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(54) Title: POINTER DETECTOR WITH CHANGEABLE SEARCH HEAD

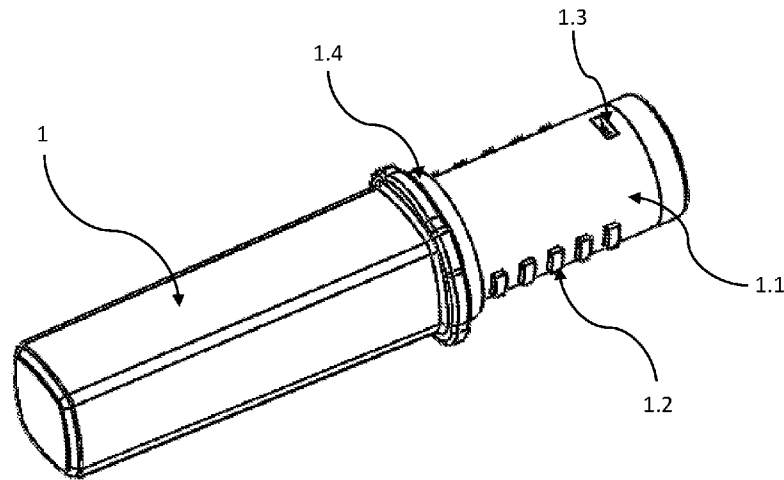


FIGURE 1

(57) Abstract: The present invention is the pointer detector of which the search head (1) and body (2) part is pluggable to each other and which, as a result, has changeable search heads (1) and it is characterized by containing: a handle (1.1) part located at the antenna part of the changeable search head (1), which is among the elements that enable the search head (1) to be plugged into and unplugged from the body (2); a cavity (2.1) extending towards the inside of the pointer detector body (2) from any end, which enables the mentioned search head (1) handle (1.1) to be inserted and placed inside the body (2); at least one mounting tab (1.2) in the form of a protrusion on the surface of the handle (1.1) part of the search head (1); at least one seat (2.2) in the inner surface of the body (2) cavity (2.1) corresponding to each one of the mentioned mounting tabs (1.2) and holding the mentioned mounting tabs (1.2) when the handle (1.1) part of the search head (1) is inserted into the body (2) cavity (2.1) and brought to lock position and releasing the mounting tabs (1.2) in the reverse locking action

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SPECIFICATION

POINTER DETECTOR WITH CHANGEABLE SEARCH HEAD

5 **Technical Field**

The present invention relates to hand-held, small dimensioned (miniature) metal detectors named as “pointer” or “pinpointer”; and it is characterized by having structures between the search head and body part enabling the pluggable installation to each other and consequently the pointer detector of the present invention having changeable search heads.

10 **Prior Art**

The miniature detectors, named as pointer or pinpointer, are used in order to pinpoint the exact location of the targets under the ground for which approximate date is detected. The common pointer detectors available in the state of the art, are one-piece detectors and have a body which is monolithic with the search head (in general, from plastic or plastic derivative material). The products in the design patents with the titles “Hand-held metal detector” no USD459246S1, “Hand-held metal detector” no USD459245S1, “Tactical hand-held metal detector” no USD513706S1, “Tactical hand-held metal detector” no USD497559S1 can be given as the examples of the available monolithic pointer detectors

As can be seen from the examples above, there are two types of pointer detectors in the state of the art.

The first type is the pointer detectors with search head in the form of a bar. In the state of the art, the mentioned search head is monolithic with the body. Such types of pointer detectors provide the detection of the exact location of the target, of which the location is detected approximately by the long search heads in the form of a bar, by dredging up the soil.

The second type it he pointer detectors with the search head in the form of a circle. The search by this type of pointer detectors is performed by moving them over the soil (ground). The search head in the form of a circle is not appropriate for dredging up under the soil and

operates as a metal detector with normal dimensions having a type of shaft. However, their dimensions are downsized in order to perform pinpointing at a certain area. The users searching for a buried object need two types of pointer detectors in the search equipment.

5 Since the mentioned pointer detectors have monolithic structure; the users are required to have both types of pointer detectors in order to complete their equipment. Moreover, since the bodies of the pointer detector devices have a monolithic structure with the search heads, it is very hard to repair the search head when it breaks down. In this case, the users are required to purchase new products.

Short Description of the Invention

10 The present invention is the pointer detector, of which the search head and body part is pluggable to each other and which, as a result, has changeable search heads; and accordingly, eliminates the disadvantages of the monolithic pointer detectors of the state of the art.

