(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 3 264 428 A1

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

(43) Date of publication:
03.01.2018 Bulletin 2018/01

(21) Application number: **16754800.7**

(22) Date of filing: **25.02.2016**

(51) Int Cl.:
H01C 10/00 *(2006.01)*

(86) International application number:
PCT/ES2016/070123

(87) International publication number:
WO 2016/135365 (01.09.2016 Gazette 2016/35)

(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
Designated Validation States:
MA MD

(30) Priority: **27.02.2015 ES 201530263**

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(54) **DEVICE FOR CONTROLLING EXTERNAL PAUSES**

(57) Device for controlling external pauses, comprising

• a casing (1) housing the pause marker (2) and potentiometer (3)

• a pause marker (2), independent of the electrical contact, one part being coupled to a potentiometer (3) and the other part to the casing (1).

• a potentiometer (3) and

• a control shaft (4) inserted either into the upper part, corresponding to the pause marker (2), or into the lower part, corresponding to the potentiometer (3) and/or pause marker, actuating the said device for controlling pauses, developing a high rotation torque of up to 360° with or without stop elements.

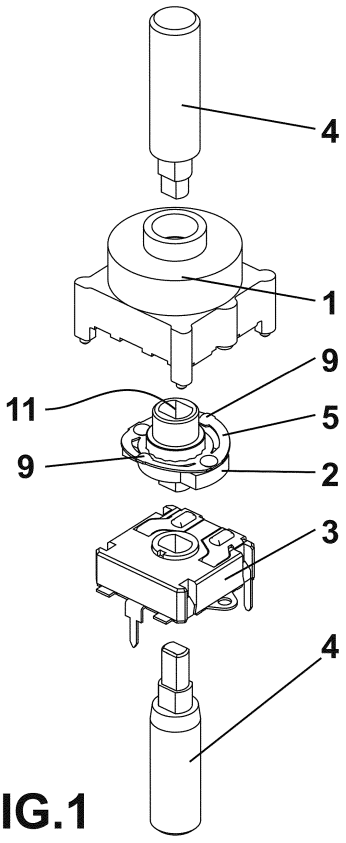


FIG.1

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Description

Technical field

[0001] The invention belongs to the technical sector of electronic components, in particular the invention relates to a device for controlling external pauses, preferably intended for electronic circuits.

[0002] The fundamental aim of the invention is to develop a device that enables the control of external pauses to be carried out on a potentiometer, achieving a high torque, without causing damage to the potentiometer, by means of

- a pause marker, independent of the electrical contact, one part of the marker being coupled to a potentiometer and another part thereof being housed in a casing that incorporates, in its interior, protrusions intended for the operation of pause control.
- a control shaft, inserted either into the upper part, corresponding to the pause marker, or into the lower part, corresponding to the potentiometer and/or pause marker.

Background of the invention

[0003] The existence of potentiometers intended for controlling internal and external pauses is widely known, for example, Spanish utility model 201431241 and invention patent 200100711 describe potentiometers with internal pause positions, the concavities for the said pauses being located on the collector plate and the cursor and wiper carrier being located inside the potentiometer, with the drawback that a high rotation torque cannot be obtained.

[0004] Furthermore, the fact that the cursor and wiper carrier are incorporated inside the potentiometer also conditions the rotation torque, it being low in order to prevent damage to the potentiometer, which restricts its use when a high rotation torque is required.

[0005] Potentiometers with a metal strip system that are intended for controlling internal pauses are also known, having a control shaft that incorporates protrusions to carry out pauses, with the drawback that the control shaft forms part of the assembly, preventing another shaft from being directly inserted either into the upper part or the lower part.

[0006] Also known in the industry are potentiometers intended for controlling internal pauses by means of the ball and spring system, having the same drawback as in the previous case given that the control shaft forms part of the potentiometer assembly.

[0007] High-torque potentiometers intended for controlling external pauses by means of the ball and spring system are also known, being easily actuated with a control shaft on their upper part, due to the type of assembly, but with the drawback that to insert the control shaft in their lower part it is necessary to align the components and to fix their position.

[0008] The fact that the control shaft can be inserted through the upper part of the aforementioned state-of-the-art potentiometers conditions the insertion of the said potentiometer in an electronic circuit, as this requires the potentiometer to be placed on just one of the faces which limits the design of the said electronic circuit.

