



(12) **EUROPEAN PATENT APPLICATION**
published in accordance with Art. 153(4) EPC

(43) Date of publication:
23.07.2014 Bulletin 2014/30

(51) Int Cl.:
G09F 3/03 (2006.01)

(21) Application number: **12832331.8**

(86) International application number:
PCT/IB2012/054680

(22) Date of filing: **10.09.2012**

(87) International publication number:
WO 2013/038321 (21.03.2013 Gazette 2013/12)

(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

(72) Inventor: **BAUCELLS GRANELL, Jaime**
E-08120 La Llagosta, Barcelona (ES)

(30) Priority: **16.09.2011 ES 201131499 P**

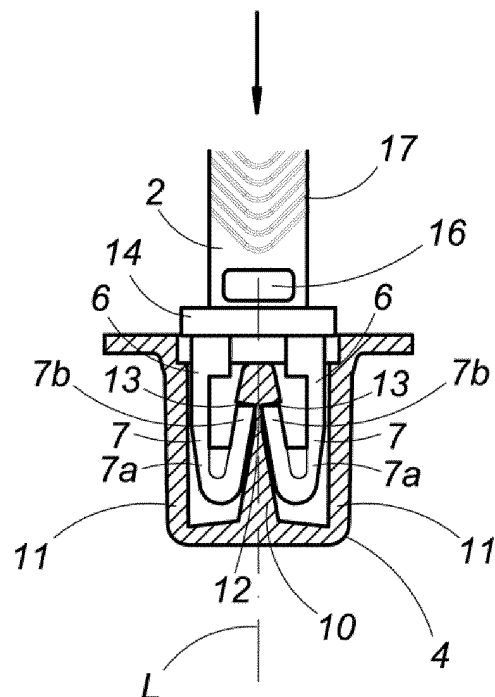
(74) Representative: **Pons Ariño, Angel**
Pons Patentes y Marcas Internacional, S.L.
Glorieta Rubén Darío 4
28010 Madrid (ES)

(71) Applicant: **Precintia International, S.A.**
08120 La Llagosta (Barcelona) (ES)

(54) **SEAL**

(57) It comprises a flexible strip (2) with a first fastening element (4) and a second fastening element (5), the second fastening element (5) comprising at least one pair of elastic arms (6) and each elastic arm (6) comprising a contact part (7, 7b) that can be press-coupled in an inner cavity (8) of the first fastening element (4). The arms (6) comprise two positions: a first position, wherein the respective contact parts (7, 7b) of each arm (6) are deflected away from one another when inserted into the cavity (8), and a second position, wherein the contact parts (7, 7b) are deflected towards one another and wherein each contact part (7, 7b) interacts with a corresponding surface (13) of the cavity (8) in order to close the seal (1).

Fig.7



Description

[0001] The present invention relates to a safety seal.

BACKGROUND OF THE INVENTION

[0002] Safety seals are known comprising an elongated and flexible strip which closes by way of a loop over itself, disposing one of its ends inside a housing formed in the other end thereof. Once the end of the strip is disposed inside the housing, said end cannot be removed from said housing, thanks to the locking mechanism which allows the introduction of the end in the housing but avoids its later removal in the opposite direction.

[0003] A known embodiment of said locking mechanisms consists of a pair of elastic arms disposed in a fork shape at one of the ends of the seal strip and designed to be coupled to the inside of a cavity of a body disposed at the other end of the strip. Said elastic arms normally have an arrow shape and are press-coupled to inner walls of the cavity formed correspondingly.

[0004] The elastic arms and the cavity are configured so that, when the arms are introduced in the cavity, a part of said arms is compressed inward by the cavity walls. By continuing to introduce the arms in the cavity, each of said parts reaches an area of the cavity wherein said parts are deflected outward, thanks to the elasticity of the arms. At this point, the deflected parts of each arm rest on edges or housings of the cavity, so that the arms cannot be removed from the cavity and, therefore, the seal is closed and can only be opened by destruction thereof.

