

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
14.06.2023 Bulletin 2023/24

(51) International Patent Classification (IPC):
A41D 1/00 ^(2018.01) **A41D 13/018** ^(2006.01)

(21) Application number: **22212849.8**

(52) Cooperative Patent Classification (CPC):
A41D 13/018; A41D 1/005

(22) Date of filing: 12.12.2022

(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 ME MK MT NL
 NO PL PT RO RS SE SI SK SM TR**
 Designated Extension States:
BA
 Designated Validation States:
KH MA MD TN

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(30) Priority: 13.12.2021 IT 202100031169

(54) **EQUIPPED GARMENT**

(57) A garment (100, 110, 120) comprising one or more layers (1) and a switch (4, 22a) and an electrical or electronic component (2b) is described. The switch (4, 22a) is configured to be able to interact with the electrical

or electronic component (2b). Furthermore, the switch (4, 22a) is associated in a removable manner with one or more layers (1) of the garment (100, 110, 120).

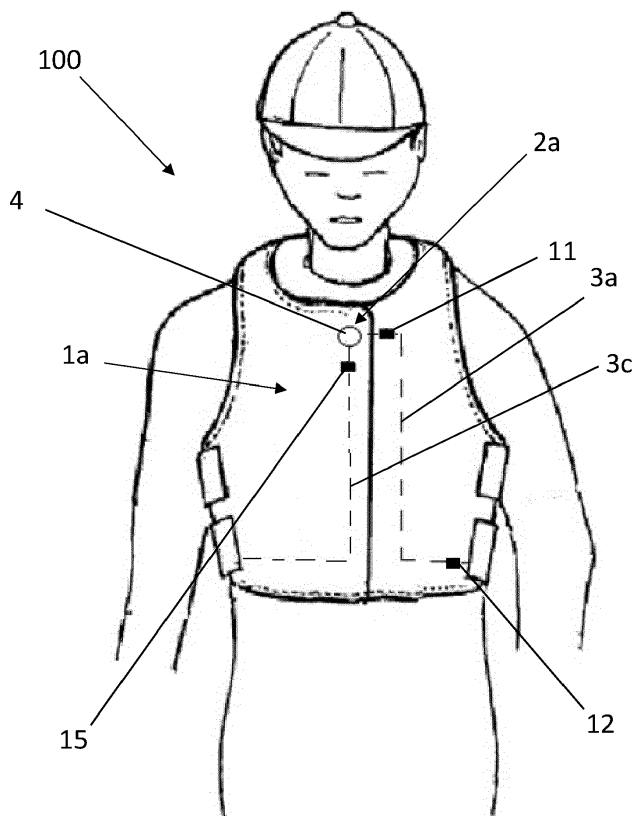


FIG. 1

Description

[0001] The present disclosure relates in general to the sector of "functional" clothing, namely that set of garments or wearable accessories which are designed and configured to perform more functions than just a simple clothing function. In particular, the present disclosure relates to a garment or wearable accessory equipped with an electric circuit which comprises at least one electrically conductive wire and an electrical or electronic device or component.

[0002] In the sector relating to the protection of a user it is known to use garments equipped with personal protection devices. The personal protection device comprises an inflatable element, namely an airbag, which is inflated in the event of impact, by an inflation device in fluid communication with the said airbag. A protection device according to the prior art also comprises an electronic unit, configured to control activation of the airbag, for example following an impact. The electronic unit may be connected to one or more peripheral units, such as a user interface and a switching-on device, as well as to one more inflation devices.

[0003] Furthermore, the personal protection device may have a wearable configuration or may be part of a garment or a wearable accessory. In particular the arrangement of the above-listed components in different positions of the personal protection device or the garment comprising it is known.

[0004] For example, an electrical or electronic device is a switch, namely a device for switching on the airbag system, which places the system on standby. Such a switching-on device may be positioned in the vicinity of a button of the garment and includes a reed contact (or reed switch) for controlling switching-on of the device. The electronic unit and the one or more inflation devices instead are generally positioned in zones of the garment where their volume creates minimum inconvenience or discomfort for the user, such as the stomach zones.

[0005] For these reasons, it is necessary to provide connections by means of one more electrically conductive wires for connecting together the switching-on device and the electronic unit and in general the various components and for allowing them to interact with each other. Generally, the peripheral units and the electronic unit are associated with the garments and the electrically conductive wires are passed between the layers which form the structure of the garment. This configuration allows direct contact with an electrically conductive wire to be avoided, but results in the need for a concealed arrangement of the electrically conductive wire and difficulty for the user to perform maintenance of the entire system and ensure efficient operation thereof.

[0006] In particular, in the event of a fault of one of the peripheral units or a wire, in fact a complex tailoring operation is required, this consisting necessarily in removal of the peripheral unit and the entire wiring connected to it following a complicated operation carried out on the

garment, as well as the replacement thereof with new components. This operation can be carried out only by specialized operators.

[0007] As a result, operations of this type may result in high costs and long maintenance times since highly specialized personnel is required in order to remove the components from the garment and then insert them back in correctly, namely without affecting operation thereof.

[0008] The starting point of the present disclosure is therefore the technical problem of providing a garment, which is able to satisfy all the aforementioned requirements with reference to the prior art and overcome the aforementioned drawbacks and/or is able to achieve further advantages. In particular, the technical problem consists in providing a garment equipped with one or more electrical or electronic components which allows easier and safer maintenance in the event of a fault of one of these elements, and is able to provide further advantages.

[0009] This is obtained by means of a garment, a wearable accessory, or a respective portion of a garment or wearable accessory, and a method according to the respective independent claims. Secondary characteristics of the subject of the present invention are defined in the corresponding dependent claims.

[0010] Underlying the present disclosure there is a recognition by the inventor that it is possible to use a modular solution for connecting the switch to the peripheral units such as the user interface or the electronic unit. Namely it is possible to combine in a removable manner a switch with the garment or wearable accessory with which it is associated, so as to facilitate the replacement or the repair thereof.

[0011] In the context of the present disclosure, the term "garment" or "portion of a garment" is understood in the broad sense as meaning any wearable accessory or article, or a part thereof, i.e. which is configured to be worn. The garment or accessory may be understood also as meaning only a part of a garment or accessory.

[0012] In particular, in accordance with the present invention, a garment, a wearable accessory or a respective portion of a garment or wearable accessory, comprising one or more layers forming at least one part of a garment, wearable accessory or a respective portion of a garment or wearable accessory, a switch or at least one electrical or electronic component, is provided. Even more particularly, the switch, which is configured to be able to interact with the at least one electric or electronic component, is associated in a removable manner with one or more layers of the garment. In other words, the switch is configured to be able to be separated or associated again with the garment by means of a connection of the removable type.

[0013] According to one embodiment, the garment may have a main layer which has, removably connected thereto, a support layer with which in turn the switch may be associated. For example, the main layer and the support layer may be connected by means of a separable connection, or hook-and-loop opening and closing con-

nection. Alternatively, the switch is associated in a removable or direct manner, with one or more layers of the garment, for example is inserted in a respective seat formed in one or more layers of the garment or wearable accessory. Preferably, the switch alone may be detached.

[0014] Preferably, the switch is a magnetic switch or a switch which can be activated by means of a magnetic field. For example, the switch may be a reed switch configured to cooperate with a magnet for opening and closing of the switch.

[0015] Preferably, the switch is an electrical switch. For example, the switch is a pressure or button switch which is able to close a circuit and may comprise two components configured to be separated or joined together in order to respectively open or close the pressure switch. Preferably, the pressure switch is associated with the main layer of the garment. In this case, the switch is preferably mounted removably on the layers of the garment. For example, the removable joining system may be realized using Velcro.

[0016] Preferably, the garment, wearable accessory or a respective portion of the garment or wearable accessory comprises an electrically conductive wire. Furthermore, the garment, wearable accessory or a respective portion of the garment or wearable accessory includes a first coupling device comprising a first coupling component. In particular, the first coupling component is associated with the switch and is configured to be coupled in a removable manner with a first coupling counter-component, which in turn is associated with the electrically conductive wire.

