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EUROPEAN QUALIFYING EXAMINATION 2025

Paper B

This paper comprises:

Inhalt (10 Seiten „Beschreibung der Anmeldung“ und „Ansprüche“)
nur auf dem Bildschirm während der Prüfung verfügbar

Content (10 pages „Description of the application“ and „Claims“)
only available on screen during the examination

Contenu (10 pages „Description de la demande“ et
„Revendications“) uniquement visible sur l‘écran pendant l‘examen

Drawings of the application

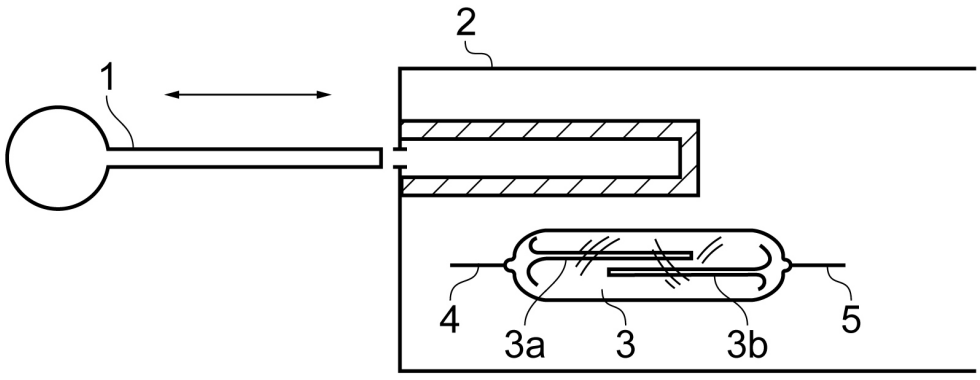

FIG 1

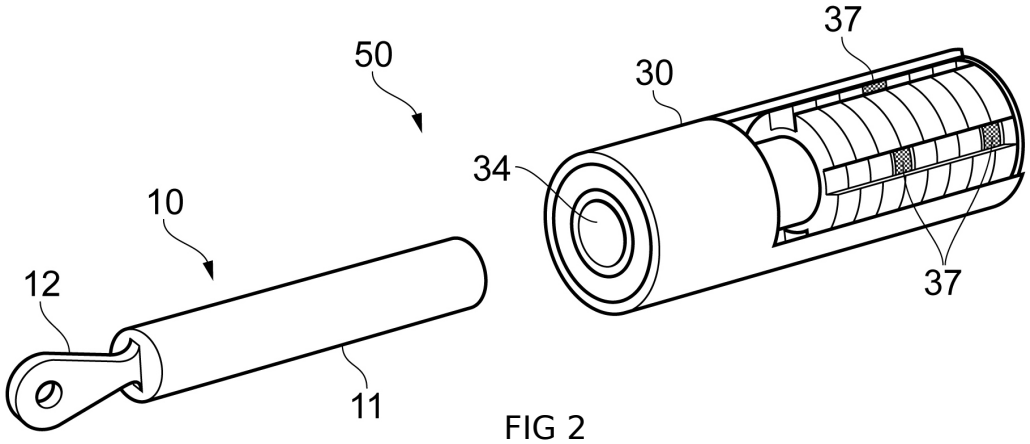

FIG 2

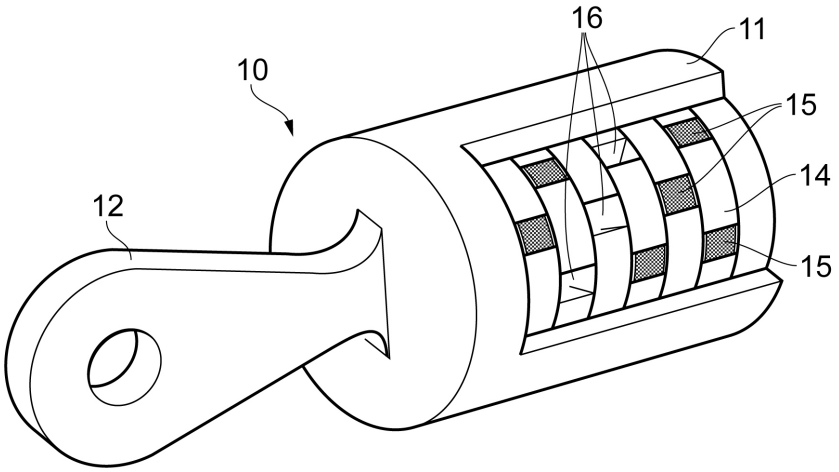

FIG 3

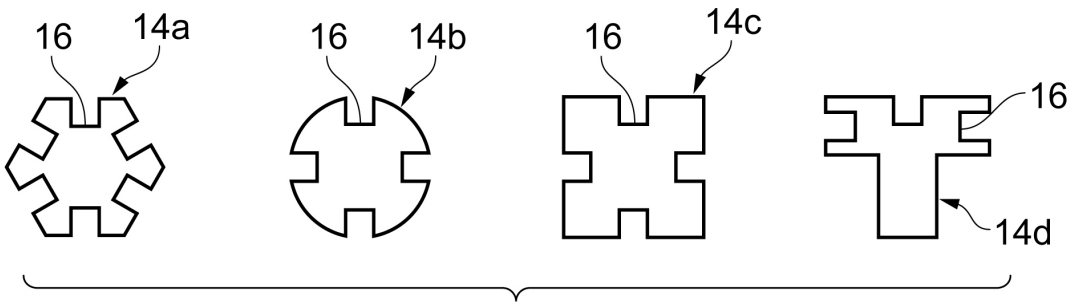
16
14a
16
14b
16
14c
16
14d

FIG 4

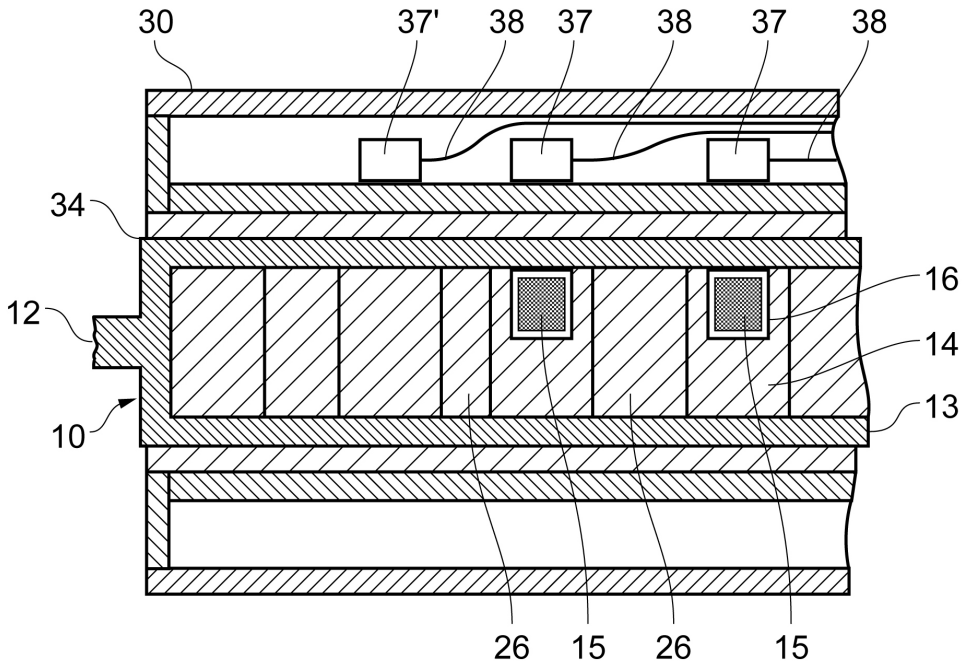
30
37'
38
37
38
37
38
34
12
10
16
14
13
26
15
26
15