[0005] Examples of this type of locking mechanism are disclosed in EP 0 634 735 A and WO 96/18985 A.

[0006] A drawback of the locking mechanism disclosed consists of the part of the arms that are coupled in the cavity, and which allow the seal to be closed, are situated in the outer area of the cavity. The outer area of the cavity is the most accessible from the outside of the seal and the most vulnerable, so that, by the introduction of a sharp object between the outer wall of the cavity and the arms, it could be possible to deflect the arms inward and open the seal without any evidence that the seal has been manipulated.

[0007] Likewise, in many of the seals that incorporate the locking mechanisms described above, the cavity comprises additional openings situated opposite the main entrance opening of the cavity. These openings serve so that part of the arms passes therethrough when said arms have been coupled to the cavity, indicating to the user that the seal has been correctly closed.

[0008] Evidently, these additional openings constitute a vulnerable point of the seal, since it is possible to access the inside of the cavity and the arms therethrough.

DESCRIPTION OF THE INVENTION

[0009] The objective of the present invention is to re-

solve the drawbacks presented by the devices known in the state of the art, by providing a seal comprising a flexible strip, a first fastening element disposed on one area of the strip and a second fastening element disposed at one end of the strip, the second fastening element comprising at least one pair of elastic arms and each elastic arm comprising a contact part that can be pressure-fitted in an inner cavity of the first fastening element, characterized in that the arms comprise two positions: a first position, wherein the respective contact parts of each arm are deflected away from one another when inserted into the inner cavity, and a second position, wherein the contact parts are deflected towards one another and wherein each contact part interacts with a corresponding contact surface of the inner cavity locking the second fastening element inside the first fastening element.

[0010] Thanks to these characteristics, the closure of the seal of the present invention is carried out by the mutual approximation of one part of each arm, i.e. the arms are locked in the cavity by the displacement of each of said parts towards the central area of the cavity. In other words, in the locking position, the parts of the arms coupled to the cavity are situated in the inner area of the cavity, and not in the outer area of the cavity.

[0011] The inner area of the cavity is less accessible from the outside of the seal than the outer area of the cavity, which makes it possible to better protect the coupling area between the arms and the cavity and hinders the manipulation of the seal by introducing objects between the cavity and the arms.

[0012] Advantageously, in the first position of the arms, the contact parts of the arms are distanced with respect to a central longitudinal axis of the cavity and, in the second position of the arms, the contact parts of the arms are situated closer to the central longitudinal axis of the cavity.

[0013] When the arms are introduced in the cavity, the contact parts of the arms are deflected outward by walls of the cavity and, then, they are deflected inward by the elasticity of the arms, being coupled to an inner area of the cavity and closing the seal.

[0014] Preferably, the contact part of each arm comprises a free end of the arm which is substantially U-shaped.

[0015] Thanks to this form, the arms can be slid through the cavity when they are introduced therein and they are locked inside on reaching a certain position.

[0016] According to the present invention, the inner cavity extends through the first fastening element longitudinally with respect to the direction of introduction of the second fastening element in the first fastening element and is open to the exterior only in the insertion side of the second fastening element in the first fastening element.

[0017] Thanks to these features, the cavity only has one opening for the insertion of the arms. In other words, the cavity has the form of a tunnel or blind orifice, so that it is not possible to access the interior of the cavity from

the bottom of the cavity.

[0018] Preferably, the inner cavity has a longitudinal section which is substantially U-shaped.

[0019] Each of the legs of the U-shape of the cavity houses a corresponding arm.

[0020] Also preferably, the contact surface of the inner cavity comprises an edge situated in the central area of the cavity.

[0021] As previously described, the central area of the cavity is less accessible from the outside of the seal and is less vulnerable than the outer area of the cavity, so that the contact parts of the arms which interact with said edge in order to close the seal are more protected.

