

(19) **DANMARK**

(10) **DK/EP 2587839 T3**



(12) **Oversættelse af
europæisk patentskrift**

Patent- og
Varemærkestyrelsen

-
- (51) Int.Cl.: **H 04 R 25/00 (2006.01)**
- (45) Oversættelsen bekendtgjort den: **2018-05-28**
- (80) Dato for Den Europæiske Patentmyndigheds bekendtgørelse om meddelelse af patentet: **2018-03-07**
- (86) Europæisk ansøgning nr.: **11186427.8**
- (86) Europæisk indleveringsdag: **2011-10-25**
- (87) Den europæiske ansøgnings publiceringsdag: **2013-05-01**
- (84) Designerede stater: **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 MK MT NL NO PL PT RO RS SE SI SK SM TR**
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- (54) Benævnelse: **Høreapparat holdertilbehør**
- (56) Fremdragne publikationer:
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DESCRIPTION

BACKGROUND OF THE INVENTION

[0001] The invention is related to a hearing aid retainer accessory for retaining a hearing aid, preferably a BTE (behind-the-ear) hearing aid, at a user's ear.

[0002] In order to operate at best and to prevent damage resulting from falling of the ear and dropping to the ground, a BTE-hearing has to be kept in a safe position at a user's ear. Even so if the user's head moves intensely as is the case during sport. Another example is a child playing.

[0003] US 2007/0217641 A1 discloses a hearing aid protection accessory formed by a flexible sleeve to be wrapped around a housing of a hearing aid, the flexible sleeve to be connected to a user's clothing via a clip and a cord. Suitable for preventing the hearing aid from dropping to the ground this arrangement, however, does not allow an adjustment to a user's ear and is likely to entangle with all kinds of obstacles a child may encounter playing. Also the sleeve adds to the thickness of the hearing aid housing rendering it difficult to be placed behind a small ear.

[0004] US 4,881,616 and US 4,702,345 each disclose a hearing aid retainer accessory that is formed by a tube with a respective sleeve connected to each end, both sleeves pulled over the housing of the hearing aid. The arrangement disclosed in US 4,881,616 allows an adjustment to a user ear by moving the sleeves toward or away from each other on the housing of the hearing aid. The degree of adjustment, however, is limited by the longitudinal dimension of the hearing aid housing. The sleeves of both US 4,881,616 and US 4,702,345 add to the thickness of the hearing aid housing, resulting in a discomfort to wear or even the ears protruding, provided they are still in a process of growth. Furthermore, the sleeves are likely to interfere with a control button located at the surface of the hearing aid housing.

[0005] US 7,013,018 B2 discloses an adjustable earring for a headset, the earring being connected via a pivotal link to a housing of a speaker included in the headset. However, due to the nature of the headset the speaker is configured to cover the pinna of a user's ear resulting in the speaker and the earring lying askew to each other.

[0006] US 4881616 relates to a hearing aid of the type including a battery containing housing normally supported rearwardly of the ear auricle by an elongated hook joining one end of the housing to an ear opening contained ear molding, an elongated tube is secured, at its respective ends, with resilient bands which surround respective end portions of the hearing aid housing and in combination with the hearing aid housing, forms an endless configuration which surrounds the ear auricle at its juncture with the head and positions the hearing aid housing rearwardly of the ear auricle and maintains it in this position by the strand fitting snugly

adjacent the user's head and forwardly of the tragus.

[0007] US 2007/264850 relates to a headset that includes a signal interface configured for receiving and forwarding electrical signals, a bending-resistant, bendable retaining member, and a functional device attached to the retaining member. Retaining member being bendable and held in a bent position without a restoring force, and is connected to signal interface for positioning functional device. Electrical signal lines provided in retaining member, and running between signal interface and functional device. Fixing element which can be placed on retaining member in various longitudinal positions to secure retaining member. Retaining clip, which can be bent into position, extends between signal interface and fixing element; and. Rear section of retaining member, signal interface, retaining clip, fixing element form a loop, the size of loop being adjustable and changeable by displacing fixing element along retaining member, in use, and loop being configured for receiving an auricle of a user and running at least partially behind auricle, is use.