Description of the invention

[0009] In order to maximise the performance of this type of potentiometer, a device for controlling pauses has been devised, comprised of:

- a casing for coupling the pause marker and potentiometer
- a pause marker, independent of the electrical contact, one part being coupled to a potentiometer and the other part to the casing.
- a potentiometer and
- a control shaft inserted either into the upper part, corresponding to the pause marker, or into the lower part, corresponding to the potentiometer and/or pause marker.

[0010] Externally the casing is configured by a base with a cavity housing the potentiometer and with anchoring means such as anchor tabs and/or fixing studs to keep the potentiometer in place, the said cavity being connected to a prolongation intended for positioning the pause marker, the bottom of the said cavity having a surface with a plurality of protrusions intended for the operation of the external pause control.

[0011] Added to the base, there is also the possibility of incorporating prolongations from which placing protuberances emerge, to support, fasten and stabilise the device for controlling pauses on an electronic circuit.

[0012] The pause marker comprises, on its upper part, a ring cursor with one or more raised sections, incorporating, on one or more of the said raised sections, a protuberance as a contact element with protrusions intended for the pause control operation; said pause marker having, on the upper part and lower part of its vertical section, a socket for coupling a control shaft.

[0013] The pause marker slides over the protrusions intended for the pause control operation, on a rotation axis of up to 360° with or without stop elements.

[0014] The sockets positioned at the lower and upper ends of the vertical section of the pause marker may optionally be connected by a through-hole.

Advantages of the invention

[0015] The device for controlling external pauses presented, affords numerous advantages over those currently available, the most important being that of having a pause marker independent of the electrical contact, with one part coupled to the casing and the other part to

a potentiometer.

[0016] An added advantage derived from the previous one is that, the fact that the pause marker is independent of the electrical contact allows a high rotation torque to be developed without damaging the potentiometer, thus prolonging its useful life.

[0017] Another noteworthy advantage is the possibility of operating the device from both ends by means of a control shaft that allows its insertion through the upper part, coupled to the pause marker or through the lower part, coupled to the potentiometer and/or pause marker.

[0018] As an additional advantage, derived from the previous one, it is to be noted that enabling the control shaft to be quickly and easily actuated from either ends, allows the said control device to be inserted in circuits in which their proximity to the external front of the final element is minimal, due to being housed in the rear face of an electronic circuit.

Description of the figures

[0019] To gain a better understanding of the object of this invention, a preferred practical embodiment is shown in the drawing attached.

Figure - 1 - shows a perspective view of the exploded diagram of the device for controlling pauses.

Figure - 2 - shows a perspective view of the casing, viewed on its upper part

Figure - 3 - shows a perspective view of the casing, viewed on its lower part

Figure - 4 - shows a perspective view of the device for controlling pauses, viewed on its upper part.

Figure - 5 - shows a perspective view of the device for controlling pauses, viewed on its lower part.

Figure - 6 - shows a plan view and section of the device for controlling pauses.

Preferred embodiment of the invention

[0020] The conformation and characteristics of the invention can be better understood in the following description that relates to the attached figures.

[0021] As can be seen in figure 1, a perspective view is shown of the exploded diagram of the device for controlling external pauses, showing the control shaft (4) positioned on the upper or lower part, enabling the actuation thereof in any situation.

[0022] This possibility allows the easy insertion of the control shaft (4), without any prior processes, into circuits whose proximity to the external front is minimal.

[0023] It also shows the casing (1) intended for housing the pause marker (2), independent of the electrical contact and potentiometer (3).

[0024] Also shown is the pause marker (2) which comprises, on its upper part, a ring cursor (5) with one or more raised sections, incorporating, on one or more of the said raised sections, a protuberance (9) as a contact element, with the protrusions (14) intended for the pause control operation; said pause marker (2) having, on the upper part and lower part of its vertical section, a socket (11) for coupling a control shaft (4).

[0025] The control shaft (4) is easily configured, on its lower part, to coincide with the sockets (11) for the actuation of the device for controlling external pauses.

