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(54) **EARPIECE AND HEARING AID DEVICE COMPRISING IT**

(57) An earpiece (2) for insertion into the ear canal is disclosed. The earpiece (2) comprises a fluid-filled flexible structure (4, 4'). The earpiece (2) comprises a

through-going canal (10) surrounded by the fluid-filled flexible structure (4, 4') configured to receive a sound outlet of a hearing aid device.

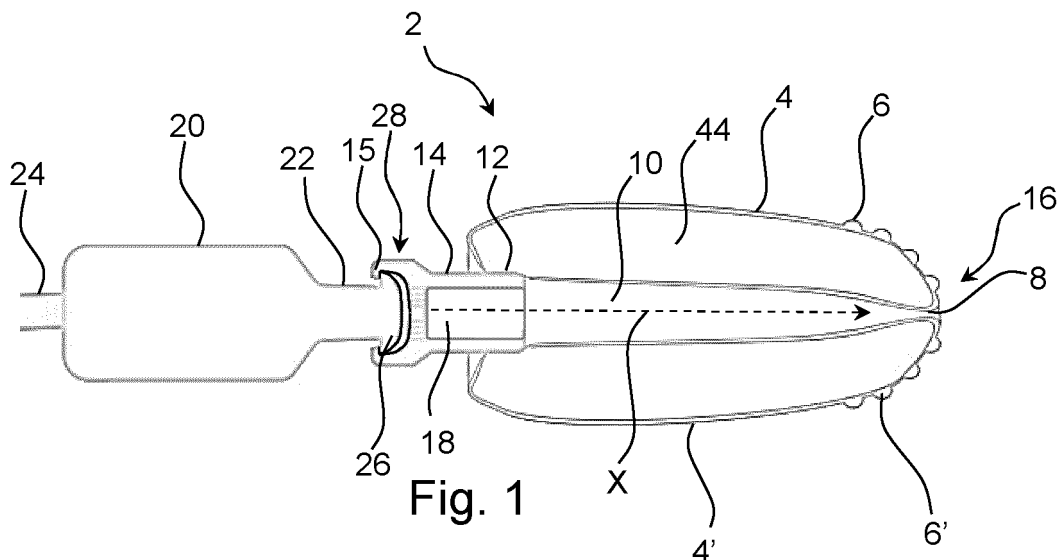


Fig. 1

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Description

FIELD

[0001] The present disclosure relates to an earpiece. The disclosure moreover relates to a hearing aid device comprising the earpiece.

BACKGROUND

[0002] Earpieces for insertion in the ear are formed to ease the comfortability of the wearer and deliver a desired sound quality. Earpieces are typically made to fit into an auditory canal of an ear in such a way that the ear piece effectively separates the ear canal in an inner part towards the ear drum and an outer part towards the outside world. In practice, it is challenging to provide an earpiece that has the desired geometry fitting the ear canal and at the same time is comfortable to wear and easy to insert into the ear canal.

[0003] Therefore, it would be desirable to have an earpiece that fits the ear canal, is comfortable to wear and easy to insert into the ear canal. The present disclosure provides at least an alternative to the prior art earpieces.

SUMMARY

[0004] According to an aspect of the disclosure, the earpiece is an earpiece for insertion into the ear canal, wherein the earpiece comprises a fluid-filled flexible structure, wherein the earpiece comprises a through-going canal surrounded by the fluid-filled flexible structure configured to receive a sound outlet of a hearing aid device.

[0005] Hereby, it is possible to provide an earpiece that fits the ear canal, is comfortable to wear and easy to insert into the ear canal. A fluid encompasses at least a liquid, a gas and/or a gel.

[0006] The earpiece according to the disclosure comprises a fluid-filled flexible structure. The fluid-filled flexible structure may be a balloon structure filled with a fluid. The flexible structure may be a balloon body interface made in any suitable material e.g. polyurethane or silicone, or in general an elastomer (such as vulcanized rubber, TPE, TPU).

[0007] The earpiece comprises a through-going canal surrounded by the fluid-filled flexible structure. The through-going canal may have any suitable shape; however, in one embodiment according to the disclosure the through-going canal extends along the longitudinal axis of the earpiece.

[0008] The through-going canal is configured to receive a sound outlet of a hearing aid device. Accordingly, the through-going canal has an opening configured to receive a sound outlet of a hearing aid device.

[0009] In another embodiment of the disclosure the fluid is a liquid such as water or oil or a gel or a gas such as air or carbon dioxide or a mixture of gas and liquid.

The gel/gas/liquid may have a damping behavior to dampen physical vibrations - to prevent sound being transferred through the earpiece via vibration. The fluid may be filled into the earpiece during at any time during the manufacturing process.