Different types of search heads can be used with the same body thanks to the pointer detector with changeable search head. This way, the user can benefit from both the bar type and
15 circular type and also other types of search heads with a single body. Owing to the present invention, the user has a device with one body (pointer) with two or more different features.

Owing to the pointer detector with changeable head search; the defective search heads and/or body (electronic signal processing, the part that contains the adjustment parts and the user holding part) can be repaired as independent of each other. Moreover, the defective and
20 irreparable search heads or the search heads for which repairing is more expensive than the replacement can be replaced by the new ones and can be used with the old body. Owing to this invention, the device servicing and spare part supplying is facilitated.

The potential disadvantages of the pluggable feature (insulation of the joints, electronic transmission, joining stability etc.) in the pointer detector with changeable search head are
25 anticipated and solved.

The device also enables underwater use owing to the gaskets and the locking method on the search heads and the body. Especially the circular search head can be used as the underwater detector.

The Description of the Invention

The pointer detector of the present invention is generally composed of a pluggable search head and body (electronic signal processing, the part that contains the adjustment parts and the user holding part). The body can work with different type of search heads owing to its
5 pluggable structure.

The body and the search heads have a structure which enables plugging to and unplugging from each other. Moreover, the joint sections between the parts are protected in the best manner against the external factors owing to this pluggable structure.

The pointer detectors of the present invention have a handle part in the form of an extension
10 at the back part of the antenna section of the search heads. The mentioned handle part enables the installation of the search head on the body. There is at least one tab on the mentioned handle part. In the ideal structuring the mentioned tabs are lined along the handle part (with certain gaps in between). These tabs can be lined as a single line or as two lines on two sides of the handle. As another version, there may be three or more tab lines. These tab lines are
15 located with gaps in between. There is a connector section at the end of the handle which provides the electronic connection with the body.

In the body, there is a cavity which enables the handle part of the search head to be inserted and seated into the body. Since the handle part generally has a cylindrical shape, the cavity in the body also has a cylindrical shape. In the inner surface of the mentioned cavity, there are
20 lined seats corresponding to the lines tabs on the handle. The mentioned seat lines are located with gaps in between in a manner which is harmonious with the tab lines mentioned above. The gaps between the equal number of seat and tab lines enable the tabs and seats not to lock onto each other when the head search handle is inserted into the body cavity. The seats located at the inner surface of the cavity and the tabs on the surface of the handle hold onto
25 each other with twist and lock principle.

When the user desires to connect the separate search head and the body, he inserts the search head handle into the cavity in the body. During this process, the search head or the body is twisted longitudinally to some extent when compared to their normal mounted positions. This way, the tabs are provided to pass through the gaps in between the seat lines without being
30 dredged up. When the handle part with the search head is inserted into the body cavity in full, the body or the search head is twisted to some extent longitudinally towards their positions

and the seats inside the body cavity are enabled to hold onto the tabs on the search head. In other words, with the mentioned twisting motion, the tabs on the search head are placed into the seats.

When the tabs are placed into the seats, the electronic connector on the handle of the search head is connected to the connector seat at the end of the body cavity. As a result, the electronic connection between the body and the search head is provided. In a sample structuring of the device, the seats can be inclined to some extent towards the mentioned connector seat. This way, the tabs are inserted into the inclined seats and the handle moves a little more in the cavity by this twist and lock action. Consequently, the connection between the connector and the connector seat is provided soundly.

There are sealing gaskets on the part where the search head joins the body and on the part where the connector is connected to the connector seat. This way, when the search head is mounted on the body, the device can be used under the water without any problems.

The present invention is explained in more detail below, through the references by mentioning the figures listed below:

Description of the Figures

Figure 1: It is the front perspective view of the changeable bar search head apart from the body.

Figure 2: It is the front perspective view of the changeable circular search head apart from the body.

Figure 3: It is the back perspective view of the changeable bar search head apart from the body.

Figure 4: It is the back perspective view of the changeable circular search head apart from the body.

Figure 5: It is the perspective view of the body apart from the search head.

Figure 6: It is the perspective view of the body apart from the search head.

Figure 7: It is the detailed view of the installation of the search head and the body.

Figure 8: It is the cross sectional view of the installed bar search head and the body.

