main control board 62 Chip hold down at least partly presses on foot 862 so that main control board 62 is supported in.

In one embodiment, exposed hole 175 corresponding with the conductive column 85 is provided on shell sheath 17, by shell After body sheath 17 is sleeved on 30 periphery of circuit shell, it is outer that one end that conductive column 85 is located at outside circuit shell 30 further passes through this Reveal hole 175 it is exposed, and then with the circuit connection outside osteoacusis loudspeaker arrangement so that the osteoacusis loudspeaker arrangement passes through conduction Column carries out electricity supply or data transmission.

Further, the outer surface depressions of circuit shell 30 are provided with the glue groove 39 around multiple mounting holes 331.Specifically Ground, glue groove 39 can be oval ring, and multiple mounting holes 331 are respectively arranged at the circular circuit shell of glue groove 39 of oval ring On 30.

In present embodiment, sealant is applied in the glue groove 39, and then shell sheath 17 has been assembled with circuit shell 30 Cheng Hou, shell sheath 17 can be tightly connected in the periphery of mounting hole 331 with circuit shell 30 by the sealant, to avoid When outside liquid enters 17 inside of shell sheath by exposed hole 175, shell sheath 17 generates cunning in 30 periphery of circuit shell It is dynamic, and further mounting hole 331 can be sealed from the outside of circuit shell 30, to further increase circuit shell 30 Airtightness, and then further increase the waterproof performance of osteoacusis loudspeaker arrangement.

In one embodiment, circuit shell 30 is further provided in one end far from ear-hang 10 and patches end 3a, rear to hang 40 include elastic metallic yarn 41 and are set to the both ends of elastic metallic yarn 41 and patch end 42, wherein patching end 3a and patching end 42 patch fixation each other.

Wherein, since the earphone core 50 of osteoacusis loudspeaker arrangement is respectively left and right two, corresponding machine core shell 20, ear-hang 10 and circuit shell 30 be also configured as left and right two, it is rear to hang 40 by patching fixed mode with two circuit shells 30 respectively The machine core shell 20, ear-hang 10 and the circuit shell 30 that are located at two sides are linked together, and the suspension setting when user wears On rear side of user's head.

Specifically, material with performance of elastic metallic yarn 41 etc. can be identical as elastic metallic yarn 11, related detailed content The aforementioned associated description to elastic metallic yarn 11 is referred to, details are not described herein again.

Patch the both ends that end 42 can be formed in elastic metallic yarn 41 by way of injection moiding.Specifically,

patching end 42 can To be made of materials such as plastic cement.

In one embodiment, it patches end 42 and is provided with jointing holes 421, this patches end 3a and is at least partially inserted into jointing holes In 421, in present embodiment, the side that circular table 37 deviates from ear-hang 10 can be specifically located at by patching end 3a.Patch end 3a with Plugging mode between jointing holes 421 and the plugging mode patched between end 15 and jointing holes 31 may be the same or different.

Wherein, insertion side of the end 3a relative to jointing holes 421 is respectively arranged with and patched in the opposite sides for patching end 3a To vertically disposed fluting 3a1.Two fluting 3a1 can be spaced and be symmetrically disposed on the two sides for patching end 3a.Further, this two A fluting 3a1 can be connected in the corresponding side wall for being perpendicularly to the insertion direction with patching end 3a.

Correspondingly, it patches and is provided with through-hole 423 corresponding with two fluting positions 3a1 on the first side wall 422 at end 42.Its In, patching end 42 includes the side wall around setting for defining jointing holes 421, and the first side wall 422 for patching end 42 can be Patch end 3a and patch end 42 patch fixed when, patch end 42 can be with the side wall that intersect of extending direction of fluting 3a1.

Wherein, osteoacusis loudspeaker arrangement further comprises fixing piece 88, and fixing piece 88 includes two pins disposed in parallel 881 and the interconnecting piece 882 for connecting pin 881.In present embodiment, two pins 881 are arranged in parallel, and interconnecting piece 882 can It is vertically connected in the same side of two pins 881, to form U-shaped fixing piece 88 similar with 81 shape of fixing piece.