[0010] By having a fluid filled earpiece a constant pressure will be maintained in the earpiece. And thereby on the ear canal - all contact points to the ear canal will experience close to the same pressure from the liquid filled earpiece - this stand in contrast to e.g. full silicone or 3D printed stiff earpieces where the areas of the ear canal will experience very different pressure levels - since the pressure in such earpieces is given by the compression of the earpiece/ear canal and the degree of compression will vary depending on the ear canal shape. E.g. in an oval ear canal fitted with a round silicone dome, the ear canal will experience more pressure on the narrow part of the oval shape than on the wider part of the oval shape.

[0011] The liquid earpiece will even this out - only leaving the thin and soft skin of the balloon as the contributor to this variation of the pressure. Accordingly, the comfortability of the user can be eased.

[0012] In a further embodiment of the disclosure the earpiece comprises a filling structure shaped and arranged to allow a fluid to be filled into the earpiece. The filling structure may comprise a one-way valve allowing fluid to be filled into the earpiece only.

[0013] In an even further embodiment of the disclosure the earpiece is configured to be sealingly arranged in the ear canal in a manner in which the earpiece bears against the ear canal wall of the ear canal and hereby adapts the geometry of the ear canal.

[0014] Hereby, it is possible to provide an earpiece that is comfortable to wear and which provides a perfect fit against the ear canal wall.

[0015] In an even further embodiment of the disclosure the earpiece is bi-stable and is configured to be arranged in a first stable configuration and in a second stable configuration.

[0016] Hereby, it is possible to arrange the earpiece in a first stable configuration during the first part of the insertion process and rearrange the geometry of the earpiece during the last part of the insertion process.

[0017] In another embodiment of the disclosure the first stable configuration is a configuration in which the earpiece extends in extension of a connection member attached to the earpiece.

[0018] In a further embodiment of the disclosure the second stable configuration is a configuration in which the earpiece surrounds the sound unit of a hearing aid device.

[0019] In an even further embodiment of the disclosure the earpiece is configured to roll and hereby change configuration from the first stable configuration to the second stable configuration.

[0020] Hereby, it is possible to switch from the first stable configuration to the second stable configuration in a

fast an easy manner. Moreover, the configuration change can take place in the ear canal while inserting the earpiece into the ear canal (e.g. the bony part of the ear canal).

[0021] In another embodiment of the disclosure the earpiece comprises a structured portion provided at the outside surface of the earpiece.

[0022] Hereby, it is possibly to increase the friction between the earpiece and the ear canal wall. Accordingly, the change from one configuration to another configuration can be initiated by pressing the structured portion of the earpiece into the ear canal wall.

[0023] In a further embodiment of the disclosure the structured portion comprises a number of studs.

[0024] Hereby, it is possible to provide an effective and easy producible friction increasing structure to the earpiece.

[0025] In another embodiment of the disclosure the structured portion comprises a number of protruding structures.

[0026] Hereby, the protruding structures can secure that the required friction between the earpiece and the ear canal wall is achieved.

[0027] The protruding structures may have curved geometries allowing the protruding structures to be pressed against the ear canal wall without introducing the risk of scratching or otherwise damaging the ear canal wall.

[0028] In a further embodiment of the disclosure the structured portion comprises a number of groove structures.

[0029] Hereby, it is possible to provide an effective and easy producible friction increasing structure to the earpiece.

[0030] In a further embodiment of the disclosure the structured portion comprises a number of protrudings and a number of groove structures.

[0031] In a further embodiment of the disclosure the earpiece is configured to be arranged in a first configuration in which the structured portion is provided in the front end of the earpiece.

[0032] Hereby, the insertion of the earpiece into the ear canal is eased. Furthermore, it is possible to attach the earpiece to a sound outlet of a hearing aid device and then insert the earpiece and the sound unit of the hearing aid device into the ear canal.

[0033] In a further embodiment of the disclosure the earpiece is configured to be arranged in a second configuration in which the structured portion is provided in the rear end of the earpiece.

[0034] Hereby, it is possible to assure that the structures portion does not cause any inconvenience for the wearer when the earpiece is arranged in the ear canal.

[0035] In an even further embodiment of the disclosure the earpiece is attached to a connection member.

[0036] Hereby, it is possible to connect the earpiece to a sound outlet of a hearing aid device simply by attaching the sound outlet to the connection member. The connection member may have any suitable shape.

[0037] The earpiece may be attached to the connection member by any suitable means such as gluing, ultrasonic welding, by means of mechanical attachment structures such as clamps or a wedge inserted to a groove structure, wherein a portion of the earpiece is sandwiched there between.