BRIEF DESCRIPTION OF THE DRAWINGS

[0022] In order to aid towards the description of the aforementioned, drawings are attached wherein, diagrammatically and only by way of non-limiting example, a practical embodiment of the seal of the invention is represented, wherein:

figure 1 is a top perspective view of the seal according to the present invention in open state;
figure 2 is a bottom perspective view of the seal according to the present invention in open state;
figure 3 is an enlarged top plan view of the second fastening means of the seal;
figure 4 is a perspective view of the seal according to the present invention in closed state;
figures 5 to 8 are schematic views which show stages of the closing procedure of the seal according to the present invention.

DESCRIPTION OF A PREFERRED EMBODIMENT

[0023] As can be observed in figures 1 and 2, the present invention consists of a seal (1) comprising a flat flexible strip (2). The strip (2) includes a flat body (3) and a housing (4) at one of its ends and a fastening element (5) at its other end. As specifically shown in figure 4, the seal (1) is designed to be closed by folding the strip (2) over itself and forming a loop by the introduction of the fastening element (5) in the housing (4).

[0024] In the closed position of the seal (1) shown in figure 4, the fastening element (5) can be coupled and fastened inside the housing (4) without possibility of removal, so that it is possible to seal an object thanks to the loop formed by the strip (2).

[0025] The flat body (3) serves to dispose thereon a label or inscription related to the product to be sealed.

[0026] As can be clearly observed in figure 3, the fastening element (5) comprises a pair of substantially parallel elastic arms (6) which extend longitudinally with respect to the strip (2) from one of its ends. Each arm (6) comprises at its free end a contact part (7) which is substantially U-shaped. Each contact part (7) comprises a first half (7a) and a second half (7b). Both halves form

an acute angle with one another and are slightly inclined with respect to the longitudinal axis of the strip (2). The first half (7a) extends away from the strip (2) from the initial portion of the corresponding arm (6). The second half (7b) extends towards the strip (2) from an intermediate curved part which connects both halves (7a), (7b).

[0027] The housing (4) comprises a prismatic hollow body which is situated on one of the faces of the flat body (3), close to the strip (2), and which extends substantially perpendicular with respect to the plane formed by said strip (2) and said flat body (3).

[0028] The housing (4) includes an inner cavity (8) (see figures 5 to 8) which also extends essentially perpendicular with respect to the plane formed by the strip (2) and the flat body (3), and which is communicated with the exterior through a main opening (9), situated at the end of the housing (4) adjacent to the flat body (3). The inner cavity (8) of the housing (4) has a longitudinal section which is substantially U-shaped, and comprises a central wall (10) which separates the two legs of the U.

[0029] The closing process of the seal (1) of the present invention is detailed below.

[0030] As explained above, the seal (1) is designed to be closed by folding the strip (2) over itself and forming a loop by the introduction of the fastening element (5) in the housing (4), i.e. by the introduction of the arms (6) in the inner cavity (8) of the housing (4).

[0031] Figure 5 shows a preliminary stage wherein the fastening element (5) has not yet been introduced in the housing (4) and wherein the arms (6) and the respective contact parts (7) are in resting position.

[0032] In figure 6, the fastening element (5) has been partially introduced in the cavity (8) of the housing (4), through the opening (9). Each arm (6) and its corresponding contact part (7) are disposed between the outer wall (11) of the cavity (8) and a widening zone (12) of the central wall (10) of the cavity (8). Since the free space between the outer wall (11) and the widening zone (12) is smaller than the width of the contact part (7) in resting state, said contact part (7) is compressed, so that the half (7b) is deflected towards the half (7a), away from the central longitudinal axis of the cavity (8) and from the other half (7b) of the other arm (6).

[0033] In figure 7, the fastening element (5) has continued to be introduced in the cavity (8) of the housing (4). As can be observed, the halves (7b) of each contact part (7) of each respective arm (6) have exceeded the area of the widening zone (12) of the central wall (10), so that they have reached an area of the cavity (8) wherein the available free space is substantially the same as the width of the contact part (7) in resting state. This means the contact parts (7) tend to recover their resting position thanks to their elasticity, i.e. the contact parts (7) expand and the respective halves (7a) and (7b) of each contact part (7) move away from one another, the halves (7b) of each arm (6) being deflected towards the central longitudinal axis (L) and towards one another.