Legend

NO	NAME OF THE PART
1	Search head
5	1.1 Handle
	1.2 Tab
	1.3 Lock seat
	1.4 Gasket
	1.5 Connector
10	1.6 Connector gasket
	2 Body
	2.1 Cavity
	2.2 Seat
	2.3 Connector seat
15	

Detailed Description of the Invention

The present invention is the pointer detector of which the search head(1) and body(2) part is pluggable to each other and which, as a result, has changeable search heads(1) and it is characterized by containing;

- 20 - A handle(1.1) located at the antenna part of the changeable search head(1), which is among the elements that enable the search head(1) to be plugged into and unplugged from the body(2);

- A cavity(2.1) extending towards the inside of the pointer detector body(2) from any end, which enables the mentioned search head(1) handle(1.1) to be inserted and placed inside the body(2);
- At least one mounting tab(1.2) in the form of a protrusion on the surface of the handle(1.1) part of the search head(1);
- At least one seat(2.2) in the inner surface of the body(2) cavity(2.1) corresponding to each one of the mentioned mounting tabs(1.2) and holding the mentioned mounting tabs(1.2) when the handle(1.1) part of the search head(1) is inserted into the body(2) cavity(2.1) and brought to lock position and releasing the mounting tabs(1.2) in the reverse locking action;
- A gasket(1.4) located at the joint of the handle(1.1) of the search head(1) and the antenna part, which provides the insulation of the body(2) cavity(2.1) entry against moisture, dust, water and other external factors, when the handle(1.1) is inserted into the body(2) cavity(2.1);
- A lock seat(1.3) located in the handle(1.1) part of the search head(1) which connects to the protrusion in the body(2) cavity(2.1) in order to support locking when the handle(1.1) is inserted into the body(2) cavity(2.1) and locking is provided;
- A connector(1.5) located in the handle(1.1) part of the search head(1) which connects to the connector seat(2.3) inside the body(2) cavity(2.1) in order to enable the electronic data and signal transmission between the body(2) and the search head(1) when the handle(1.1) is inserted into the body(2) cavity(2.1) and locking is provided;
- A connector gasket(1.6) which provides the insulation of the connector(1.5), connector seat(2.3) that carries out the electronic data and signal transmission between the body(2) and the search head(1), against moisture, dust, water and other external factors.

CLAIMS

1- The present invention is the pointer detector of which the search head(1) and body(2) part is pluggable to each other and which, as a result, has changeable search heads(1) and it is characterized by containing;

- 5
- A handle(1.1) located at the antenna part of the changeable search head(1), which is among the elements that enable the search head(1) to be plugged into and unplugged from the body(2);
 - A cavity(2.1) extending towards the inside of the pointer detector body(2) from any end, which enables the mentioned search head(1) handle(1.1) to be inserted and placed

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 - At least one mounting tab(1.2) in the form of a protrusion on the surface of the handle(1.1) part of the search head(1);
 - At least one seat(2.2) in the inner surface of the body(2) cavity(2.1) corresponding to each one of the mentioned mounting tabs(1.2) and holding the mentioned mounting

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 - tabs(1.2) when the handle(1.1) part of the search head(1) is inserted into the body(2) cavity(2.1) and brought to lock position and releasing the mounting tabs(1.2) in the reverse locking action.

2- It is the pointer detector with changeable search heads(1) according to Claim 1 and it is characterized by; containing a gasket(1.4) located at the joint of the handle(1.1) of the search

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head(1) and the antenna part, which provides the insulation of the body(2) cavity(2.1) entry against moisture, dust, water and other external factors, when the handle(1.1) is inserted into the body(2) cavity(2.1).

3- It is the pointer detector with changeable search heads(1) according to Claim 1 and it is characterized by; containing a lock seat(1.3) located in the handle(1.1) part of the search

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head(1) which connects to the protrusion in the body(2) cavity(2.1) in order to support locking when the handle(1.1) is inserted into the body(2) cavity(2.1) and locking is provided.

4- It is the pointer detector with changeable search heads(1) according to Claim 1 and it is characterized by; containing a connector(1.5) located in the handle(1.1) part of the search head(1) which connects to the connector seat(2.3) inside the body(2) cavity(2.1) in order to

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enable the electronic data and signal transmission between the body(2) and the search head(1) when the handle(1.1) is inserted into the body(2) cavity(2.1) and locking is provided.

5- It is the pointer detector with changeable search heads(1) according to Claim 4 and it is characterized by; containing a connector gasket(1.6) which provides the insulation of the connector(1.5), connector seat(2.3) that carries out the electronic data and signal transmission between the body(2) and the search head(1), against moisture, dust, water and other external factors.

