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(54) CHARGER FOR ONE OR MORE HEARING DEVICES

(57) The invention relates to a charger (1) for one or more hearing devices (7), comprising a base part (2) having one or more holding cavities (6) for receiving a portion of a hearing device (7) or a part thereof, the portion containing a magnetisable part (11) made from a magnetisable material, wherein the base part (2) comprises two or more magnets (12.1, 12.2) arranged at an end of each holding cavity (6).

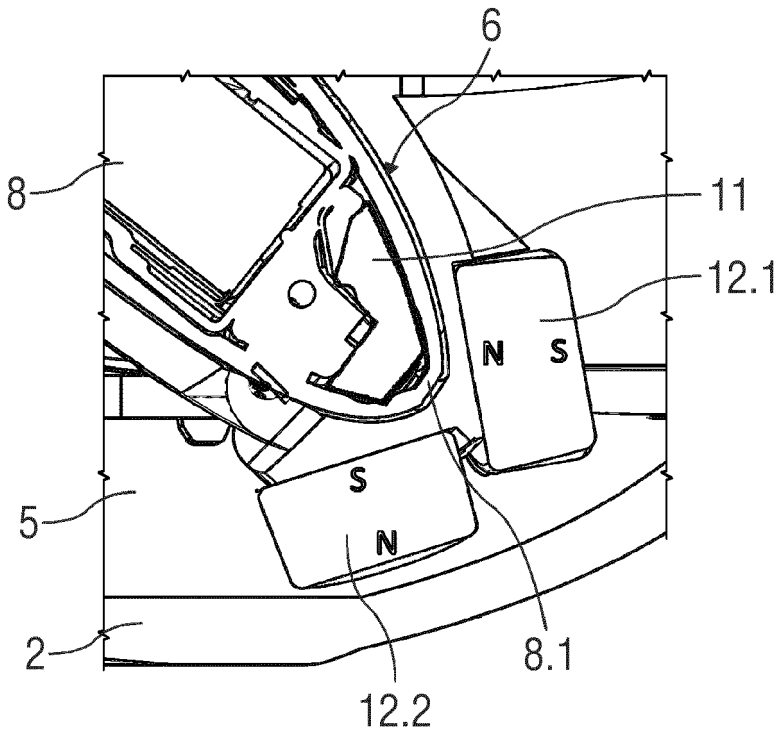

FIG 3

EP 4 099 713 A1

Description

Technical Field

[0001] The invention relates to a charger for one or more hearing devices.

Background of the Invention

[0002] Hearing devices are often fitted with rechargeable batteries and may be recharged either using contactless charging or contact charging of the rechargeable batteries using charging terminals, while the batteries are still in the hearing device. For effective charging of the hearing device, either wirelessly or by providing a charging current to the hearing device, the hearing device may be held in a charging position in the hearing device charger.

[0003] WO 2019/037854 A1 discloses a charger for a hearing device that provides a user with control of insertion and/or ejection of the hearing device into or out of the charger. A user may use a user control to move the hearing device in the charger from a position where the hearing device can be charged by the charger and a removal position where the user may easily, manually remove the hearing device from the charger.

Summary of the Invention

[0004] It is an object of the present invention to provide a novel charger for one or more hearing devices.

[0005] The object is achieved by a charger for one or more hearing devices according to claim 1.

[0006] Preferred embodiments of the invention are given in the dependent claims.

[0007] According to the invention, a charger for one or more hearing devices comprises a base part, which may be a receptacle, the base part having one or more holding cavities for receiving a portion of a hearing device or a part thereof, e.g. a rear end, a front end, a top, middle or bottom part of a hearing device or of a part thereof, the portion containing a magnetisable part made from a magnetisable material, wherein the base part comprises two or more magnets arranged at an end of each holding cavity.

[0008] In an exemplary embodiment, a north pole of one of the magnets faces the holding cavity, while a south pole of another one of the magnets faces the holding cavity.