It should be pointed out that fixing piece 88 can be similar to the shape of fixing piece 81, but specific dimensional parameters can fit Should be different in peripheral structure, In present embodiment, the length of pin 881 is greater than the length of pin 811,812 length of interconnecting piece Less than the length etc. of interconnecting piece 882, it is not specifically limited herein.

Further, pin 881 can be inserted into fluting 3a1 from the outside via through holes 423 for patching end 42, and by interconnecting piece 882 are barred from the outside for patching end 3a, and then realize to patch end 42 and patch and hold 3a's to patch fixation.

By the above-mentioned means, the fixing piece 88 of osteoacusis loudspeaker arrangement includes two pins 881 disposed in parallel and is used for The interconnecting piece 882 of pin 881 is connected, is patched so that fixing piece 88 docks spigot 3a in certain span and patches end 42 It is fixed, so that circuit shell 30

and the rear fixation hung between 40 are more stable, firm ; And 88 structure of fixing piece is simple, It is inserted and removed from conveniently, is fixed as detachably so that patching end 3a and patching patching between end 42, and enable to bone The assembly for conducting loudspeaker arrangement is more convenient.

Further, in one embodiment, the second sidewall 424 opposite with the first side wall 422 for patching end 42 is enterprising One step is provided with the through-hole 425 opposite with through-hole 423, and pin 881 is further inserted into through-hole 425 through fluting 3a1.

In the present embodiment, 881 via through holes 423 of pin are inserted into fluting 3a1, and further through fluting 3a1 insertion To through-hole 425, that is to say, that pin 881 can by it is rear hang 40 patch end 42 two laterat walls and patch end 3a it is complete Run through and be connected together, so that being patched between circuit shell 30 and rear extension 40 stronger.

Specifically, in one embodiment, patch end 3a along patch end 3a relative to jointing holes 421 direction of insertion into one Step, which is divided into first and patches section 3a2 and second, patches a section 3a3.

Wherein, patching end 3a may be provided at a close auxiliary sidewall 34 side for end for circuit shell 30, the auxiliary sidewall 34 It specifically can be another auxiliary sidewall 34 opposite with the auxiliary sidewall 34 where the locating piece 38 in above embodiment.

Further, first patch section 3a2 and second patch section 3a3 can close to locating piece 38 a lateral edge patch end 3a Relative to jointing holes 421 direction of insertion and stepped setting so that in the cross-wise direction being perpendicularly to the insertion direction, First section for patching section 3a2 is greater than the second section for patching section 3a3.

Correspondingly, jointing holes 421 are further divided into shape point relative to the direction of insertion of jointing holes 421 along patching end 3a Section 3a2 and second is not patched with first and patches the first hole section 4211 and the second hole section 4212 that section 3a3 matches, so that End 3a is patched when being inserted into jointing holes 421, first, which patches section 3a2 and second, patches section 3a3 and be inserted in the first hole section respectively 4211 and second 4212 in hole section.

Further, fluting 3a1 may be disposed at first and patch on section 3a2, and specifically, fluting 3a1 can be arrived along end 3a is patched The direction of locating piece 38, the i.e. opposite direction of the auxiliary sidewall 34 of the two of circuit shell 30 and be extended, so that perforation first connects The two sidewalls vertical with the major side wall 33 of circuit shell 30 of section 3a2 are inserted, and are further connect through first along being inserted perpendicularly into direction insert the two sidewalls of

the major side wall 33 for being parallel to circuit shell 30 of section 3a2.

Wherein, patching the through-hole 423 being arranged on end 42 can be corresponding with the fluting side towards locating piece 38 of 3a1, and leads to It hole 425 then can be corresponding with fluting remotely located piece 38 of the side of 3a1.

Further, in one embodiment, it first patches section 3a2 and second and patches the top side of section 3a3 and coplanar with each other set It sets.Wherein, the first top side for patching that section 3a2 and second patches section 3a3 refers to when user normally wears osteoacusis loudspeaker arrangement, First patches the side that section 3a2 and second patches the headward top side of section 3a3, namely patches section 3a2 and second with first and connect It inserts section 3a3 and is formed by ladder-like opposite side.