[0034] After this displacement, the halves (7b) remain

disposed adjacent to a corresponding edge (13) of the widening zone (12), the surface of which is substantially perpendicular to the direction of introduction of the fastening element (5) in the cavity (8). In this position of the halves (7b), in the event that someone pulls the strip (2) outward to remove the fastening element (5) from the cavity (8) and open the seal (1), the halves (7b) rest on said edges (13), so that they make it impossible to remove the fastening element (5) from the cavity (8).

[0035] As can be observed, the widening zone (12) has a substantially conical longitudinal section which widens in the direction of introduction of the fastening element (5) in the cavity (8). This form of the widening zone (12) facilitates compression of the contact parts (7) when starting to introduce the fastening element (5) in the cavity (8) (figure 6). Likewise, if the seal (1) has not been correctly closed (i.e. if the halves (7b) have not reached the position shown in figure 7), the conical nature of the widening zone (12) tends to displace the contact parts (7) out of the cavity (8), since the contact parts (7) tend to recover their expanded rested position and the form or ramp of the widening zone (12), which favours the displacement of said contact parts (7) outward. In this way, the user will immediately perceive that the seal has not been correctly closed.

[0036] As can be observed, when the seal (1) is closed (figures 7 and 8), the halves (7b) which avoid the removal of the fastening element (5) of the cavity (8) and, therefore, the opening of the seal (1), are disposed in the central area of the cavity (8), totally protected from access thereto from the outside.

[0037] On the other hand, since the housing (4) only has one opening (9) of access to the inside of the cavity (8), it is impossible to access the cavity (8) from the outside from other openings situated in the bottom of the cavity (8), as was the case of the devices of the prior art.

[0038] The seal (1) comprises a rim (14) between the strip (2) and the fastening element (5). This rim (14) fits into a corresponding mouth (15) which forms part of the opening (9) of the cavity (8) and hinders access to the inside of the cavity (8) when the fastening element (5) is locked inside the cavity (8) and the seal (1) has been closed (figure 8).

[0039] The strip (2) further comprises weakening areas (16) beside the tag (3), close to the housing (4), and beside the fastening element (5). Said weakening areas (16) consist of rectangular openings that traverse the strip (2) and which make it possible to break the seal (1) manually where necessary.

[0040] Likewise, the strip (2) comprises a rough gripping area (17) situated close to the fastening element (5). In the present embodiment, said gripping area (17) comprises a plurality of curved elements in relief present on the surface of both faces of the strip (2). The gripping area (17) allows the user to effectively hold the strip (2) with his fingers and facilitate the introduction of the fastening element (5) in the cavity (8) of the housing (4) in order to close the seal (1).

[0041] The seal (1) shall be made in materials with suitable flexibility and resistance that allow achieving the described characteristics, such as polypropylene.

Claims

1. Seal (1) comprising a flexible strip (2), a first fastening element (4) disposed on an area of the strip (2) and a second fastening element (5) disposed at one end of the strip (2), the second fastening element (5) comprising at least one pair of elastic arms (6) and each elastic arm (6) comprising a contact part (7, 7b) that can be pressure-fitted in an inner cavity (8) of the first fastening element (4), **characterized in that** the arms (6) comprise two positions: a first position, wherein the respective contact parts (7, 7b) of each arm (6) are deflected away from one another when inserted into the inner cavity (8), and a second position, wherein the contact parts (7, 7b) are deflected towards one another and wherein each contact part (7, 7b) interacts with a corresponding contact surface (13) of the inner cavity (8) locking the second fastening element (5) inside the first fastening element (4).
2. Seal (1) according to claim 1, wherein, in the first position of the arms (6), the contact parts (7, 7b) of the arms (6) are distanced with respect to a central longitudinal axis (L) of the cavity (8) and, in the second position of the arms (6), the contact parts (7, 7b) of the arms (6) are situated closer to the central longitudinal axis (L) of the cavity (8).
3. Seal (1) according to claim 1 or 2, wherein the contact part (7) of each arm (6) comprises a free end of the arm (6) which is substantially U-shaped.
4. Seal (1) according to any of the preceding claims, wherein the inner cavity (8) extends through the first fastening element (4) longitudinally with respect to the direction of introduction of the second fastening element (5) in the first fastening element (4) and is open to the exterior only in the insertion side of the second fastening element (5) in the first fastening element (4).
5. Seal (1) according to claim 4, wherein the inner cavity (8) has a longitudinal section which is substantially U-shaped.
6. Seal (1) according to any of the preceding claims, wherein the contact surface of the inner cavity comprises an edge (13) situated in the central area of the cavity (8).