[0038] In another embodiment of the disclosure the connection member comprises a hollow pipe structure.

[0039] By having hollow pipe structure, it is possible to guide sound waves generated by a sound unit towards the connection member in a direction towards the ear drum, when the earpiece has been inserted into the ear canal of the wearer.

[0040] It may be an advantage that the connection member comprises an elongated hollow pipe structure.

[0041] In another embodiment of the disclosure the earpiece is attached to an end portion of the connection member.

[0042] Hereby, it is possible to insert the earpiece into the ear canal while the earpiece is arranged in a configuration in which it extends in extension of the connection member. Furthermore, it is possible to roll the earpiece into a second configuration in which the connection member is arranged in the front end of the earpiece and hereby is arranged to transfer sound waves generated by a sound unit (connected directly or indirectly e.g. via an intermediate structure) to the connection member and further into the ear canal towards the eardrum.

[0043] In an embodiment of the disclosure the hearing aid device is a hearing aid device having an output configured to be received in an earpiece according to an earpiece of the disclosure.

[0044] The output may comprise a speaker unit that is configured to be arranged in the ear canal.

[0045] The output may alternatively be an insert unit in case that the sound unit is arranged outside the ear canal. In this case the output is configured to be inserted into the ear canal of the user while the sound unit is arranged outside the ear canal (e.g. behind the ear). Further, a hearing aid configured to be fitted entirely into the ear canal, such as an IIC or CIC device, may have an earpiece according to the present disclosure fitted to it.

[0046] In another embodiment of the disclosure the hearing device comprises a speaker unit attached to a connection member.

[0047] Hereby, it is possibly to provide a hearing aid device that is easy to insert into the ear canal. Furthermore, replacement of the earpiece and attachment of the earpiece to an output is eased.

[0048] In another embodiment of the disclosure the speaker unit is moveably attached to the connection member.

[0049] Hereby, it is possible to facilitate the insertion of the hearing aid device into the ear canal. Furthermore, the comfortability can be increased because the speaking unit is allowed to move relative to the connection member.

[0050] In another embodiment of the disclosure the

connection member comprises a mounting structure configured to be attached to the speaker unit.

[0051] Hereby, attachment of the connection member to the speaker unit is eased.

[0052] In a further embodiment of the disclosure the speaker unit comprises a front portion comprising a narrowing neck structure having a smaller width than the remaining portion of the speaker unit.

[0053] Hereby, it is possible to provide attachment structures for attaching the speaker unit to a connection member.

[0054] In a further embodiment of the disclosure the hearing device comprises a speaker unit provided with a cable in connected to the rear end of the speaker unit.

[0055] Hereby, it is possible to provide the speaking unit with signals for generating air-borne sound waves to be transferred towards the eardrum. The signals may be provided by a hearing aid device housing arranged outside the ear canal (e.g. behind the ear of the wearer).

[0056] In an even further embodiment of the disclosure the hearing device is provided with a vent tube extending along the speaker unit.

[0057] Hereby, it is possible to vent the space between the eardrum and the earpiece. Accordingly, the risk of occlusion can be reduced or even eliminated.

[0058] In other embodiment of the disclosure the length of the vent tube exceeds the length of the speaker unit.

[0059] Hereby, it is possible to guide air and ambient sounds (to prevent or reduce occlusion) beyond the total length of the speaker unit.

[0060] In a further embodiment of the disclosure the length of the vent tube exceeds the total length of the speaker unit and the connection member attached thereto.

[0061] Hereby, it is possible to guide air beyond the total length of the speaker unit and the connection member attached thereto.

[0062] In an even further embodiment of the disclosure the vent tube extends along the connection member at the outside side of the connection member.

[0063] Hereby, it is possible to provide a compact and functional earpiece.

[0064] In an even further embodiment of the disclosure the earpiece is configured to completely surround the speaker unit.

[0065] Hereby, a compact hearing aid device can be provided.

[0066] In another embodiment of the disclosure the earpiece completely surrounds the speaker unit and the connection member attached thereto.

[0067] Hereby, it is possible to provide a very compact hearing aid device, in which the speaker unit and the connection member are protected by the ear piece.

[0068] By an earpiece according to the disclosure it is possible to provide an earpiece that can be tight, sealingly arranged in the ear canal of the wearer. This is done to establish a good barrier for the sound generated by the speaker - so generated sound will not leak from the ear

canal and eventually be picked up by the instrument's own microphone(s). Thereby feedback is prevented or at least reduced. The earpiece is capable of dynamically adapting its shape to the shape of the ear canal, including when jaw movements are present. The earpiece may be provided in different sizes to better accommodate a user's individual ear canal size.