[0017] Preferably, the first coupling device is a mechanical coupling of the male-female type. Consequently, the first coupling component and the first coupling counter-component are respectively a female coupling component and a male coupling component, or vice versa.

[0018] Preferably, the electrically conductive wire is inserted so as to pass through or slide inside a housing of the garment. Alternatively, the electrically conductive wire is inserted between the main layer and a cover layer of the garment, or between the main layer and an outer layer of the garment. In other words, the electrically conductive wire is inserted concealingly in the garment, in a special housing or between two layers of the garment.

[0019] Preferably, an opening is present along one or more layers of the garment, in the proximity of the first coupling device, and is configured to allow access to the first coupling device. In other words, an opening is present in order to facilitates access to the first coupling device by a user, for example in order to replace or repair an element of the garment.

[0020] Preferably, the garment comprises a second coupling device, which in turn comprises a second coupling component. Preferably, the second coupling component is associated with the electrical or electronic component and is configured to be coupled in a removable

manner with a second coupling counter-component associated with the electrically conductive wire. In particular, the second coupling counter-component is preferably associated with the electrically conductive wire in the proximity of an end opposite to that of the first coupling counter-component.

[0021] In this way, by removing the fastening between the electrically conductive wire and the switch, or between the electrically conductive wire and the electrical or electronic component, it is possible to remove from the layers of the garment at least one of the switch, the electrically conductive wire and the electrical or electronic component, which are all preferably associated in a removable manner with one or more layers of the garment.

[0022] Preferably, the garment comprises an inflatable element, an inflation device and a control unit. In particular, the inflation device is configured to inflate the inflatable element from a deflated condition into a inflated condition. Furthermore, the control unit is preferably configured to manage activation of the inflation device.

[0023] Preferably, the electrical or electronic component is or comprises said control unit.

[0024] Preferably, the switch is configured to communicate with the control unit via an electrical signal transmitted by means of said electrically conductive wire. In other words, the electrically conductive wire allows direct communication between the control unit and the switch, which for example may activate or deactivate the control unit.

[0025] According to an alternative embodiment, the switch is configured to communicate with the control unit by means of a wireless connection, for example a Bluetooth connection.

[0026] The switch and the electrical or electronic component, as well as the electrically conductive wire, are therefore to be regarded as modules of the garment, which are coupled together in a removable manner, wherein the switch is fixed in a removable manner to the layers of the garment.

[0027] Preferably, the switch, all the electrically conductive wires and all the electrical or electronic components of the garment are associated in a removable manner with the layers of the garment.

[0028] The main advantage of the invention therefore lies in the fact that maintenance is facilitated in the event of a fault affecting the switch, or an electrical or electronic component or an electrically conductive wire, since it is possible to disconnect the element to be repaired or replaced from the other elements of the garment and remove it from the said garment, without the need for a complex tailoring operation. The element may therefore be repaired or replaced and then repositioned in the garment, also by the user him/herself, without the need to remove also the other elements connected thereto.

[0029] It is therefore clear that the maintenance of one of the elements forming part of a garment according to the present invention does not require a specialized operator, but may be completed simply and easily also by

a user of the garment.

[0030] Preferably, in order to remove the faulty electrically conductive wire, it is possible to use a new electrically conductive wire provided at its respective ends with a male coupling component and a female coupling component. The wire may be connected to the faulty electrically conductive wire, which may be disconnected from the respective electrical or electronic devices connected to it and connected to one end of the new and functioning electrically conductive wire, instead of to the electrical or electronic component. The faulty electrically conductive wire may be extracted, by pulling one end thereof and thus inserting the functional electrically conductive wire instead of it.

[0031] Further advantages, characteristic features and modes of use of the subject of the present disclosure will become clear from the following detailed description of a number of preferred examples of embodiment thereof, provided by way of a nonlimiting example.

[0032] It is nevertheless evident that each embodiment may have one or more of the advantages listed above; in any case it is nevertheless not necessary that each embodiment should have simultaneously all the advantages listed.

[0033] Reference will be made to the figures of the attached drawings in which:

- Figure 1 shows a front view of a garment according to the present invention worn by a user;
- Figure 2 shows a back view of the garment of Figure 1;
- Figure 3 shows a front view of a garment according to an alternative embodiment of the present disclosure, which is open so as to show its inner side;
- Figure 4 shows a front view of a garment being worn, according to a further alternative embodiment of the garment shown in Figure 1;
- Figure 5 shows a diagram representing the components and the connections present in a garment according to the present invention;
- Figures 5a-5d show diagrams representing components and connections in a garment according to the present invention during the respective operations for maintenance and changing of an electrically conductive wire;
- Figure 6 shows a detailed cross-sectional view of a partially cross-sectioned detail of the garment according to Figure 1;
- Figure 7 shows a detailed cross-sectional view of a switch of a garment according to the prior art;

- Figure 8 shows a detailed cross-sectional view of a switch of a garment according to the present invention and the components connected to it;

- 5 - Figure 9 shows a front view of a magnetic switch for a garment according to the present disclosure;

- Figure 10 shows a front view of a further component for a garment according to the present disclosure;

- 10 - Figure 11 shows a schematic representation of the connections of the electrical or electronic components of the garment according to Figure 3.

- 15 **[0034]** With reference to the attached figures, the number 100 denotes overall a garment according to an embodiment of the present invention.

- [0035]** According to a main aspect of the present disclosure, for example with reference to Figure 1, the garment 100 is an equipped garment, i.e. a garment provided with a switch 4, 22a and at least one electrical or electronic component 2b. More particularly, the garment 100 has a structure which includes one or more layers. These layers define a housing or a zone for receiving the body of a user. The one or more layers therefore identify a casing containing the body of a user. Preferably, it may consist of a main body 1a which forms an outer lining of the garment and an inner layer 1b which is arranged between the main layer 1a of the garment and the body of a user.

- 30 **[0036]** A single main layer 1a may also be provided.

- [0037]** "Electrical or electronic component 2b" is understood in the context of the present disclosure as meaning any device, part, body or the like which is structured or configured to give the garment 100 additional functionality, so that said garment may be called an "equipped garment". The electrical or electronic component 2b may be an electronic control unit, a display or other interface with the user or other functional component for the garment.

- 35 **[0038]** The switch 4, 22a is configured or structured to be able to interact with the electrical or electronic component 2a, for example it may transmit or receive a signal or data from the electrical or electronic component 2b. The switch 4, 22a may interact with the electrical or electronic component 2b by means of an electric circuit, for example by means of one or more electrically conductive wires, or by means of a wireless connection, for example a Bluetooth connection.

- 40 **[0039]** Furthermore, at least the switch 4, 22a is associated in a removable manner with one or more layers of the garment 100. In other words, at least the switch 4, 22a may be removed from one or more layers of the garment 100.

- 45 **[0040]** The switch 4, 22a may be a magnetic switch or a switch which can be activated by means of a magnetic field, or an electrical switch. The switch 4, 22 may also be configured to manage the activation or a standby state

of the electrical or electronic component 2b.

[0041] In other words, the switch 4, 22a may activate or place on standby the electrical or electronic component 2b, which may be an electronic control unit, a display or other user interface or another functional component for the garment. In other words, the switch is preferably configured to place the electrical or electronic component 2b in a state of a potential activation or deactivation, i.e. which respectively allows operation or momentarily interrupts operation thereof.

[0042] In other words, when the switch 4, 22a is closed, the electrical or electronic component 2b is switched on or made available to be activated, whereas, when the switch 4, 22a is open, the electrical or electronic component 2b is deactivated or placed on standby.

[0043] According to an embodiment of the present invention, the switch 4, 22a is associated with at least one support layer 1c of the garment. Furthermore the at least one support layer 1c is preferably connected to the main layer 1a of the garment 100 by means of a separable connection 21, or a hook-and-loop opening and closing connection.

[0044] According to one embodiment, the switch 4, 22a is a magnetic switch, in particular a reed switch 22a, configured to cooperate with a magnet 5. In other words, the magnet 5 may activate the closing or opening of the magnetic switch, which is a reed switch 22a.