[0026] Figure 2 shows the casing (1) viewed on its upper part, incorporating prolongations (7) which act as a support for the device for controlling external pauses, the said prolongations (7) being finished on top with placing protuberances (8) which, in addition to placing and/or anchoring the device for controlling external pauses on an electronic circuit, improve its stability.

[0027] The placing protuberances (8) may not be necessary depending on the mounting conditions on an electronic circuit.

[0028] Figure 3 shows the casing (1) seen on its lower part, presenting a cavity (12) housing a potentiometer (3) with anchoring mechanisms such as anchor tabs (6) and/or fixing studs (10), The cavity (12) connects to a prolongation (13) intended for positioning the pause marker (2), the bottom of the said cavity (12) having a surface with a plurality of protrusions (14) intended for the operation of the external pause control.

[0029] It also shows the prolongations (7) with placing protuberances (8), which may not be necessary depending on mounting conditions.

[0030] Figure 4 shows the mounting of the device for controlling pauses, seen on its upper part, showing the pause marker (2) presenting a socket (11) on its upper part intended for the quick insertion of a control shaft (4) (not shown).

[0031] Figure 5 shows a lower view of the device for controlling external pauses, mounted, showing the bottom area of the pause marker (2) joined to the potentiometer (3) intended for the insertion of a control shaft (4) (not shown), and the potentiometer (3) fixed in the casing (1) by means of the anchor tabs (6) and/or fixing studs (10).

[0032] Attachment of the potentiometer can be carried out by means of the anchor tabs (6) or by means of the fixing studs (10) and with both at the same time if necessary, said attachment being optionally covered by a lid (not shown).

[0033] Figure 6 shows the device for controlling pauses, marking section A-A, mounted, seen from above, showing the pause marker (2) housed between the upper part of the casing (1).

[0034] Figure 7 shows the device for controlling pauses in section A-A, in which the fitting of the pause marker (2) with the casing (1) and the potentiometer (3) can be seen, also showing the protrusions (14) intended for the operation of the external pause control, coinciding with one or more protuberances (9) incorporated on the ring cursor (5) of the pause marker (2).

[0035] Figure 8 shows the device for controlling pauses in section B-B, in which the fitting of the pause marker

(2) with the casing (1) and the potentiometer (3) can be seen, also showing the positioning of the raised sections of the ring cursor (5), showing the protuberances (9) on the protrusions (14) intended for the operation of the external pause control.

[0036] The sections portrayed in figures 7 and 8 show the pause marker (2) with a through-hole, connecting the sockets (11) intended for inserting a control shaft (4) (not shown).

[0037] These views show the protrusions (14) intended for controlling pauses, in conjunction with the protuberances (9) of the pause marker (2), on a rotation axis of up to 360° with or without stop elements, developing a high rotation torque.

[0038] The casing (1) shown in the figures is configured, for illustrative purposes, in a geometrical embodiment that presents a cube-shaped base and an upper cylindrical prolongation.

Claims

1. - Device for controlling external pauses **characterised in that** it comprises:

   • a pause marker (2) independent of the electrical contact
   • a potentiometer (3)
   • a casing (1) housing the pause marker (2) and potentiometer
   • a control shaft (4) inserted either into the upper part, corresponding to the pause marker (2), or into the lower part, corresponding to the potentiometer (3) and/or pause marker (2).

2. - Device for controlling pauses, according to claim 1, wherein the casing (1) is configured externally by a base with a cavity (12) housing the potentiometer (3) and anchoring means, such as anchor tabs (6) and/or fixing studs (10) to attach the said potentiometer (3), the said cavity (12) being connected to a prolongation (13) intended for positioning the pause marker (2), the bottom of the said cavity (12) having a surface with a plurality of protrusions (14) intended for the operation of the external pause control.

3. - Device for controlling pauses, according to claim 2, wherein on the base of the casing (1) prolongations (7) are optionally incorporated.

4. - Device for controlling pauses, according to claim 3, wherein, from the prolongations (7) emerge placing protuberances (8), to support, anchor and stabilise the device for controlling pauses, on an electronic circuit.

5. - Device for controlling pauses, according to claims 1 and 2, wherein attachment of the potentiometer (3) is carried out by means of anchor tabs (6) or by means of fixing studs (10), the said attachment of the potentiometer (3) also being optionally covered by a lid.