BRIEF DESCRIPTION OF DRAWINGS

[0069] The aspects of the disclosure may be best understood from the following detailed description taken in conjunction with the accompanying figures. The figures are schematic and simplified for clarity, and they just show details to improve the understanding of the claims, while other details are left out. Throughout, the same reference numerals are used for identical or corresponding parts. The individual features of each aspect may each be combined with any or all features of the other aspects. These and other aspects, features and/or technical effect will be apparent from and elucidated with reference to the illustrations described hereinafter in which:

- Fig. 1 shows a schematic cross-sectional view of an earpiece according to an embodiment of the disclosure;
- Fig. 2 shows a schematic cross-sectional of an earpiece according to an embodiment of the disclosure being inserted into the ear canal of a user;
- Fig. 3 shows a schematic cross-sectional of an earpiece according to an embodiment of the disclosure being inserted into the bony part of an ear canal of a user and
- Fig. 4 shows a schematic cross-sectional of an earpiece according to an embodiment of the disclosure provided with a vent.

DETAILED DESCRIPTION

[0070] The detailed description set forth below in connection with the appended drawings is intended as a description of various configurations. The detailed description includes specific details for the purpose of providing a thorough understanding of various concepts. However, it will be apparent to those skilled in the art that these concepts may be practiced without these specific details. Several aspects of the apparatus and methods are described by various blocks, functional units, modules, components, circuits, steps, processes, algorithms, etc. (collectively referred to as "elements"). Depending upon particular application, design constraints or other reasons, these elements may be implemented using electronic hardware, computer program, or any combination thereof.

[0071] The electronic hardware may include microprocessors, microcontrollers, digital signal processors (DSPs), field programmable gate arrays (FPGAs), pro-

grammable logic devices (PLDs), gated logic, discrete hardware circuits, and other suitable hardware configured to perform the various functionality described throughout this disclosure. Computer program shall be construed broadly to mean instructions, instruction sets, code, code segments, program code, programs, subprograms, software modules, applications, software applications, software packages, routines, subroutines, objects, executables, threads of execution, procedures, functions, etc., whether referred to as software, firmware, middleware, microcode, hardware description language, or otherwise.

[0072] A hearing device may include a hearing aid that is adapted to improve or augment the hearing capability of a user by receiving an acoustic signal from a user's surroundings, generating a corresponding audio signal, possibly modifying the audio signal and providing the possibly modified audio signal as an audible signal to at least one of the user's ears. The "hearing device" may further refer to a device such as an earphone or a headset adapted to receive an audio signal electronically, possibly modifying the audio signal and providing the possibly modified audio signals as an audible signal to at least one of the user's ears. Such audible signals may be provided in the form of an acoustic signal radiated into the user's outer ear, or an acoustic signal transferred as mechanical vibrations to the user's inner ears through bone structure of the user's head and/or through parts of middle ear of the user or electric signals transferred directly or indirectly to cochlear nerve and/or to auditory cortex of the user.

[0073] The hearing device is adapted to be worn in any known way. This may include i) arranging a unit of the hearing device behind the ear with a tube leading airborne acoustic signals into the ear canal or with a receiver/ loudspeaker arranged close to or in the ear canal such as in a Behind-the-Ear type hearing aid, and/ or ii) arranging the hearing device entirely or partly in the pinna and/ or in the ear canal of the user such as in an In-the-Ear type hearing aid or In-the-Canal/ Completely-in-Canal type hearing aid. Both types could include sealing in the bony (and sensitive) part of the ear canal

[0074] A "hearing system" refers to a system comprising one or two hearing devices, and a "binaural hearing system" refers to a system comprising two hearing devices where the devices are adapted to cooperatively provide audible signals to both of the user's ears. The hearing system or binaural hearing system may further include auxiliary device(s) that communicates with at least one hearing device, the auxiliary device affecting the operation of the hearing devices and/or benefitting from the functioning of the hearing devices. A wired or wireless communication link between the at least one hearing device and the auxiliary device is established that allows for exchanging information (e.g. control and status signals, possibly audio signals) between the at least one hearing device and the auxiliary device. Such auxiliary devices may include at least one of remote con-

trols, remote microphones, audio gateway devices, mobile phones, public-address systems, car audio systems or music players or a combination thereof. The audio gateway is adapted to receive a multitude of audio signals such as from an entertainment device like a TV or a music player, a telephone apparatus like a mobile telephone or a computer, a PC. The audio gateway is further adapted to select and/or combine an appropriate one of the received audio signals (or combination of signals) for transmission to the at least one hearing device. The remote control is adapted to control functionality and operation of the at least one hearing devices. The function of the remote control may be implemented in a SmartPhone or other electronic device, the SmartPhone/ electronic device possibly running an application that controls functionality of the at least one hearing device.