Further, first patch section 3a2 and second patch section 3a3 top side it is coplanar and be formed with for accommodating conducting wire Cabling channel 3a4.Cabling channel 3a4 can extend along the direction that patches for patching end 3a and jointing holes 421, can be used for accommodating passing through and hang later 40 and be connected to the conducting wire of control circuit 60 and battery 70.

In present embodiment, it will can first patch end 3a and be inserted in jointing holes 421, the court for then patching section 3a2 from first Fluting 3a1 is inserted into the side of locating piece 38.Specifically, in present embodiment, the court that end 3a is set to circuit shell 30 is patched Remotely located piece 38 of side of 40 end face is hung backward, therefore, also has one in the side for patching end 3a towards locating piece 38 Fixed space, thus to circuit shell 30 and it is rear hang 40 and carry out grafting installation when, can be by fixing piece 88 from patching end 3a2 Bottom side, i.e., first patch section 3a2 towards the side of locating piece 38 by through-hole 423 is inserted into fluting 3a1 and in turn be inserted into it is logical in hole 425, to realize that circuit shell 30 is hung 40 and be plugged and fixed with rear.It in this way, can be completely hidden by fixing piece 88 It is hidden in circuit shell 30 to be formed by inner space with rear extension 40 without exposed, without occupying additional space.

Further, in one embodiment, rear extension 40 further includes injection molding in elastic metallic yarn 41 and patches outside end 42 The second protection sleeve pipe 43 for enclosing and with the integrally formed end protection cap 44 of the second protection sleeve pipe 43.

Wherein, the material of the second protection sleeve pipe 43 and end protection cap 44 can be with protection sleeve pipe 16 and shell sheath 17 material is identical, such as all can be have the soft material, such as soft silica gel, rubber etc. of certain elasticity.

End protection cap 44 can specifically be formed in the both ends of elastic metallic yarn 41, can be located at elastic metallic yarn 41 two The end 42 that patches at end is shaped in the periphery for patching end 42.

It should be pointed out that shell sheath 17 is only wrapped up by one end towards ear-hang 10 of circuit shell 30 to circuit shell At 30 circular table 37, therefore, the part that 40 are hung after the direction of the circular table 37 of circuit shell 30 then exposes to shell shield The periphery of set 17.Further, in present embodiment, end protection cap 44 and the shape for patching the inner sidewall that end 42 is collectively formed The shape of the shape end exposed with the circuit shell 30 matches, to be further covered in the end of the exposed circuit shell 30 Periphery, and hung after the direction of the end face towards circuit shell 30 of the end protection cap 44 and shell sheath 17 40 end face bullet Property abut, to further provide for sealing.

Further, in one embodiment, the end of the exposed circuit shell 30 of shell sheath 17 be additionally provided with by Keyhole 342 is accordingly provided with key 83, end protection cap 44 covers the key 83, and is provided with and is used in key hole 342 Accommodate the key accommodation groove 441 of key 83.

Specifically, 342 space set of key hole is in patching end 3a towards the side of locating piece 38, and key hole 342 Quantity can be one or more, specifically can be according to the specific structure and electricity of the control circuit 60 inside circuit shell 30 The structure of road shell 30 itself determines, is not specifically limited herein.

The foregoing is merely presently filed embodiments, are not intended to limit the scope of the patents of the application, all to utilize this Equivalent structure or equivalent flow shift made by application specification and accompanying drawing content, it is relevant to be applied directly or indirectly in other Technical field similarly includes in the scope of patent protection of the application.

