between the second end portions 22, 23 along the longitudinal direction Y. The second wall 21 defines a containment seat 24.

**[0018]** Note that the first half-shell 10 is inserted into the containment seat 24 defining a closed space 24' of varying size.

**[0019]** In other words, the first half-shell 10 is inserted into the containment seat 24 of the second half-shell 20 realizing with the second half-shell 20 the closed space 24'.

**[0020]** Preferably, each first end portion 12, 13 faces a respective second end portion 22, 23.

**[0021]** More preferably, the first end portions 12, 13 are contained internally to the second end portions 22, 23. Thus, the closed space 24' is defined between the first half shell 10 and between the second half shell 20 specifically by the first wall 11 and the first end portions 12, 13, with the second wall 21 and with the second end portions 22, 23.

**[0022]** In particular, the closed space 24' is a space that is never directly accessible to a user when the case 100 is assembled.

**[0023]** In more detail, the closed space 24' has a size that is variable depending on the positioning of the first half-shell 10 relative to the second half-shell 20. Instead, note that the housing chamber 14 always has the same dimensions regardless of the positioning of the first half-shell 10 and is in fact a substantially rigid housing chamber.

**[0024]** Case 100 comprises coupling means 25, 30, 31 placed at first end portions 12, 13 and second end portions 22, 23.

**[0025]** In particular, coupling means 25, 30, 31 rotatably couple the first half-shell 10 and the second half-shell 20. More details about coupling means 25, 30, 31 will be given later in this description.

**[0026]** Note that the first half-shell 10 and the second half-shell 20 are coupled in such a way that they can rotate with each other around a common axis of rotation X to switch the case 100 from an opening configuration to a closing configuration or vice versa. The axis of rotation X is substantially parallel to the longitudinal direction Y.

**[0027]** According to a preferred embodiment of the present invention, the case 100 is an eyeglass case. According to this embodiment, the housing chamber 14 is suitable for holding a pair of eyeglasses 200.

**[0028]** In the following, reference will be made in an illustrative but not limiting manner to an eyeglass case.

**[0029]** In detail, when the case 100 is in the opening configuration, the housing chamber 14 faces outward and the closed space 24' is separated from the housing chamber 14. In practice, in the opening configuration, the housing chamber 14 is not covered by the second wall 21 and the pair of eyeglasses 200 can be stored in or withdrawn from the housing chamber 14.

**[0030]** Instead, when the case 100 is in the closing configuration, the housing chamber 14 is enclosed by the second wall 21 and is contained in the closed space 24'. In other words, in the closing configuration, the housing chamber 14 is covered by the second wall 21 and the pair of eyeglasses 200 cannot be stored in or taken out of the housing chamber 14.

**[0031]** When the case 100 is in the opening configuration, the closed space 24' is defined between the outer side of a part of the first wall 11 and between the inner side of the second wall 21. In contrast, when the case 100 is in the closing configuration, the first wall 11 and the second wall 21 are arranged to have their respective inner sides facing each other, realizing the closed space 24' that contains, in that case, the housing chamber 14.

**[0032]** Note that the first wall 11 is at least partially overlapped by the second wall 21. In other words, the first wall 11 is enclosed at least partially by the second wall 21, both in the opening configuration and in the closing configuration, as particularly visible in Figures 3 and 9 and also in Figures 5 and 6 referring to a particular embodiment of the present invention.

**[0033]** In addition, as stated above, the first end portions 12, 13 are also enclosed in the second end portions 21, 23.

**[0034]** Enclosed means that the first half-shell 10 is at least partly contained in the second half-shell 20.

**[0035]** The part of the first wall 11 enclosed by the second half shell 20 when the case 100 is in the closing configuration is smaller than the part of the first wall 11 enclosed by the second half shell 20 when the case 100 is in the opening configuration.

**[0036]** In more detail, when case 100 switches from the closing configuration to the opening configuration, the first wall 11 rotates with respect to the second wall 21, and the part of the first wall 11 overlapping the second wall 21 slides over the second wall 21 such that an increasingly larger part of that first wall 11 is enclosed by the second half-shell 20. The rotation of first wall 11 causes housing chamber 14 to face less and less toward second wall 21, so that such housing chamber 14 opens more and more outward when the case 100 switches to the opening configuration.

**[0037]** On the other hand, when the case 100 switches from the opening configuration to the closing configuration, the first wall 11 moves relative to the second wall 21 such that an increasingly smaller portion of that first wall 11 is enclosed by the second half-shell 20. The rotation of the first wall 11 in such a case causes the housing chamber 14 to be increasingly covered by the second wall 21 when the case 100 switches to the closing configuration.

**[0038]** Preferably, the coupling means 25, 30, 31 comprise a male element 25 and a female element 31 placed on one of the second end portions 22, 23 and one of the first end portions 12, 13 or vice versa, respectively.

**[0039]** In accordance with a preferred embodiment, as shown in the figures, coupling means 25, 30, 31 comprise a pin 25.

**[0040]** The pin 25 extends from one of the second end portions 22, 23 defining the axis of rotation X. In other words, the pin 25 is a protrusion extending from a respective second end portion 22, 23 away from the same second end portion 22, 23 and approaching the opposite second end portion 23, 22.

**[0041]** In addition, the coupling means 25, 30, 31 comprise a fastener 30 integral with a respective first end portion 12, 13.

**[0042]** The fastener 30 comprises a recess 31 in which the pin 25 is housed.

**[0043]** The recess 31 faces toward the respective second end portion 22, 23 and thus toward the pin 25. In other words, recess 31 is not facing toward housing chamber

14.

**[0044]** In particular, pin 25 is engaged in recess 31 in such a way as to realize the rotating coupling between the respective first end portions 12, 23 and the respective second end portions 22, 23.

**[0045]** Recess 31 is, in other words, a blind hole made on fastener 30.

**[0046]** In short, according to this embodiment, the above-mentioned male element is realized with pin 25 and the above-mentioned female element is realized with recess 31.

**[0047]** In an alternative embodiment, the recess 31 is a through-hole.

**[0048]** Preferably, the first half-shell 10 has a first edge 15 and the second half-shell 20 has a second edge 26.

**[0049]** The first edge 15 is a free edge of the first wall 11 extending between the two first end portions 12, 13.

**[0050]** The second edge 26 is a free edge of the second wall 21 extending between the two second end portions 22, 23. The first edge 15 and the second edge 26 are configured to be abutting each other when case 100 is in the closing configuration.

**[0051]** On the other hand, when case 100 switches from the closing configuration to the opening configuration, the first edge 15 moves away from the second edge 26. Preferably, the second half-shell 20 has a third edge 27 opposite to the second edge 26. The third edge 27 is a free edge of the second wall 21 that extends, similarly to the second edge 26, between the two second end portions 22, 23.

**[0052]** The third edge 27 is configured to abut with the first wall 11 when case 100 is in the opening configuration, as visible in Figure 4a.

**[0053]** In more detail, when the case 100 switches from the closing configuration to the opening configuration, the first half-shell 10 rotates with respect to the second half-shell 20 until the third edge 27 abuts the first wall 11, preventing further rotation of the first half-shell 10 with respect to the rotation axis X. In this condition, the housing chamber 14 is open to the outside, and thus is not covered by the second wall 21. According to one embodiment of the present invention, the case 100 comprises a recall mechanism 40 configured to pull the first half-shell 10 into rotation when the case 100 is in the opening configuration to return it to the closing configuration.