Fig.1

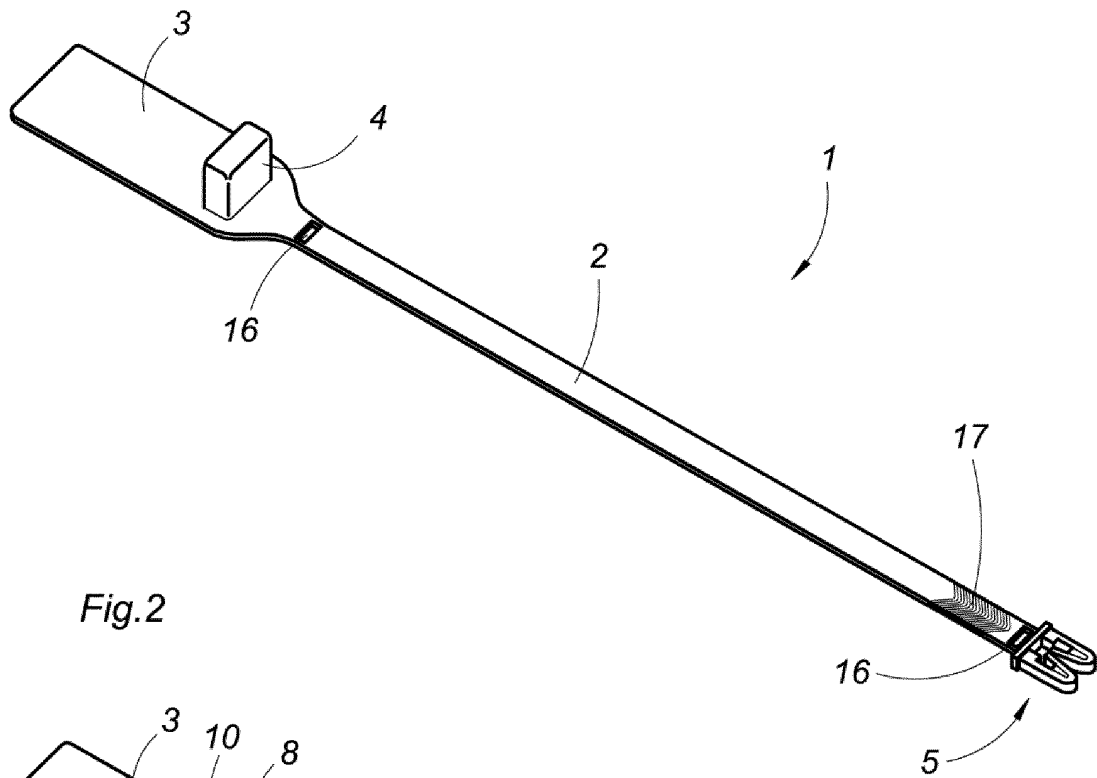


Fig.2

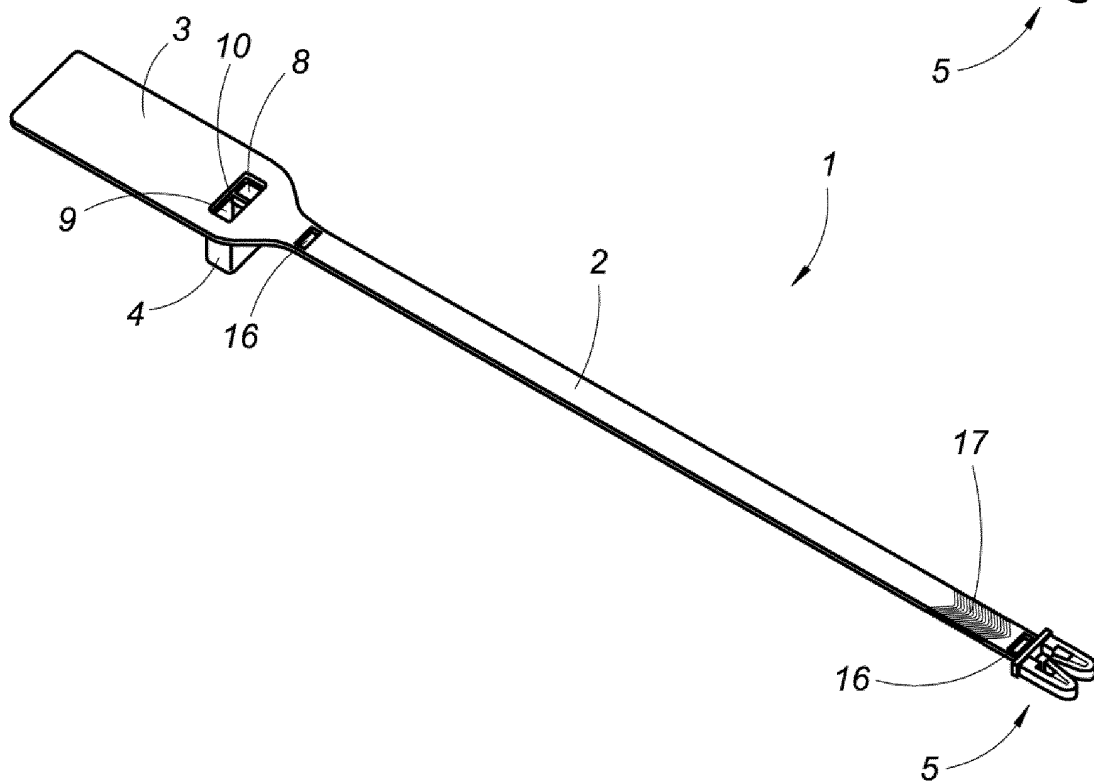


Fig.3

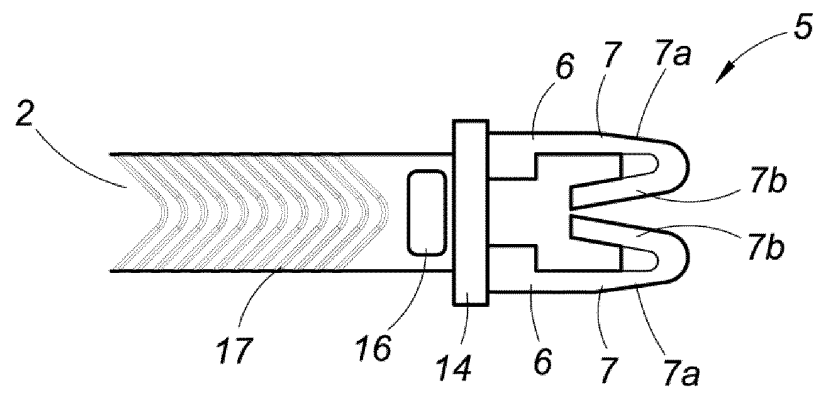


Fig.4

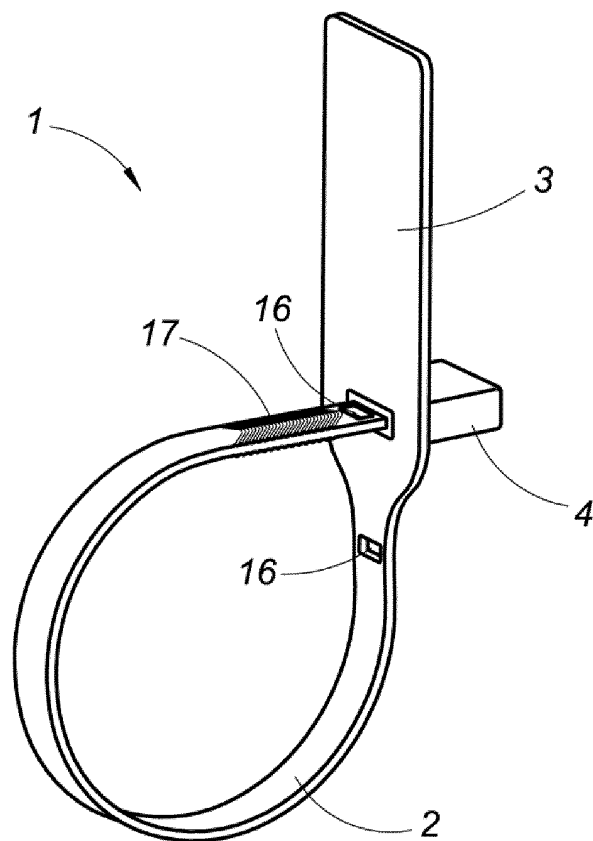


Fig.6

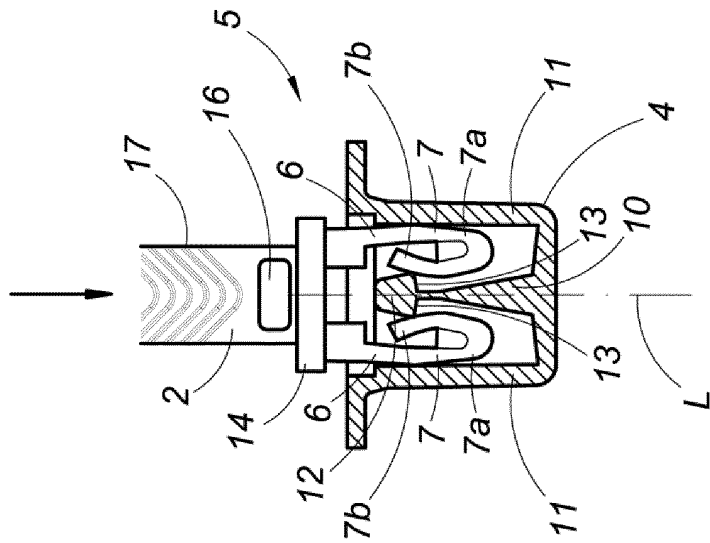


Fig.5

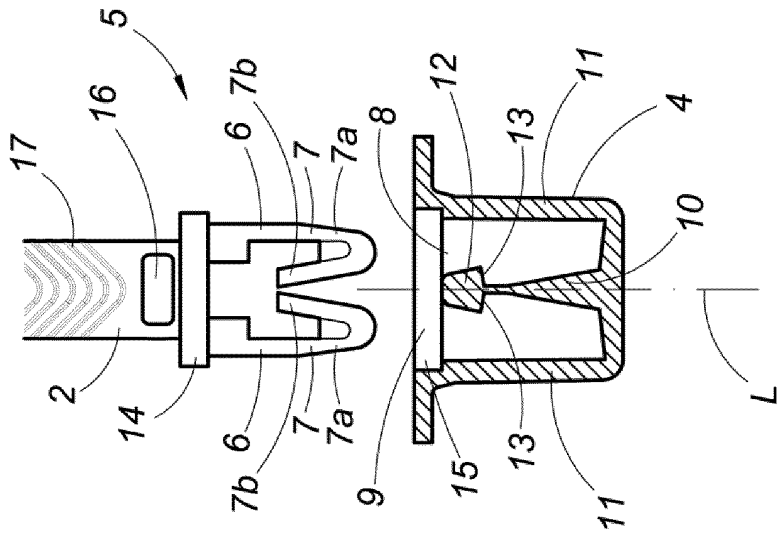


Fig.8

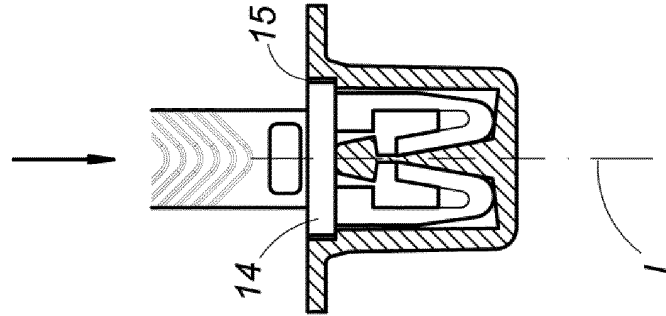
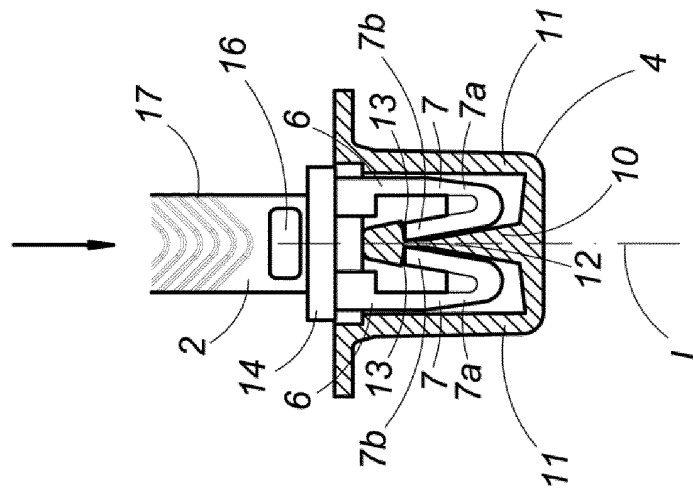


Fig.7



INTERNATIONAL SEARCH REPORT

International application No.

PCT/IB2012/054680

A. CLASSIFICATION OF SUBJECT MATTER

G09F3/03 (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)

G09F