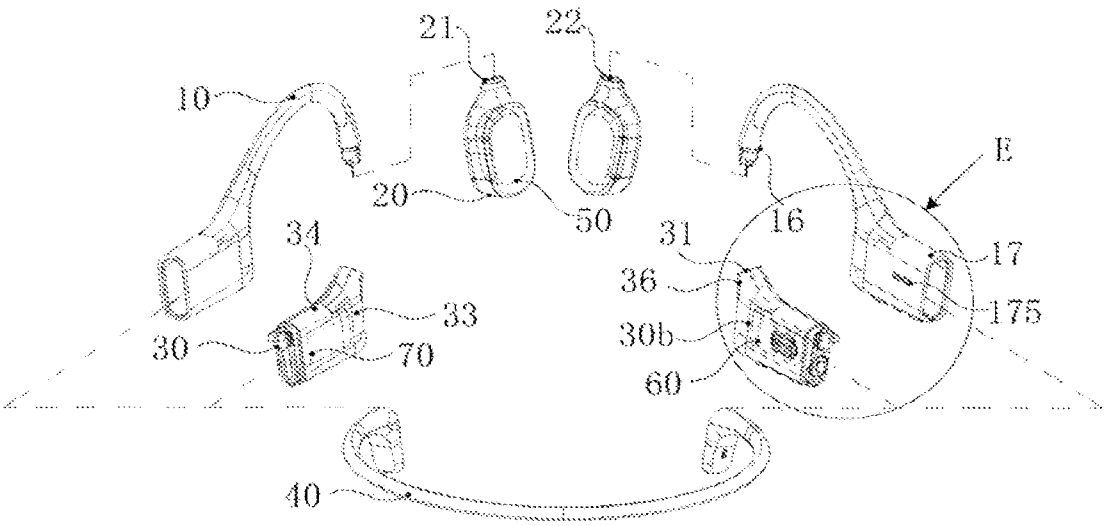


图1

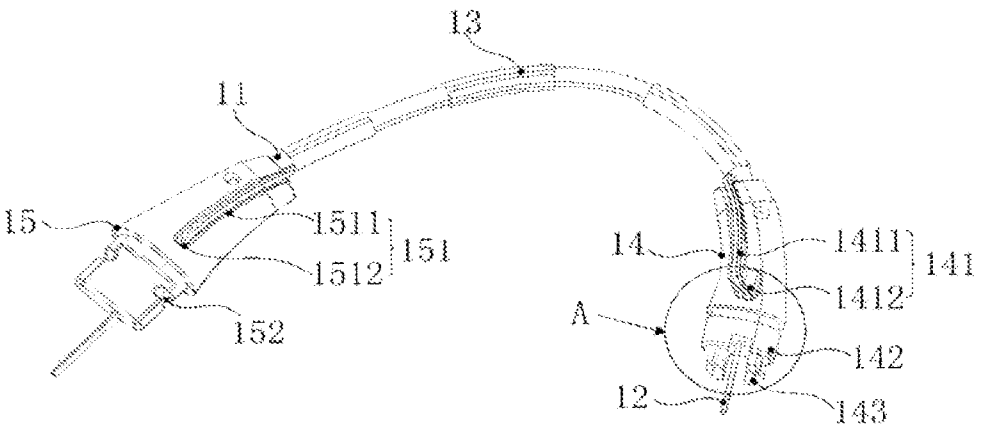


图2

IPR2025-00842; Shokz
Ex. 2018 - Page 1428