**[0054]** In this way, the recall mechanism 40 allows the first half-shell 10 to rotate relative to the axis of rotation X so that the second wall 21 can cover the housing chamber 14 again. Advantageously, the case 100 closes by itself.

**[0055]** Preferably, the recall mechanism 40 comprises a cam 41 integral with a respective first end portion 12, 13.

**[0056]** In this case, the recall mechanism 40 comprises an elastic element 42 coupled to a respective second end portion 22, 23 and at least partially in contact with the cam 41.

**[0057]** Preferably, the elastic element 42 is interposed between the first end portions 12, 13 and the second end

portions 22, 23. In this case, cam 41 is also interposed between the first end portions 12, 13 and the second end portions 22, 23.

**[0058]** Cam 41 is configured to load spring element 42 with a loading moment when case 100 switches from the closing configuration to the opening configuration. In fact, during such a switch, cam 41 pulls or compresses spring element 42 more than when case 100 is in the closing configuration. Consequently, by releasing the first half-shell 10 when case 100 is in an intermediate position between the opening and closing configurations, case 100 returns to the closing configuration due to the load moment loaded in spring element 42. In fact, the elastic element 42 pushes the cam 41 into rotation, which in turn pushes the first half-shell 10 into rotation, the latter being integral with said cam 41.

**[0059]** Preferably, at least one of the two second end portions 22, 23 comprises one or more hooking elements 28 for positioning the elastic element 42.

**[0060]** Preferably, such hooking elements 28, particularly visible in Figures 7 and 8, are additional protrusions extending from a respective second end portion 22, 23 toward the opposite second end portion 23, 22.

**[0061]** Preferably, fasteners 30 are two in number and each is arranged at a respective first end portion 12, 13. In this case, the pins 25 are two in number and each extends from a respective second end portion 22, 23. Further, each second end portion 22, 23 comprises said one or more hooking elements 28.

**[0062]** According to the preferred embodiment, the cam 41 is made on the fastener 30.

**[0063]** In other words, the case 100 may comprise two fasteners 30, each of which comprises a respective recess 31 and a respective cam 41 both facing a respective second end portion 22, 23. In addition, each cam 41 is in contact with a respective spring element 42 coupled to a respective second end portion 22, 23. Said elastic elements 42 are positioned on the respective second end portions 22, 23 by the hooking elements 28 extending from said second end portions 22, 23.

**[0064]** Preferably, the hooking elements 28 are two pairs. In such a case, each second end portion 22, 23 comprises a pair of hooking elements 28.

**[0065]** According to the preferred embodiment, the fastener 30 is interlockingly coupled with the first half-shell 10. In other words, the fastener 30 is a separate body from the first half shell 10.

**[0066]** Advantageously, the assembly of the case 100, explained below, is simplified. According to this embodiment, the respective first end portion 12, 13 has an opening 120, 130 in which the fastener 30 is engaged.

**[0067]** Alternatively, the fastener 30 is made in one piece with the first half-shell 10. In that case, the recess 31 and cam 41 are made on the respective first end portion 12, 13. In accordance with embodiments of the present invention, the spring element 42 may be a linear spring, a torsion spring, a coil spring, or others.

**[0068]** According to an embodiment of the present

invention, not shown in the figures, the recall mechanism 40 comprises a first magnet coupled to the fastener 30 and a second magnet coupled to the respective second end portion 22, 23. The first magnet and the second magnet have reversed polarity with each other.

**[0069]** When case 100 is in the closing configuration, the first magnet and the second magnet are aligned with each other. In that case, the magnetic attraction between them keeps the case 100 in the closing configuration.

**[0070]** When case 100 is in the opening configuration, the first magnet and the second magnet are misaligned with each other. In that case, the magnetic attraction between them rotates the first half-shell 10 so that case 100 can switch to the closing configuration.

**[0071]** In accordance with other embodiments, the recall mechanism 40 may comprise elastic bands or a compliant mechanism.

**[0072]** Preferably, the first half-shell 10 and/or the second half-shell 20 are made of an injection moldable polymer and/or a bio-polymer.

**[0073]** For example, the first half-shell 10 and/or the second half-shell 20 are made of polylactic acid (PLA) with wood inclusions.

**[0074]** Alternatively, the first half shell 10 and/or the second half shell 20 are made of polyhydroxyalkanoate (PHA) .

**[0075]** The assembly of the case 100 according to the preferred embodiment of the present invention is as follows.

**[0076]** Initially, the elastic element 42 is placed on the respective second end portion 22, 23 by engaging said elastic element 42 to the respective hooking element 28.

**[0077]** Next, the first half-shell 10 is assembled on the second half-shell 20 such that the respective first end portion 12, 13 faces the respective second end portion 22, 23. Specifically, the first half shell 10 is inserted into the containment seat 24 such that the first end portions 12, 13 and the first wall 11 are at least partially contained in the second half shell 20. Once the first half shell 10 is assembled, the fastener 30 is placed on the respective first end portion 12, 13, orienting the fastener 30 so that the cam 41 faces the respective second end portion 22, 23 and so that the cam 41 is in contact with the spring element 42 when the fastener 30 is assembled.

**[0078]** Advantageously, the case can be easily opened with one hand due to the special design of the first half-shell and the second half-shell jointly with the way in which the first half-shell is constrained inside the second half-shell.

**[0079]** The described housing also allows the volume of the housing chamber to be optimized.

**[0080]** From the description made, the features of the case that is the subject of the present invention are clear, as are the advantages thereof.

**[0081]** Finally, it is clear that the case thus designed is susceptible to numerous modifications and variations, all of which are within the scope of the invention; furthermore, all details are replaceable by technically equivalent

elements. In practice, the materials used, as well as the dimensions, may be any according to technical requirements.

## Claims

1. Case (100) extending in length along a longitudinal direction (Y) and comprising:

- a first half-shell (10) at least partially open having two first end portions (12, 13) opposite each other and transverse to the longitudinal direction (Y), and a first wall (11) substantially U-shaped; said first wall (11) extending between said first end portions (12, 13) along said longitudinal direction (Y) and defining a housing chamber (14);

- a second half-shell (20) at least partially open having two second end portions (22, 23) opposite to each other and transverse to the longitudinal direction (Y), and a second wall (21) extending between said second end portions (22, 23) along said longitudinal direction (Y) defining a containment seat (24); said first half-shell (10) being inserted into said containment seat (24) defining a closed space (24') of varying dimensions;

- coupling means (25, 30, 31) placed at said first end portions (12, 13) and said second end portions (22, 23), said coupling means (25, 30, 31) rotatably coupling said first half-shell (10) and said second half-shell (20) in such a manner that said first half-shell (10) and said second half-shell (20) can rotate with each other about a common axis of rotation (X) substantially parallel to the longitudinal direction (Y) to switch said case (100) between an opening configuration, in which said housing chamber (14) faces outward and said closed space (24') is separated from said housing chamber (14), and a closing configuration, in which said housing chamber (14) is closed by said second wall (21) and is contained in said closed space (24').