[0008] WO 2004/112431 relates to an electrical and mechanical connection between a head worn communication device and an accessory thereto. Mechanical connection means and electrical connection points at the communication device are placed at one and the same surface part, and further connection means and electrical connection points at the accessory are placed at one and the same surface part, such that a sliding action between the two surface parts will cause the respective mechanical connection means to grip each other while the respective electrical connection points gain contact with each other. The document further discloses a hearing aid with an accessory.

[0009] US 2009/103765 relates to headset for fitting an earpiece that has a lock housing in or on which a fixing device is provided. A flexurally rigid and elastic ear loop which forms a loop for accommodating the outer ear of a user, and one end of the ear loop is received longitudinally displaceable in the fixing device of the lock housing, and for adjusting the size of the loop is adjustably received in various length positions, creating a fixing effect. There is a control device for receiving and outputting electrical signals and a signal interface for receiving and/or outputting electrical signals to and/or from the control device.

[0010] Finally, US 4,918,757 and US 3,327,807 each disclose an arrangement for retaining a hearing aid at a user's head utilizing a head band. Undesirably each of the arrangements exerts an uncomfortable force to the users head and is rather noticeable.

[0011] It is therefore an object of the present invention to provide a hearing aid retainer accessory which avoids the disadvantages of prior art devices and is intuitive and easy to attach, comfortable to wear, free of interference with a hearing aid's control buttons and the specially designed hearing aid geometry, all while retaining a hearing aid at a user's ear safely and stably.

SUMMARY OF THE INVENTION

[0012] It is an object of the present invention is to provide an alternative hearing aid retainer accessory avoiding the disadvantages of the arrangements known from these prior art devices. According to a first aspect of the present invention, the technical object is achieved by a hearing aid retainer accessory according to the subject-matter of claim 1. The inventive hearing aid retainer accessory is intuitive and easy to attach, comfortable to wear, free of interference with a hearing aid's control buttons and the specially designed hearing aid geometry, all while retaining a hearing aid at a user's ear safely and stably. Neither the first nor the second attaching means add to the circumferential geometry (geometry extending around the longitudinal axis) of the housing of the hearing aid.

The invention includes the realization that prior art hearing aid retainer accessories add to the circumferential geometry of a hearing they are attached to, rendering it uncomfortable or even impossible to wear.

[0013] To be even comfortable for a user the first attaching means can be configured as a flexible sleeve. The flexible sleeve can be wrapped around a portion of a hook of a hearing aid. Preferably, the flexible sleeve has a smaller physical dimension than the second attaching means. The first attaching means can be configured as a flexible sleeve having an inner diameter adapted to the outer diameter of a closed surface.

In a further preferred embodiment the second attaching means comprises an end surface portion with a hook-like protrusion. The hook-like protrusion is mechanically engageable to a complementary cut out region in a base portion of a housing of a hearing aid.

The second attaching means can comprise an end surface portion from which the hook-like protrusion extends. The end surface portion can have a surface area of roughly the same size as a longitudinal end face portion of a housing of a hearing aid. In this manner a seamless and harmonic transition between the second attaching means and a hearing aid housing to be connected is achieved.

According to a second aspect of the present invention, the technical object is achieved by a hearing aid and a hearing aid retainer accessory according to the subject-matter of claim 7. In a preferred embodiment the first attaching means is configured as a flexible sleeve having an inner diameter adapted to the outer diameter of the surface hook. The second attaching means can comprise a hook-like protrusion mechanically engaged to the complementary cut out region in the longitudinal end face portion of the housing of the hearing aid. In this manner an especially robust mechanical connection is between the hearing aid and the hearing aid retainer accessory is established.

In a further embodiment the second attaching means comprises an end surface portion from which a hook-like protrusion extends. The end surface portion has surface area of roughly the same size as the longitudinal end face portion of the housing of the hearing aid. This adds to the comfort of the assembly if worn.

To provide an optimal connection between the hearing aid and the hearing aid retainer accessory, the second attaching means can comprise an end surface portion with a hook-like protrusion. The base portion of the hearing aid can comprise a cut out region complementary to the hook-like protrusion of the second attaching means. The hook-like protrusion can be engaged to the respective cut out region mechanically.

In a preferred embodiment, the hearing aid is a BTE-hearing aid.

[0014] It is to be understood that the embodiments and advantages described with respect to the first aspect of the present invention apply to the second aspect of the invention and vice versa.