[0009] In an exemplary embodiment, the two magnets are arranged at an angle of about 90 ° to 120° relative to each other, wherein the end of the holding cavity is enclosed in this angle.

[0010] In an exemplary embodiment, the charger further comprises a magnet or a magnetisable plate arranged behind the magnets facing away from the holding cavity to create a magnetic shortcut between the magnets.

[0011] In an exemplary embodiment, the charger further comprises a lid for covering the base part.

[0012] In an exemplary embodiment, the lid is coupled to the base part by a hinge.

[0013] In an exemplary embodiment, the charger further comprises an inlay held in the base part, wherein the one or more holding cavities and the two or more magnets are arranged in the inlay.

[0014] In an exemplary embodiment, the one or more holding cavities are respectively shaped complementary to a portion, e.g. a rear end, of a hearing device or part thereof having a bent shape, e.g. resembling a banana.

[0015] In an exemplary embodiment, one of the holding cavities is shaped to receive a portion, e.g. rear end, of a hearing device or part thereof for a right ear, wherein another one of the holding cavities is shaped to receive a portion, e.g. a rear end, of a hearing device or part thereof for a left ear which has a different shape than the one for the right ear.

[0016] In an exemplary embodiment, the one or more holding cavities are shaped so that the hearing device or part thereof lays tilted sideways and/or that the bent portions, e.g. the behind the ear parts, protrude from them at an angle of about 0 to 90°, in particular 30° to 80°, from a perpendicular on a surface of the inlay or of the base part such that a forward end of the bent hearing device or part thereof bends back toward the inlay and/or base part.

[0017] In an exemplary embodiment, the charger further comprises a lifting mechanism configured to lift the inlay at least at one end thereof as the lid is being opened, and to put the inlay deeper down into the base part again when the lid is being closed.

[0018] In an exemplary embodiment, the lifting mechanism is configured to lift the inlay at its end closest to the hinge.

[0019] In an exemplary embodiment, the lifting mechanism comprises a cam track on one of the lid and the inlay and a cam follower on the other one of the lid and the inlay.

[0020] In an exemplary embodiment, an end of the inlay remote from the hinge is rotatably supported in the base part.

[0021] In an exemplary embodiment, the charger is part of an assembly, further comprising one or more hearing devices respectively having a behind the ear part, wherein the one or more holding cavities are configured to receive a respective portion, e.g. a rear end, of the behind the ear part, wherein the portion contains a magnetic part or a magnetisable part made from a magnetisable material.

[0022] In an exemplary embodiment, the behind the ear part may have a shape resembling a banana.

[0023] Further scope of applicability of the present invention will become apparent from the detailed description given hereinafter. However, it should be understood that the detailed description and specific examples, while indicating preferred embodiments of the invention, are

given by way of illustration only, since various changes and modifications within the spirit and scope of the invention will become apparent to those skilled in the art from this detailed description.

Brief Description of the Drawings

[0024] The present invention will become more fully understood from the detailed description given hereinbelow and the accompanying drawings which are given by way of illustration only, and thus, are not limitative of the present invention, and wherein:

Figure 1 is a schematic view of a charger for hearing devices,

Figure 2 is another schematic view of the charger,

Figure 3 is a schematic detail view of the charger with a holding cavity holding a rear end of a behind the ear part of a hearing device,

Figure 4 is a schematic detail view of the charger with an alternative configuration of the holding cavity,

Figure 5 is a schematic view of an exemplary embodiment of the charger, and

Figure 6 is a schematic sectional view of the charger of figure 5.

[0025] Corresponding parts are marked with the same reference symbols in all figures.

Detailed Description of Preferred Embodiments

[0026] **Figure 1** is a schematic view of a charger 1 for hearing devices 7. **Figure 2** is another schematic view of the charger 1.