6- It is the pointer detector with changeable search heads(1) according to Claim 1 and it is characterized by; the tabs(1.2) being located in a line along the handle(1.1) part.

7- It is the pointer detector with changeable search heads(1) according to Claim 6 and it is characterized by; containing seats(2.2) in the inner surface of the mentioned cavity(2.1) corresponding to the mentioned mounting tabs(1.2) on the handle(1.1) .

8- It is the pointer detector with changeable search heads(1) according to any of the Claims above and it is characterized by; locking releasing of the mentioned tabs(1.2) and seats(2.2) bay twist and lock principle.

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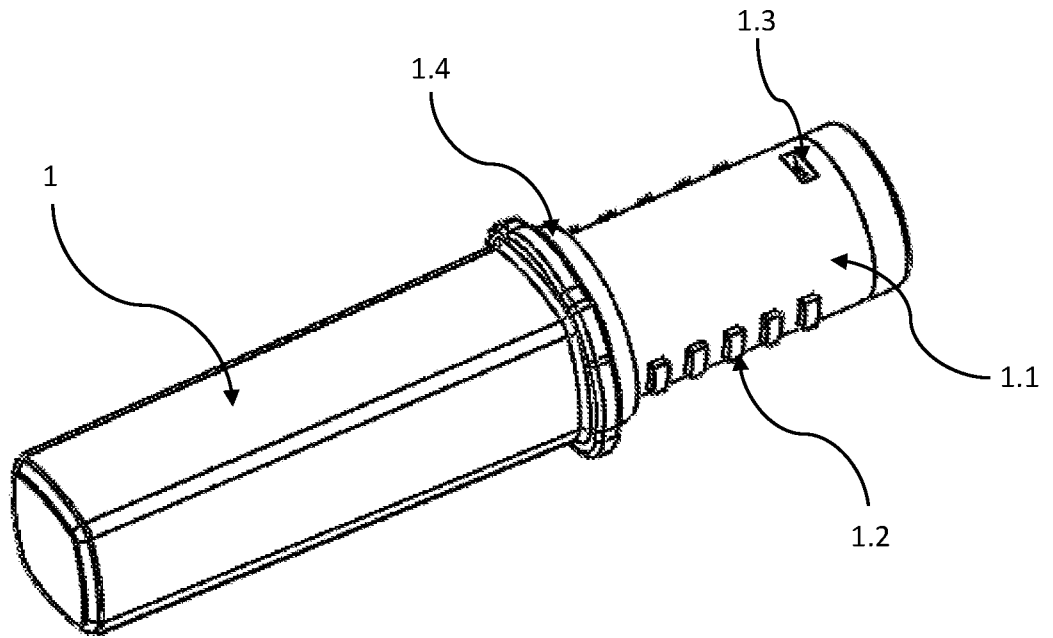