BRIEF DESCRIPTION OF THE DRAWINGS

[0015]

Fig. 1 schematically depicts a side view of a hearing aid retainer accessory connected to a hearing aid according to the invention;

Fig. 2 schematically depicts a side view of a tubular feed-through accommodating a second portion;

Fig. 3 schematically depicts a schematic side view of the tubular feed-through of fig. 2 accommodating a second end portion secured by a lock pin;

Fig. 4 schematically depicts a perspective view of a lock pin to be engaged to a second end portion;

Fig. 5 schematically depicts a perspective view of a base portion having a complementary cut out region;

Fig. 6 schematically depicts a perspective view of a second attaching means having a hook-like protrusion;

DETAILED DESCRIPTION

[0016] Fig. 1 shows a hearing aid retainer accessory 10 for a hearing aid 20, the hearing aid 20 being designed as a BTE-hearing aid with a relatively large diameter longitudinal end face portion 22 and a relatively smaller diameter hook-end 25 to which a hook 13 is attached.

[0017] The hearing aid retainer accessory 10 comprises an elongated string 1, a first attaching means 4 and a second attaching means 5. The elongated string 1 is configured as an elastic tube, with a first end portion 2 and a second portion 3. The first attaching means 4 is configured as a flexible sleeve 4 and attached around the hook 13 and is connected to the first end portion 2 of the elongated string 1. The flexible sleeve has an inner diameter adapted to the outer diameter of the hook 13. Furthermore, the first attaching means 4 has a smaller physical dimension than the second attaching means 5.

[0018] The second attaching means 5 comprises a tubular feed-through 7. The tubular feed-through accommodates the second portion 3 of the elongated string 1 in a friction fitting manner. The second attaching means 5 is connected to a longitudinal end face portion 22 belonging to a housing 21 of the hearing aid 20.

[0019] A retaining ring is formed of both the geometry of the hearing aid and the elongated string 1, wherein neither one of the first and second attaching means 4, 5 adds to the circumferential geometry of the housing 21. As indicated by the arrows the elongated string 1 can be pulled through the tubular feed-through 7 in order to adjust the hearing aid retainer accessory 10 to a user's ear.

[0020] A tubular feed-through 7 comprised by a second attaching means 5 in fig. 2 accommodates a second portion 3 of an elongated string 1. The elongated string 1 is configured as an elastic tube. After the hearing aid retainer accessory 10 has been properly adjusted to a user's ear, an expandable portion 1' of the elongated string 1 (a portion that is not part of the retaining ring formed) can be cut off.

[0021] Fig. 3 shows elongated string 1 without the expandable portion 1'. Hence, the second portion 3 constitutes a second end portion 3'. The second end portion 3' is secured in the tubular feed-through 7 by a lock pin 8, which is engaged axially in second end portion 3'.

[0022] Fig. 4 shows a perspective view of a lock pin 8 to be engaged to a second end portion 3' securing it to a second attaching means 5. Again the second end portion 3' is accommodated by a tubular feed-through 7.

[0023] Fig. 5 depicts a second attaching means 5 connected to an elongated string 1 and secured with lock pin 8 and about to be attached to a longitudinal end face portion 22 of a housing 21 of a hearing aid 20. The second attaching means 5 comprises an end surface portion 11 from which a hook-like protrusion 12 extends. The end surface portion 11 has surface area of roughly the same size as the longitudinal end face portion 22. The hook-like protrusion 12 is configured to engage to a complementary cut out region 23 located in the longitudinal end face portion 22 of the housing 21 of the hearing aid 20 shown in fig 6.

[0024] Prior to the attachment of the second attaching means 5 to the longitudinal end face portion 22, a battery drawer 24 of the hearing 20 is slid open. Thereafter the second attaching means 5 is guided, whereby the end surface portion 11 is kept parallel to longitudinal end face portion 22, in a sliding manner onto the longitudinal end face portion 22 until the hook-like protrusion 12 engages to the complementary cut out region 23. The battery drawer 24 is closed afterwards.

