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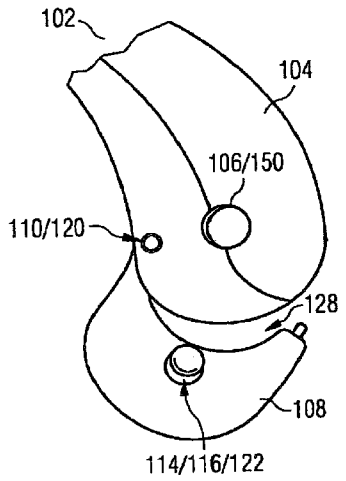
FIG 3



(57) Abstract: In an embodiment, a hearing aid (102) is provided. The hearing aid (102) may include a first hearing aid housing portion (104), the first hearing aid housing portion (104) including at least one first recess (106); a second hearing aid housing portion (108) coupled to the first hearing aid housing portion (104) via an axis of rotation (110), the second hearing aid housing portion including at least one second recess (112); and a lock (114) configured to engage the at least one second recess, the lock (114) comprising at least one protruding portion; wherein the at least one protruding portion (116) may be configured to be housed in the at least one second recess upon an application of a force in a direction substantially perpendicular to a plane of the second hearing aid housing portion and to be received in the at least one first recess upon removal of the force so as to lock the second hearing aid housing portion when the second hearing aid housing portion may be rotated towards the first hearing aid housing portion.

DESCRIPTION

HEARING AID

Embodiments relate to a hearing aid.

A hearing aid is usually fitted in or behind the ear of the user to amplify the sound for the user. Some popular types of hearing aids include behind-the-ear (BTE) hearing aids, in-the-ear (ITE) hearing aids, in-the-canal (ITC) hearing aids, completely-in-the-canal (CIC) hearing aids, etc.

A hearing aid usually includes a hearing aid housing within which a microphone for collecting sound waves, a signal processing circuit (also referred to as a speech processing circuit) for processing the collected sound waves and a loudspeaker (which may also be referred to as a receiver in the field of hearing aids) may be housed. To provide power for the microphone, the signal processing circuit and the loudspeaker, the hearing aid usually includes a battery chamber housing, also referred to as a battery door, coupled to the hearing aid housing to receive a battery.

The hearing aid may also include an add-on accessory configured to be attached to the hearing aid housing. The add-on accessory may be a so-called audio shoe. An audio shoe may be a small device attached to the hearing aid housing and may be used to connect an FM receiver or other similar device. The hearing aid may also include a lock.

As each of the battery chamber housing and the so-called audio shoe may be of a considerable size and weight, thereby contributing to the overall size and weight of the hearing aid, it may be desired to reduce the size and weight of the hearing aid while providing a reasonable level of safety to a hearing aid user.

In various embodiments, a hearing aid may be provided, which may include a lock which may provide an increased latching strength for the hearing aid user while having a reduced size and weight.

An embodiment relates to a hearing aid. The hearing aid may include a first hearing aid housing portion, the first hearing aid housing portion including at least one first recess; a second hearing aid housing portion coupled to the first hearing aid housing portion via an axis of rotation, the second hearing aid housing portion including at least one second recess; and a lock configured to engage the at least one second recess, the lock comprising at least one protruding portion; wherein the at least one protruding portion may be configured to be housed in the at least one second recess upon an application of a force in a direction substantially perpendicular to a plane of the second hearing aid housing portion and to be received in the at least one first recess upon removal of the force so as to lock the second hearing aid housing portion when the second hearing aid housing portion may be rotated towards the first hearing aid housing portion. By way of example, the second hearing aid housing portion may be rotated towards the first hearing aid housing to lock the second hearing aid housing portion and may be rotated away from the first hearing aid housing portion to unlock the second hearing aid housing portion.

In an embodiment, the number of first recess(es) on the first hearing aid housing portion may correspond to the number of second recess(es) on the second hearing aid housing portion and the number of protruding portions, but not so limited. The position of each first recess on the first hearing aid housing portion may correspond to the position of each second recess on the second hearing aid housing portion such that each protruding portion may be respectively received in the corresponding first recess when the second hearing aid housing portion may be rotated towards the first hearing aid housing portion to lock the second hearing aid housing

portion. By way of example, the first hearing aid housing portion may include two first recesses, one of the first recesses positioned on a first surface of the first hearing aid housing portion and the other of the first recesses positioned on a second surface of the first hearing aid housing portion, the second surface being positioned opposite to the first surface. The second hearing aid housing portion may also include two second recesses, one of the second recesses formed on a first surface of the second hearing aid housing portion and the other of the second recesses formed on a second surface of the second hearing aid housing portion, the second surface being positioned opposite to the first surface. A first protruding portion may engage one of the second recesses and a second protruding portion may engage the other of the second recesses. The first protruding portion may be received in one of the first recesses and the second protruding portion may be received in the other of the first recesses when the second hearing aid housing portion may be rotated towards the first hearing aid housing portion to lock the second hearing aid housing portion.

In an embodiment, the first hearing aid housing portion may include two first through holes positioned on opposite surfaces of the first hearing aid housing portion, each first through hole being positioned adjacent to each first recess on each surface of the first hearing aid housing portion. The second hearing aid housing portion may also include a second through hole formed through a portion of the second hearing aid housing portion. The dimensions of each of the first through holes and the second through hole may be approximately the same but the second through hole may include a depth bigger than each of the first through holes. The number of first through holes may or may not correspond to the number of second through holes. An interchangeable pin may be configured to be inserted through the two first through holes on the first hearing aid housing portion and the second through hole formed through the portion of the second hearing aid housing portion, thereby forming the axis

of rotation. The insertion of the interchangeable pin through the respective two first through holes on the first hearing aid housing portion and the second through hole on the second hearing aid housing portion also enable the second hearing aid housing portion to be coupled to the first hearing aid housing portion at the axis of rotation. For ease of convenience, the interchangeable pin may be removed or replaced when necessary so as to allow an attachment of a suitable second hearing aid housing portion, with or without audio shoe. The interchangeable pin may be of any suitable rigid material as long as the pin does not deform upon application of a force and may serve to hold the second hearing aid housing portion onto the first hearing aid housing portion.

In an embodiment, the at least one first recess may include a through hole or a blind hole. The through hole may be a hole made fully through the first hearing aid housing portion and the blind hole may be a hole made partially through the first hearing aid housing portion. The blind hole may be of any suitable depth. The through hole and the blind hole may be of a circular shape, a square shape, a triangle shape or of any suitable shape depending on user and design requirements. In an embodiment, a portion of the through hole may be partially covered with a flexible cover or sheet to facilitate an application of a force onto the protruding portion. The flexible cover or sheet may be of a rubber material or any other suitable material which may allow a slight deformation upon an application of a force.