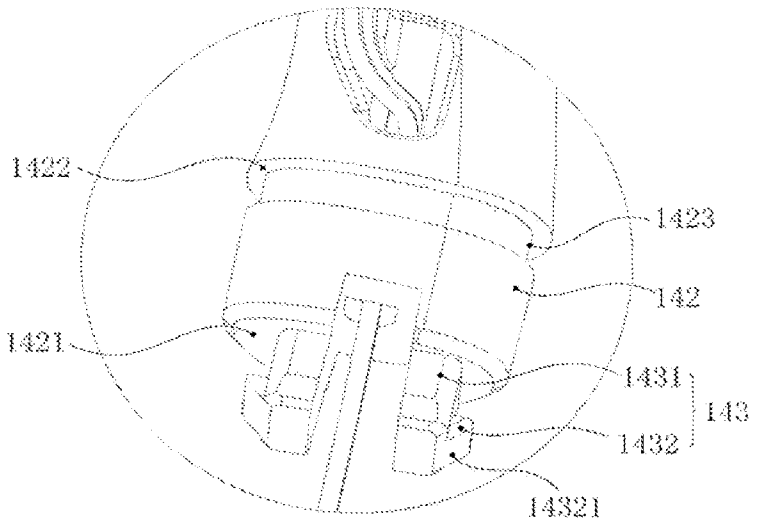


图3

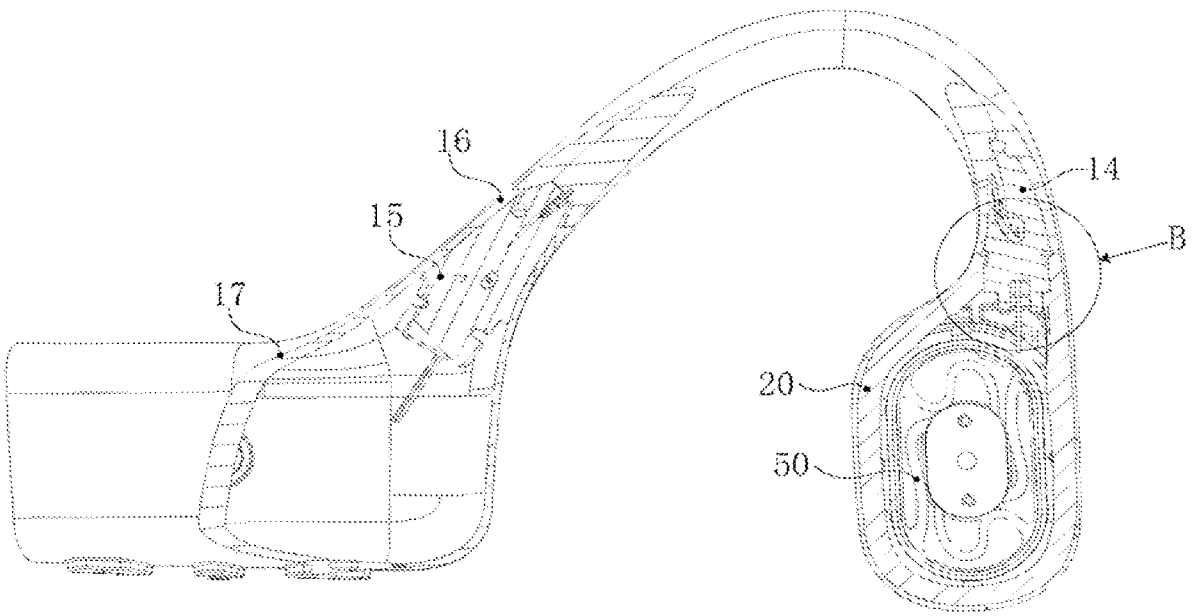


图4

IPR2025-00842; Shokz
Ex. 2018 - Page 1429