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)

EPODOC, INVENES, WPI

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 3980332 A (KING SR KARL G) 14/09/1976, abstract; figures 1-7	1-3, 6
A	ES 1025407U U (BROOKS TODO SEGURIDAD EN ESPA - BROOKS TODO SEGURIDAD ESPANA) 01/01/1994, figures 1-7; claims 1-3	1-6
A	ES 2215261T T3 (MAINETTI TECNOLOGIE S P A) 01/10/2004, figures 1-4	1-6

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

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance.

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"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
08/01/2013Date of mailing of the international search report
(22/01/2013)

Name and mailing address of the ISA/

OFICINA ESPAÑOLA DE PATENTES Y MARCAS
Paseo de la Castellana, 75 - 28071 Madrid (España)
Facsimile No.: 91 349 53 04Authorized officer
M. Pérez Moreno

Telephone No. 91 3498490

Form PCT/ISA/210 (second sheet) (July 2009)

INTERNATIONAL SEARCH REPORT

International application No.

PCT/IB2012/054680

Information on patent family members

Patent document cited in the search report	Publication date	Patent family member(s)	Publication date
US3980332 A	14.09.1976	NONE	
-----	-----	-----	-----
ES1025407U U	01.01.1994	EP0634735 A1	18.01.1995
		ES1025407Y Y	01.07.1994
-----	-----	-----	-----
ES2215261T T3	01.10.2004	HK1020792 A1	24.12.2004
		US6128932 A	10.10.2000
		CA2252360 A1	06.05.1999
		PT915448E E	30.06.2004
		EP0915448 A2	12.05.1999
		DE69821315T T2	25.11.2004
		AT258704T T	15.02.2004
		ITVI970188 A1	06.05.1999
		IT1296683 B1	14.07.1999
-----	-----	-----	-----

Form PCT/ISA/210 (patent family annex) (July 2009)

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

- EP 0634735 A [0005]
- WO 9618985 A [0005]