In an embodiment, the at least one protruding portion may include a metal pin and a spring, the spring coupled to the metal pin. The spring may include a coil spring, a U spring or any other suitable spring which may be configured to be fitted within a second recess in the second hearing aid housing portion. The at least one protruding portion may include any other suitable pin made of a rigid material as long as the pin does not deform upon an application of a

force. The spring may be coupled to the pin, the second hearing aid housing portion or to both the pin and the second hearing aid housing portion depending on user and design requirements.

In an embodiment, the at least one first recess may include a shape corresponding to a shape of the at least one protruding portion. The at least one first recess and the at least one protruding portion may be of a circular shape, a square shape, a triangle shape or of any suitable shape depending on user and design requirements. The dimensions of each of the at least one first recess may be slightly bigger than the dimensions of each of the at least one protruding portion such that each of the at least one protruding portion may be accommodated within each of the at least one first recess when the second hearing aid housing portion may be locked onto the first hearing aid housing portion.

In an embodiment, the second hearing aid housing portion may include a battery chamber housing configured to receive a battery to provide power for the microphone, signal processing circuit, loudspeaker, and other suitable components or circuits in the hearing aid. The battery chamber housing may include a partially circular outer shape so as to accommodate a circular battery. The shape of the battery chamber housing may correspond to the shape of the battery so as to be able to fix the battery within the battery chamber housing when the hearing aid may be in use. The battery chamber housing may include any other suitable shapes depending on user and design requirements.

In an embodiment, the second hearing aid housing portion may include at least one audio contact for external audio connection. By way of example, the second hearing aid housing portion may include one, two, three, or more audio contacts but not so limited.

In an embodiment, the first hearing aid housing portion may include a first electrical connector. The first hearing aid housing portion may include a first substrate having an electronic circuit and the first electrical connector may be electrically coupled to the first substrate.

In an embodiment, the second hearing aid housing portion may include a second electrical connector. The second hearing aid housing portion may include a second substrate having an electronic circuit and the second electrical connector may be electrically coupled to the second substrate. The coupling of the second electrical connector to the first electrical connector may provide electrical connectivity between the first electrical connector and the second electrical connector when the second hearing aid housing portion may be locked onto the first hearing aid housing portion. By way of example, the first electrical connector may be termed a male connector and the second electrical connector may be termed a female connector.

In an embodiment, the second electrical connector may be electrically coupled to the second substrate via at least one electrical wire, flex cable or any other suitable electrical connection. The first electrical connector may also be electrically coupled to the first substrate via at least one electrical wire, flex cable or any other suitable electrical connection.

In an embodiment, the first substrate may include a printed circuit board (PCB). The second substrate may also include a PCB. The first substrate and the second substrate may be positioned at any suitable position within the respective first hearing aid housing portion and the second hearing aid housing portion.

In an embodiment, the first electrical connector may include or may be made of electrically conductive material and, in

addition, of metal such as gold, stainless steel and any other suitable material.

In an embodiment, the second electrical connector may include or may be made of electrically conductive material and, in addition, of metal such as gold, stainless steel and any other suitable material.

In an embodiment, the hearing aid may be a behind-the-ear hearing aid.

In an embodiment, the hearing aid may further include an ear hook coupled to the first hearing aid housing portion.

In an embodiment, the first hearing aid housing portion may include or may be made of plastic material, rubber material or any other suitable material which may be molded to the desired shape.

In an embodiment, the second hearing aid housing portion may include or may be made of plastic material, rubber material or any other suitable material which may be molded to the desired shape.

In an embodiment, the first hearing aid housing portion may be made of the same material as the second hearing aid housing portion. Use of the same material for both the first hearing aid housing portion and the second hearing aid housing portion may provide for ease of fabrication for the first hearing aid housing portion and the second hearing aid housing portion. The first hearing aid housing portion and the second hearing aid housing portion may be of any suitable shape depending on user and design requirements.

In the drawings, like reference characters generally refer to the same parts throughout the different views. The drawings are not necessarily to scale, emphasis instead generally being placed upon illustrating the principles of the

invention. In the following description, various embodiments of the invention are described with reference to the following drawings, in which:

Figure 1 shows a side view of a hearing aid with close second hearing aid housing portion;

Figure 2 shows a rear view of the hearing aid with close second hearing aid housing portion;

Figure 3 shows a side view of the hearing aid with open second hearing aid housing portion;

Figure 4 shows an enlarged side view of a second hearing aid housing portion and a lock;

Figure 5 shows an enlarged inner view of the second hearing aid housing portion and a lock;

Figure 6 shows an enlarged perspective view of the second hearing aid housing portion and a lock according to an embodiment;

Figure 7 shows a side view of a hearing aid with audio shoe, audio cable and close second hearing aid housing portion;

Figure 8 shows a rear view of the hearing aid with audio shoe, audio cable and close second hearing aid housing portion;

Figure 9 shows a side view of the hearing aid with audio shoe, audio cable and open second hearing aid housing portion;

Figure 10 shows an enlarged side view of a second hearing aid housing portion with audio shoe and a lock;

Figure 11 shows an enlarged inner view of the second hearing aid housing portion with audio shoe and a lock;

Figure 12 shows an enlarged perspective view of the second hearing aid housing portion with audio shoe and a lock according to an embodiment;

Figure 13 shows an enlarged side view of a first recess including a through hole and partially covered with a flexible cover and a protruding portion including a coil spring;

Figure 14 shows an enlarged side view of a first recess including a through hole and partially covered with a flexible cover and a protruding portion including a U spring according to an embodiment;

Figure 15 shows a cross-sectional view of a first recess including a through hole and a protruding portion including a coil spring attached to the metal pin and the second hearing aid housing portion; and

Figure 16 shows a cross-sectional view of a first recess including a through hole and a protruding portion including a coil spring attached to the metal pin according to an embodiment.

Fig.1 shows a side view of a hearing aid 102 with close second hearing aid housing portion 108, Fig.2 shows a rear view of the hearing aid 102 with close second hearing aid housing portion 108 and Fig.3 shows a side view of the hearing aid 102 with open second hearing aid housing portion 108.

By way of example, Fig.1, Fig.2 and Fig.3 show a behind-the-ear (BTE) hearing aid 102. The hearing aid 102 may include a first hearing aid housing portion 104, the first hearing aid housing portion 104 including two first recesses 106

positioned on opposite surfaces of the first hearing aid housing portion 104 (only one first recess 106 is shown in Fig.3). The hearing aid 102 may include a second hearing aid housing portion 108 coupled to the first hearing aid housing portion 104 via an axis of rotation 110, the second hearing aid housing portion 108 including two second recesses (not shown) positioned on opposite surfaces of the second hearing aid housing portion 108. The hearing aid 102 may further include a lock 114 configured to engage the two second recesses 112, the lock 114 including two protruding portions 116. The two protruding portions 116 may be configured to be respectively housed in the two second recesses upon an application of a force in a direction substantially perpendicular to a plane of the second hearing aid housing portion 108 (direction as shown by arrows 118 in Fig.2) and to be received in the corresponding two first recesses 106 upon removal of the force so as to lock the second hearing aid housing portion 108 when the second hearing aid housing portion 108 may be rotated towards the first hearing aid housing portion 104.