FIGURE 1

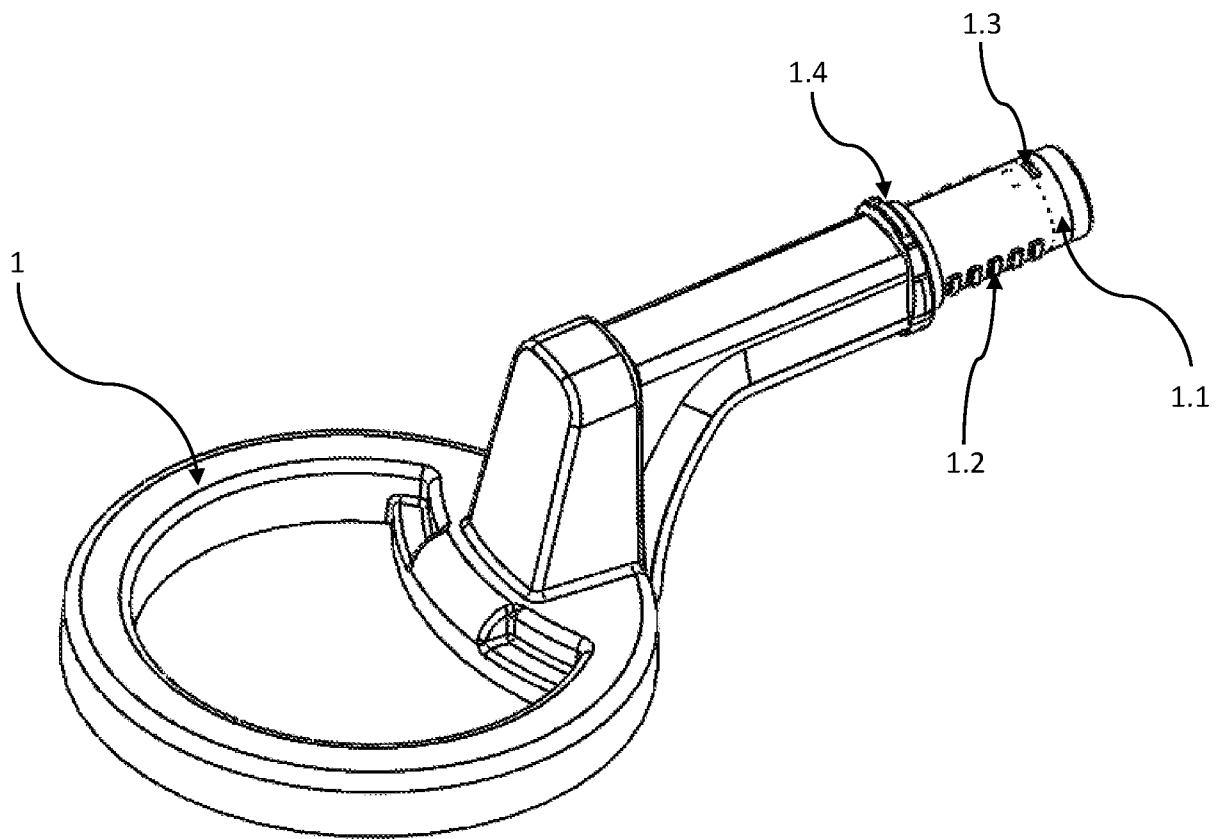