2. Case (100) according to claim 1, wherein said coupling means (25, 30, 31) comprise:

- a pin (25) extending from one of said second end portions (22, 23) defining said axis of rotation (X);

- a fastener (30) integral with a respective first end portion (12, 13), said fastener (30) comprising a recess (31) in which said pin (25) is housed.

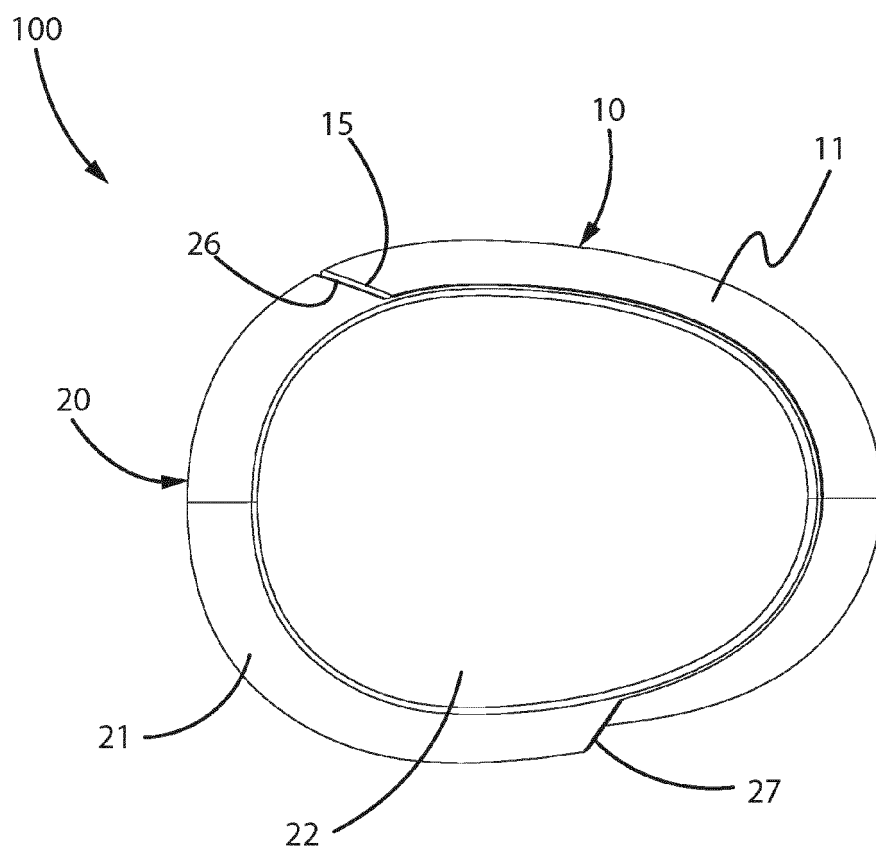
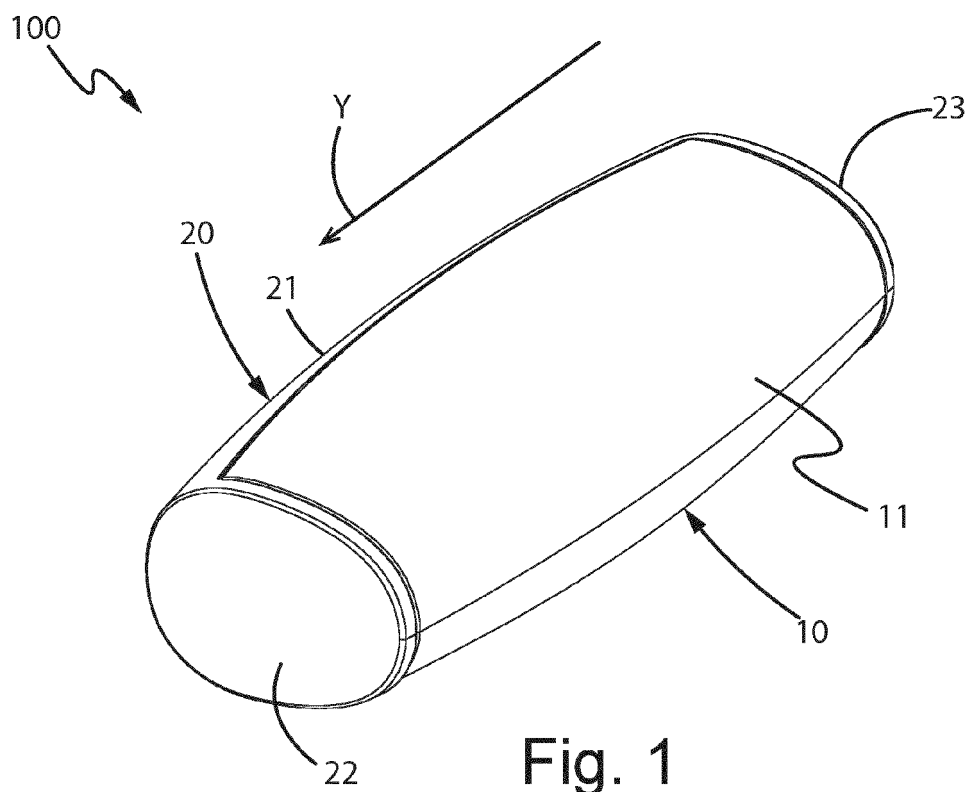
3. Case (100) according to claim 1 or 2, wherein said first half-shell (10) has a first edge (15) and said second half-shell (20) has a second edge (26), said