The axis of rotation 110 may include an interchangeable pin 120 configured to be inserted through respective portions of the first hearing aid housing portion 104 and the second hearing aid housing portion 108.

Each of the two first recesses 106 may include a through hole 150 and each of the two protruding portions 116 may include a metal pin 122 and a spring (not shown), the spring may be coupled to the metal pin 122. Each of the two first recesses 106 may include a shape corresponding to a shape of each of the two protruding portions 116.

The first hearing aid housing portion 104 may include a rear microphone 126 positioned between the two first recesses 106 as shown in Fig.2.

The second hearing aid housing portion 108 may include a battery chamber housing 128 configured to receive a battery (not shown).

The hearing aid 102 may further include an ear hook 130 coupled to the first hearing aid housing portion 104 and the ear hook 130 may serve to fix the hearing aid 102 behind the ear of the hearing aid user.

The first hearing aid housing portion 104 may include plastic material, rubber material or any other suitable materials. The second hearing aid housing portion 108 may include plastic material, rubber material or any other suitable materials, e.g. any other suitable electrically isolating material. The first hearing aid housing portion 104 may be made of the same material as the second hearing aid housing portion 108.

By way of example, when a hearing aid user intends to lock the second hearing aid housing portion 108, the hearing aid user may rotate the second hearing aid housing portion 108 towards the first hearing aid housing portion 104. Then the hearing aid user may apply a force directly on each of the two protruding portions 116 (preferably at the same time) in a direction substantially perpendicular to a plane of the second hearing aid housing portion 108. Then the second hearing aid housing portion 108 may be further rotated towards the first hearing aid housing portion 104 such that each of the two protruding portions 116 may be overlapped under a portion of the first hearing aid housing portion 104, causing each of the two protruding portions 116 to be continuously depressed. As soon as each of the two protruding portions 116 may be received in each of the corresponding two first recesses 106 on the first hearing aid housing portion 104, the force may be released and the second hearing aid housing portion 108 may be locked. In an embodiment, the hearing aid user may only need to apply a suitable amount of force on the second hearing aid housing portion 108 to guide

the two protruding portions 116 to be received in each of the corresponding two first recesses 106 and the user may not need to apply a force directly on each of the two protruding portions 116. There may also be guiding means positioned on the first hearing aid housing portion 104 for ease of guiding the two protruding portions 116 to be received in each of the corresponding two first recesses 106.

In a similar manner, when a hearing aid user intends to unlock the second hearing aid housing portion 108, the hearing aid user may apply a force directly on each of the two protruding portions 116 in a direction substantially perpendicular to a plane of the second hearing aid housing portion 108. Then the hearing aid user may rotate the second hearing aid housing portion 108 away from the first hearing aid housing portion 104 such that each of the two protruding portions 116 may initially be overlapped under a portion of the first hearing aid housing portion 104, causing each of the two protruding portions 116 to be continuously depressed. As soon as each of the two protruding portions 116 may not be in contact with first hearing aid housing portion 104, the force may be released and the second hearing aid housing portion 108 may be unlocked.

Fig.4 shows an enlarged side view of a second hearing aid housing portion 108 and a lock 114, Fig.5 shows an enlarged inner view of the second hearing aid housing portion 108 and a lock 114 and Fig.6 shows an enlarged perspective view of the second hearing aid housing portion 108 and a lock 114 according to an embodiment.

The hearing aid 102 may include a second hearing aid housing portion 108 and a lock 114. The second hearing aid housing portion 108 may include a battery chamber housing 128 configured to receive a battery (not shown). The direction of insertion of the battery is as per the arrow 142 shown in Fig.4.

The second hearing aid housing portion 108 may also include a second through hole 132 formed through a portion of the second hearing aid housing portion 108 so as to allow a subsequent insertion of an interchangeable pin (not shown).

The hearing aid 102 may include a lock 114 configured to engage the two second recesses (not shown) on opposite surfaces on the second hearing aid housing portion 108, the lock 114 including two protruding portions 116 as shown in Fig.5 and Fig.6.

Fig.7 shows a side view of a hearing aid 102 with audio shoe 139, audio cable 141 and close second hearing aid housing portion 108, Fig.8 shows a rear view of the hearing aid 102 with audio shoe 139, audio cable 141and close second hearing aid housing portion 108 and Fig.9 shows a side view of the hearing aid 102 with audio shoe 139, audio cable 141 and open second hearing aid housing portion 108.

By way of example, Fig.7, Fig.8 and Fig.9 show a behind-the-ear hearing aid 102. The hearing aid 102 may include a first hearing aid housing portion 104, the first hearing aid housing portion 104 including two first recesses 106 positioned on opposite surfaces of the first hearing aid housing portion 104 (only one first recess 106 is shown in Fig.9). The hearing aid 102 may include a second hearing aid housing portion 108 coupled to the first hearing aid housing portion 104 via an axis of rotation 110, the second hearing aid housing portion 108 including two second recesses (not shown) positioned on opposite surfaces of the second hearing aid housing portion 108. The hearing aid 102 may further include a lock 114 configured to engage the two second recesses (not shown), the lock 114 including two protruding portions 116. The two protruding portions 116 may be configured to be respectively housed in the two second recesses upon an application of a force in a direction substantially perpendicular to a plane of the second hearing aid housing portion 108 (direction as shown by arrows 118 in

Fig.8) and to be received in the corresponding two first recesses 106 upon removal of the force so as to lock the second hearing aid housing portion 108 when the second hearing aid housing portion 108 may be rotated towards the first hearing aid housing portion 104.

The axis of rotation 110 may include an interchangeable pin 120 configured to be inserted through respective portions of the first hearing aid housing portion 104 and the second hearing aid housing portion 108.

Each of the two first recesses 106 may include a through hole 150 and each of the two protruding portions 116 may include a metal pin 122 and a spring (not shown), the spring coupled to the metal pin 122. Each of the two first recesses 106 may include a shape corresponding to a shape of each of the two protruding portions 116.

The first hearing aid housing portion 104 may include a rear microphone 126 positioned between the two first recesses 106 as shown in Fig.8.

The second hearing aid housing portion 108 may include a battery chamber housing 128 configured to receive a battery (not shown), an audio shoe 139 with three audio contacts 138 and an audio cable 141 for external audio connection.

The first hearing aid housing portion 104 may include a first electrical connector 134 and the second hearing aid housing portion 108 may include a second electrical connector 136 as shown in Fig.9. The second electrical connector 136 may be electrically coupled to the first electrical connector 134 when the second hearing aid housing portion 108 may be locked.