[0027] The charger 1 may be configured as a box comprising a base part 2 and a lid 3 for covering the base part 2, wherein the lid 3 may be coupled to the base part 2 by a hinge 4, e.g. a live hinge. The base part 2 may comprise an inlay 5 having one or more holding cavities 6, preferably two holding cavities 6, for receiving a hearing device 7 or a part thereof, e.g. a behind the ear part 8 or a part thereof. A respective ear level part 9 adapted to be worn at least partially within an ear canal of a user may be coupled to each behind the ear part 8 by a cable 10. In an exemplary embodiment, each holding cavity 6 may be configured to receive a portion, e.g. a rear end 8.1, of a behind the ear part 8 while the cable 10 may emerge from a forward end 8.2 of the behind the ear part 8. In an exemplary embodiment, the behind the ear part 8 may have a bent shape, e.g. resembling a banana, and the holding cavities 6 are formed complementary to the rear end 8.1 of the behind the ear part 8. In an exemplary embodiment, the shapes of the behind the ear part 8 for a left ear may differ from the one for the right ear and so the holding cavities 6 differ from each other in shape thus making apparent which behind the ear part 8 is supposed to be put into which holding cavity 6. In particular, the holding cavities 6 are shaped so that the hearing devices or behind the ear parts 8 lay tilted sideways and/or that the behind the ear parts 8 protrude from them at an angle of about 30° to 80° from a perpendicular on the inlay 5 such that forward end 8.2 of the behind the ear part 8 bends back toward the inlay 5.

[0028] This allows for presenting the hearing devices 7 from the side without compromising size and usability. The base part 2 and the lid 3 may have a squarish cross section with round edges.

[0029] **Figure 3** is a schematic view of one of the holding cavities 6 holding a rear end 8.1 of the behind the ear part 8. The rear end 8.1 contains a magnetisable part 11 made from a magnetisable material. For each holding cavity 6 one or more magnets 12.1, 12.2 are arranged in the inlay 5 at an end of the holding cavity 6 where the rear end 8.1 of the behind the ear part 8 is located, preferably at a distance allowing for attracting the magnetisable part 11. In an exemplary embodiment, two magnets 12.1, 12.2 are provided for each holding cavity 6. In particular, the two magnets 12.1, 12.2 may be arranged at an angle relative to each other, e.g. at an angle of about 90 ° to 120°, wherein the holding cavity 6 is arranged so that the rear end 8.1 of the behind the ear part 8 projects into this angle. Each of the magnets 12.1, 12.2 has a north pole N and a south pole S. In an exemplary embodiment, one of the magnets 12.1 faces the magnetisable part 11 with the north pole N while the other one of the magnets 12.2 faces the magnetisable part 11 with the south pole S.

[0030] This way, a magnetic loop is created through the magnetisable part 11, causing the retention of the hearing device 7, in particular the behind the ear part 8 thereof, in the charger 1.

[0031] **Figure 4** is a schematic view of an alternative configuration of one of the holding cavities 6 holding a rear end 8.1 of the behind the ear part 8.

[0032] In an exemplary embodiment, a magnetisable plate 13 may be provided in the inlay 5 behind the magnets 12.1, 12.2, i.e. facing away from the holding cavity 6 in order to create a magnetic shortcut between the south pole S of the magnet 12.1 and the north pole N of the magnet 12.2 thus closing the magnetic loop. This magnetisable plate 13 improves the magnetic field if required. As a consequence space requirements may be reduced even further.

[0033] **Figure 5** is a schematic view of another exemplary embodiment of the charger 1.

[0034] **Figure 6** is a schematic sectional view of the charger 1 of figure 5. In addition to the above described charger 1, the charger 1 of figures 5 and 6 comprises a lifting mechanism 14 configured to lift the inlay 5 at least at one end thereof, e.g. the end closest to the hinge 4,

as the lid 3 is opened. When the lid 3 is closed, the lifting mechanism 14 will put the inlay 5 deeper down into the base part 2 again. For this purpose, the lifting mechanism 14 may comprise a cam track 15 on one of the lid 3 and the inlay 5 and a cam follower 16 on the other one of the lid 3 and the inlay 5. In particular, the cam track 15 and cam follower 16 are located at a lower side of the inlay 5 thus covered by the inlay 5 within the base part 2. An end of the inlay 5 remote from the hinge 4 may be rotatably supported in the base part 2.