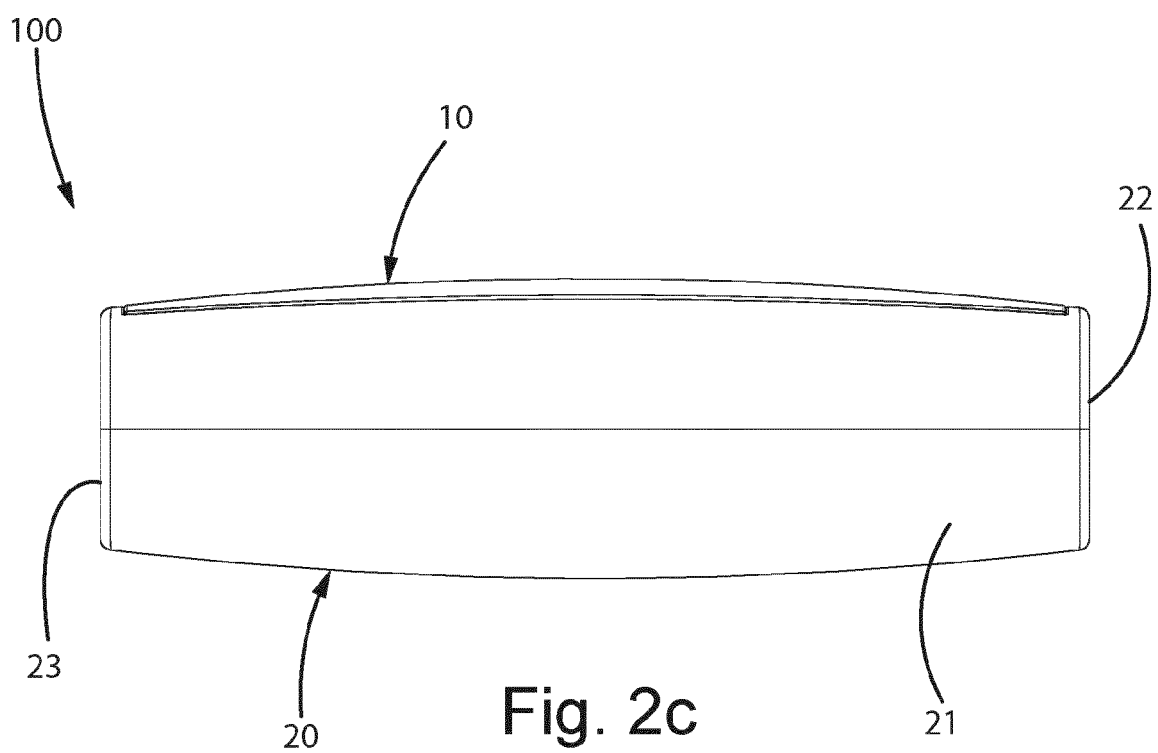
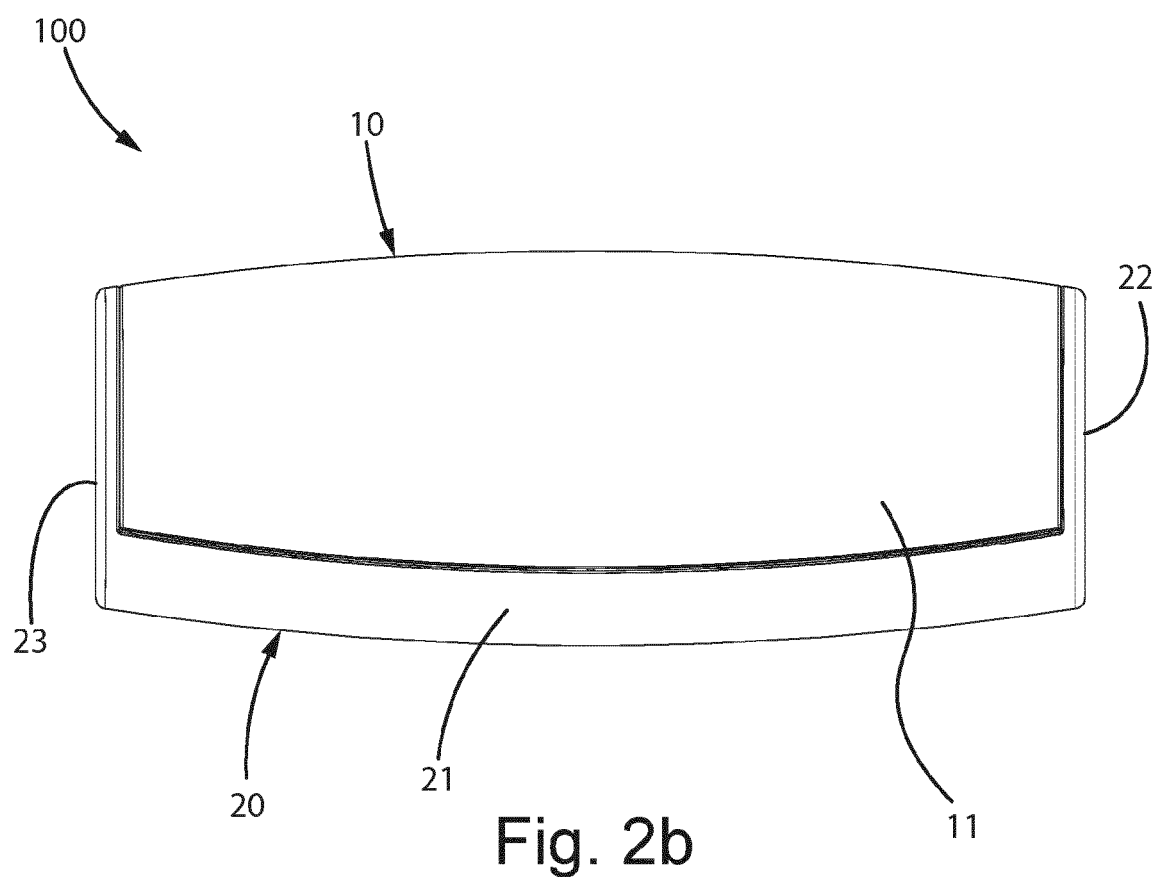
first edge (15) and said second edge (26) being configured to be abutting each other when said case (100) is in the closing configuration.

4. Case (100) according to one of the preceding claims, wherein said second half-shell has a third edge (27) opposite to the second edge (26), said third edge (27) being configured to abut with said first wall (11) when said case (100) is in the opening configuration. 5  
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5. Case (100) according to one of the preceding claims, comprising a recall mechanism (40) configured to pull said first half-shell (10) into rotation when said case (100) is in the opening configuration to return it to the closing configuration. 15
6. Case (100) according to claim 5, wherein said recall mechanism (40) comprises:
  - a cam (41) integral with a respective first end portion (12, 13), 20
  - an elastic element (42) coupled to a respective second end portion (22, 23) and at least partially in contact with said cam (41), 25