The first electrical connector 134 may include or may be made of electrically conductive material and, in addition, of metal such as gold, stainless steel and any other suitable material. The second electrical connector 136 may include or

may be made of electrically conductive material and, in addition, of metal such as gold, stainless steel and any other suitable material, e.g. any other suitable electrically conductive material.

The hearing aid 102 may further include an ear hook 130 coupled to the first hearing aid housing portion 104 and the ear hook 130 may serve to fix the hearing aid 102 behind the ear of the hearing aid user.

The first hearing aid housing portion 104 may include plastic material, rubber material or any other suitable materials. The second hearing aid housing portion 108 may include plastic material, rubber material or any other suitable materials. The first hearing aid housing portion 104 may be made of the same material as the second hearing aid housing portion 108.

Fig.10 shows an enlarged side view of a second hearing aid housing portion 108 with audio shoe 139 and a lock 114, Fig.11 shows an enlarged inner view of the second hearing aid housing portion 108 with audio shoe 139 and a lock 114 and Fig.12 shows an enlarged perspective view of the second hearing aid housing portion 108 with audio shoe 139 and a lock 114 according to an embodiment.

The hearing aid 102 may include a second hearing aid housing portion 108 and a lock 114. The second hearing aid housing portion 108 may include a battery chamber housing 128 configured to receive a battery (not shown) and an audio shoe 139 with three audio contacts 138 and an audio cable (not shown) for external audio connection. The direction of insertion of the battery is as per the arrow 142 shown in Fig.10.

The second hearing aid housing portion 108 may also include a second through hole 132 formed through a portion of the

second hearing aid housing portion 108 so as to allow a subsequent insertion of an interchangeable pin (not shown).

The second hearing aid housing portion 108 may include a second electrical connector 136 and the second electrical connector 136 may include or may be made of electrically conductive material and, in addition, of metal such as gold, stainless steel and any other suitable material, e.g. any other suitable electrically conductive material.

The hearing aid 102 may include a lock 114 configured to engage the two second recesses (not shown) on opposite surfaces on the second hearing aid housing portion 108, the lock 114 including two protruding portions 116 as shown in Fig.11 and Fig.12.

Fig.13 shows a cross-sectional view of a first recess 106 including a through hole 150 and partially covered with a flexible cover 140 and a protruding portion 116 including a coil spring 146 and Fig.14 shows a cross-sectional view of a first recess 106 including a through hole 150 and partially covered with a flexible cover 140 and a protruding portion 116 including a U spring 148 according to an embodiment.

The hearing aid 102 may include a first hearing aid housing portion 104, the first hearing aid housing portion 104 including a first recess 106 and a second hearing aid housing portion 108, the second hearing aid housing portion 108 including a second recess 112. The hearing aid 102 may further include a lock 114 configured to engage the second recess 112, the lock 114 including a protruding portion 116. The first recess 106 may include a through hole 150 partially covered with a flexible cover 140 to facilitate an application of a force indirectly onto the protruding portion 116. The direction of the force may be as shown by the respective arrows 118 in Fig.13 and Fig.14. The flexible cover 140 may surround a top portion of the protruding

portion 116 such that the protruding portion 116 is not in contact with the external environment.

In Fig.13, the protruding portion 116 may include a metal pin 122 and a coil spring 146, the coil spring 146 coupled to the metal pin 122.
In Fig.14, the protruding portion 116 may include a metal pin 122 and a U spring 148, the U spring 148 coupled to the metal pin 122.

The second recess 112 may be configured to include two respective grooves 144 such that a portion of the metal pin 122 may be configured to engage the second recess 112.

The coil spring 146 or the U spring 148 allows the metal pin 122 to be depressed in a direction substantially perpendicular to a plane of the second hearing aid housing portion 108 upon an application of a force and to be released upon removal of the force.

Fig.15 shows a cross-sectional view of a first recess 106 including a through hole 150 and a protruding portion 116 including a coil spring 146 attached to the metal pin 122 and the second hearing aid housing portion 108 and Fig.16 shows a cross-sectional view of a first recess 106 including a through hole 150 and a protruding portion 116 including a coil spring 146 attached to the metal pin 122 according to an embodiment.

The hearing aid 102 may include a first hearing aid housing portion 104, the first hearing aid housing portion 104 including a first recess 106 and a second hearing aid housing portion 108, the second hearing aid housing portion 108 including a second recess 112. The hearing aid 102 may further include a lock 114 configured to engage the second recess 112, the lock 114 including a protruding portion 116. The first recess 106 may include a through hole 150.

In Fig.15, the protruding portion 116 may include a metal pin 122, a top portion of the metal pin 122 in the form of a C-shape and a bottom portion of the metal pin 122 in the form of an elongated portion. The protruding portion 116 may further include a coil spring 146, the coil spring 146 coupled to the metal pin 122.

In Fig.16, the protruding portion 116 may include a metal pin 122, the top portion of the metal pin 122 in the form of an E-shape and the bottom portion of the metal pin 122 in the form of an elongated portion. The protruding portion 116 may further include a coil spring 146, the coil spring 146 coupled to the second hearing aid housing portion 108. It should be mentioned that another suitable shape of the metal pin 122 may also be provided in another embodiment.

The second recess 112 may be configured to include two respective grooves 144 such that a portion of the metal pin 122 may be configured to engage the second recess 112.

The coil spring 146 may be coupled to the metal pin 122, the second hearing aid housing portion 108 or both the metal pin 122 and the second hearing aid housing portion 108 so as to allow flexibility in the design of the protruding portion 116. In either configuration, the coil spring 146 may allow the metal pin 122 to be depressed in a direction substantially perpendicular to a plane of the second hearing aid housing portion 108 upon an application of a force and to be released upon removal of the force.

While the invention has been particularly shown and described with reference to specific embodiments, it should be understood by those skilled in the art that various changes in form and detail may be made therein without departing from the spirit and scope of the invention as defined by the appended claims. The scope of the invention is thus indicated by the appended claims and all changes which come within the

meaning and range of equivalency of the claims are therefore intended to be embraced.

CLAIMS

1. A hearing aid, comprising:

a first hearing aid housing portion, the first hearing aid housing portion comprising at least one first recess;

a second hearing aid housing portion coupled to the first hearing aid housing portion via an axis of rotation, the second hearing aid housing portion comprising at least one second recess; and

a lock configured to engage the at least one second recess, the lock comprising at least one protruding portion;

wherein the at least one protruding portion is configured to be housed in the at least one second recess upon an application of a force in a direction substantially perpendicular to a plane of the second hearing aid housing portion and to be received in the at least one first recess upon removal of the force so as to lock the second hearing aid housing portion when the second hearing aid housing portion is being rotated towards the first hearing aid housing portion.

2. The hearing aid of claim 1,

wherein the at least one first recess comprises a through hole or a blind hole.

3. The hearing aid of claim 1 or 2,

wherein the at least one protruding portion comprises a metal pin and a spring, the spring coupled to the metal pin.