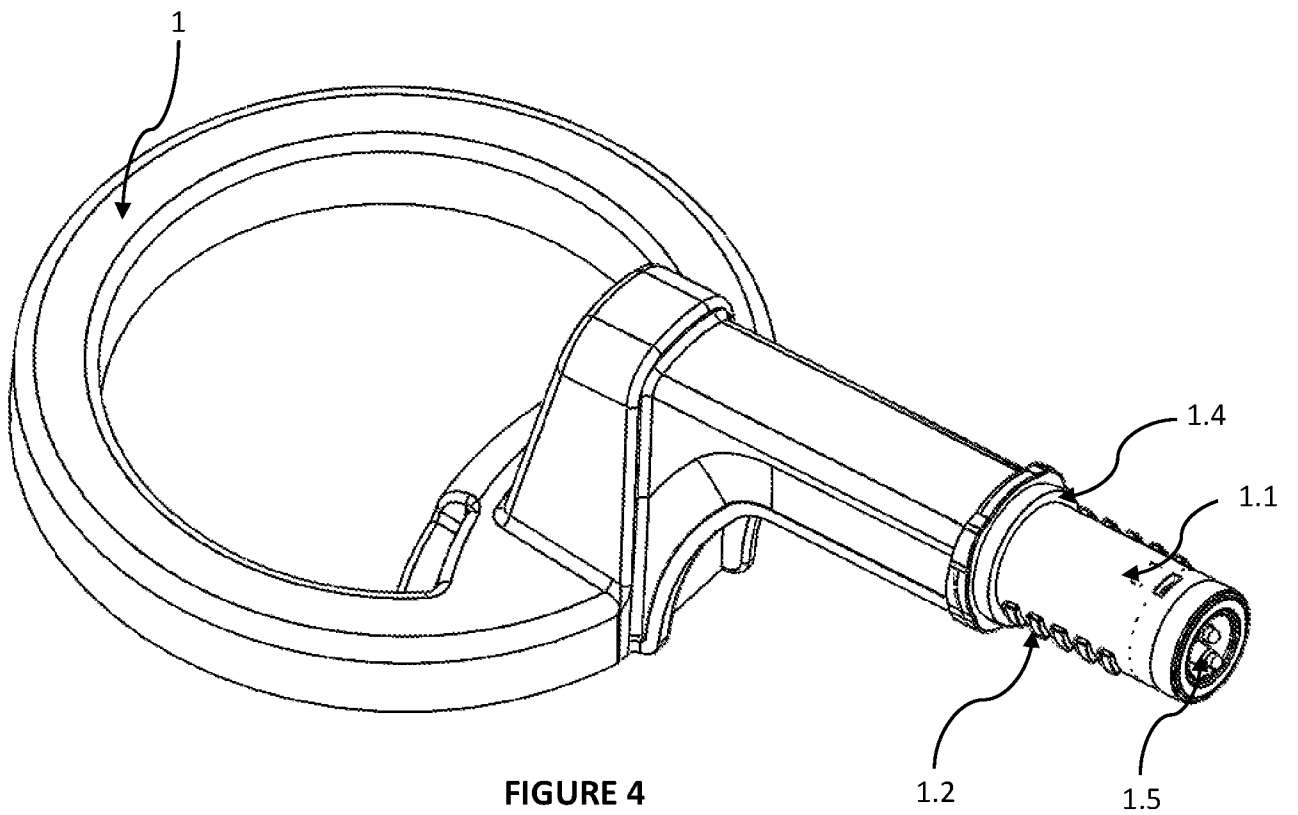
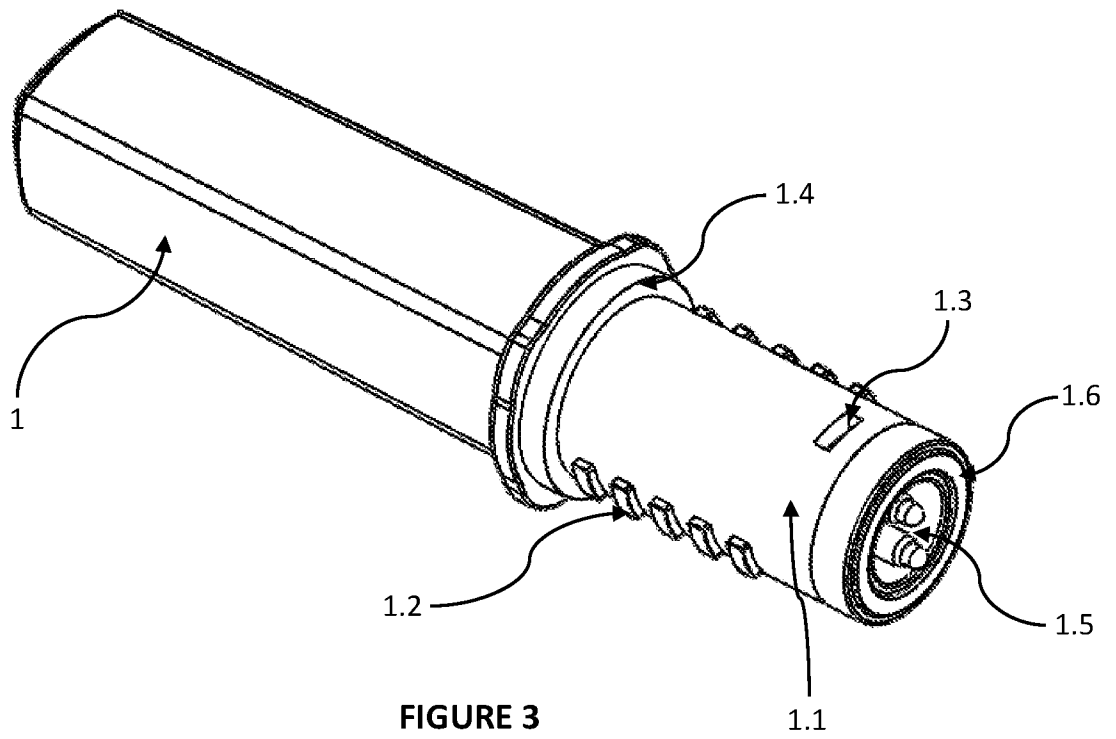