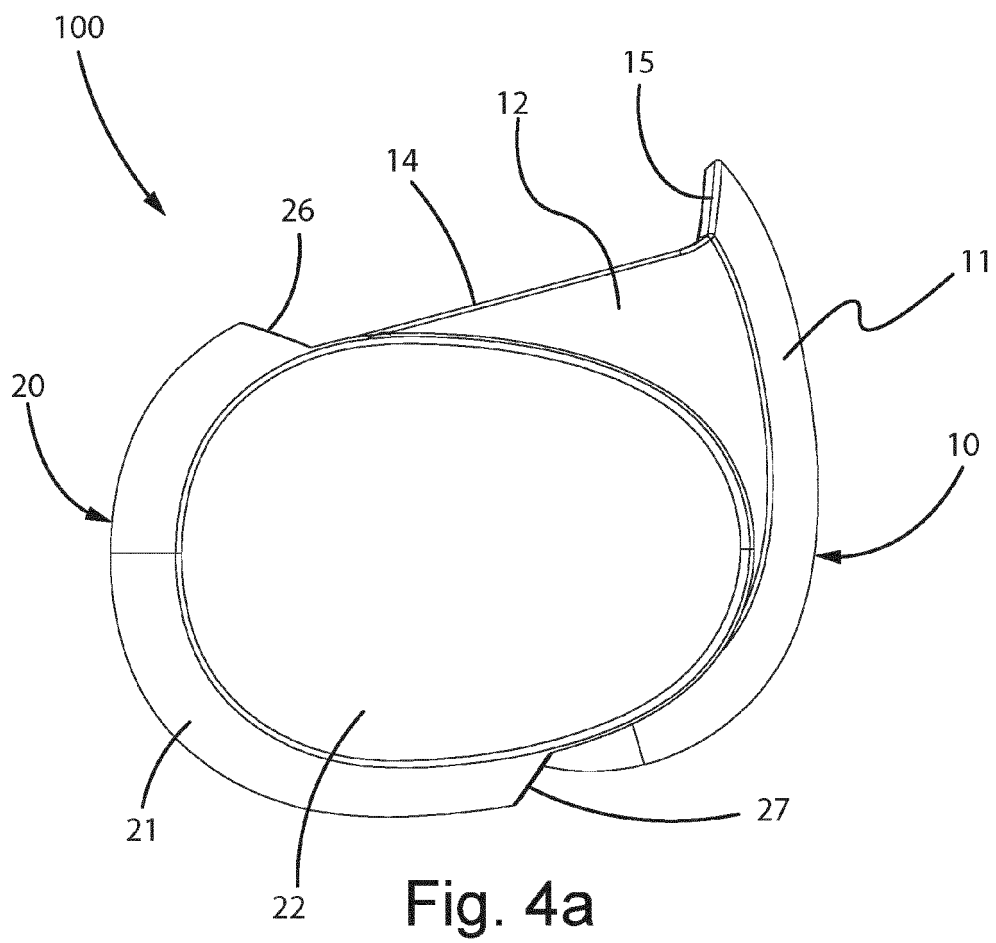
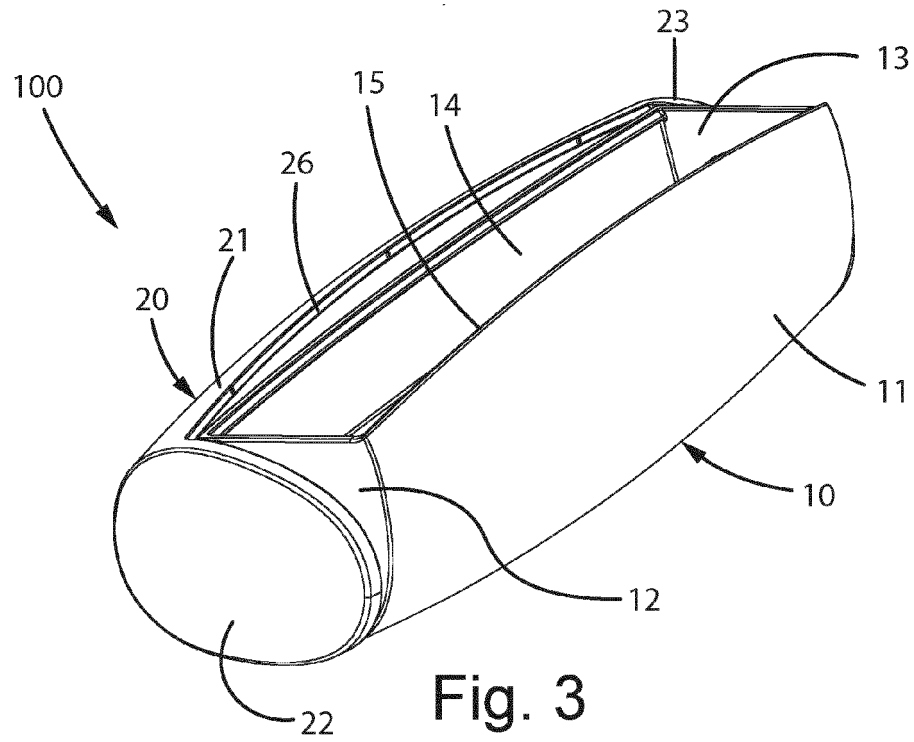
said cam (41) being configured to load said elastic element (42) with a load moment when the case (100) switches from the closing configuration to the opening configuration. 30
7. Case (100) according to claim 6, wherein at least one of said two second end portions (22, 23) comprises one or more hooking elements (28) for positioning said elastic element (42). 35
8. Case (100) according to any of claims 2 to 7, wherein said fasteners (30) are two in number and each is disposed at a respective first end portion (12, 13); said pins (25) being two in number and each extending from a respective second end portion (22, 23), each second end portion (22, 23) comprising said one or more hooking elements (28). 40
9. Case (100) according to any of claims 2 to 8, wherein said fastener (30) is coupled by interlocking with said first half-shell (10). 45
10. Case (100) according to any of the preceding claims, wherein said housing chamber (14) is suitable for holding a pair of eyeglasses (200); said case (100) being an eyeglass case. 50