[0035] When opening the charger 1, the lifting mechanism 14 automatically lifts the inlay 5 with the hearing devices 7 such that they can be accessed much easier.

[0036] Furthermore, the charger 1 comprises circuitry for charging a respective battery arranged in the hearing device 7, in particular in the behind the ear part 8 thereof, e.g. through galvanic contacts or in a wireless fashion.

List of References

[0037]

1	charger
2	base part
3	lid
4	hinge
5	inlay
6	holding cavity
7	hearing device
8	behind the ear part
8.1	rear end
8.2	forward end
9	ear level part
10	cable
11	magnetisable part
12.1, 12.2	magnet
13	magnetisable plate
14	lifting mechanism
15	cam track
16	cam follower

Claims

1. A charger (1) for one or more hearing devices (7), comprising a base part (2) having one or more holding cavities (6) for receiving a portion of a hearing device (7) or a part thereof, the portion containing a magnetic part or a magnetisable part (11) made from a magnetisable material, wherein the base part (2) comprises two or more magnets (12.1, 12.2) arranged at an end of each holding cavity (6).

2. The charger (1) according to claim 1, wherein a north pole (N) of one of the magnets (12.1) faces the holding cavity (6) while a south pole (S) of another one of the magnets (12.2) faces the holding cavity (6).

3. The charger (1) according to claim 1 or 2, wherein the two magnets (12.1, 12.2) are arranged at an angle of about 90 ° to 120° relative to each other, wherein the end of the holding cavity (6) is enclosed in this angle.

4. The charger (1) according to any one of the preceding claims, further comprising a magnetisable plate (13) arranged behind the magnets (12.1, 12.2) facing away from the holding cavity (6) to create a magnetic shortcut between the magnets (12.1, 12.2).

5. The charger (1) according to any one of the preceding claims, further comprising a lid (3) for covering the base part (2).

6. The charger (1) according to claim 5, wherein the lid (3) is coupled to the base part (2) by a hinge (4).

7. The charger (1) according to any one of the preceding claims, further comprising an inlay (5) held in the base part (2), wherein the one or more holding cavities (6) and the two or more magnets (12.1, 12.2) are arranged in the inlay (5).

8. The charger (1) according to any one of the preceding claims, wherein the one or more holding cavities (6) are respectively shaped complementary to a portion of a hearing device (7) or part thereof having a bent shape.

9. The charger (1) according to any one of the preceding claims, wherein one of the holding cavities (6) is shaped to receive a portion of a hearing device (7) or part thereof for a right ear, wherein another one of the holding cavities (6) is shaped to receive a portion of a hearing device (7) or part thereof for a left ear which has a different shape than the one for the right ear.

10. The charger (1) according to claim 8 or 9, wherein the one or more holding cavities (6) are shaped so that the hearing device or part thereof lays tilted sideways and/or that the bent portions protrude from them at an angle of about 30° to 80° from a perpendicular on a surface of the inlay (5) or of the base part (2) such that a forward end (8.2) of the hearing device (7) or part thereof bends back toward the inlay (5) or base part (2).

11. The charger (1) according to any one of the claims 6 to 10, further comprising a lifting mechanism (14) configured to lift the inlay (5) at least at one end thereof as the lid (3) is being opened, and to put the inlay (5) deeper down into the base part (2) again when the lid (3) is being closed.

12. The charger (1) according to claim 11, wherein the

lifting mechanism (14) is configured to lift the inlay (5) at its end closest to the hinge (4).