[0045] According to one aspect of the present invention, the magnetic switch 22a is placed in a removable manner (for example inside a pocket or on Velcro layer) on a front flap of the garment on the layer 1a in the proximity of a zip or button closure or other closing device, and a magnet 5 is placed in the vicinity of the magnetic switch 22a on the other flap so that, when the garment is closed in the front zone, the magnet may close the magnetic switch 22a.

[0046] According to an alternative embodiment, the switch 4, 22a is an electric switch. In particular, the electrical switch is a pressure switch 4, namely a button which may be closed by means of application of a pressure thereon and opened again in a similar manner and preferably associated with the main layer 1a. Moreover, the pressure switch 4 comprises two parts 4a, 4b which are configured to be separated or joined together in order to respectively open or close the pressure switch 4. Preferably, the two components 4a, 4b of the pressure switch 4 are configured to close the pressure switch 4 when they are joined together and to open the pressure switch 4 when they are separated. In other words, according to a preferred embodiment, the magnetic switch is associated with one of the two components 4a, 4b of the button 4, while a magnet 5 or another component able to generate a magnetic field is associated with the other one of the two components. Therefore by closing the button 4, namely by joining together the components 4a and 4b of the button, the magnet may activate the button switch 4.

[0047] According to one aspect of the present disclosure, with reference to Figure 8, the two components 4a,

4b are removably mounted on the main layer 1a. For example, the two components 4a, 4b may be fixed on support layers 1c which are in turn removably fixed on an inner side of the outer layer 1a, for example by means of removable connection 21, such as Velcro. In this way, in order to remove the pressure switch 4 and allow removal, the first coupling device 11, 15 may be disconnected and the support layers 1c removed.

[0048] According to one embodiment, the garment comprises an electrically conductive wire 3a. Moreover, the garment 100 comprises a first coupling device 11, 15 comprising a first coupling component 11a, 15a and a first coupling counter-component 11b, 15b. In particular, the first coupling component 11a, 15a is configured to be removably coupled to the first coupling counter-component 11b, 15b. Even more particularly, for example the first coupling component 11a is associated with, or placed on the side of, the switch 4, 22a, while the second coupling counter-component 11b is associated with, or placed on the side of, the electrically conductive wire 3a.

[0049] Preferably, the first coupling device 11, 15 is a mechanical coupling of the male-female type. Even more preferably, the first coupling component 11a, 15a is one of a male coupling component and a female coupling counter-component and the first coupling counter-component 11b, 15b is the other one of the male coupling component and the female coupling counter-component. Preferably, the first coupling device 11 allows a physical connection between the switch 4, 22a and the electrically conductive wire 3a and ensures that there is continuity of the electrical connection between the two elements, namely allows the electric current to pass between the two elements. A similar coupling device 15 with a coupling component 15a (for example male component) and coupling counter-component 15b (for example female counter-component) is shown in Figure 8.

[0050] According to one embodiment, the electrically conductive wire 3a is inserted so as to pass or slide inside a housing of the garment 100, namely between the main layer 1a and a cover layer 1b of the garment 100, or also between the main layer 1a and an outer layer 1d of the garment.

[0051] Preferably, with reference to Figure 6, the electrically conductive wire 3a is inserted so as to pass inside a channel 16 formed by the outer layer 1a and the cover layer 1b, associated with said main layer 1a for example by means of stitching or other method for connecting together fabrics. In other words, the cover layer 1b is associated with the main layer 1a so as to form a channel inside which the electrically conductive wire 3a is housed, preferably so as to pass through it. The electrically conductive wire 3a may be housed inside another channel formed in a different way, for example by means of a strip or band. Both configurations described allow the wire to be removed from its housing channel, for example in the case where maintenance thereof is required.

[0052] Basically, even only one of the switch 4, 22a and the electrically conductive wire 3a may be removed

from one or more layers and dissociated (by means of removal of the fastening between the first coupling component 11a and the first coupling counter-component 11b) also from the other one of the switch 4, 22a and the electrically conductive wire 3a and allow respective maintenance or replacement without having to modify the entire electrical circuit of the garment 100.

[0053] In this way, a user may disconnect the first coupling component 11a and the first coupling counter-component 11b when at least one of or both the switch 4, 22a and the electrically conductive wire 3a must be replaced or repaired. In particular, a user may remove the switch 4, 22a from the garment in order to perform maintenance or may remove the electrically conductive wire 3a from the channel where it is housed passing through it.

[0054] Even more particularly, with reference to Figures 5a-5c, in the case where it is required to replace the wire 3a with a new wire, a user may connect one end of the wire 3a to an end of the new wire which is provided with a coupling component compatible with or similar to the component 11a associated with the switch 4, 22a. Then the user may remove the wire 3a from its housing, in particular the wire 3a is pulled by means of its free end in such a way that the removal of the wire 3a results in the simultaneous insertion of the new wire inside the same housing channel. In other words, the new wire is connected to the wire 3a to be replaced, which is extracted from its housing by means of the end opposite to said connection with the new wire, so that the new wire is pulled inside the housing channel.

[0055] Preferably, an opening is present in the proximity of the first coupling device 11, 15, along one or more layers of the garment, for example along the main layer 1a, and is configured to allow access to the first coupling device 11, 15 in such a way as to facilitate for example replacement or maintenance of the switch 4, 22a and/or of the electrically conductive wire 3a. In this way a user may access the coupling device 11, for example in order to disconnect or re-connect the components. In other words, when the coupling device 11 is in use, namely connects together the switch 4, 22a and the electrically conductive wire 3a, it can be accessed by a user via an opening along a suitable region of the layers of the garment. The presence of the opening simplifies the separation and the connection of the coupling components 11a and 11b by a user.

[0056] According to one embodiment, the garment comprises a second coupling device 12, 13, 14 which in turn comprises a second coupling component 12a and a second coupling counter-component 12b. In particular, the second coupling component 12a is configured to be coupled in a removable manner with the second coupling counter-component 12b. Even more particularly, for example the second coupling component 12a is associated with, or placed on the side of, the electrical or electronic component 2b, while the second coupling counter-component 11b is associated with, or placed on the side of, the electrically conductive wire 3a.

[0057] The electrical or electronic component 2b may be associated in a removable manner with one or more layers of the garment. In other words, the electrical or electronic component 2b may be removed from one or more layers of the garment 100. Basically, even only one of the electrical or electronic component 2b and the electrically conductive wire 3a may be removed from one or more layers and dissociated (by means of removal of the fastening between the second coupling component 12a and the second coupling counter-component 12b) also from the other one of the electrical or electronic component 2b and the electrically conductive wire 3a and allow respective maintenance or replacement without having to modify the entire electrical circuit of the garment 100.

[0058] In this way, a user may disconnect the second coupling component 11a and the second coupling counter-component 11b when at least one of or both the electrical or electronic component 2b and the electrically conductive wire 3a must be replaced or repaired. In particular, a user may remove the electrical or electronic component 2b from the garment in order to carry out maintenance or may remove the electrically conductive wire 3a from the channel inside which it is housed passing through it.

[0059] Even more particularly, in the case where it is required to replace the wire 3a with a new wire, a user may connect one end of the wire 3a to the end of the new wire which is provided with a coupling component compatible with or similar to the component 12a associated with the electrical or electronic component 2b. Then the user may remove the wire 3a from its housing, in particular the wire 3a is pulled by means of its free end in such a way that the removal of the wire 3a results in the simultaneous insertion of the new wire inside the same housing channel. In other words, the new wire is connected to the wire 3a to be replaced, which is extracted from its housing by means of the end opposite to said connection with the new wire, so that the new wire is pulled inside the housing channel.

[0060] As can be seen from the figures, the garment may include a plurality of electrical and electronic components, indicated by the reference numbers 2a, 4, 22a, 22b, 102 and a plurality of electrically conductive wires 3a, 3b, 3c which provide the garment with the desired functionality. The electrical or electronic components may be of various types, depending on the structure of the garment to be equipped. Further removable coupling devices 11, 12, 13, 14, 15 are therefore provided and may be identical to each other or have an identical function.