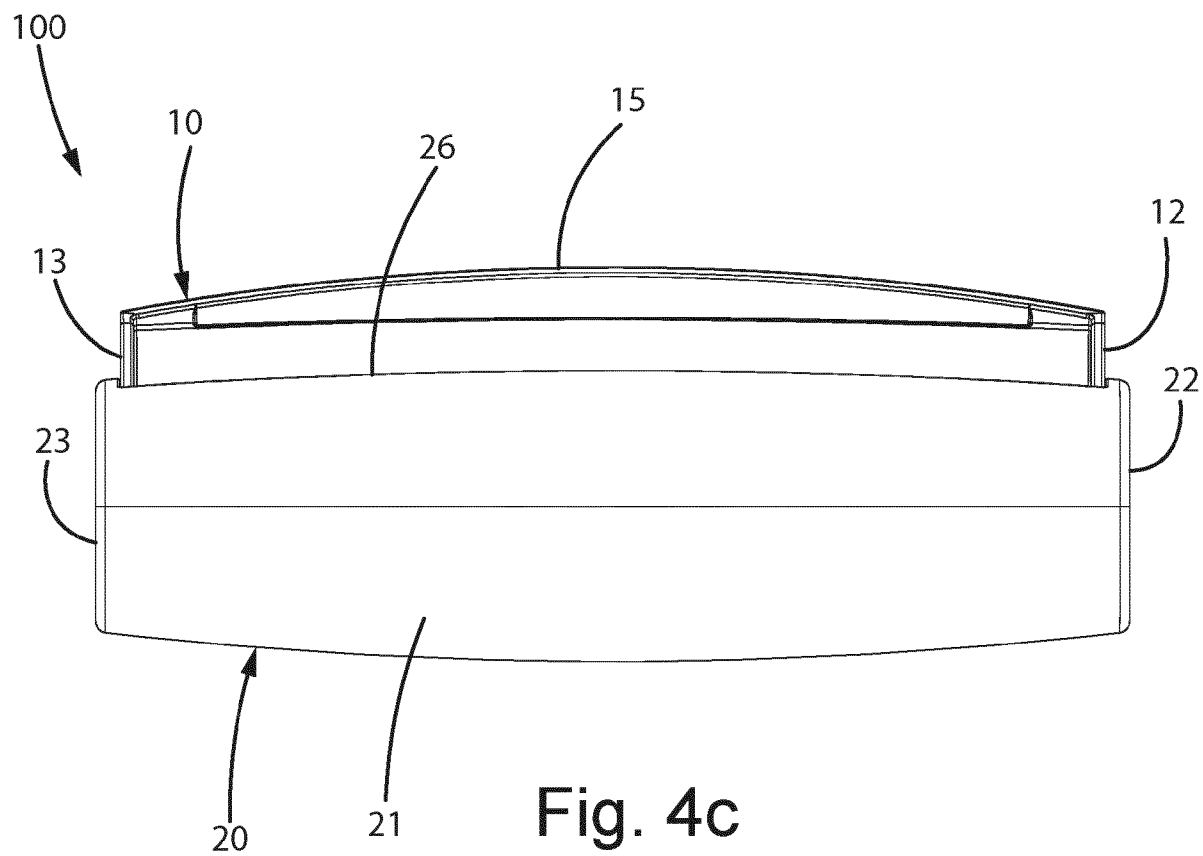
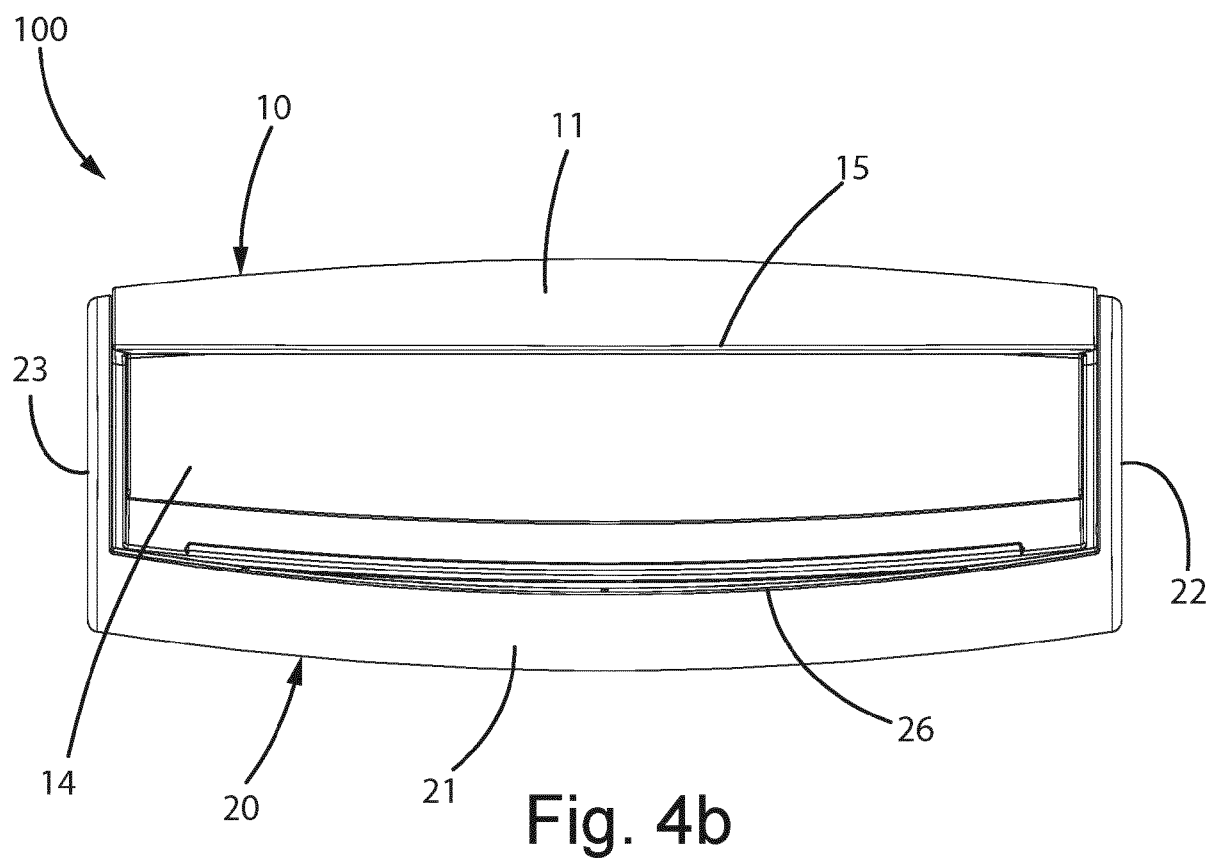
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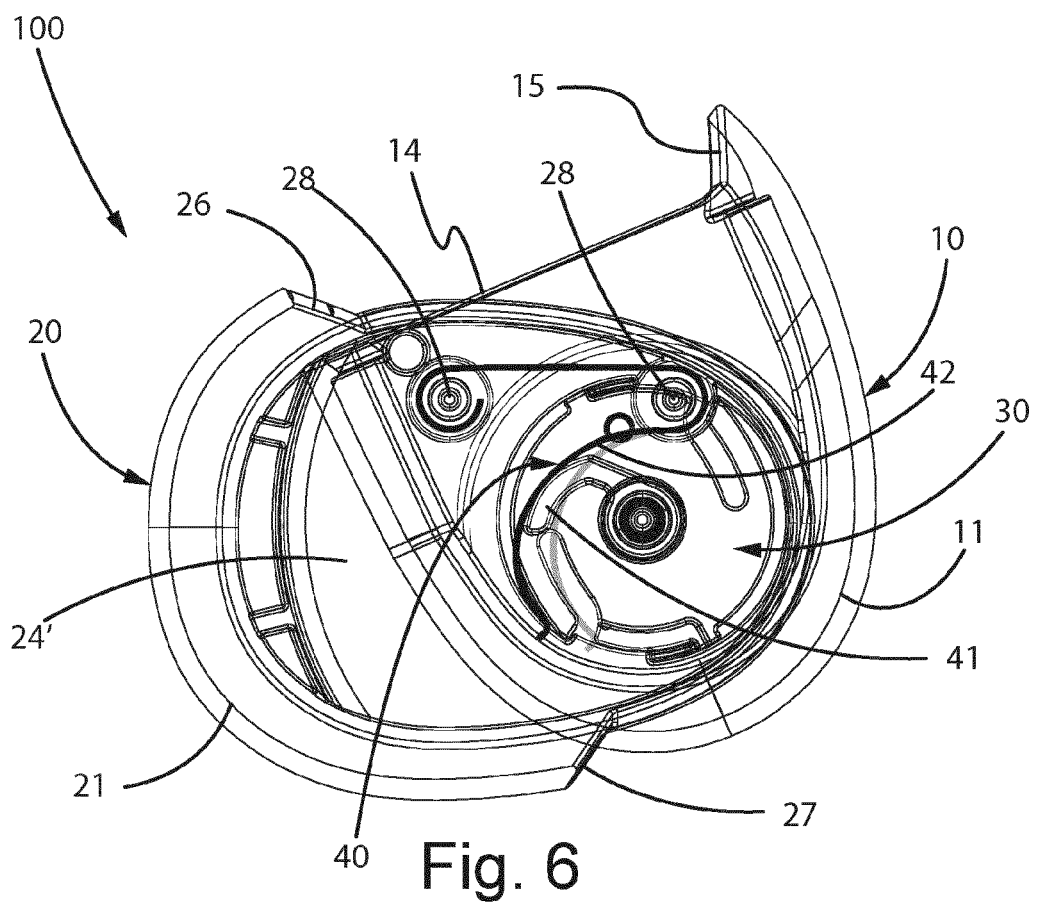
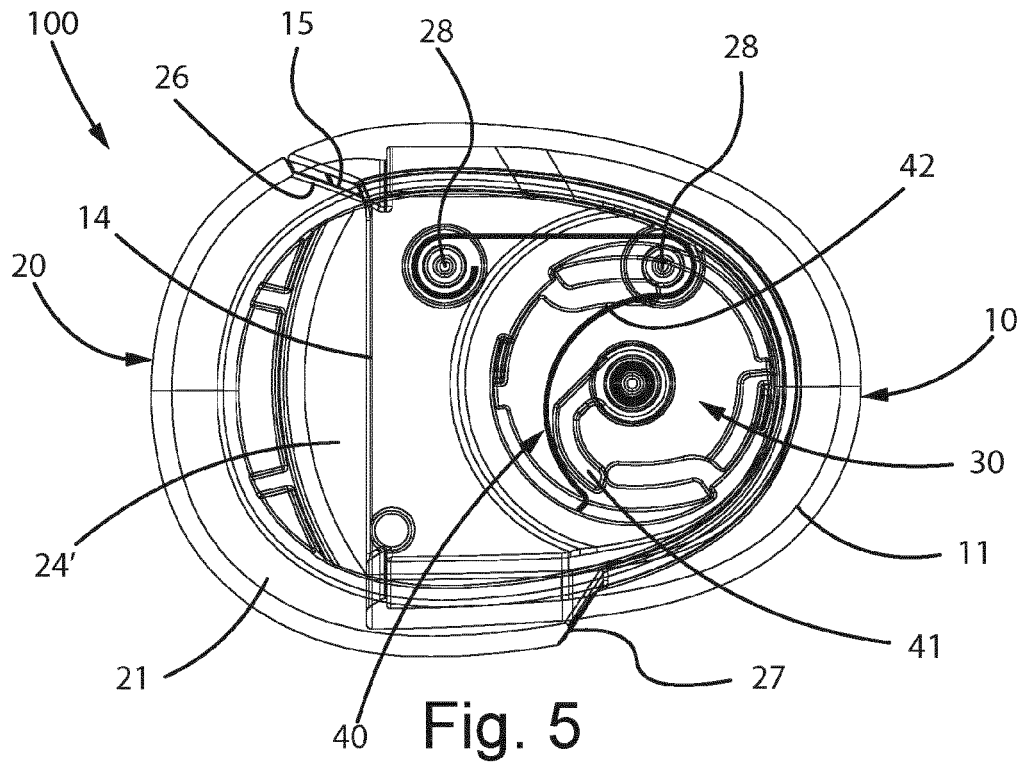