[0075] In general, a hearing device includes i) an input unit such as a microphone for receiving an acoustic signal from a user's surroundings and providing a corresponding input audio signal, and/or ii) a receiving unit for electronically receiving an input audio signal. The hearing device further includes a signal processing unit for processing the input audio signal and an output unit for providing an audible signal to the user in dependence on the processed audio signal.

[0076] The input unit may include multiple input microphones, e.g. for providing direction-dependent audio signal processing. Such directional microphone system is adapted to enhance a target acoustic source among a multitude of acoustic sources in the user's environment. In one aspect, the directional system is adapted to detect (such as adaptively detect) from which direction a particular part of the microphone signal originates. This may be achieved by using conventionally known methods. The signal processing unit may include amplifier that is adapted to apply a frequency dependent gain to the input audio signal. The signal processing unit may further be adapted to provide other relevant functionality such as compression, noise reduction, etc. The output unit may include an output transducer such as a loudspeaker/ receiver for providing an air-borne acoustic signal transcutaneously.

[0077] Now referring to Fig. 1, which illustrates a schematic cross-sectional view of an earpiece 2 according to an aspect of the disclosure, it can be seen that the earpiece 2 comprises a first side 4 and another side 4' provided at the opposite side of the longitudinal axis X of the earpiece 2. The sides 4, 4' constitute a fluid-filled flexible structure 4, 4' surrounding a through-going canal 10 extending along the longitudinal axis X of the earpiece 2. The through-going canal 10 surrounding the fluid-filled flexible structure 4, 4' is configured to receive a sound outlet of a hearing aid device.

[0078] In Fig. 1 it can be seen that the earpiece 2 is attached to a connection member 14 provided with a hollow pipe structure constituting a sound canal 18. The earpiece 2 is attached to an end portion (the distal end portion) of the connection member 14.

[0079] The connection member 14 comprises a mounting structure 28 provided in its proximal end, in which protrusions 15 are provided. An attachment structure 26 of a neck structure 22 of a speaker unit 20 is moveably attached to the mounting structure 28 of the connection member 14.

[0080] A cable 24 is connected to the end of the speaker unit 20. Hereby, a signal processing unit (may include amplifier that is adapted to apply a frequency dependent gain to an input audio signal) of a hearing aid device (not shown) can send a signal to the speaker unit 20, which can generate the desired air-borne acoustic signal and transmit it through the connection member 14 and the earpiece 2.

[0081] A plurality of stud members 6, 6' are provided on the front end of the earpiece 2. A portion of the stud members 6 protrude from the first side 4 of the fluid-filled flexible structure and another portion of the stud members 6' protrudes from the other side 4' of the fluid-filled flexible structure. The stud members 6, 6' are configured to increase the friction against the ear canal.

[0082] The front end of the earpiece 2 is pointed in order to facilitate insertion into the ear canal (see Fig. 2).

[0083] Fig. 2 illustrates a schematic cross-sectional of an earpiece 2 according to an embodiment of the disclosure during insertion into the ear canal 30 of a user. The earpiece 2 is moved towards the eardrum (see Fig. 3) in the direction indicated by an arrow 34. The cable 24 is configured to be used to insert the earpiece 2 into the ear canal 30. The cable 24 is electrically and mechanically connected to the speaker unit 20, which is mechanically attached to the connection member 14 attached to the earpiece 2. Accordingly, force can be transferred via the cable 24, through the speaker unit 20, via the connection member to the earpiece 2.

[0084] A number of stud members 6, 6' protruding from the front end 16 of the earpiece 2 are adapted to increase the friction against ear canal wall 32. Hereby, it is possible to roll the earpiece 2 and hereby change the configuration of the earpiece 2 from the first stable configuration shown in Fig. 2 to the second stable configuration shown in Fig. 3.

[0085] Fig. 3 illustrates a schematic cross-sectional of an earpiece 2 according to an embodiment of the disclosure being inserted into the bony part of an ear canal 30 of a user. The earpiece 2 corresponds to the one shown in Fig. 1 and in Fig. 2, however, it is arranged in another configuration in which the stud members 6, 6' are arranged in the rear end 17 of the earpiece 2.

[0086] The earpiece 2 is arranged in the ear canal 30 and abuts the ear canal wall 32. The earpiece 2 is arranged in a configuration, in which the connection member 14 is arranged in the front end 16 of the earpiece 2. It is indicated in Fig. 3 that sound waves 38 are transmitted from the sound unit 20 through the connection member 14 and further through the opening in the earpiece 2 into the ear canal 30 towards the eardrum 36.