FIG 5

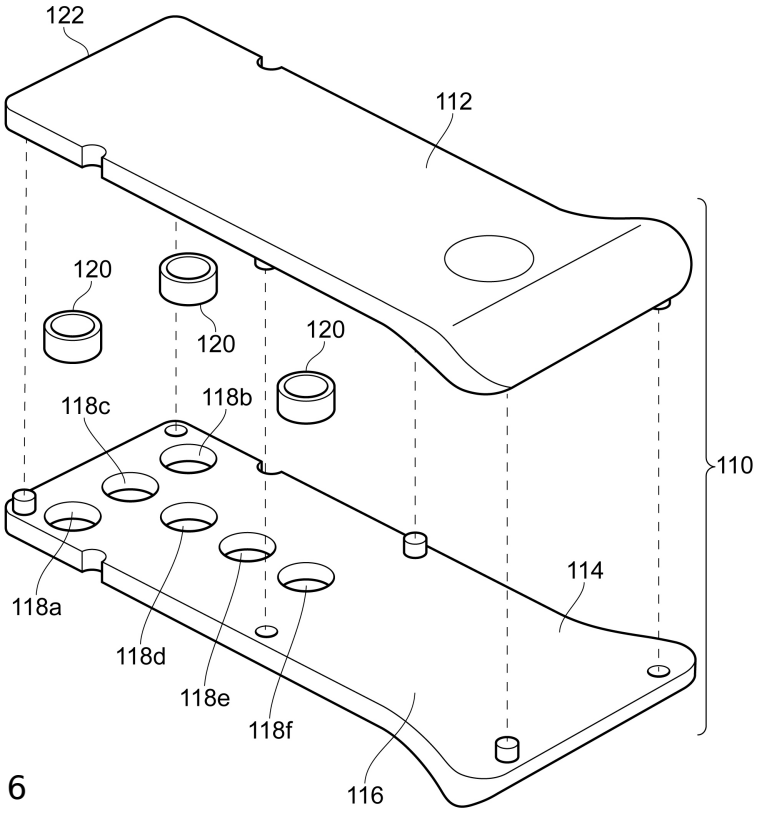
122
112
120
120
120
118c
118b
110
118a
114
118d
118e
118f
116

FIG 6

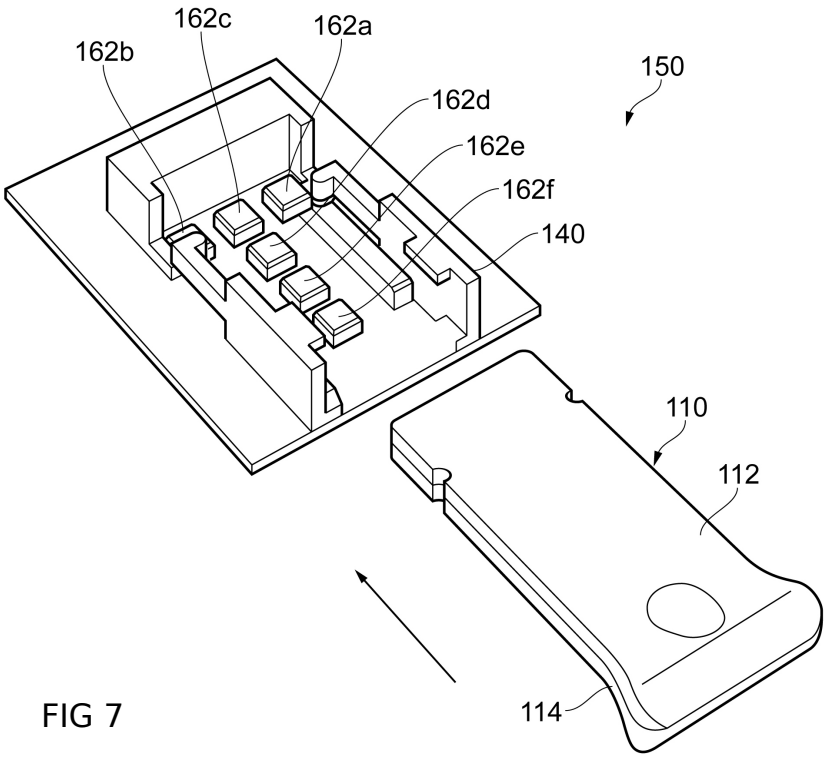
162c
162a
162b
150
162d
162e
162f
140
110
112
114

FIG 7

Inhalt (3 Seiten „Bescheid“) nur auf dem Bildschirm während der Prüfung verfügbar

Content (3 pages „Communication“) only available on screen during the examination

Contenu (3 pages „Notification“) uniquement visible sur l‘écran pendant l‘examen

Document D1: DE123321A

[001] The present invention relates to an electrical switching apparatus having a test function. This function may only be activated by an authorised user who is in possession of an appropriate key.