13. The charger (1) according to claim 11 or 12, wherein the lifting mechanism (14) comprises a cam track (15) on one of the lid (3) and the inlay (5) and a cam follower (16) on the other one of the lid (3) and the inlay (5).

14. The charger (1) according to claim 12 or 13, wherein an end of the inlay (5) remote from the hinge (4) is rotatably supported in the base part (2).

15. An assembly, comprising the charger (1) according to any one of the preceding claims and one or more hearing devices (7) respectively having a behind the ear part (8), wherein the one or more holding cavities (6) are configured to receive a respective portion of the behind the ear part (8), wherein the portion contains a magnetic part or a magnetisable part (11) made from a magnetisable material.

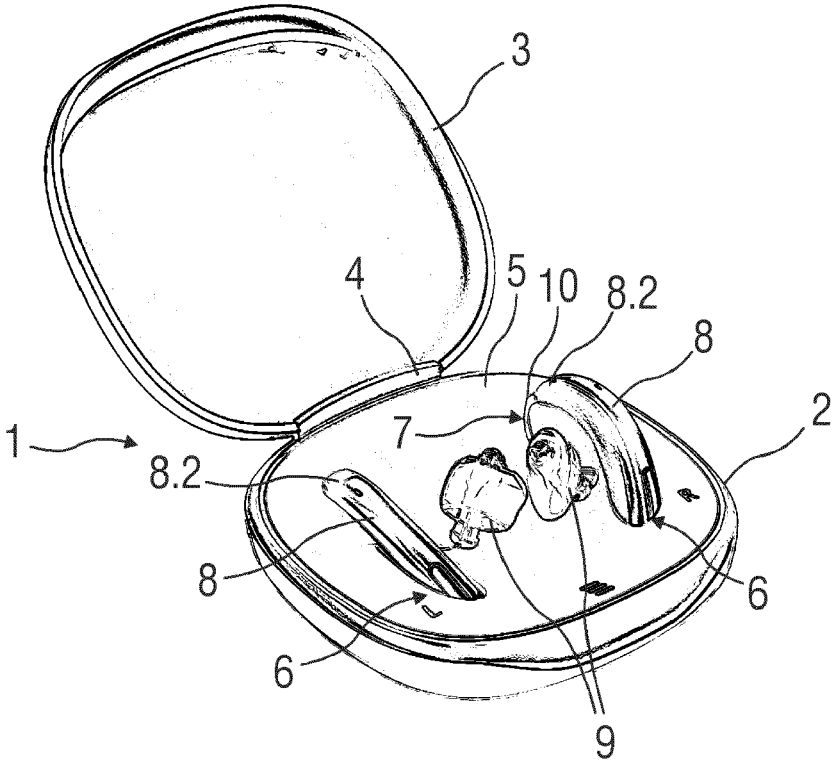

FIG 1

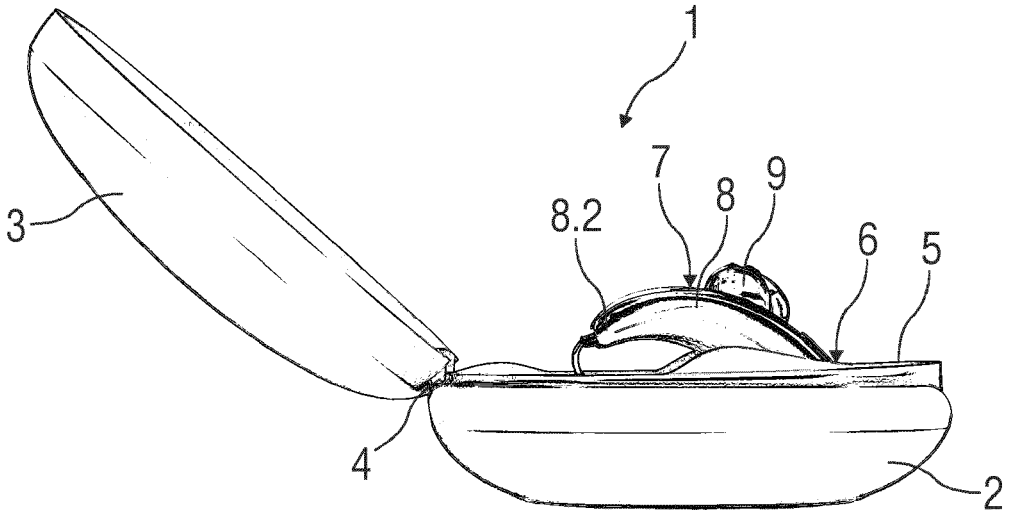

FIG 2

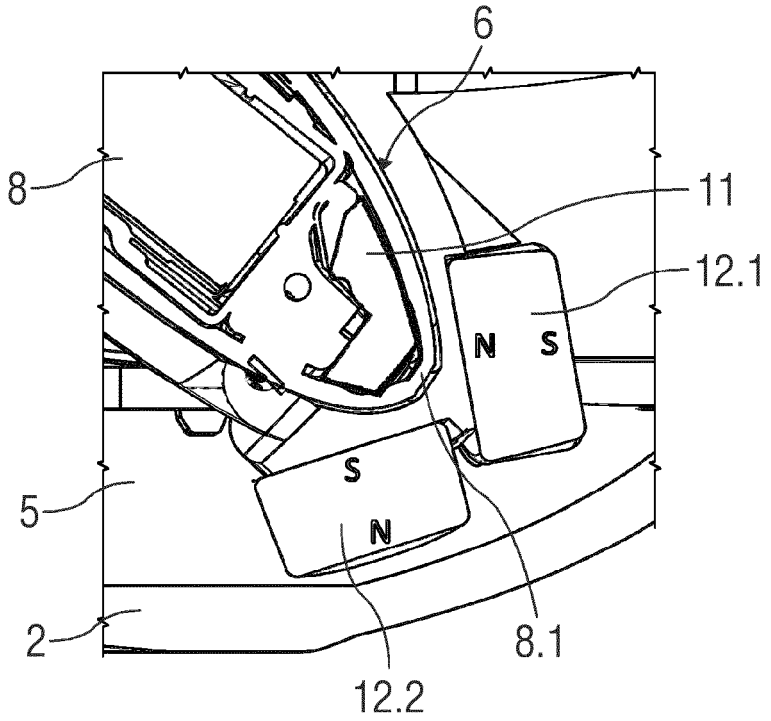

FIG 3