6. - Device for controlling pauses, according to claim 1, wherein the pause marker (2) comprises, on its upper part, a ring cursor (5) with one or more raised sections, incorporating, on one or more of the said raised sections, a protuberance (9) as a contact element with the protrusions (14) intended for the operation of the external pause control, said pause marker (2) having, on the upper end and lower end of its vertical section, a socket (11) for coupling a control shaft (4).

7. - Device for controlling pauses, according to claim 6, wherein the sockets (11) positioned at either end of the vertical shaft of the pause marker (2) are connected to each other by means of a through-hole.

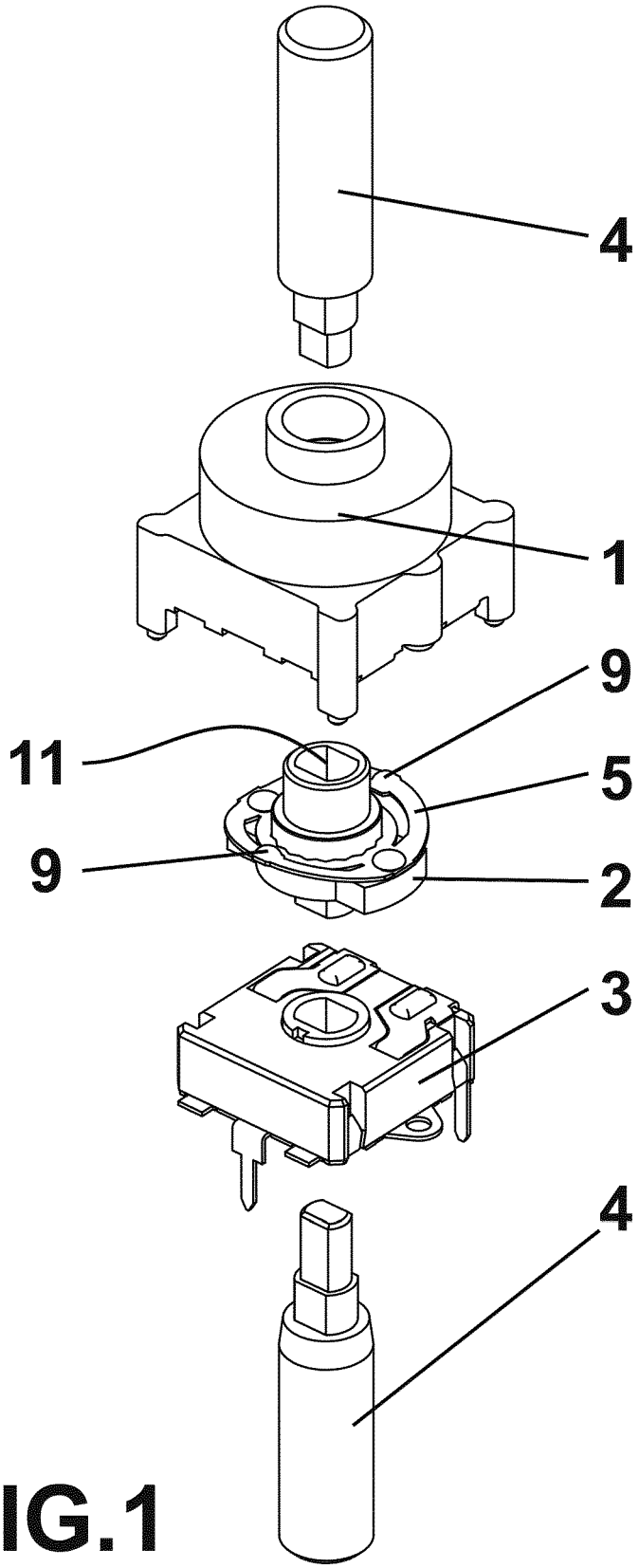


FIG.1

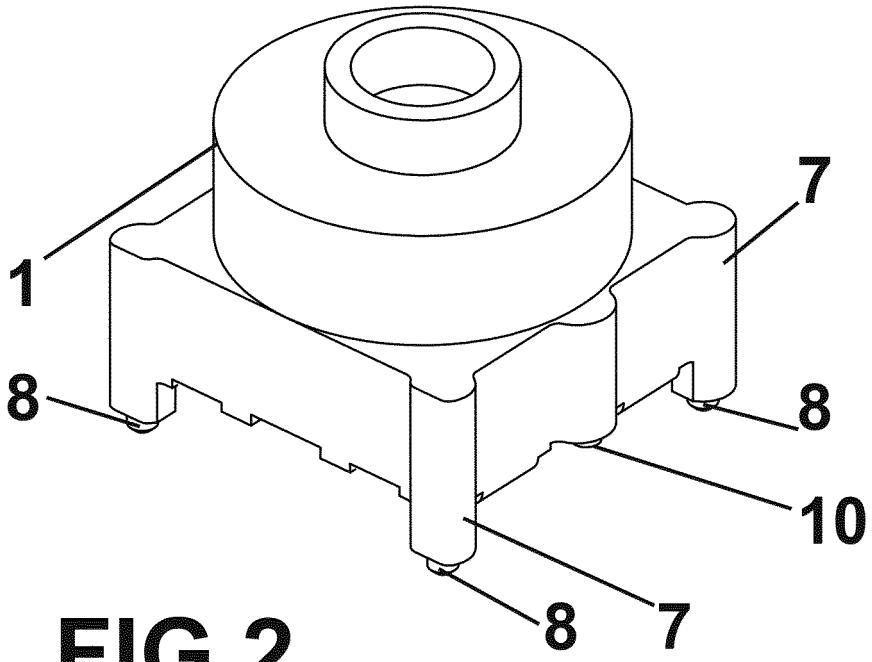


FIG.2

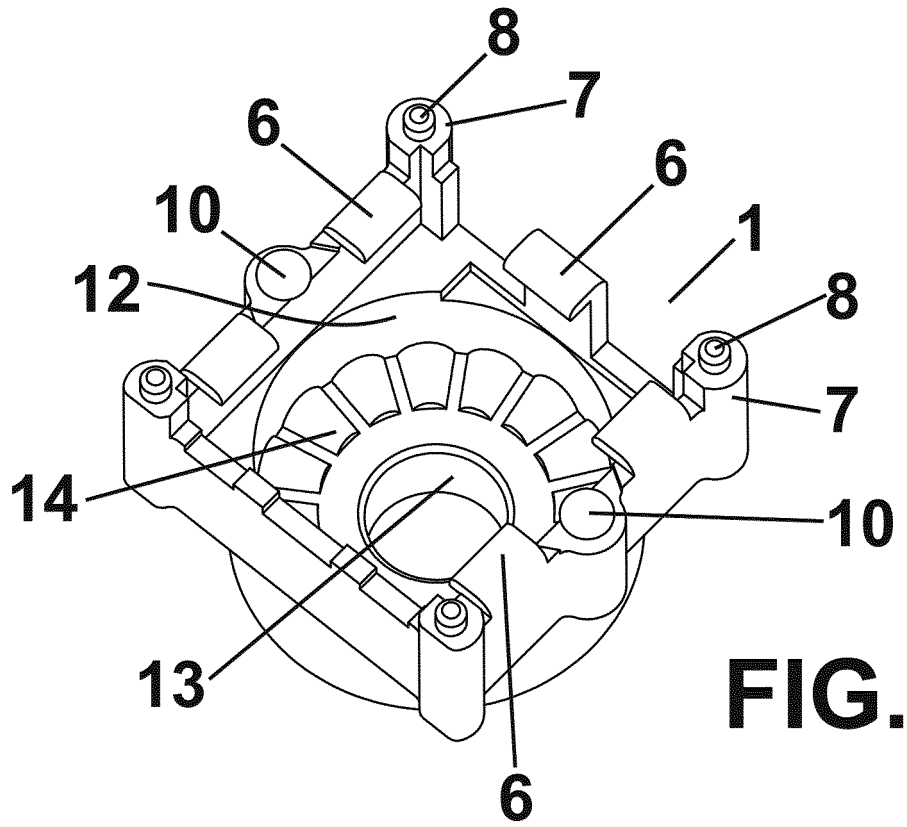


FIG.3

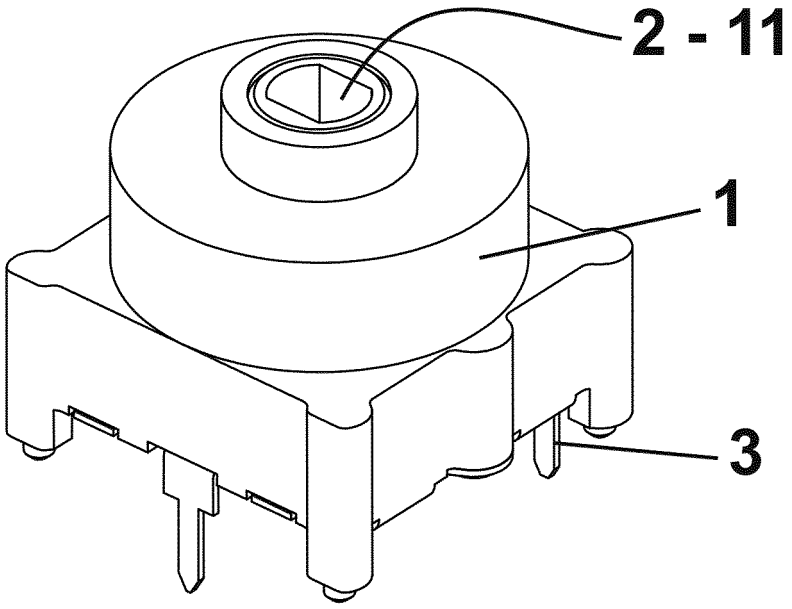


FIG.4

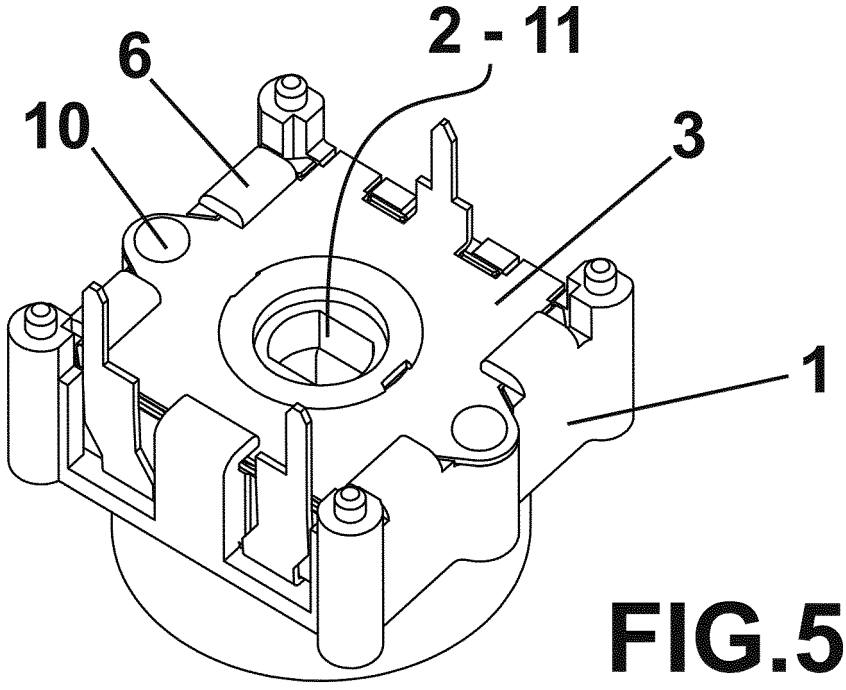


FIG.5

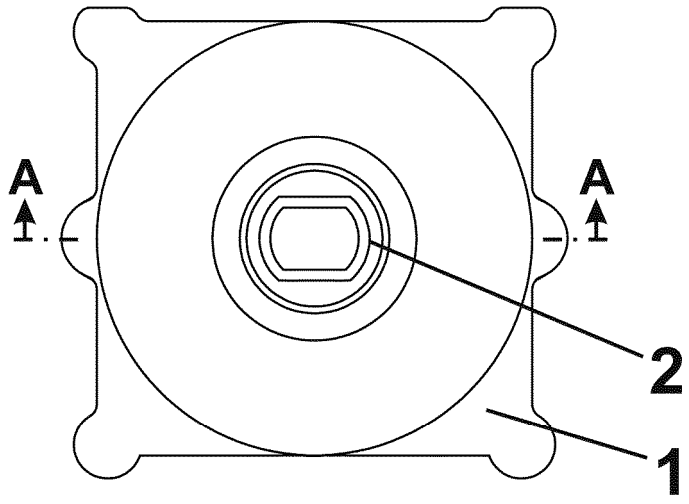


FIG.6

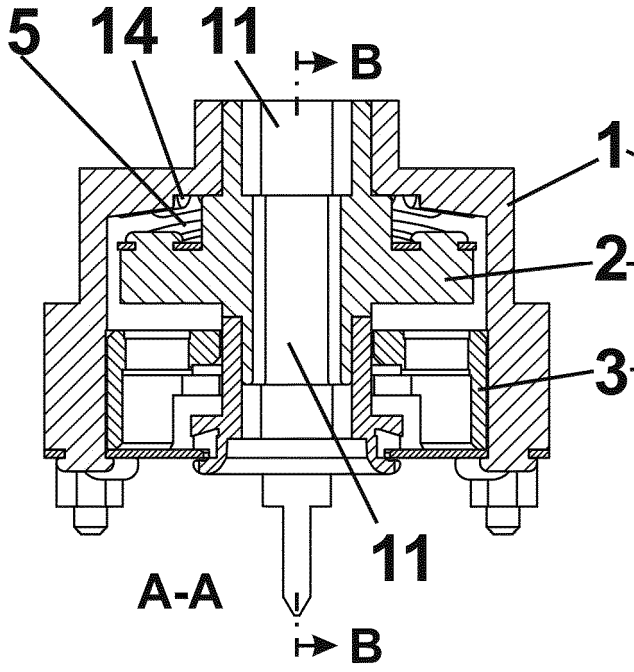


FIG.7

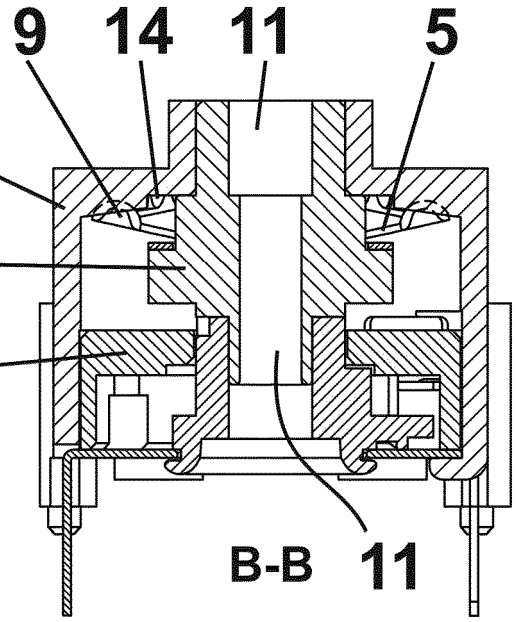


FIG.8

INTERNATIONAL SEARCH REPORT

International application No.
PCT/ES2016/070123

A. CLASSIFICATION OF SUBJECT MATTER

H01C10/00 (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)
H01C

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.
A	ES 1126905U U (PIHER SENSORS & CONTROLS SA) 08/10/2014, page 5, line 14- página7,line 7; figures 1-3c	1-7
A	US 3832671 A (KOHIMA T) 27/08/1974, column 2, line 25- column 5, line 10; figures 1-4	1-7
A	GB 1338377 A (SMITHS INDUSTRIES LTD) 21/11/1973, page 1, lines 1-89; figures 1,2	1-7

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

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
17/06/2016	**(21/06/2016)**
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 04	Authorized officer M. Pérez Moreno Telephone No. 91 3498490

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.
PCT/ES2016/070123

Patent document cited in the search report	Publication date	Patent family member(s)	Publication date
ES1126905U U	08.10.2014	ES1126905Y Y	20.01.2015
US3832671 A	27.08.1974	JPS4915437U U	08.02.1974
GB1338377 A	21.11.1973	NONE	

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REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- ES 201431241 **[0003]**
- ES 200100711 **[0003]**