[002] Fig. 1 shows an electrical apparatus 131 with a housing 133 and an opening 135 adapted to receive a key 137 having a specific corresponding end shape 139 with a recess and a magnet 140 positioned in it (only shown schematically). A magnetic field detector and a processing circuit (not shown) are located within the housing 133. When the key 137 is inserted into the opening 135, the magnetic field detector detects the presence of the magnet 140 and sends a corresponding signal to the processing circuit, which validates that an authorised user wants to start a test function. The circuit then actuates a latch allowing the test function to be executed.

[003] The security can be improved with more complicated geometry for the shape 139, which section can take any polygonal form. The security can be further improved by using several magnets having different polarities inside corresponding radially outwardly open recesses of the shape 139 and positioned about the axis of the key 137. Several detectors are then used in correspondence with these magnets and send respective signals to the processing circuit for validation.

D1 Drawing:

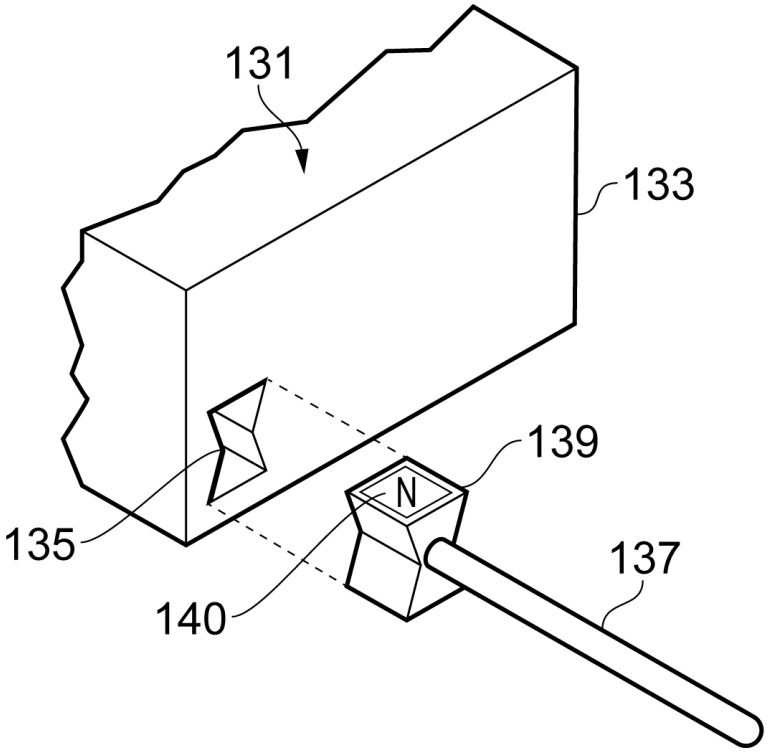

Fig 1

Document D2: EP987789A1

[001] The present invention is directed to improvements in keycards including magnets and of related locks, where the introduction of the keycard into the lock provides a signal related to a combination of magnetic poles of the magnets that is used to actuate a latch of the lock.

[002] Referring to Fig. 1a, the keycard 1 is composed of a body 2 linked to a lid 4. The body 2 has a set of recesses 5 in which respective magnets 6 are positioned or that can be left empty. As shown in Fig. 1a, the orientation of the magnets (north and south poles) may be different. Once a configuration of magnets positioned in the recesses is chosen, the keycard is built by sliding and fixing the body 2 into the lid 4.

[003] Fig. 1b shows a lock 10 including a case 11 with slot 12 and internal canal 13 adapted to receive the keycard 1. At one side of canal 13 are arranged magnetic sensors 14 (for instance Hall-effect transducers) in correspondence to the recesses 5 of keycard 1. The sensors 14 (not all shown) each generate a signal based on the polarity of the magnets 6, said signal being processed using a circuit 15. The result of this processing is a code which corresponds to the polarity or absence of a magnet in each recess of the keycard 1. This code is compared with a pre-established combination. If the code coincides with the pre-established combination, the circuit 15 activates a latch that will drive a member operating a door, access, alarm, etc. (not shown).