4. The hearing aid of any one of claims 1 to 3,

wherein the at least one first recess comprises a shape corresponding to a shape of the at least one protruding portion.

5. The hearing aid of any one of claims 1 to 4,

wherein the second hearing aid housing portion comprises a battery chamber housing configured to receive a battery.

6. The hearing aid of any one of claims 1 to 5,

wherein the second hearing aid housing portion comprises at least one audio contact.

7. The hearing aid of any one of claims 1 to 6,

wherein the first hearing aid housing portion comprises a first electrical connector.

8. The hearing aid of claim 7,

wherein the first electrical connector comprises electrically conductive material.

9. The hearing aid of any one of claims 1 to 8,

wherein the second hearing aid housing portion comprises a second electrical connector.

10. The hearing aid of claim 9,

wherein the second electrical connector comprises electrically conductive material.

11. The hearing aid of claim 9 or 10,

wherein the second electrical connector is electrically coupled to the first electrical connector when the second hearing aid housing portion is locked.

12. The hearing aid of any one of claims 1 to 11,

wherein the hearing aid is a behind-the-ear hearing aid.

13. The hearing aid of any one of claims 1 to 12, further comprising

an ear hook coupled to the first hearing aid housing portion.

14. The hearing aid of any one of claims 1 to 13,

wherein the first hearing aid housing portion comprises plastic material.

15. The hearing aid of any one of claims 1 to 14,

wherein the second hearing aid housing portion comprises plastic material.

16. The hearing aid of any one of claims 1 to 15,

wherein the first hearing aid housing portion is made of the same material as the second hearing aid housing portion.