[0061] The description provided in respect of the switch 4, 22a, the electrically conductive wire 3a, the electrical or electronic component 2b and the coupling devices 11, 12 is applicable to all the other electrical and electronic components 22b, 102 and the electrically conductive wires 3b, 3c, as well as to the respective coupling devices 13, 14, 15.

[0062] For example, Figures 1-4 show a garment 100,

110, 120 provided with an inflatable protection element 101. More particularly, the garment 100, 110, 120 also comprises an inflatable element 101 and an inflation device 102. In particular, the inflation device 102 is configured to inflate the inflatable element 101, using methods which are well-known to the person skilled in the art. This garment 100 has, by way of electrical and electronic components, an electronic control board, inflation devices connected to a control unit 22b, and a switch 4, 22a, such as, for example, one of the switches described above.

[0063] A configuration of a garment with an inflatable protection element, control electronics and inflation devices are known to the person skilled in the art. Preferably, the control unit 22b may control activation of the inflation device 102 and therefore inflation of the inflatable element 101, for example following an impact. Further electrical or electronic components may include an interface for displaying the state of the entire system (Figure 10) or other devices of the known type.

[0064] According to an embodiment of the present invention, the electrical or electronic component 2b is said control unit 22b, and the switch 4, 2a is configured to communicate with the control unit 22b via an electric signal transmitted by means of said electrically conductive wire 3a. For example, the switch 4, 22a may activate or deactivate a standby condition of the control unit 22b. In particular, the switch 4, 22a may keep the control unit 22b in the standby condition when it is open and may deactivate the standby condition of the control unit 22b when it is closed. Preferably, therefore, the control unit 22b is configured to activate the inflation device 102 only if the magnetic switch 22a is active, i.e. preferably closed, or if the garment is worn by the user and the pressure switch 4 is closed.

[0065] In other words, therefore, the control unit 22b is active, i.e. may control potential activation of the inflation device 102, when the switch 4, 22a is closed.

[0066] It can be understood that one or more of the electrical or electronic components, such as the control unit 22b, the inflation device 102, the magnetic switch 22a, or the pressure switch 4, may be connected to the other one or more of said electrical or electronic components via an associated electrically conductive wire 3a, 3b, 3c by means of the respective removable coupling devices 11, 12, 13, 14 and 15. Each coupling device 11, 12, 13, 14 and 15 may further comprise a coupling component which is configured to be removably coupled with a coupling counter-component.

[0067] The operation of each coupling device 12, 13, 14 and 15 is entirely similar to that of the coupling device 11 and is able to offer the same advantages with regard to the components connected by it. In particular, each coupling device 12, 13, 14 and 15 allows the single elements associated with the garment to be disconnected, so as to allow the repair or replacement of the single faulty element without removing from the garment 100 also the connected elements.

[0068] According to an alternative embodiment, the

electrical or electronic component 2b is the control unit 22b and the switch 4, 22a is configured to communicate with said control unit 22b, for example in order to manage a standby condition of the control unit 22b, by means of a wireless connection, for example a Bluetooth connection.

[0069] The subject-matter of the present disclosure has been described hitherto with reference to embodiments thereof. It is to be understood that other embodiments relating to the same inventive idea may exist, all of these falling within the scope of protection of the claims which are attached below.

15 Claims

1. Garment (100, 110, 120) or wearable accessory, or respective portion of a garment or wearable accessory, comprising:

- one or more layers (1) of the garment or wearable accessory, or respective portion of the garment or wearable accessory,
- a switch (4, 22a) and
- an electrical or electronic component (2b),

wherein said switch (4, 22a) is configured to be able to interact with said electrical or electronic component (2b), and wherein at least said switch (4, 22a) is associated in a removable manner with one or more layers (1) of the garment or wearable accessory, or respective portion of the garment or wearable accessory.

2. Garment (100, 110, 120) or wearable accessory, or respective portion of a garment or wearable accessory, according to the preceding claim, wherein said switch (4, 22a) is associated with a support layer (1c) of the garment or wearable accessory, or respective portion of the garment or wearable accessory, and wherein said support layer (1c) is connected to a main layer (1a) of the garment or wearable accessory, or respective portion of the garment or wearable accessory, by means of a separable connection (21), or a hook-and-loop opening and closing connection.

3. Garment (100, 110, 120) or wearable accessory, or respective portion of a garment or wearable accessory, according to any one of the preceding claims, wherein said switch (4, 22a) is a magnetic switch or a switch which can be activated by a magnetic field, or is an electrical switch.

4. Garment (100, 110, 120) or wearable accessory, or respective portion of a garment or wearable accessory, according to the preceding claim, wherein said magnetic switch is a reed switch (22a) configured to

cooperate with a magnet (5).

5. Garment (100, 110, 120) or wearable accessory, or respective portion of a garment or wearable accessory, according to claim 3 in combination with claim 2, wherein said electrical switch is a pressure switch (4), associated with said main layer (1a) and comprising two components (4a, 4b) configured to be separated or joined together in order to respectively open or close said pressure switch (4). 5
6. Garment (100, 110, 120) or wearable accessory, or respective portion of a garment or wearable accessory, according to any one of the preceding claims, comprising an electrically conductive wire (3a), wherein the wearable garment or accessory, or respective portion of a garment or wearable accessory, includes a first coupling device (11, 15) comprising a first coupling component (11a, 15a), associated with said switch (4, 22a) and configured to be coupled in a removable manner with a first coupling counter-component (11b, 15b) associated with said electrically conductive wire (3a). 10 15 20
7. Garment (100, 110, 120) or wearable accessory, or respective portion of a garment or wearable accessory, according to the preceding claim, wherein said first coupling device (11, 15) is a mechanical coupling of the male-female type, and wherein said first coupling component (11a, 15a) is one of a male coupling component and a female coupling counter-component and said first coupling counter-component (11b, 15b) is the other one of the male coupling component and the female coupling counter-component. 25 30 35
8. Garment (100, 110, 120) or wearable accessory, or respective portion of a garment or wearable accessory, according to claim 6 or 7 in combination with claim 2, wherein said electrically conductive wire (3a) is inserted so as to pass through, or slide inside, a housing, or between said main layer (1a) and a cover layer (1b) of the garment, or between said main layer (1a) and an outer layer (1d) of the garment or wearable accessory, or respective portion of the garment or wearable accessory. 40 45
9. Garment (100, 110, 120) or wearable accessory, or respective portion of a garment or wearable accessory, according to any one of claims 6 to 8, wherein an opening is present in the proximity of said first coupling device (11, 15), along said one or more layers (1), and is configured to allow access to the first coupling device (11, 15). 50 55
10. Garment (100, 110, 120) or wearable accessory, or respective portion of a garment or wearable accessory, according to any one of claims 6 to 9, comprising

ing a second coupling device (12, 13, 14), wherein said second coupling device (12, 13, 14) comprises a second coupling component (12a), associated with said electrical or electronic component (2b) and configured to be coupled in a removable manner with a second coupling counter-component (12b) associated with said electrically conductive wire (3a).

11. Garment (100, 110, 120) or wearable accessory, or respective portion of a garment or wearable accessory, according to any one of the preceding claims, comprising an inflatable element (101), an inflation device (102) and a control unit (22b), wherein said inflation device (102) is configured to inflate said inflatable element (101) and said control unit (22b) is configured to manage activation of the inflation device (102). 10 15 20
12. Garment (100, 110, 120) or wearable accessory, or respective portion of a garment or wearable accessory, according to the preceding claim in combination with claim 11, wherein said electrical or electronic component is said control unit (22b), and wherein said switch (4, 22a) is configured to communicate with said control unit (22b) via an electrical signal transmitted by means of said electrically conductive wire (3a). 25 30 35
13. Garment (100, 110, 120) or wearable accessory, or respective portion of a garment or wearable accessory according to claim 11, wherein said electrical or electronic component is said control unit (22b) and wherein said switch (4, 22a) is configured to communicate with said control unit (22b) by means of a wireless connection, for example a Bluetooth connection. 40 45
14. Garment (100, 110, 120) or wearable accessory, or respective portion of a garment or wearable accessory, according to any one of the preceding claims, wherein said switch (4, 22a) is associated directly and in a removable manner with one or more layers (1) of the garment or the wearable accessory, or respective portion of the garment or wearable accessory. 50 55
15. Method for equipping a wearable garment or accessory, or respective portion of a wearable garment or accessory, wherein said wearable garment or accessory, or respective portion of a wearable garment or accessory, is according to any one of the preceding claims.