FIGURE 2



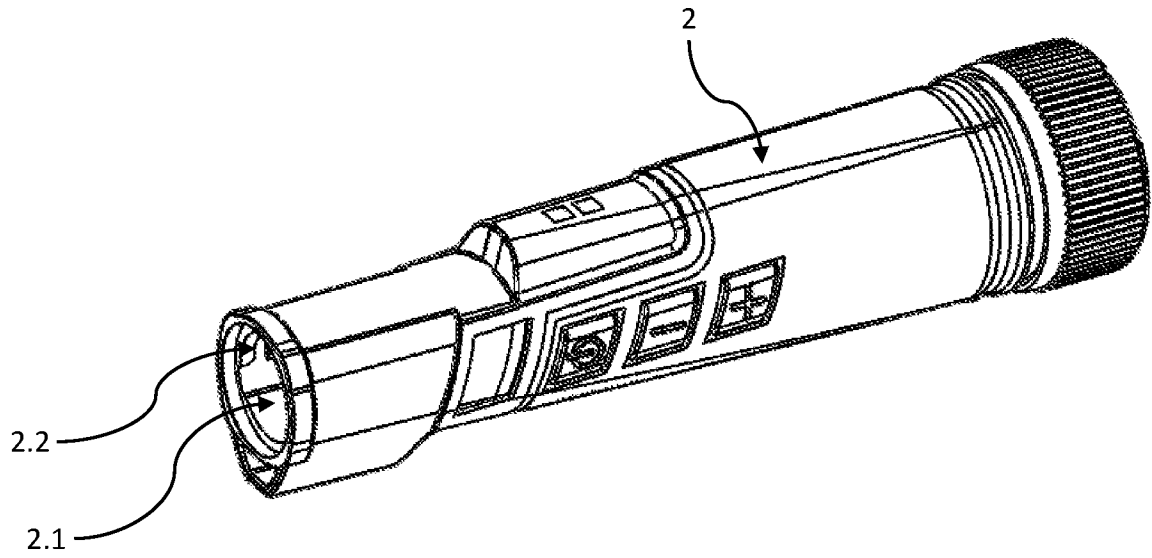


FIGURE 5

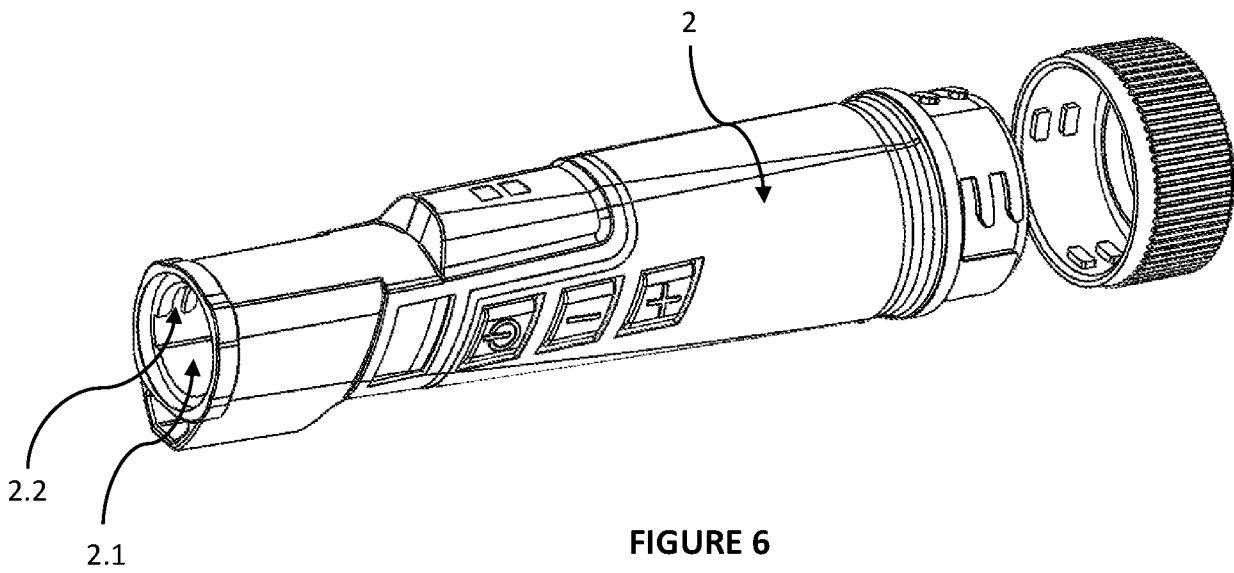
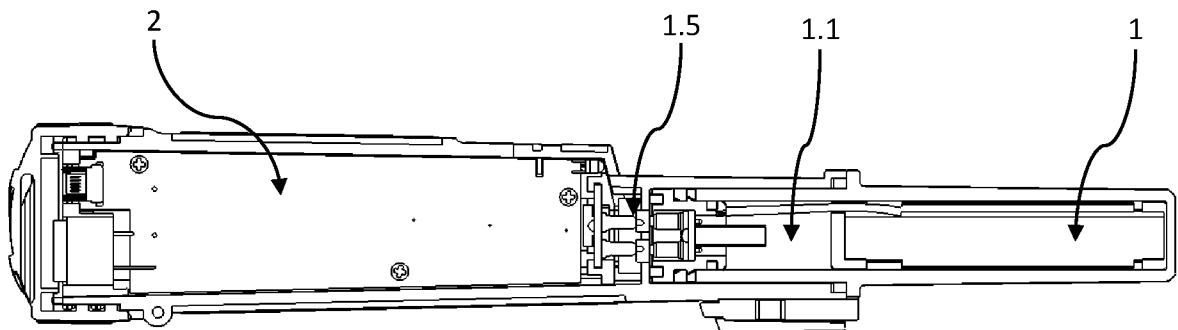
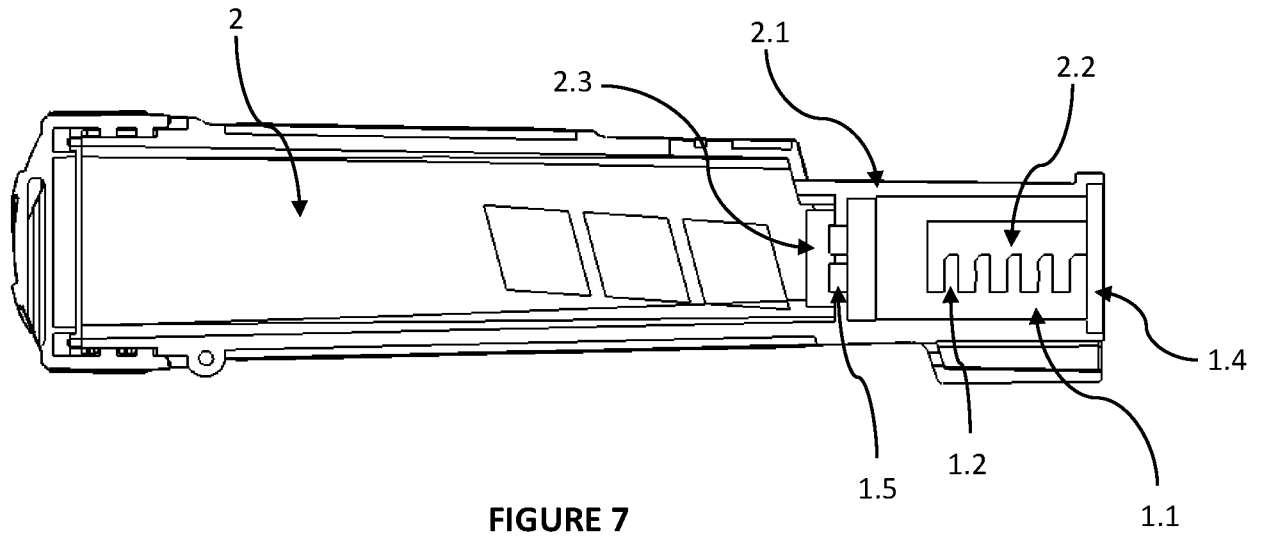