REFERENCES CITED IN THE DESCRIPTION

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Patentkrav

1. Høreapparatholdertilbehør (10) til at blive anvendt sammen med et høreapparat (20), der har et hus (21) med en endefladedel (22) og en krogende (25), til hvilken en krog (13) er fastgjort, hvor høreapparatholdertilbehøret (10) omfatter en langstrakt streng (1), der omfatter en rørformet streng eller en rørformet del med en første endedel (2) og en anden del (3), et første fastgørelsesmiddel (4), der er forbundet til den første endedel (2), og et andet fastgørelsesmiddel (5), der er forbundet til den anden del (3), hvor
- den langstrakte streng (1) er indrettet til at blive trukket gennem en rørformet gennemføring (7), som er omfattet af det andet fastgørelsesmiddel (5), hvor det første fastgørelsesmiddel (2) er konfigureret til at blive fastgjort til kroge (13) af høreapparatet (20), hvor det andet fastgørelsesmiddel (5) er konfigureret til at blive fastgjort til endefladedelen (22) af huset (21) af høreapparatet (20), så at en holderring er dannet af både geometrien af høreapparatet (20) og den langstrakte streng (1), og hvor den anden del af den langstrakte streng, uden en ekspanderbar del (1'), er konfigureret til at blive fastgjort til det andet fastgørelsesmiddel (5) med en låsestift (8), der er indrettet til at gå i indgreb med en indvendig diameter af den rørformede streng eller rørformede del til udvidelse af en udvendig diameter af den rørformede streng eller rørformede del.
2. Høreapparatholdertilbehør (10) ifølge krav 1, kendetegnet ved, at den rørformede gennemføring (7) er indrettet til at rumme den anden del (3) af den langstrakte streng (1) i en friktionfitting og på en justerbar måde.
3. Høreapparatholdertilbehør (10) ifølge hvilke som helst af kravene 1 til 2, kendetegnet ved, at det første fastgørelsesmiddel (4) er konfigureret som en fleksibel muffe, der har en mindre fysisk dimension end det andet fastgørelsesmiddel (5).
4. Høreapparatholdertilbehør (10) ifølge hvilke som helst af kravene 1 til 3, kendetegnet ved, at det første fastgørelsesmiddel (4) er konfigureret som en fleksibel muffe, der har en indvendig diameter, som er indrettet til den udvendige diameter af kroge (13).

- 5 5. Høreapparatholdertilbehør (10) ifølge hvilke som helst af kravene 1 til 4, kendetegnet ved, at det andet fastgørelsesmiddel (5) omfatter et krog lignende fremspring (12), der er konfigureret til at gå i mekanisk indgreb med et komplementært udskæringsområde (23) i endefladedelen (22) af huset (21) af høreapparatet (20).
- 10 6. Høreapparatholdertilbehør (10) ifølge hvilke som helst af kravene 1 til 4, kendetegnet ved, at det andet fastgørelsesmiddel (5) omfatter en endefladedel (11), fra hvilken et krog lignende fremspring (12) strækker sig, hvor endefladedelen (11) har et overfladeareal af samme størrelse som endefladedelen (22) af huset (21) af høreapparatet (20).
- 15 7. Høreapparat (20) og et høreapparatholdertilbehør (10), der er fastgjort dertil, hvor høreapparatet (20) har et hus (21) med en endefladedel (22) og en krogende (25), til hvilken en krog (13) er fastgjort, hvor høreapparatholdertilbehøret (10) omfatter en langstrakt streng (1), der omfatter en rørformet streng eller en rørformet del med en første endedel (2) og en anden del (3), et første fastgørelsesmiddel (4), der er forbundet til den første endedel (2), og et andet fastgørelsesmiddel (5), der er forbundet til den
20 anden del (3), kendetegnet ved, at den langstrakte streng (1) er indrettet til at blive trukket gennem en rørformet gennemføring (7), som er omfattet af det andet fastgørelsesmiddel (5); hvor det første fastgørelsesmiddel (2) er fastgjort til kroge (13) af høreapparatet (20), det andet fastgørelsesmiddel (5) er fastgjort til
25 endefladedelen (22) af huset (21) af høreapparatet (20), så at en holderring er dannet af både geometrien af høreapparatet (20) og den langstrakte streng (1), og den anden del af den langstrakte streng, uden en ekspanderbar del (1'), er konfigureret til at blive fastgjort til det andet fastgørelsesmiddel (5) med en
30 låsestift (8), der er indrettet til at gå i indgreb med en indvendig diameter af den rørformede streng eller rørformede del til udvidelse af en udvendig diameter af den rørformede streng eller rørformede del.
- 35 8. Høreapparat (20) og høreapparatholdertilbehør (10) ifølge krav 7, kendetegnet ved, at den rørformede gennemføring (7) er indrettet til at rumme den anden del (2) af den langstrakte streng (1) i en friktionfitting og på en justerbar måde.