[0087] When the earpiece 2 needs to be removed, one

can pull the cable 24. The earpiece 2 is bi-stable and is configured to be arranged in a first stable configuration (shown in Fig. 2) and in a second stable configuration shown in Fig. 3. The earpiece 2 is configured to roll and hereby change configuration from the first stable configuration to the second stable configuration shown in Fig. 3.

[0088] Fig. 4 illustrates a schematic cross-sectional of an earpiece 2 according to an embodiment of the disclosure provided with a vent 40 formed as a tube 40 extending along the sound unit 20.

[0089] The earpiece 2 is basically shaped as the earpiece illustrated in Fig. 3, however, a vent 40 has been added. The earpiece 2 comprises a plurality of stud members 6, 6' arranged in the rear end 17 of the earpiece 2. The earpiece 2 surrounds the sound unit 20 and the connection member 14 attached to the front end of its neck structure 22. The vent 40 extends along the longitudinal axis X of the earpiece 2. The vent 40 formed as a tube 40 is capable of establishing fluid communication across the earpiece 2. As it can be seen in Fig. 4 a flow 42 of air is conducted through the vent 40. Hereby, it is possible to pressure. If the ear canal 30 is completely plugged by the earpiece 2 the phenomena "occlusion" will occur. The vent 40 provide ventilation for the ear canal 30, which is important because it prevents the 'plugged up' or occluded sensation that the user gets if the ear canal 30 was completely closed off with the earpiece 2. The vent also releases pressure differences e.g. when the user is flying. Also, the vent releases air trapped inside the ear canal during insertion. The vent may be made in various sizes and numbers depending on the purpose (and the users hearing loss).

[0090] The earpiece 2 may be filled with any suitable fluid 44. Such fluid 44 may be water or oil or a gel or a gas such as air or carbon dioxide or a mixture of gas and liquid. By having a fluid filled earpiece 2 the pressure acting in the ear canal becomes constant along the entire surface of the earpiece 2. This will make the earpiece 2 more comfortable to wear.

[0091] The connection member 14 is equipped with a mounting structure 28 provided in its proximal end. In this end a mounting structure 28 having protrusions 15 configured for attachment to the neck structure 22 are provided. An attachment structure of the neck structure 22 of a speaker unit 20 is moveably attached to the mounting structure 28 of the connection member 14.

[0092] As used, the singular forms "a," "an," and "the" are intended to include the plural forms as well (i.e. to have the meaning "at least one"), unless expressly stated otherwise. It will be further understood that the terms "includes," "comprises," "including," and/or "comprising," when used in this specification, specify the presence of stated features, integers, steps, operations, elements, and/or components, but do not preclude the presence or addition of one or more other features, integers, steps, operations, elements, components, and/or groups thereof. It will also be understood that when an element is referred to as being "connected" or "coupled" to another

element, it can be directly connected or coupled to the other element but an intervening elements may also be present, unless expressly stated otherwise. Furthermore, "connected" or "coupled" as used herein may include wirelessly connected or coupled. As used herein, the term "and/or" includes any and all combinations of one or more of the associated listed items. The steps of any disclosed method is not limited to the exact order stated herein, unless expressly stated otherwise.

[0093] It should be appreciated that reference throughout this specification to "one embodiment" or "an embodiment" or "an aspect" or features included as "may" means that a particular feature, structure or characteristic described in connection with the embodiment is included in at least one embodiment of the disclosure. Furthermore, the particular features, structures or characteristics may be combined as suitable in one or more embodiments of the disclosure. The previous description is provided to enable any person skilled in the art to practice the various aspects described herein. Various modifications to these aspects will be readily apparent to those skilled in the art, and the generic principles defined herein may be applied to other aspects.

[0094] The claims are not intended to be limited to the aspects shown herein, but is to be accorded the full scope consistent with the language of the claims, wherein reference to an element in the singular is not intended to mean "one and only one" unless specifically so stated, but rather "one or more." Unless specifically stated otherwise, the term "some" refers to one or more.

[0095] Accordingly, the scope should be judged in terms of the claims that follow.