FIG 1

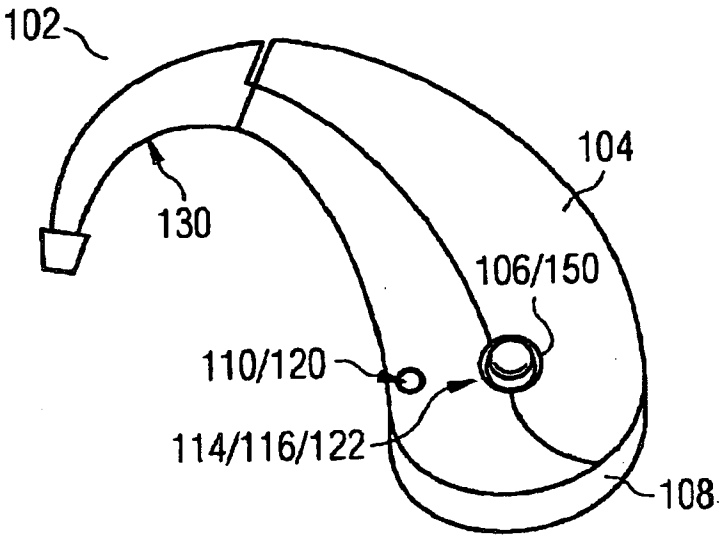


FIG 2

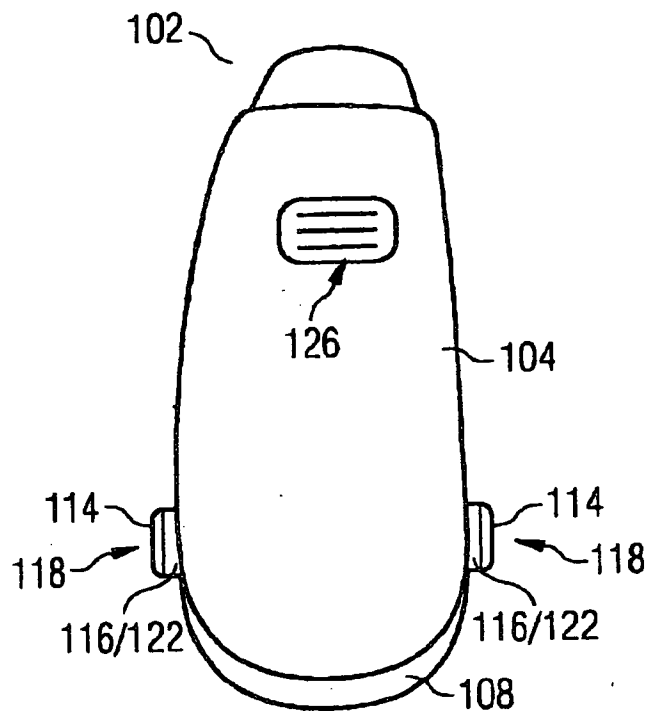


FIG 3

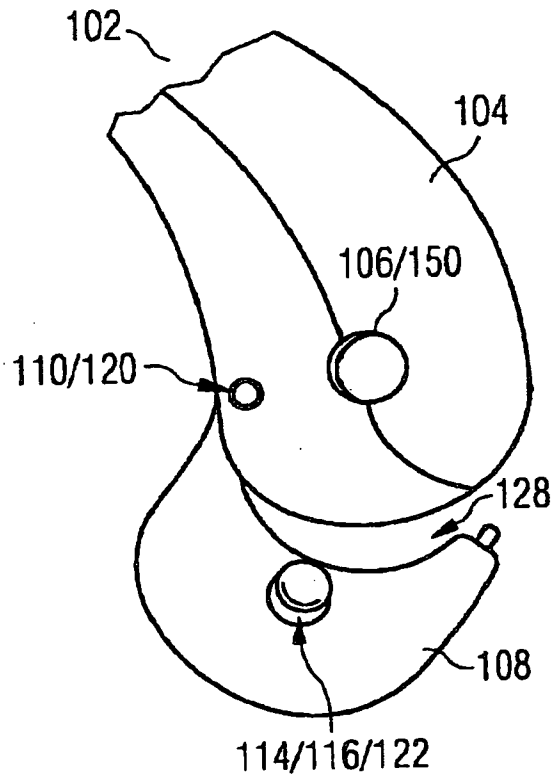


FIG 4

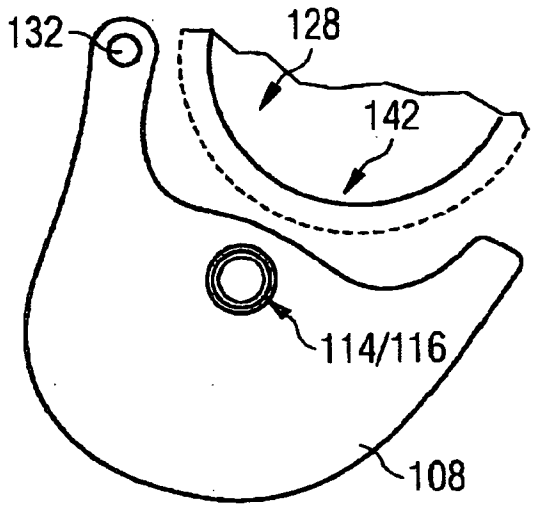


FIG 5

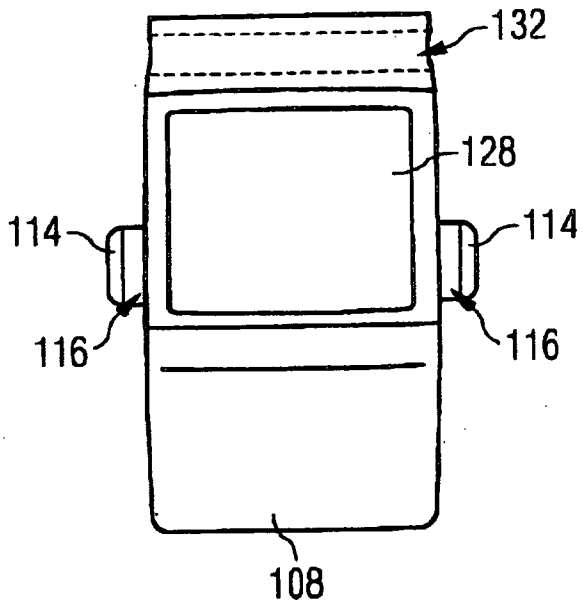


FIG 6

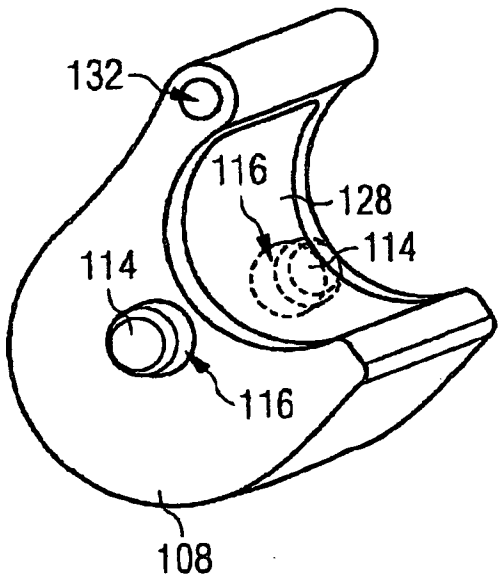


FIG 7

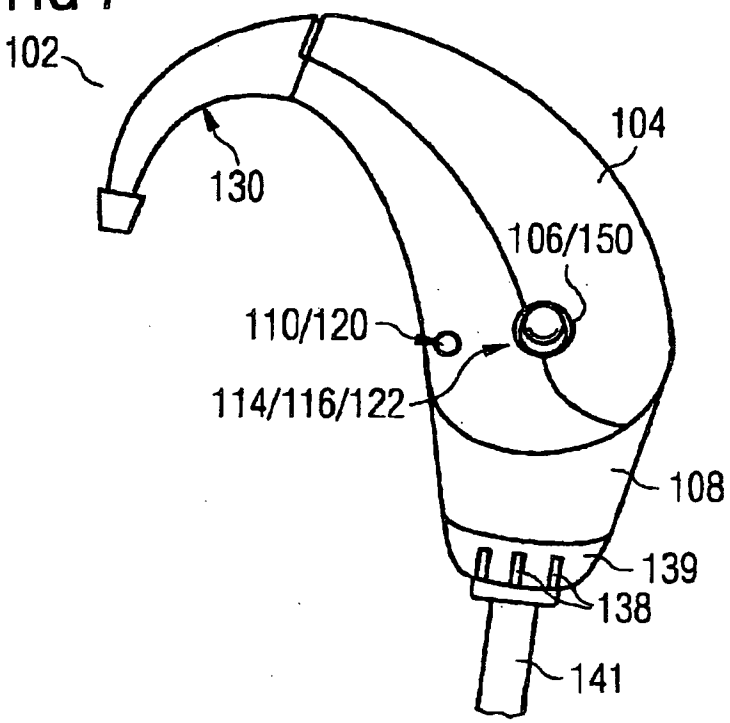


FIG 8

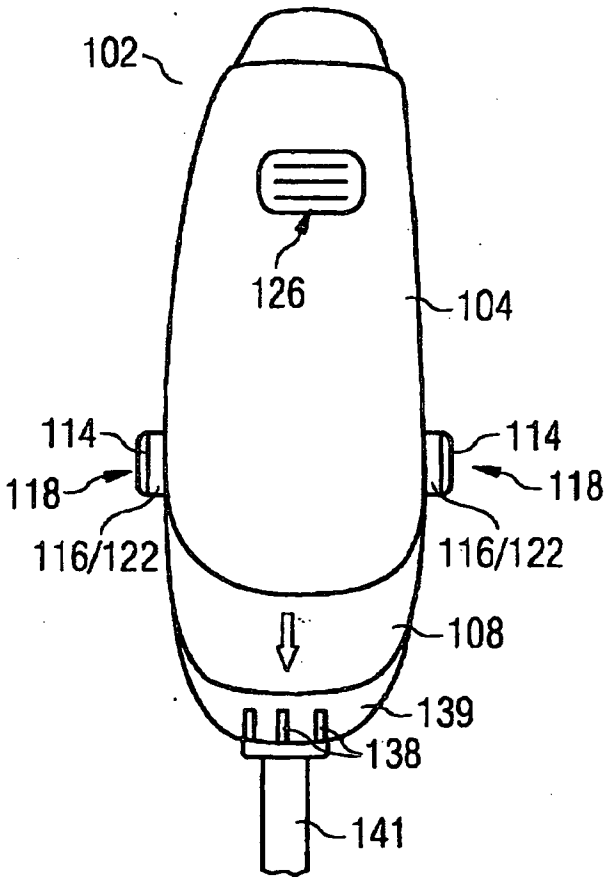


FIG 9

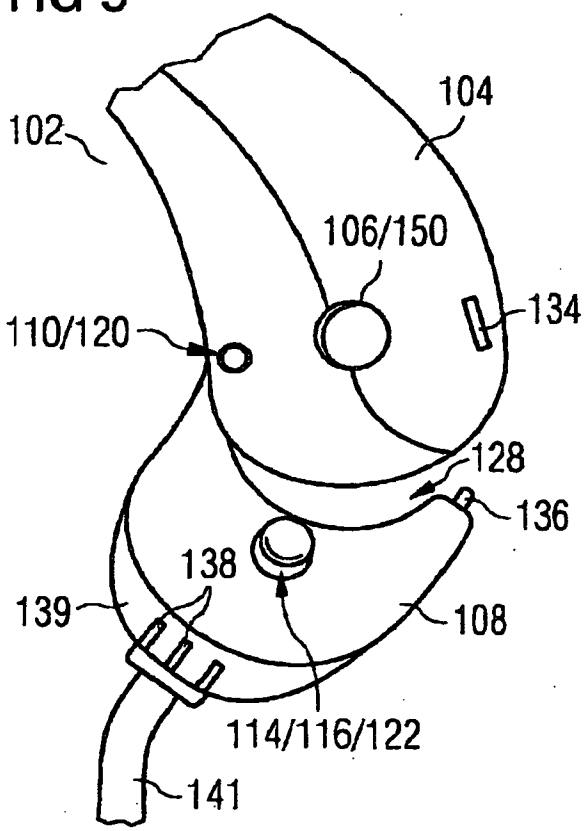


FIG 10

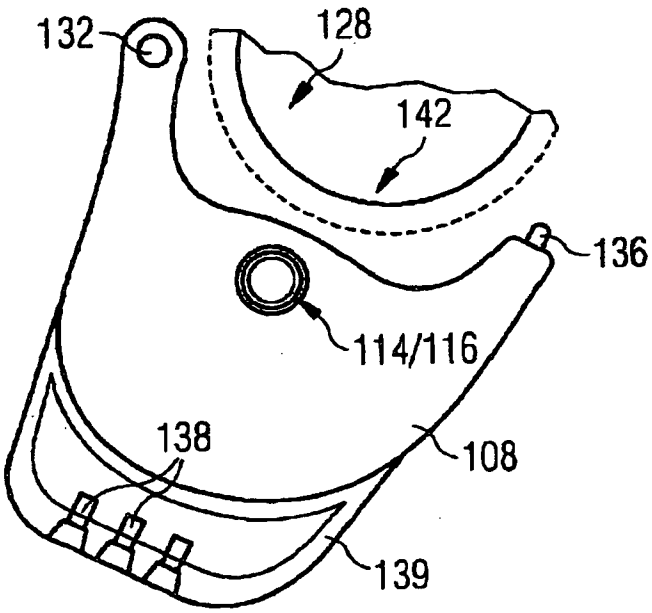


FIG 11

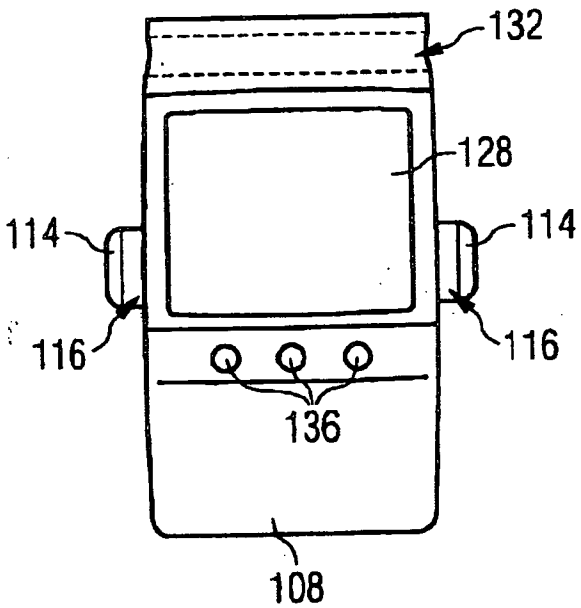


FIG 12

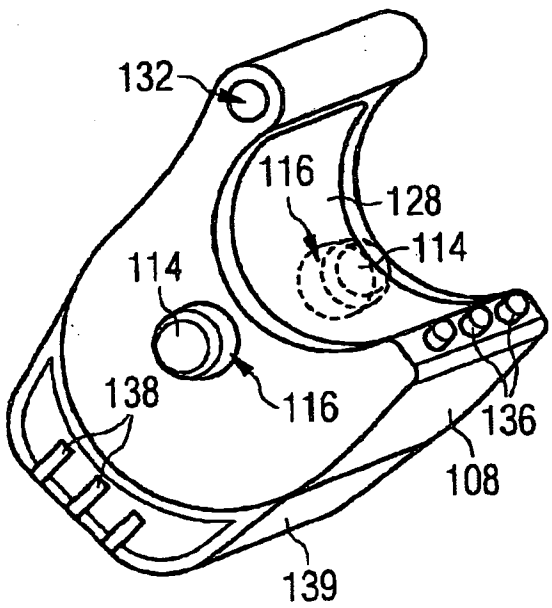


FIG 13

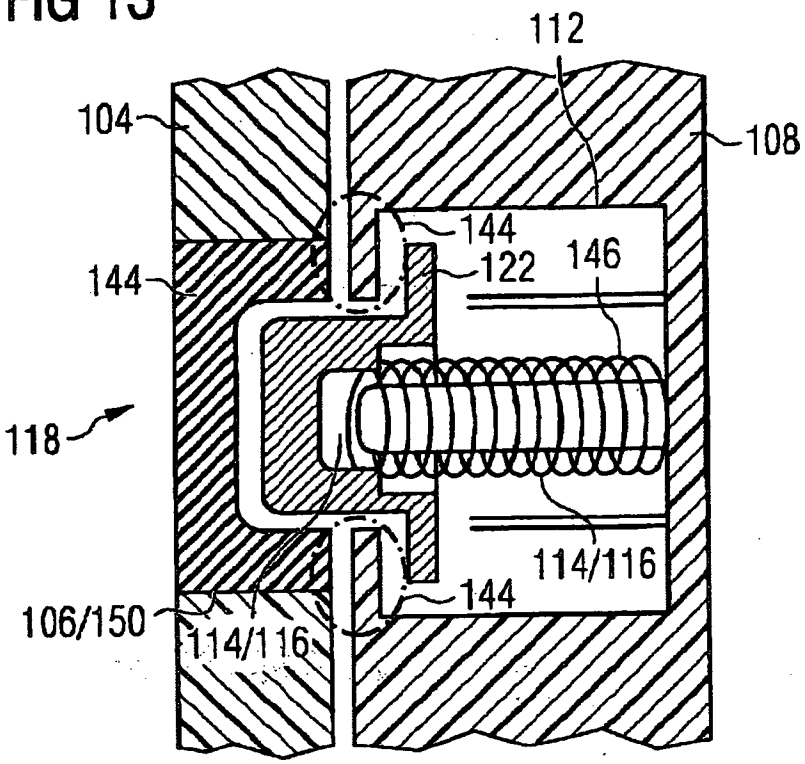

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FIG 14

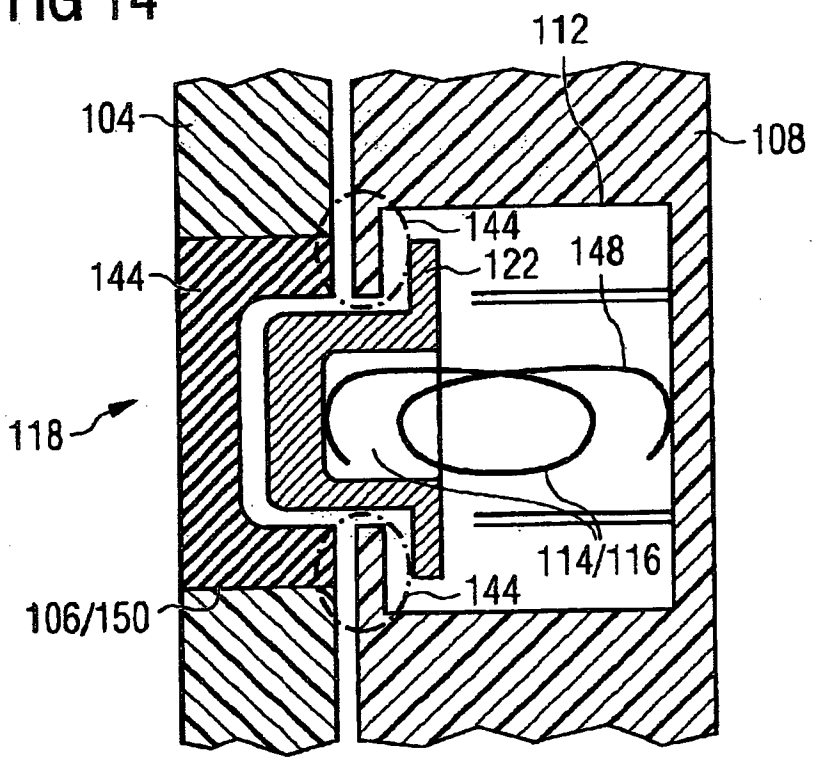
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FIG 15