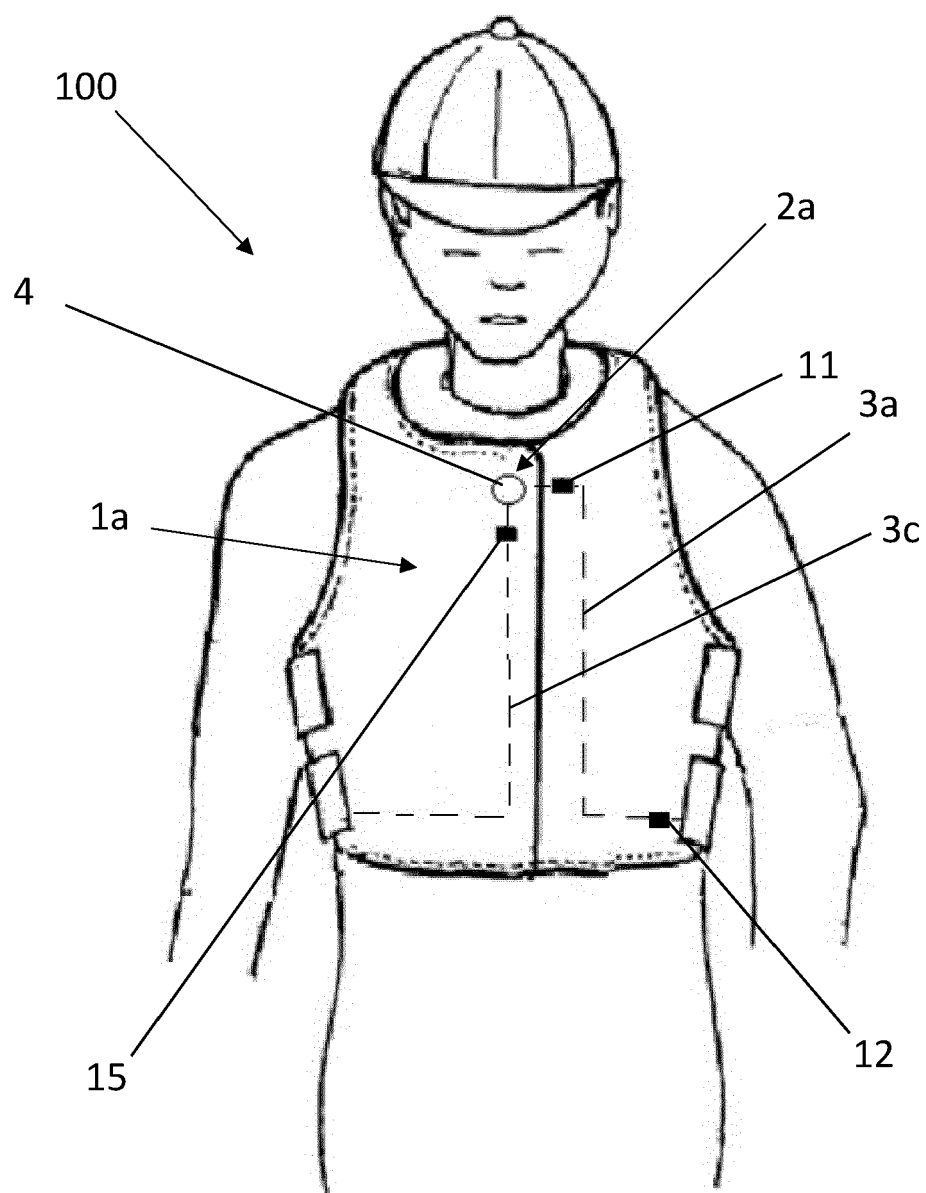


FIG. 1

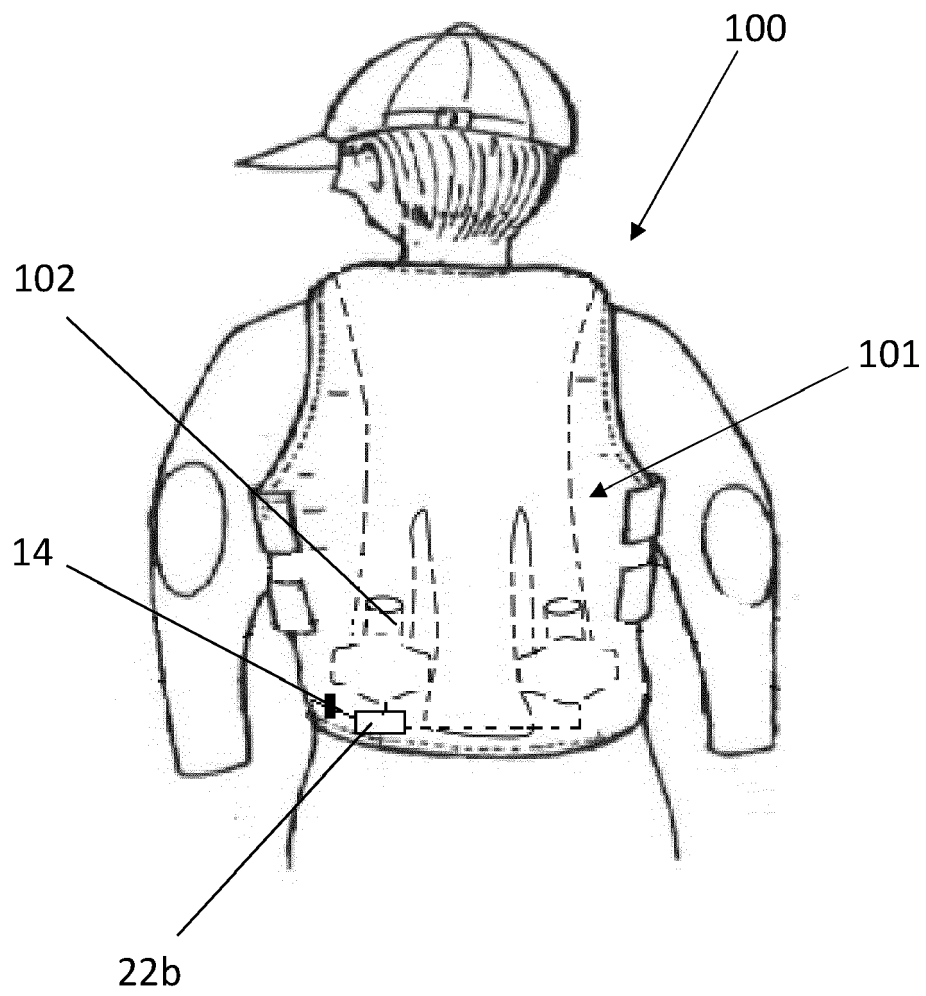


FIG. 2

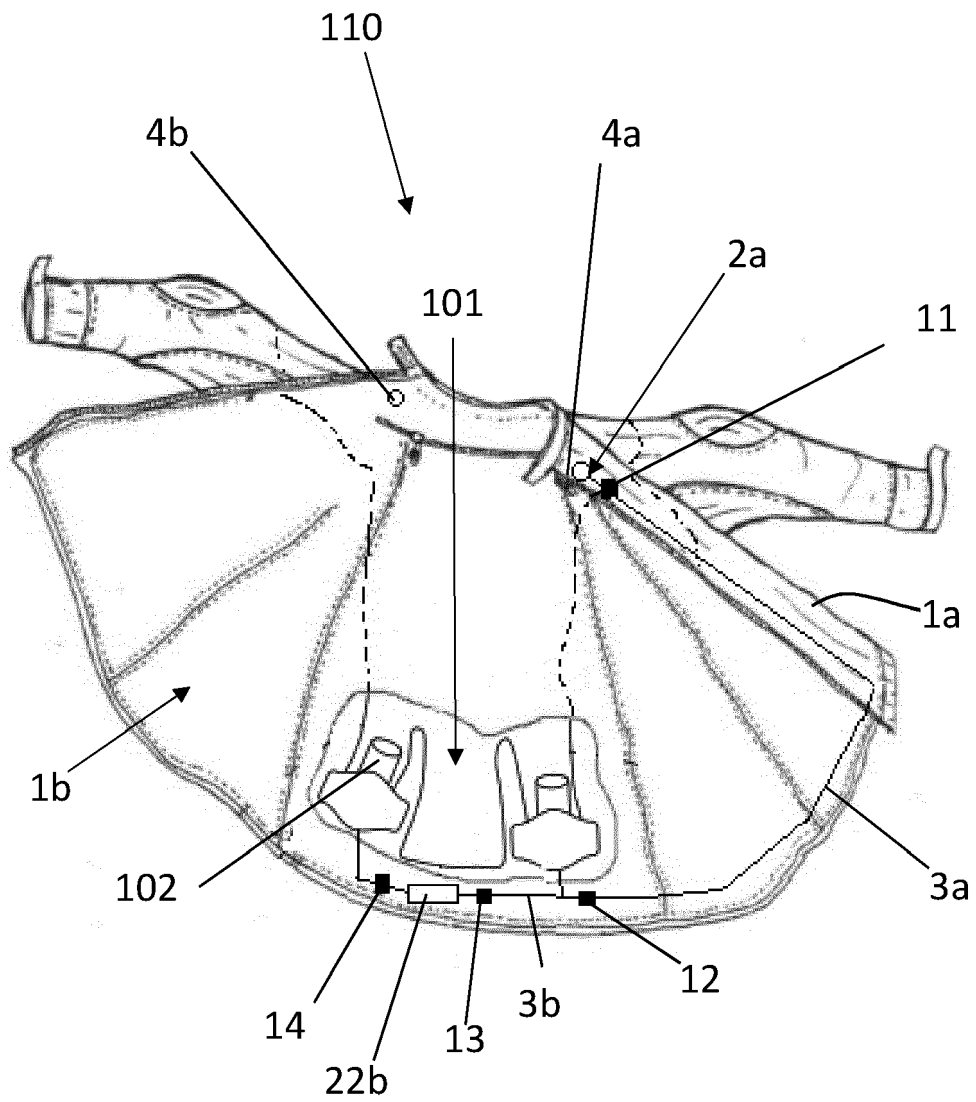


FIG. 3

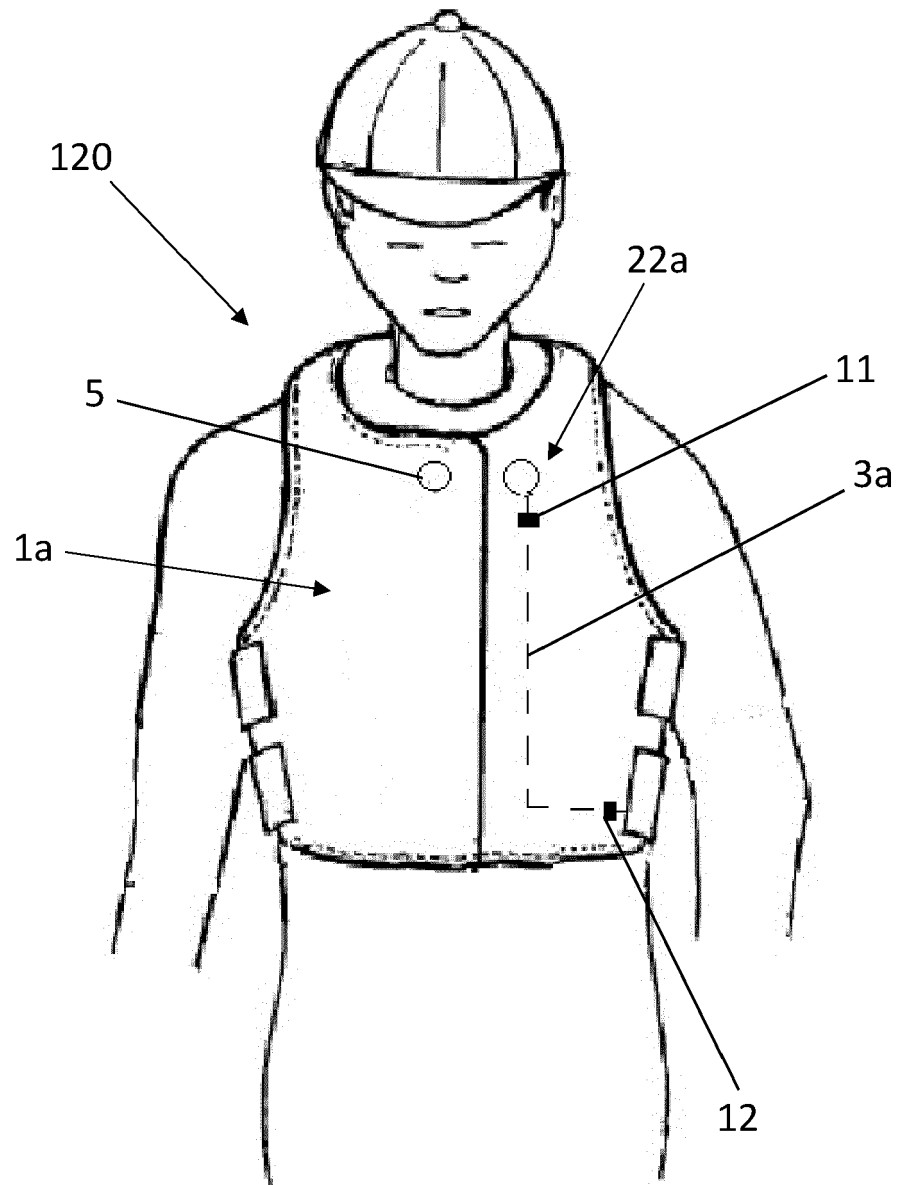