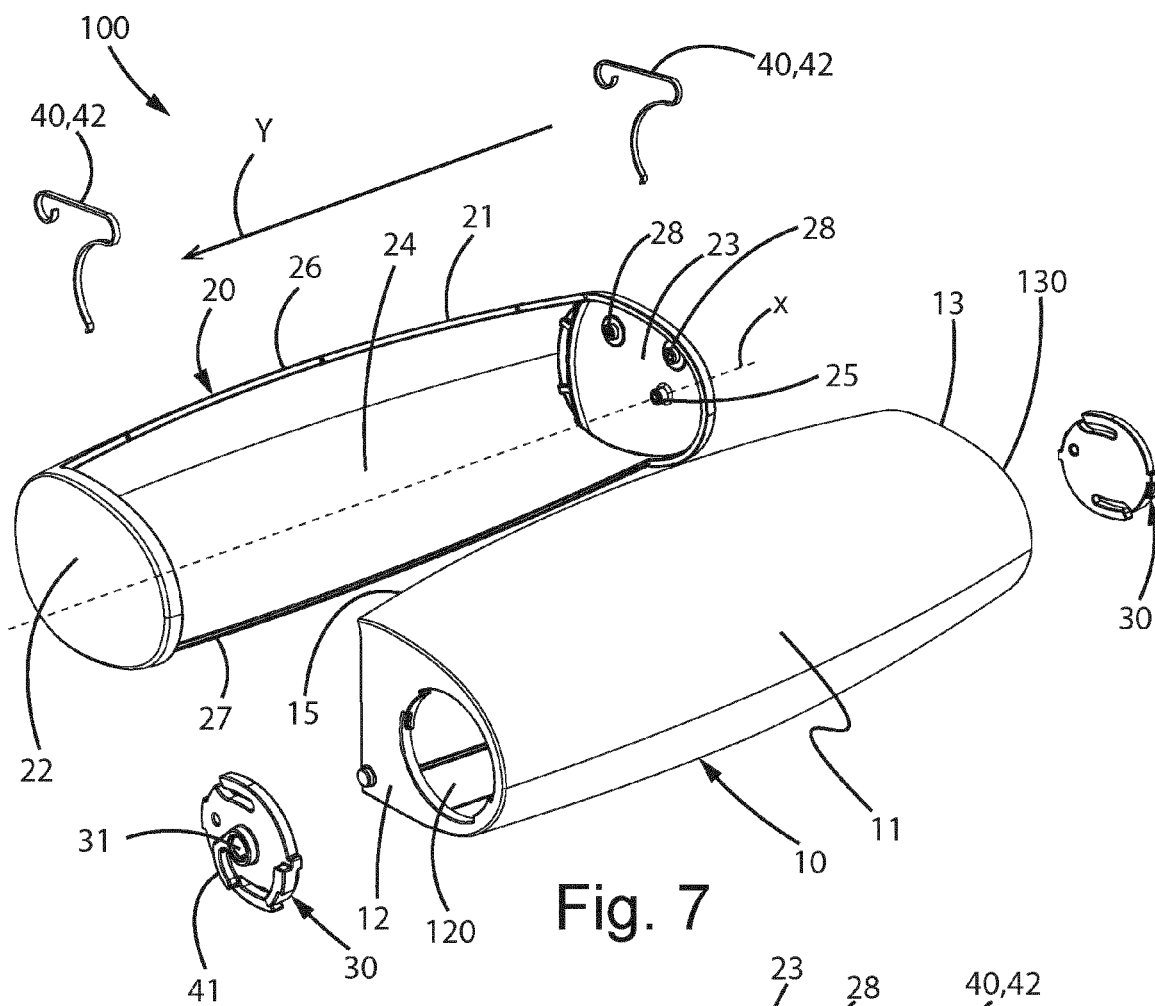
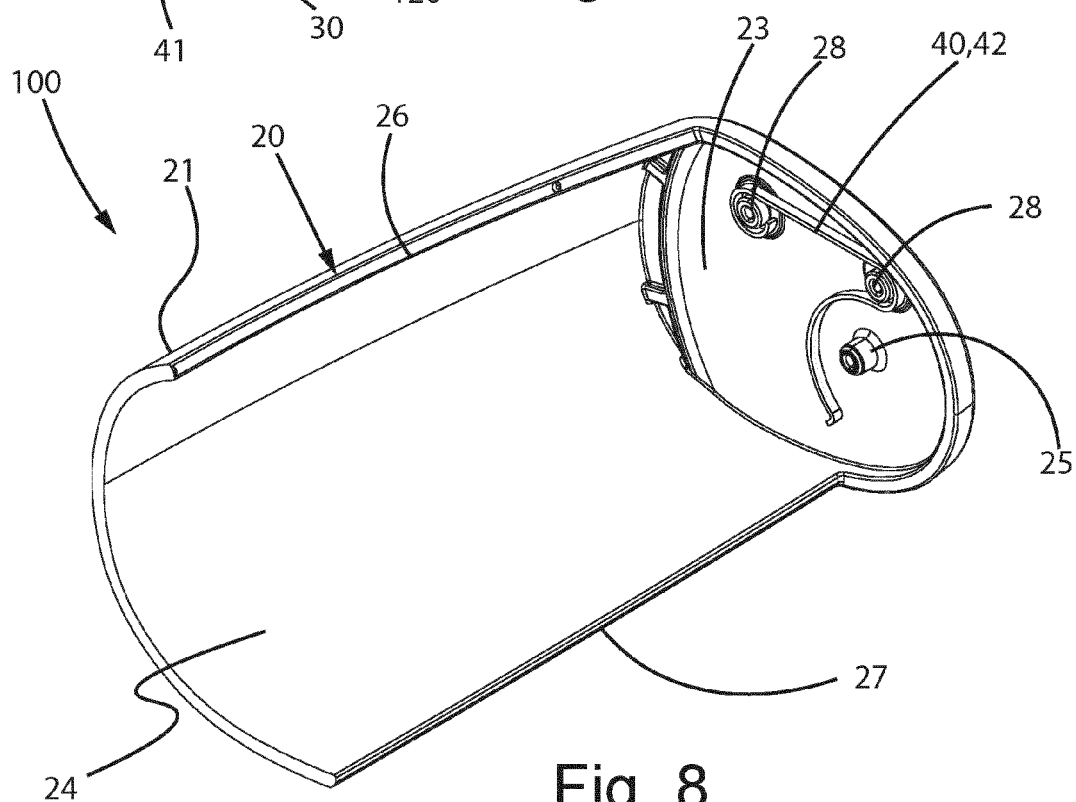