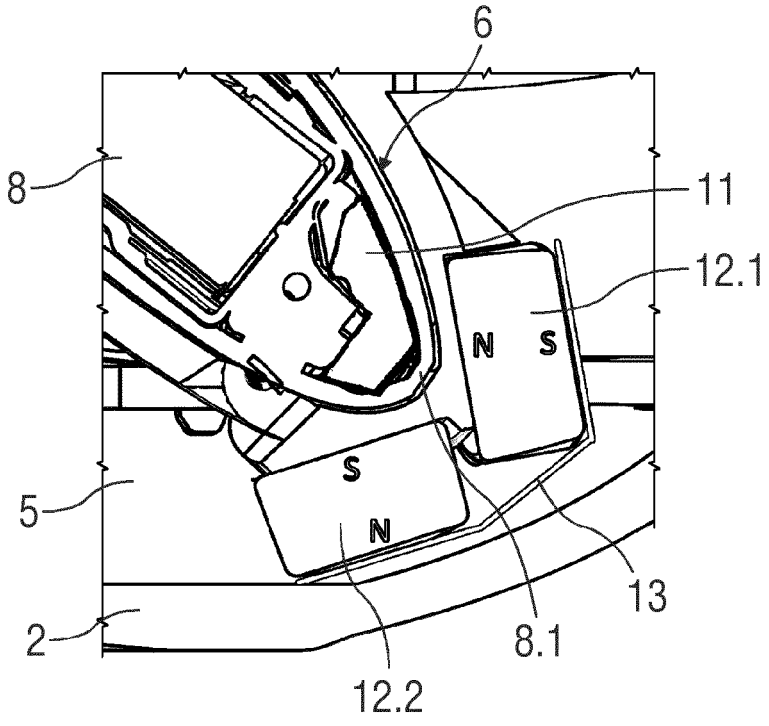

FIG 4

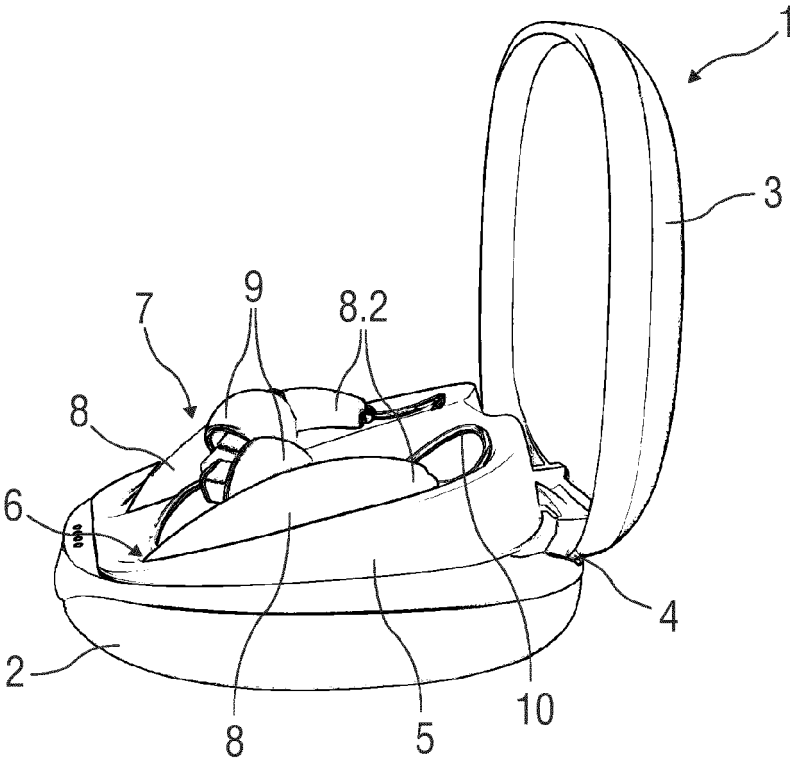

FIG 5

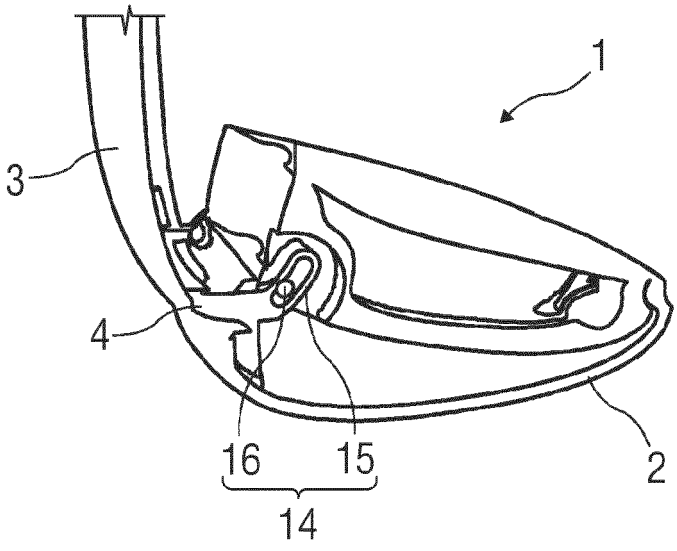

FIG 6

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Application Number
EP 21 17 7350

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TECHNICAL FIELDS SEARCHED (IPC)
H04R

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	17 November 2021	Duffner, Orla

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