5 9. Høreapparat (20) og høreapparatholdertilbehør (10) ifølge hvilke som helst af kravene 7 til 8, kendetegnet ved, at det første fastgørelsesmiddel (4) er konfigureret som en fleksibel muffe, der har en mindre fysisk dimension end det andet fastgørelsesmiddel (5).

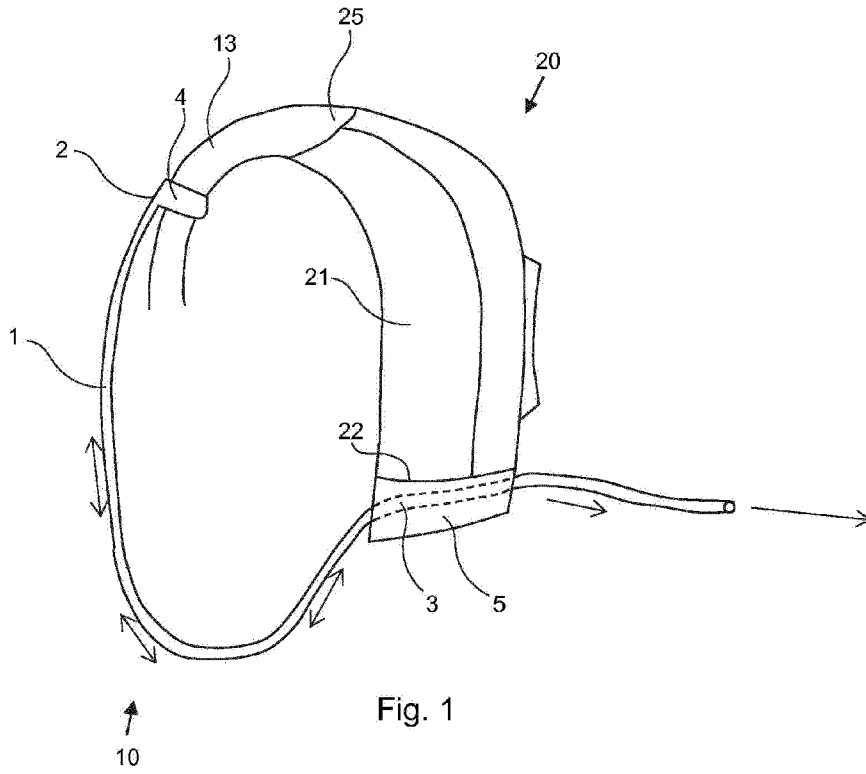
10 10. Høreapparat (20) og høreapparatholdertilbehør (10) ifølge hvilke som helst af kravene 7 til 9, kendetegnet ved, at det første fastgørelsesmiddel (4) er konfigureret som en fleksibel muffe, der har en indvendig diameter, som er indrettet til den udvendige diameter af krogen (13).

15 11. Høreapparat (20) og høreapparatholdertilbehør (10) ifølge hvilke som helst af kravene 7 til 10, kendetegnet ved, at det andet fastgørelsesmiddel (5) omfatter et krog lignende fremspring (12), der er konfigureret til at gå i mekanisk indgreb med et komplementært udskæringsområde (23) i endefladedelen (22) af huset (21) af høreapparatet (20).

20 12. Høreapparat (20) og høreapparatholdertilbehør (10) ifølge hvilke som helst af kravene 7 til 10, kendetegnet ved, at det andet fastgørelsesmiddel (5) omfatter en endefladedel (11), fra hvilken et krog lignende fremspring (12) strækker sig, hvor endefladedelen (11) har et overfladeareal af samme størrelse som endefladedelen (22) af huset (21) af høreapparatet (20).