FIG. 4

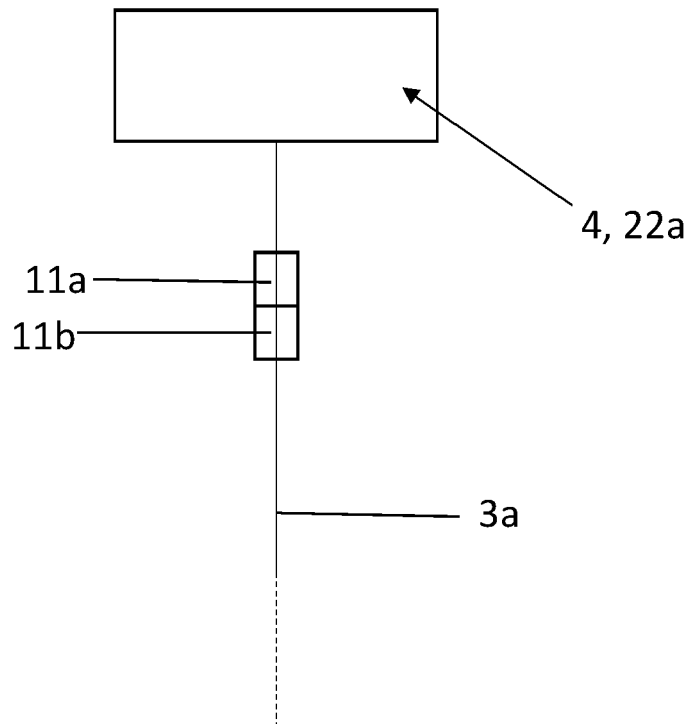


FIG. 5

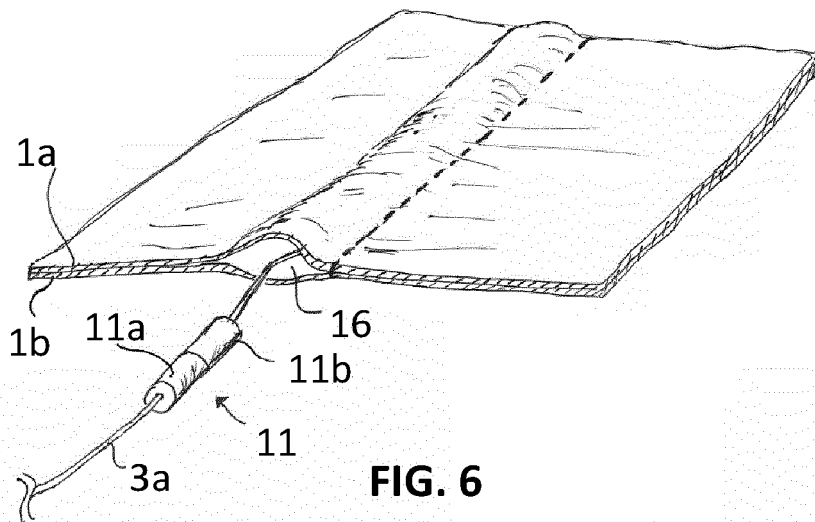


FIG. 6

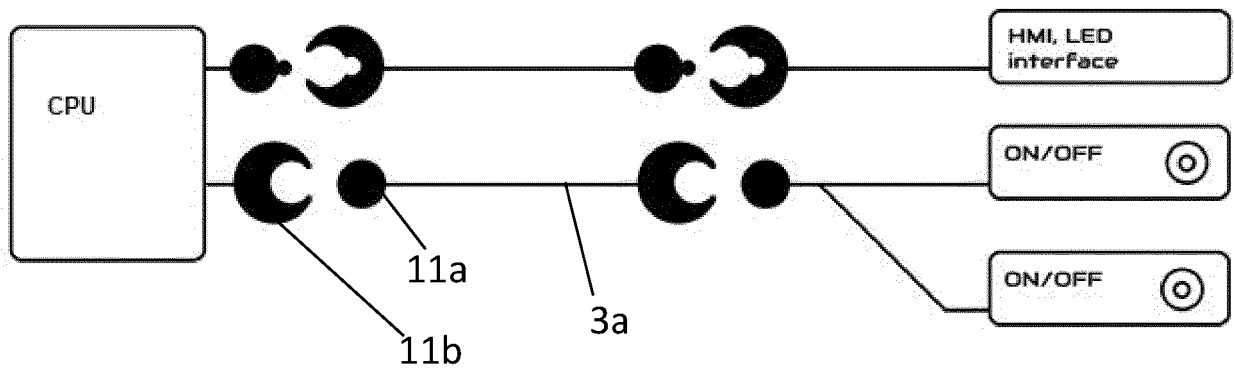


FIG. 5a

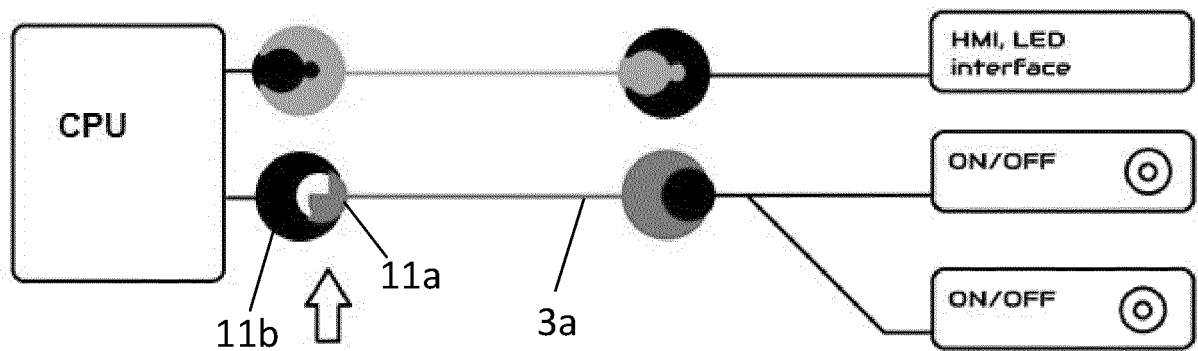