List of reference numerals

[0096]

2	Earpiece
4, 4'	Side
6, 6'	Stud member
8	Opening
10	Sound canal
12	Attachment member
14	Connection member
15	Protrusion
16	Front end
17	Rear end
18	Sound canal
20	Speaker unit (receiver)
22	Neck structure (front portion)
24	Cable
26	Attachment structure
28	Mounting structure
30	Ear canal
32	Ear canal wall
34	Arrow
36	Eardrum
38	Sound wave

40	Tube
42	Flow
44	Fluid
X	Longitudinal axis

Claims

1. An earpiece (2) for insertion into the ear canal (30), wherein the earpiece (2) comprises a fluid-filled flexible structure (4, 4'), wherein the earpiece (2) comprises a through-going canal (10) surrounded by the fluid-filled flexible structure (4, 4') configured to receive a sound outlet of a hearing aid device.
2. An earpiece (2) according to claim 1, wherein the earpiece (2) is configured to be sealingly arranged in the ear canal (30) in a manner in which the earpiece (2) bears against the ear canal wall (32) of the ear canal (30) and hereby adapts the geometry of the ear canal (30).
3. An earpiece (2) according to claim 1 or claim 2, wherein the earpiece (2) is bi-stable and is configured to be arranged in a first stable configuration and in a second stable configuration.
4. An earpiece (2) according to claim 2 and 3, wherein the earpiece (2) is configured to roll and hereby change configuration from the first stable configuration to the second stable configuration.
5. An earpiece (2) according to one of the preceding claims, wherein the earpiece (2) comprises a structured portion provided at the outside surface of the earpiece (2).
6. An earpiece (2) according to claim 5, wherein the structured portion comprises a number of studs (6, 6').
7. An earpiece (2) according to one of the preceding claims 4-5, wherein the earpiece (2) is configured to be arranged in a first configuration in which the structured portion is provided in the front end (16) of the earpiece (2).
8. An earpiece (2) according to one of the preceding claims 5-7, wherein the earpiece (2) is configured to be arranged in a second configuration in which the structured portion is provided in the rear end (17) of the earpiece (2).
9. An earpiece (2) according to one of the preceding claims, wherein the earpiece (2) is attached to a connection member (14).
10. An earpiece (2) according to claim 9, wherein the

connection member (14) comprises a hollow pipe structure.

11. A hearing aid device having an output configured to be received in an earpiece (2) according to one of the preceding claims. 5
12. A hearing device according to claim 11, wherein the hearing device comprises a speaker unit (20) attached to the connection member (14). 10
13. A hearing device according to one of the claims 11-12, wherein the hearing device comprises a speaker unit (20) provided with a cable (24) in connected to the rear end of the speaker unit (20). 15
14. A hearing device according to one of the claims 11-13, wherein the hearing device is provided with a vent tube (40) extending along the speaker unit (20). 20
15. A hearing device according to one of the claims 11-14, wherein the earpiece (2) is configured to completely surround the speaker unit (20). 25

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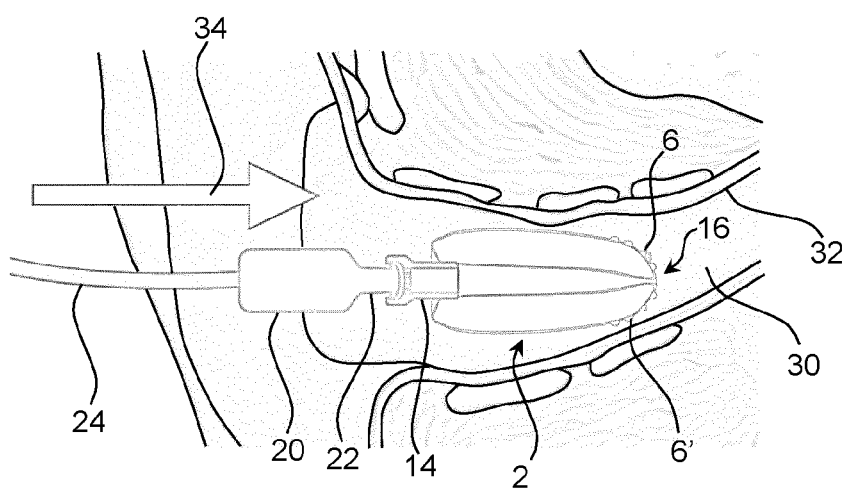
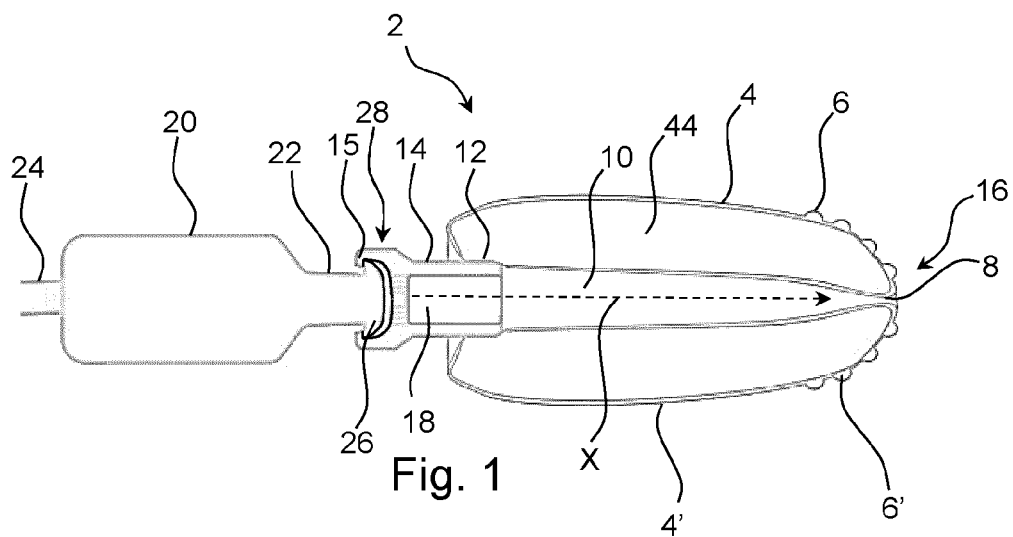