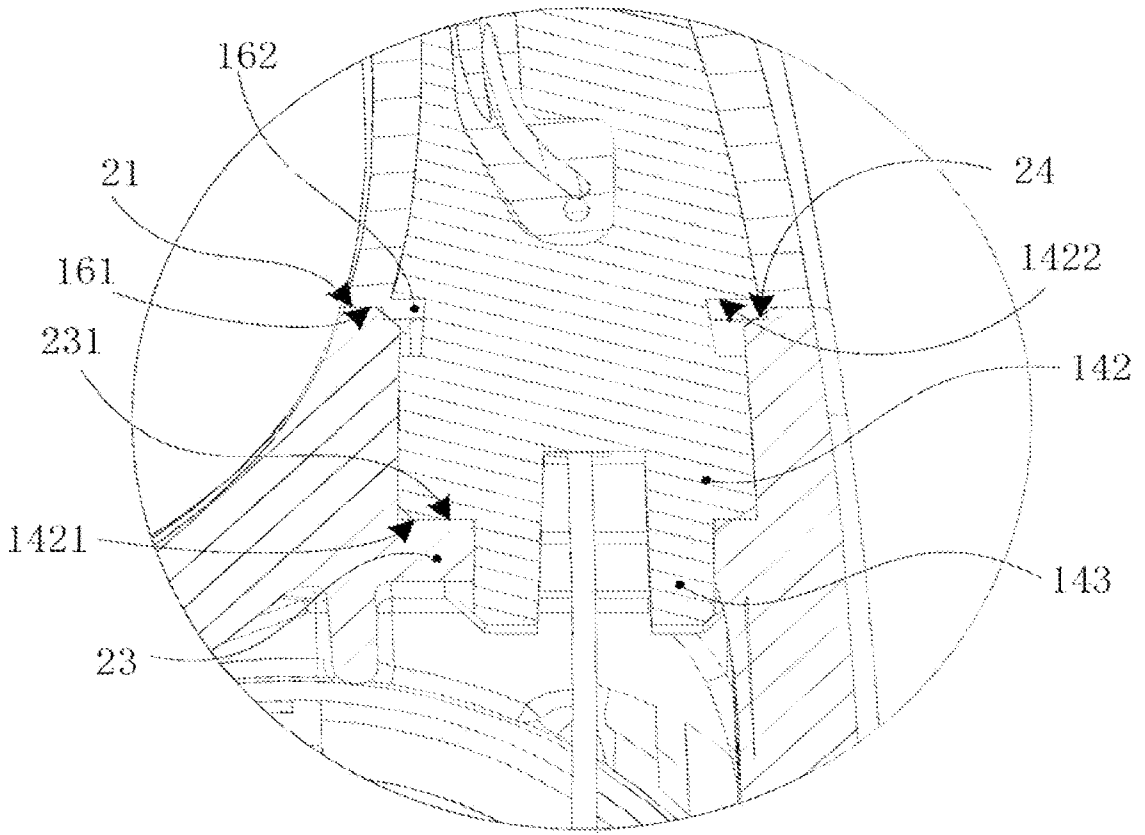


图5

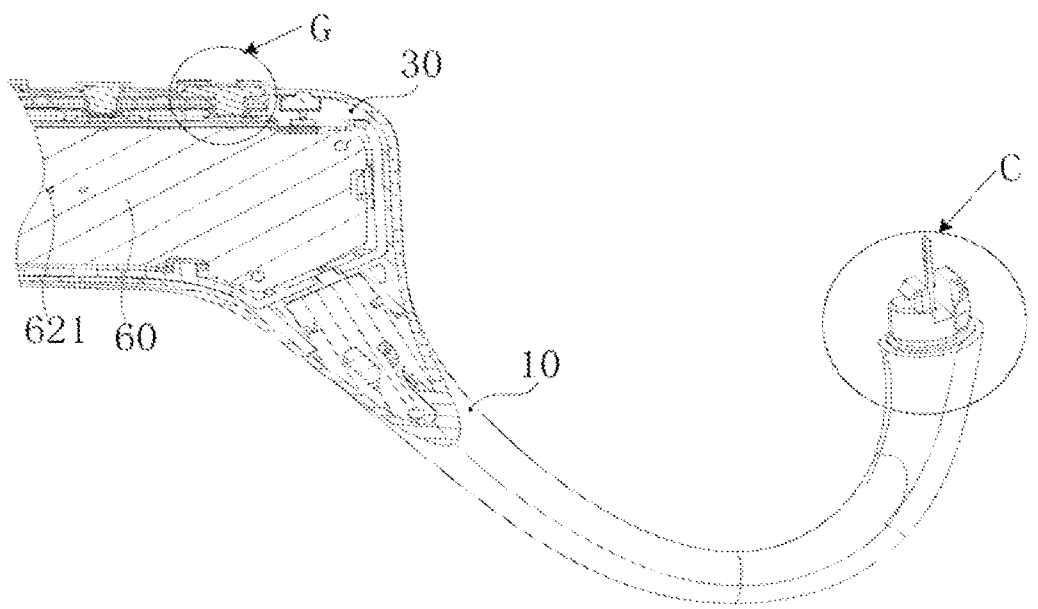


图6

IPR2025-00842; Shokz
Ex. 2018 - Page 1430