FIG. 5b

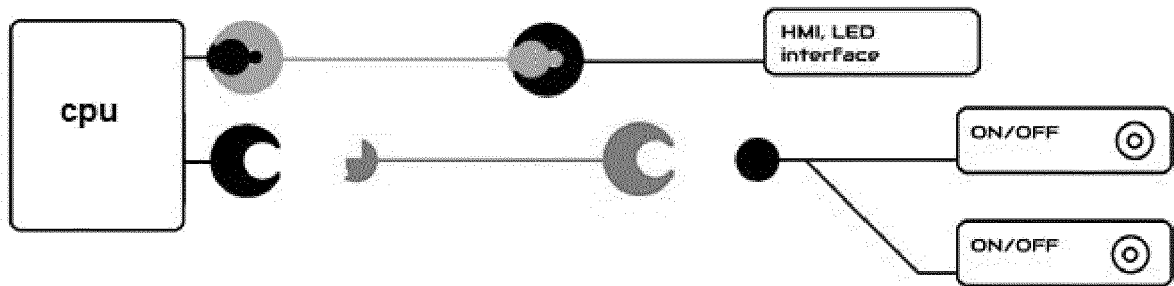


FIG. 5c

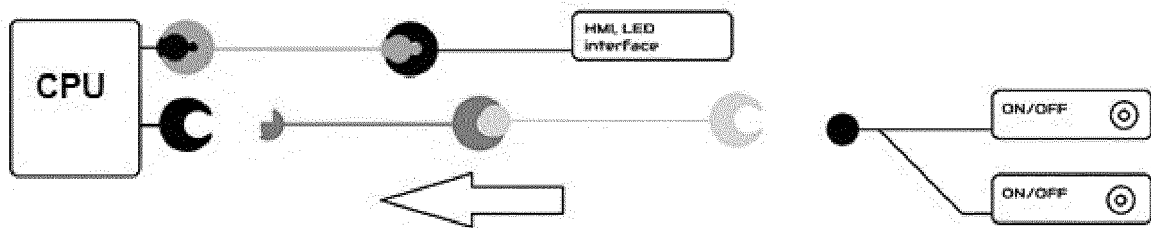
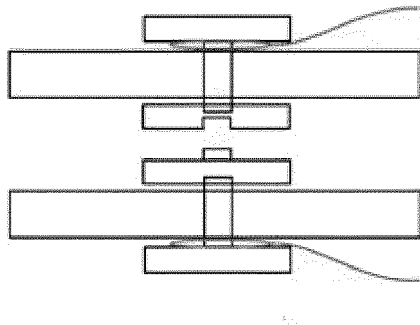
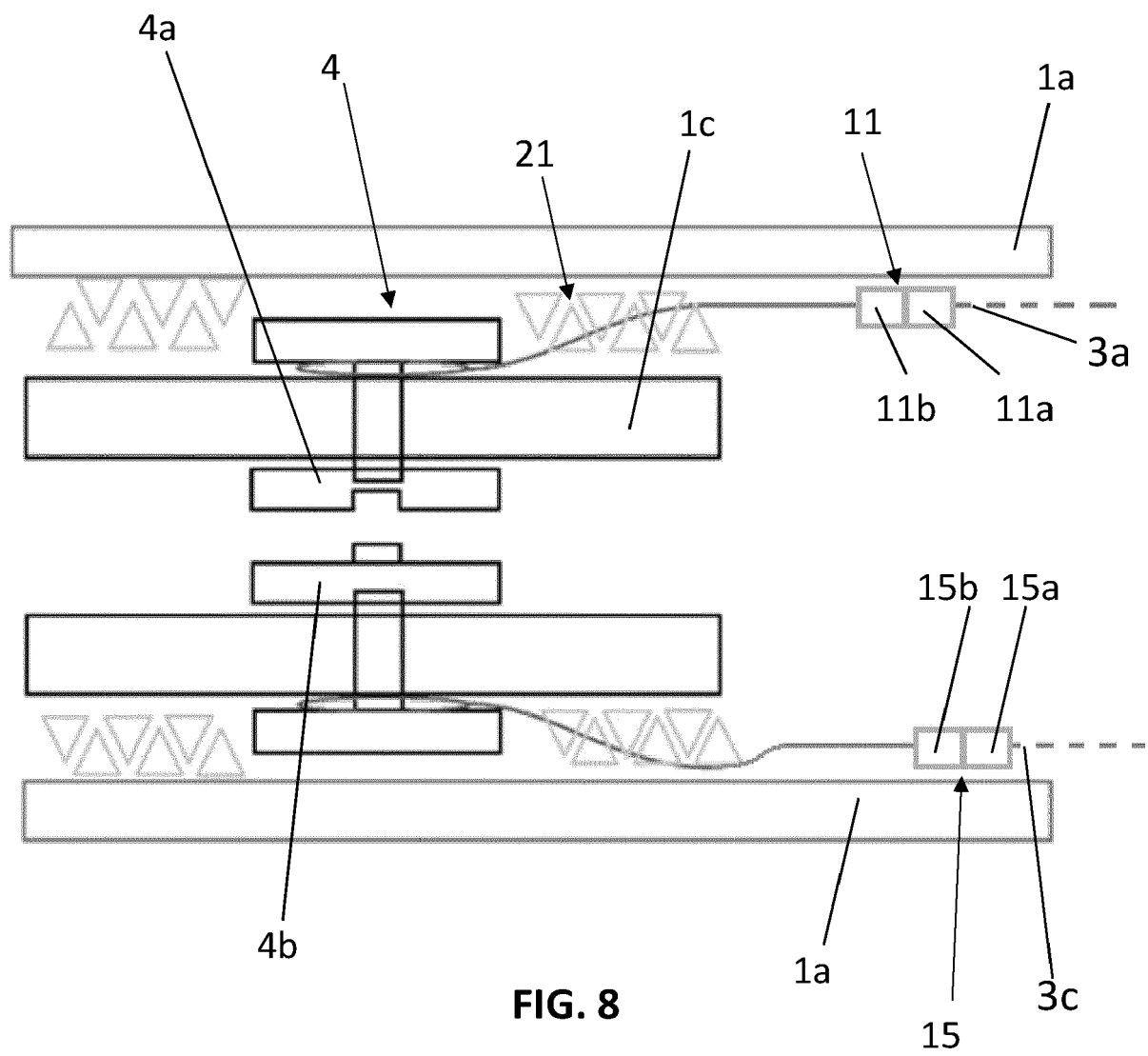