Fig. 2

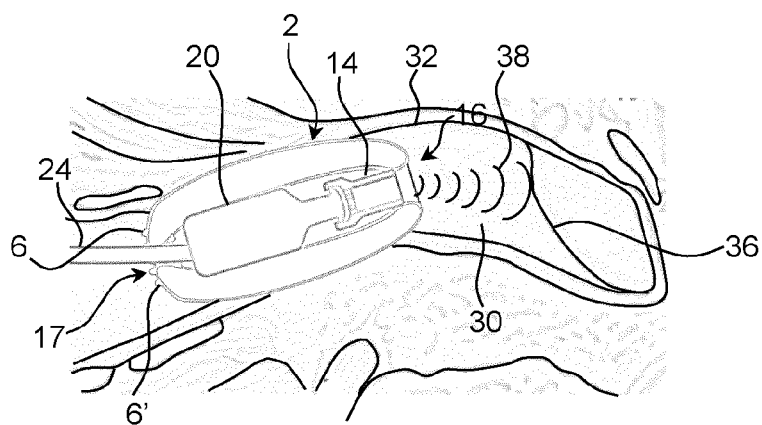


Fig. 3

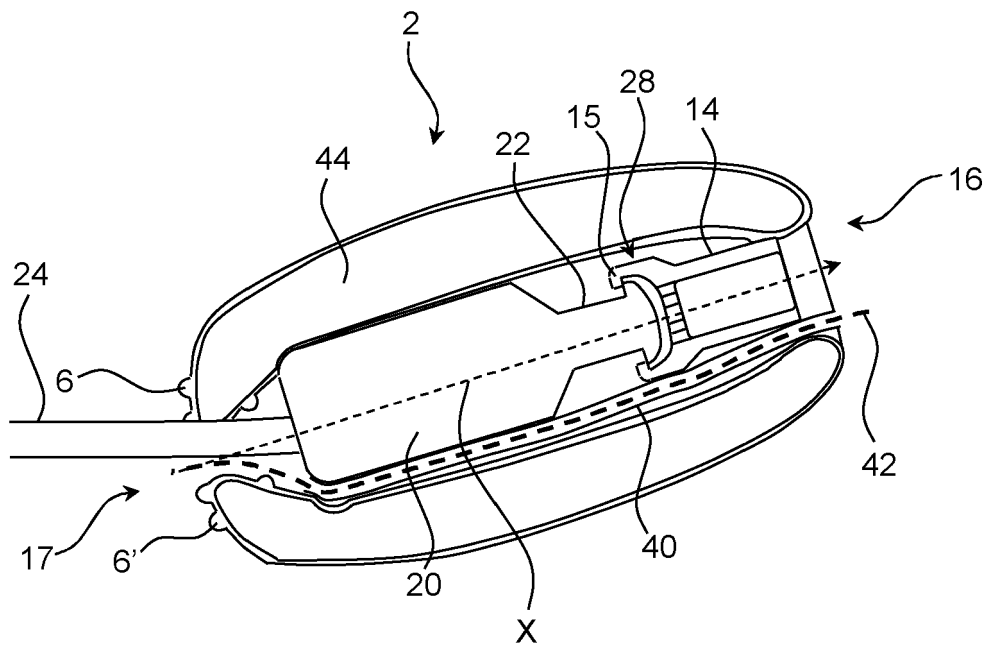


Fig. 4