Fig. 7



**Fig. 8**

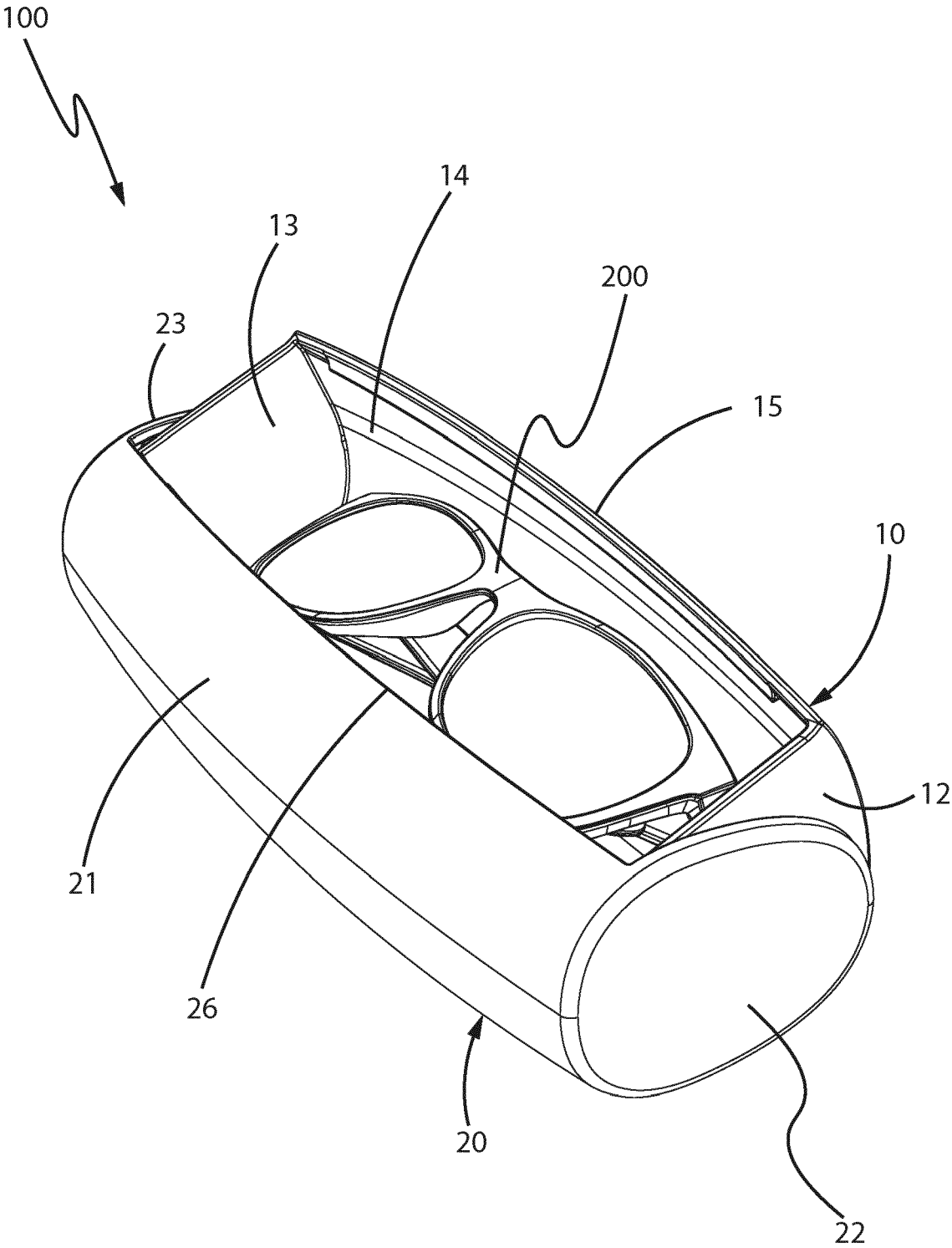


Fig. 9



## EUROPEAN SEARCH REPORT

Application Number

EP 24 18 3048

## 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	KR 200 332 044 Y1 (UNKNOWN) 3 November 2003 (2003-11-03)	1-4,8-10	INV. A45C11/04
A	* paragraphs [0024] - [0031]; figures * -----	5-7	A45C13/00
X	CN 218 483 943 U (QINGDAO HUILU ORGANOSILICONE CO LTD) 17 February 2023 (2023-02-17)	1-4,8-10	
A	* abstract; figures * -----	5-7	
A	US 5 775 761 A (ASAMI GORO [JP] ET AL) 7 July 1998 (1998-07-07) * claims; figures *	1-10	
A	CN 208 149 187 U (ANHUI JIANGHUAI AUTOMOBILE GROUP CORP LTD) 27 November 2018 (2018-11-27) * abstract; figures * -----	1-10	
			TECHNICAL FIELDS SEARCHED (IPC)
			A45C
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
The Hague		23 August 2024	Zattoni, Federico
CATEGORY OF CITED DOCUMENTS			
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# ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO.

EP 24 18 3048

5

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.

23 - 08 - 2024

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Patent document cited in search report		Publication date	Patent family member(s)	Publication date
KR 200332044	Y1	03-11-2003	NONE	
-----				
CN 218483943	U	17-02-2023	NONE	
-----				
US 5775761	A	07-07-1998	JP 3451156 B2	29-09-2003
			JP H09169245 A	30-06-1997
			US 5775761 A	07-07-1998
-----				
CN 208149187	U	27-11-2018	NONE	
-----				

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EPO FORM P0459

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