FIG. 5d



ARTE NOTA

FIG. 7



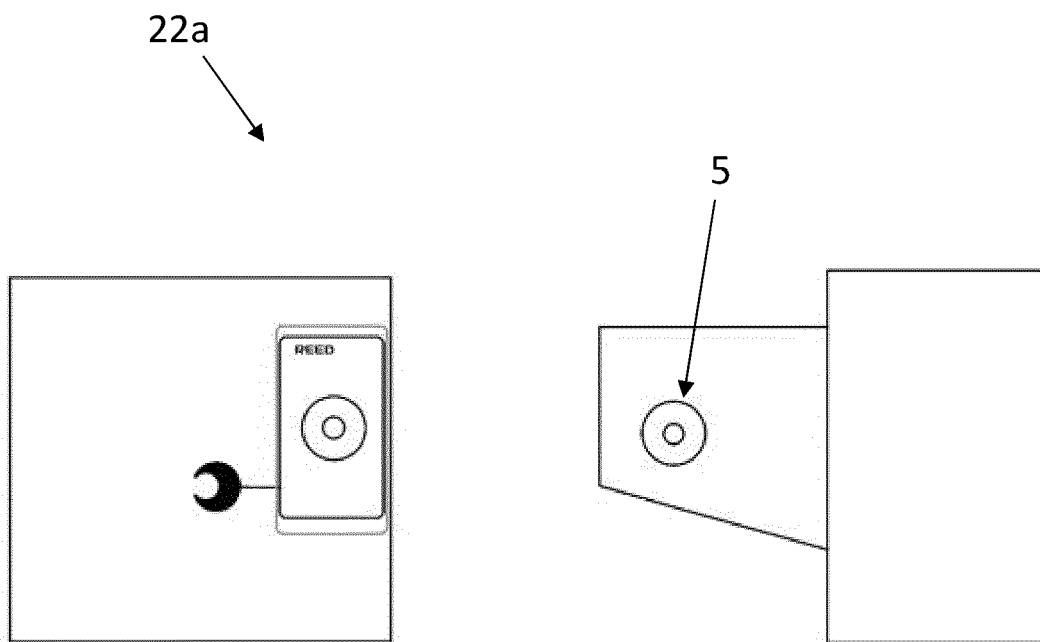


FIG. 9

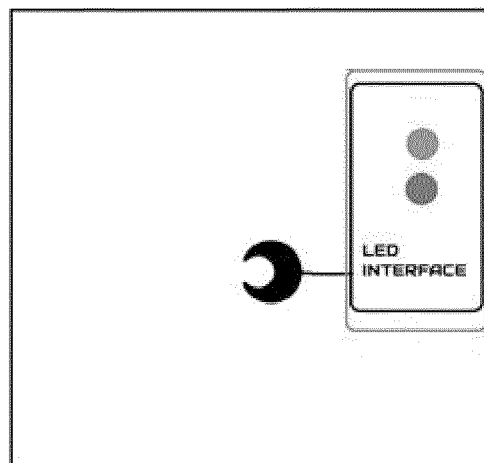


FIG. 10

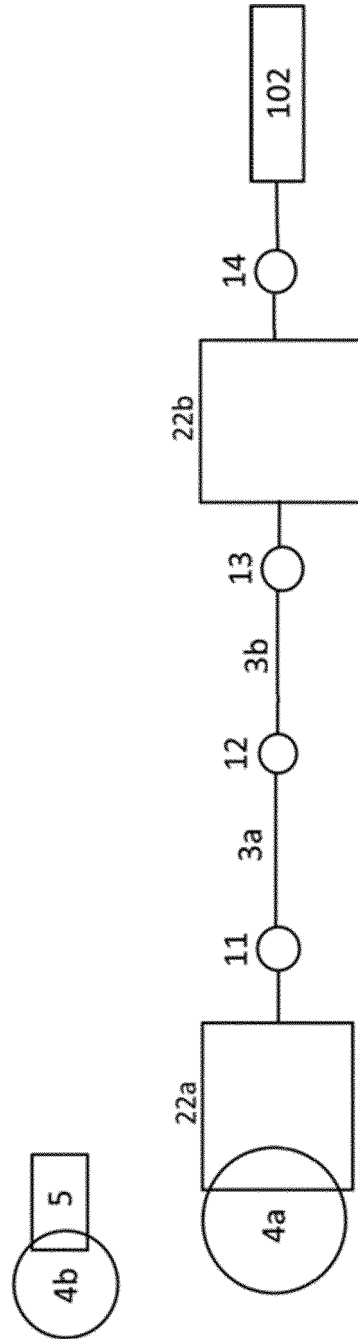


FIG. 11



EUROPEAN SEARCH REPORT

Application Number

EP 22 21 2849

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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	Black Diamond Radio: "Concierge Coiled Tube Earpiece", / 10 November 2013 (2013-11-10), XP055952270, Retrieved from the Internet: URL:https://www.youtube.com/watch?v=7yLPF55K8qY [retrieved on 2022-08-17]	1-3, 5-10, 14, 15	INV. A41D1/00 A41D13/018
A	* The whole video * -----	4, 11-13	
X	WO 2021/089439 A1 (ALPINESTARS RES S P A [IT]) 14 May 2021 (2021-05-14)	1-13, 15	
A	* abstract * * page 4, lines 14-31 * * page 5, line 26 - page 9, line 13 * * page 11, lines 3-6 * * figures 1-4 * -----	14	
A	EP 2 671 463 A1 (DAINESE SPA [IT]) 11 December 2013 (2013-12-11) * the whole document * -----	1-15	TECHNICAL FIELDS SEARCHED (IPC) A41D A44C
The present search report has been drawn up for all claims			

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EPO FORM 1503 03:82 (P04C01)

Place of search

The Hague

Date of completion of the search

14 April 2023

Examiner

Dogantan, Umut H.

CATEGORY OF CITED DOCUMENTS

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D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO.

EP 22 21 2849

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
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14-04-2023

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