FIGURE 6



INTERNATIONAL SEARCH REPORT

International application No
PCT/TR2018/050317

A. CLASSIFICATION OF SUBJECT MATTER
INV. G01D11/30
ADD.
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)
G01D G01V

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)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 43 18 563 A1 (VALLON GMBH [DE]) 8 December 1994 (1994-12-08) column 2, line 51 - column 3, line 23; figures 1,2	1-8
X	DE 928 238 C (PAUL JUDITH) 26 May 1955 (1955-05-26) page 1, line 1 - page 2, line 77; figures 1,2	1-8
X	US 6 957 506 B1 (FAIR LINDEL R [US]) 25 October 2005 (2005-10-25) column 5, line 16 - column 7, line 42; figures 4,5	1-8
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Further documents are listed in the continuation of Box C.

See patent family annex.

* Special categories of cited documents :

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"&" document member of the same patent family

Date of the actual completion of the international search 14 March 2019	Date of mailing of the international search report 27/03/2019
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Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer Lyons, Christopher
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INTERNATIONAL SEARCH REPORT

International application No
PCT/TR2018/050317

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 99/19748 A1 (DEW ENGINEERING & DEVELOPMENT [CA]; UNITED KINGDOM GOVERNMENT [CA]; B0) 22 April 1999 (1999-04-22) page 4, line 25 - page 6, line 31; figures 2,3	1-8
A	----- US 2008/276429 A1 (BUKOVITZ RICHARD K [US] ET AL) 13 November 2008 (2008-11-13) page 2, paragraph 34 - page 3, paragraph 42; figures 1-8 -----	1-8

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/TR2018/050317

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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