D2 Drawings:

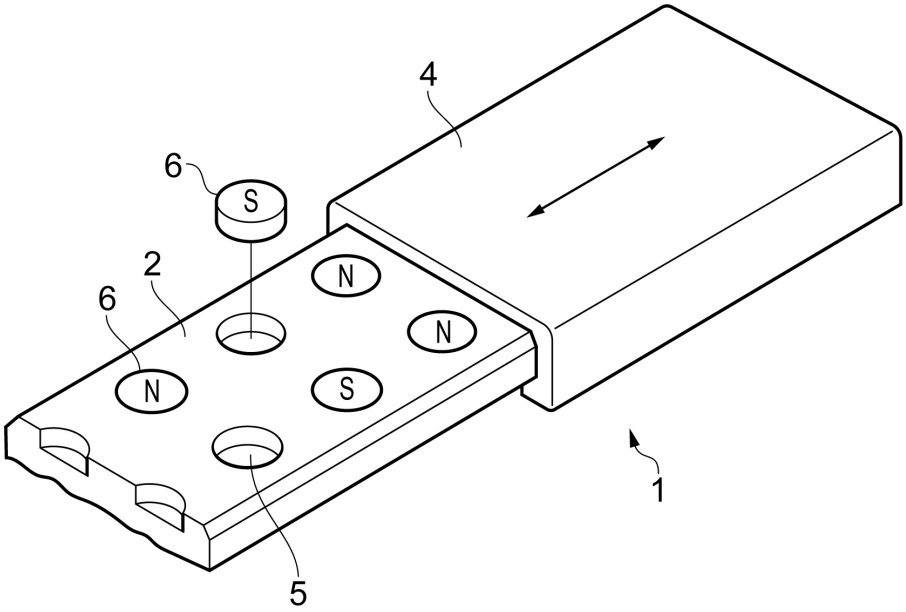

Fig 1a

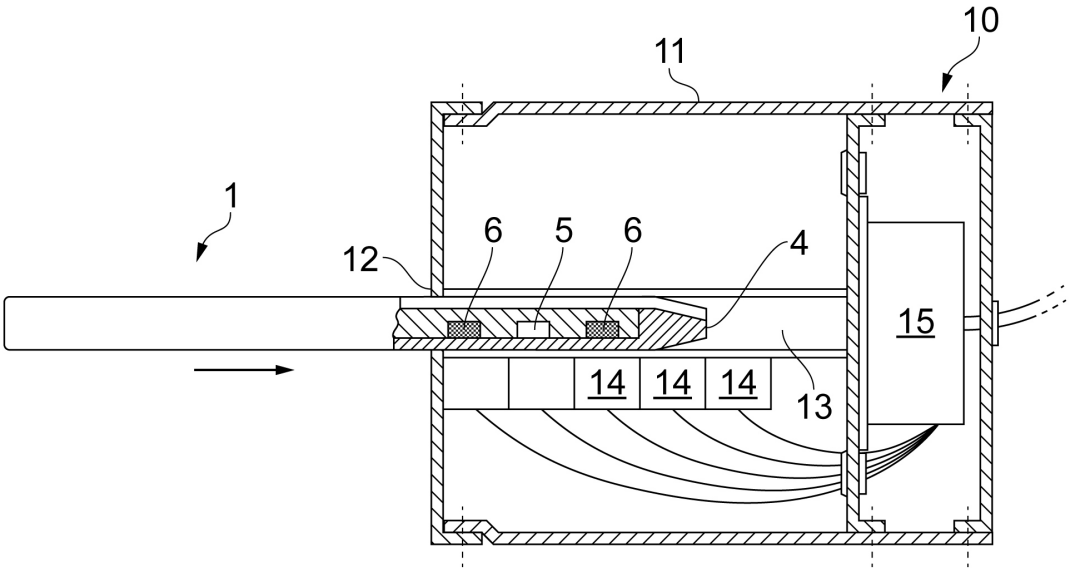

Fig 1b

Document D3: US45653223A

[001] The present invention relates to a contactless switching device which can be used to start/open or stop/lock a vehicle or apparatus.