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DRAWINGS



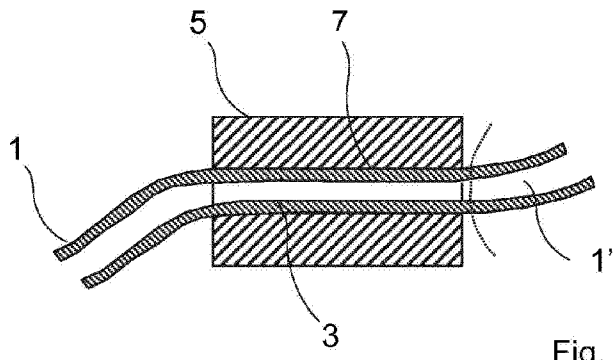


Fig. 2

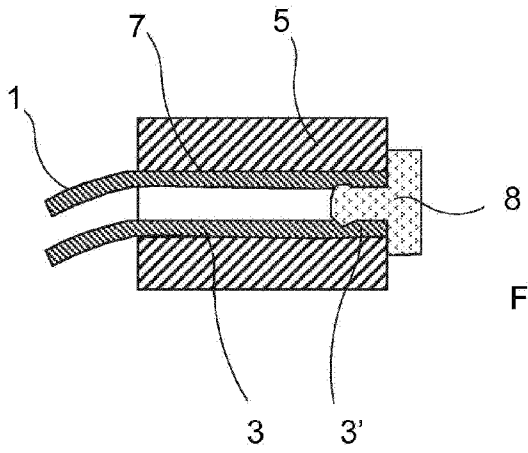


Fig. 3

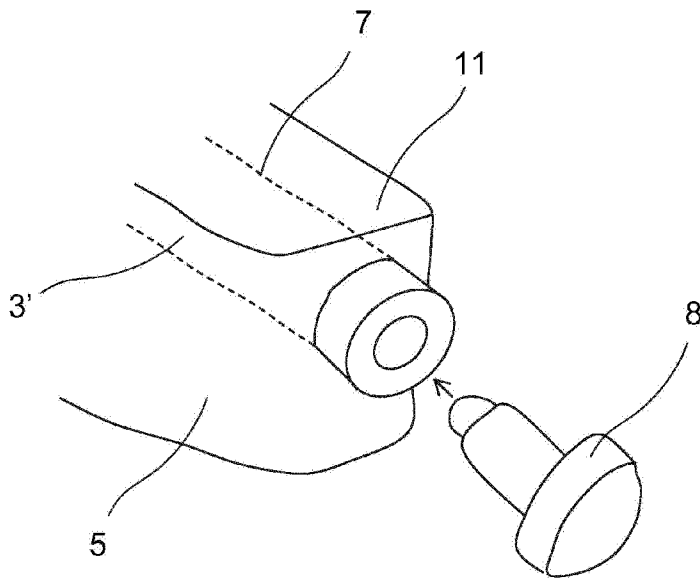


Fig. 4

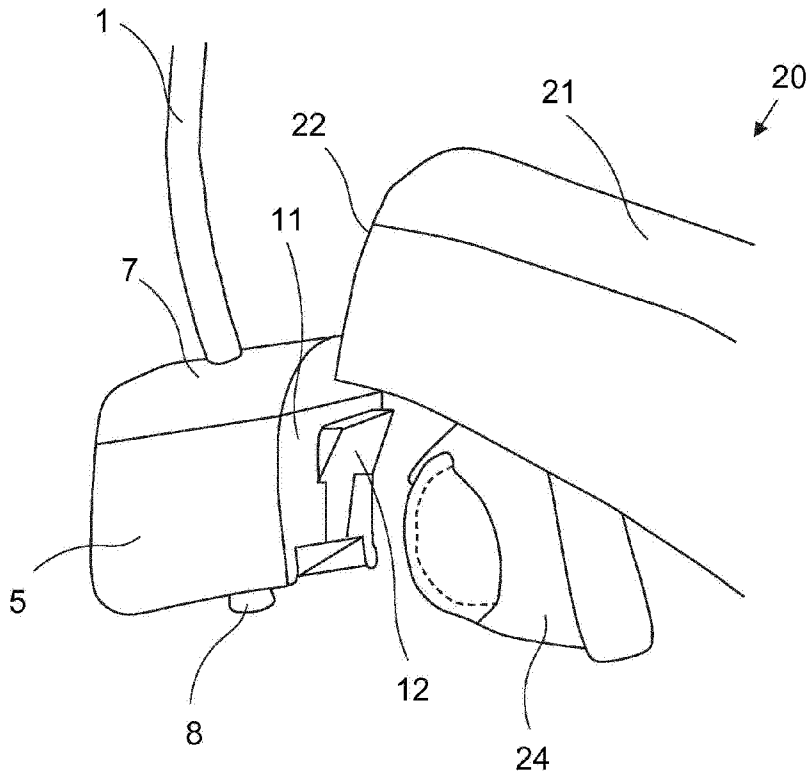


Fig. 5