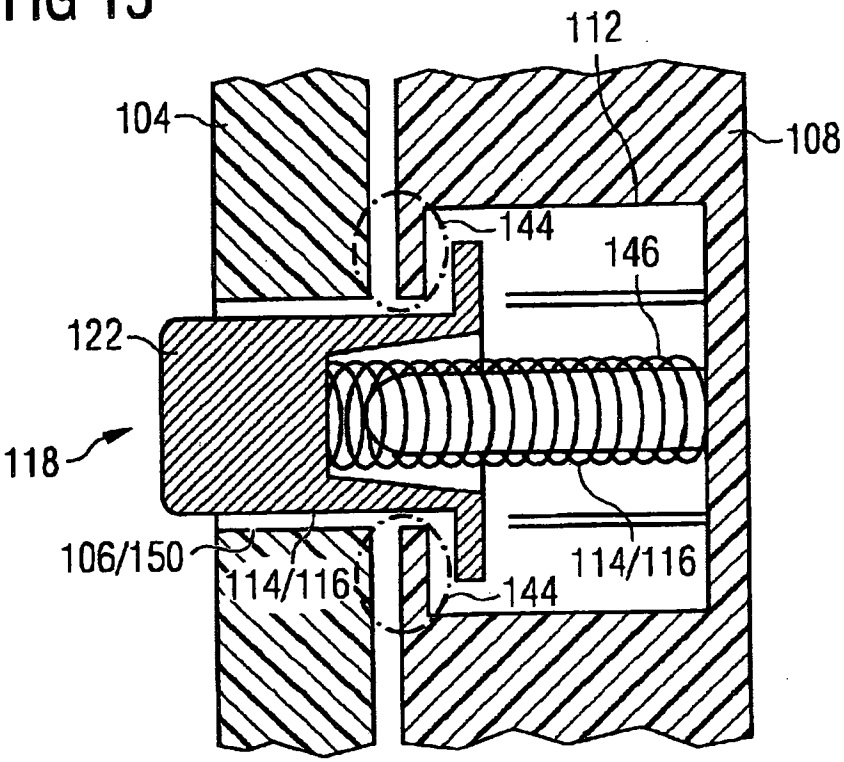
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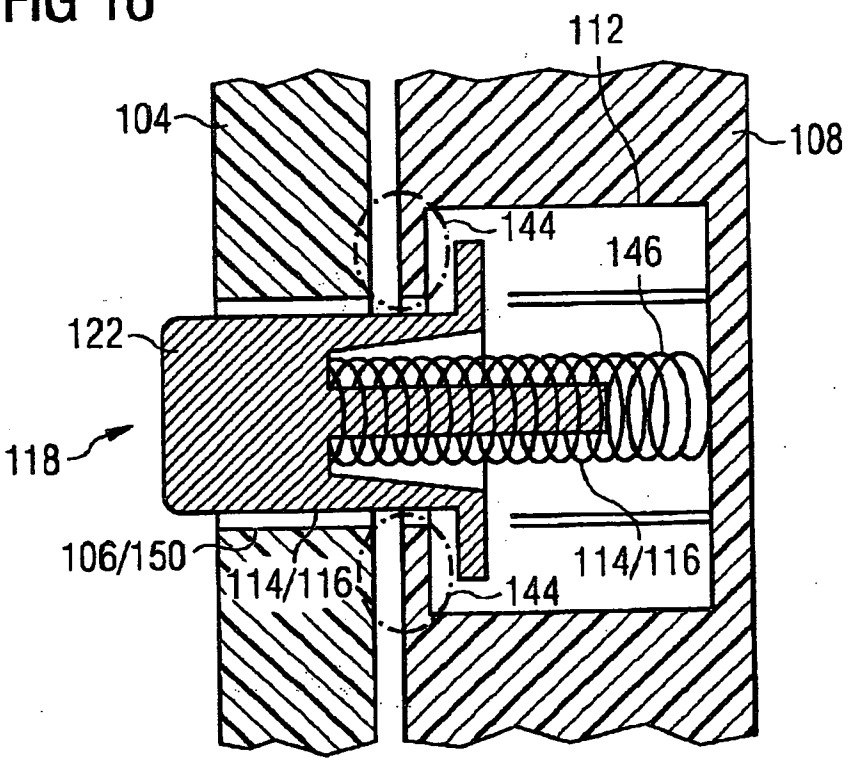
FIG 16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INTERNATIONAL SEARCH REPORT

International application No.
PCT/SG 2008/000478

A. CLASSIFICATION OF SUBJECT MATTER
IPC[8]: H04R 25/00; H04R 25/02
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)
IPC[8]: H04R 25/00; H04R 25/02

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)
WPI, EPODOC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 2007/006302 A1 (Westermann and Topholm) 18 January 2004 (18.01.2004) *Abstract; claims 1-3; Fig.2*	1
A	CH 673364 A5 (Meyer) 28 February 1990 (28.02.1990) *Abstract; claims 1-2; Fig. 1*	1

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents:
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"E" earlier application or patent but published on or after the international filing date
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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
28 April 2009 (28.04.2009)	8 May 2009 (08.05.2009)

Name and mailing address of the ISA/ AT	Authorized officer
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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.
PCT/SG 2008/000478

Patent document cited in search report		Publication date	Patent family member(s)			Publication date
WO	A	2007006302	JP	T	2009500926T	2009-01-08
			CN	A	101218851	2008-07-09
			US	A1	2008152178	2008-06-26
			EP	A1	1911328	2008-04-16
			CA	A1	2614357	2007-01-18
			AU	A1	2006269108	2007-01-18
CH	A	673364	CH	A5	673364	1990-02-28