[002] A first embodiment is shown in Fig. 1a wherein a contactless programmable push-button 1 comprises a push-button element 2 arranged in a housing 21. The push-button element 2 has an exterior part 3 and an interior mounting part 5. The push-button element 2 is linearly displaceable along an axis 8 between a first and second position and has a generally cylindrical shape with a circular section. A magnet 10 is mounted in the interior part 5. A Hall-effect transducer 15 is mounted in line with the linear displacement direction of the push-button element, i.e. the transducer is mounted along the line 8. The spring 18 biases the push-button element 2 toward the first position. When the push-button element 2 is depressed, the magnet 10 moves closer toward the Hall-effect transducer 15, which detects its proximity and transmits a signal to a microprocessor 25 located inside the housing 21. Hence, the microprocessor 25 is configured to determine when the push-button element 2 is depressed or not. Depending on the assessment of the microprocessor 25, a latch (not shown) can be actuated to execute the start/open or stop/lock function.

[003] In an alternative embodiment shown in Fig. 1b, the transducer is positioned within the housing 21 at its periphery along the axis 8 while the magnet is positioned in the interior part 5 also along the axis 8 and such that the transducer can detect the magnet when it passes at proximity during the operation of pressing.

[004] In another alternative embodiment (not shown in the figures), it is also possible to use several transducers 15 and one magnet along the axis 8 so that the transducers can detect several positions of the push-button. Similarly, it is possible to use several magnets and one transducer along the axis 8. Such alternative arrangements make it possible to detect whether the push-button is in an open position, a closed position or any intermediate position (depending on the geometric arrangement and the number of transducers or magnets).

[005] In a further alternative embodiment, the contactless switching device of the present invention may take other forms than a push-button switch. For instance, it may take the form of a lever-operated rotary switch or key-operated rotary switch wherein the push-button element is replaced by a rotary disc containing magnets. A rotary switch, unlike the single magnet/sensor combination switch described above, can be configured so that it cannot be fooled by an external magnetic field that is stronger than the magnet in the button.

[006] As is shown in Fig. 2, the rotary switch may use three Hall-effect transducers 150, 155 and 160 that are connected to the microprocessor 25. These transducers are mounted on a planar surface 200 located within the housing 21. A first set of magnets comprising magnets 115, 117 and 125 is mounted on a surface of a rotary disc 100 that is parallel to the planar surface 200 and is mounted on the interior mounting part 5. The Hall-effect transducers 150, 155 and 160 are located and aligned below magnets 115, 117 and 125 respectively when the disc 100 is in a first neutral position. Additional magnets 110, 112, 120 and 122 are also mounted on the surface of the rotary disc 100. The rotary disc 100 can rotate clockwise and anticlockwise from the first position so that altogether three positions are possible.

[007] The arrangement of the magnetic polarities (designated with N and S) is such that in each of the three positions, the pattern of magnets detected by the three transducers is different and all three of the magnets do not have their polarities oriented in the same direction. When the disc 100 rotates, a second set of magnets aligns over the transducers 150, 155 and 160. For example, if the disc 100 rotates clockwise from the first position (Fig. 2) to a second position (Fig. 3), the magnet 122 aligns over transducer 155, the magnet 117 aligns over transducer 150 and the magnet 112 aligns over transducer 160. Since the magnets in the second set do not all have the same polarity orientation as the magnets in the first set, the combination of Hall-effect signals generated by the transducers is different.

[008] Hence, the new position of the disc 100 (and therefore of the rotary switch) can be determined by the microprocessor 25 based on the combination of signals detected. Moreover, since the rotary switch uses a plurality of magnets having their polarities oriented in different directions, an external magnet cannot fool the switch because the external magnet would bias all sensors in the same manner. This further alternative embodiment allows the construction of the switching device to be simplified as fewer detectors than magnets are used.

D3 Drawings:

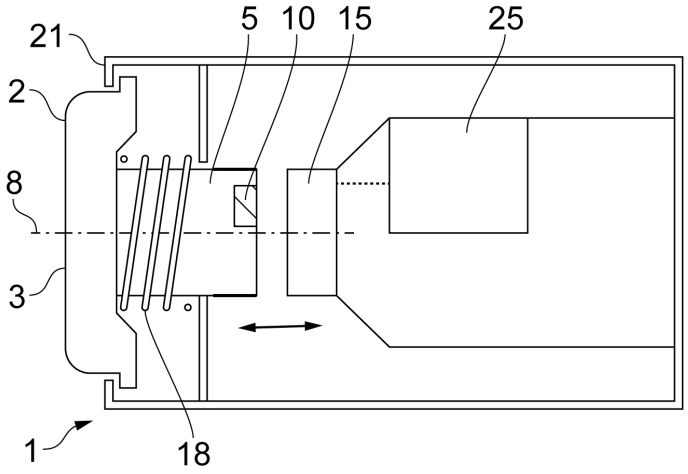

Fig 1a

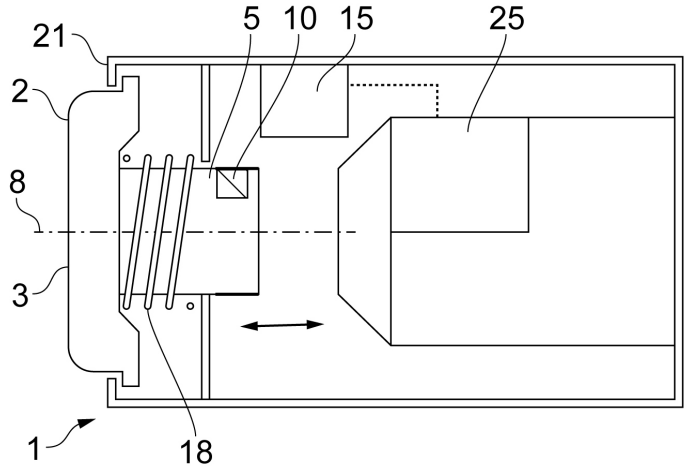

Fig 1b

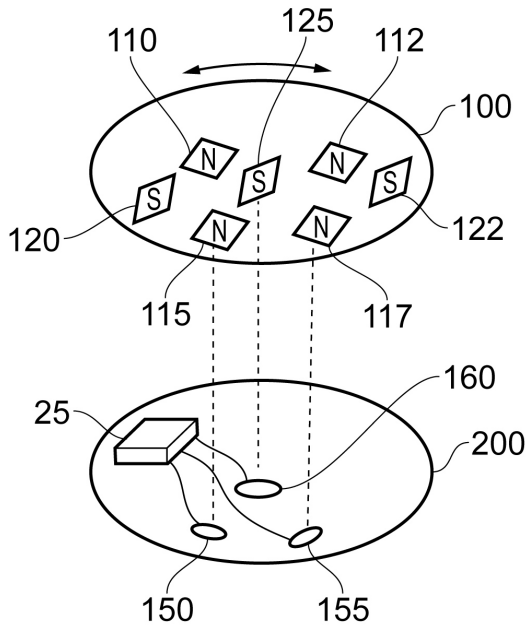

Fig 2

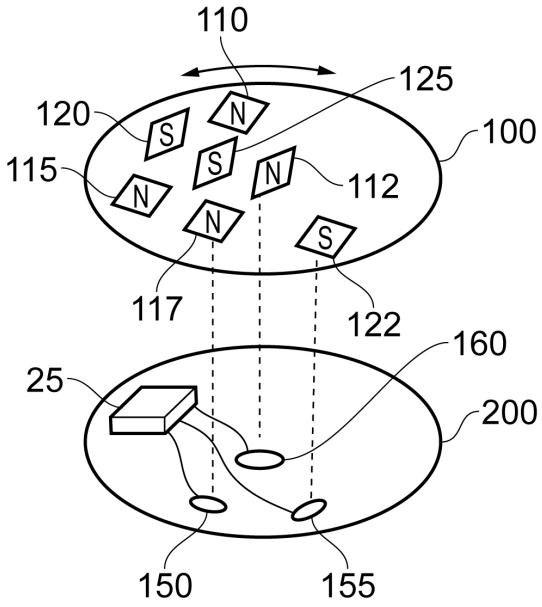

Fig 3

Inhalt (6 Seiten „Schreiben des Mandanten“ und „Geänderte Ansprüche“) nur auf dem Bildschirm während der Prüfung verfügbar

Content (6 page „Client‘s letter“ and „Amended claims“) only available on screen during the examination

Contenu (6 page „Lettre du client“ et „Revendications modifiées“) uniquement visible sur l‘écran pendant l‘examen