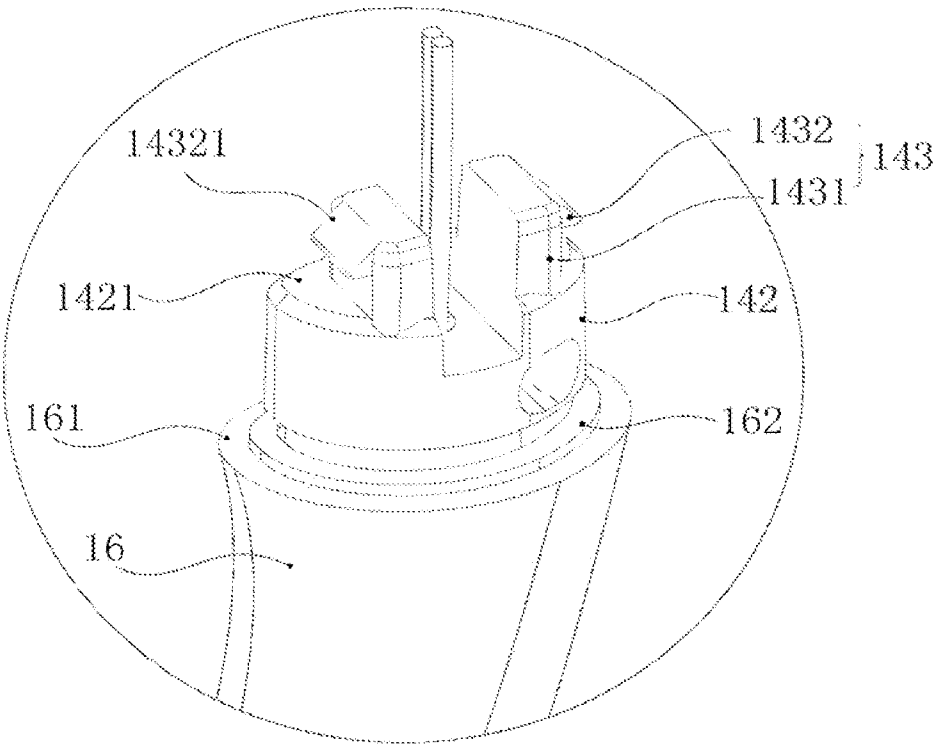


图7

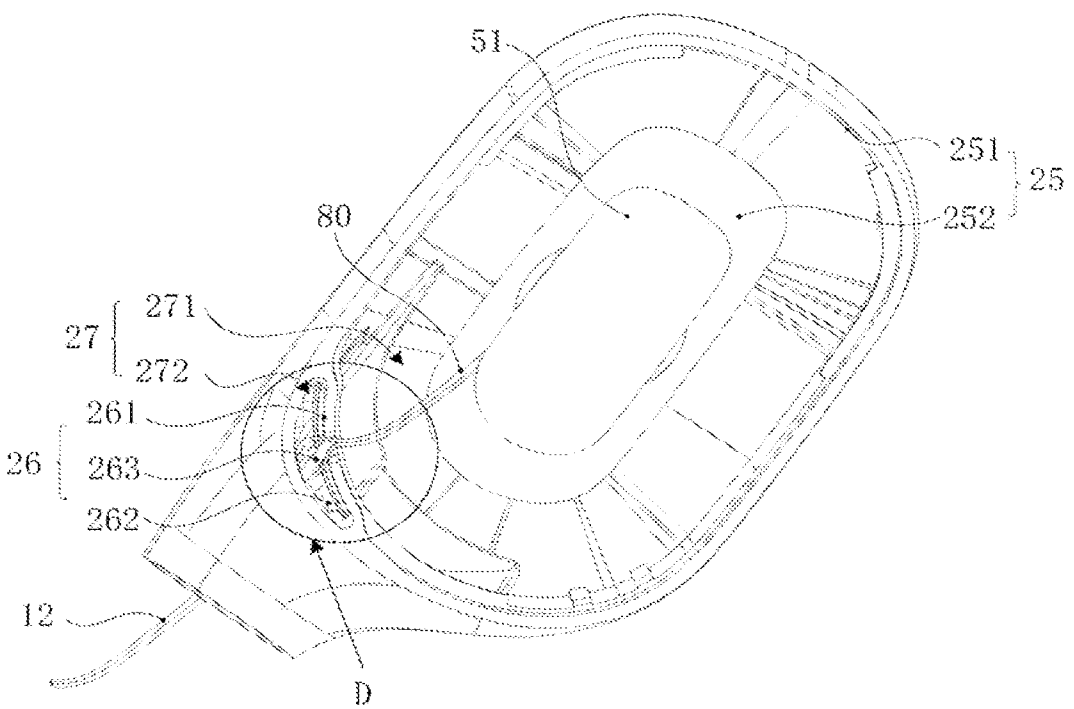


图8

IPR2025-00842; Shokz
Ex. 2018 - Page 1431

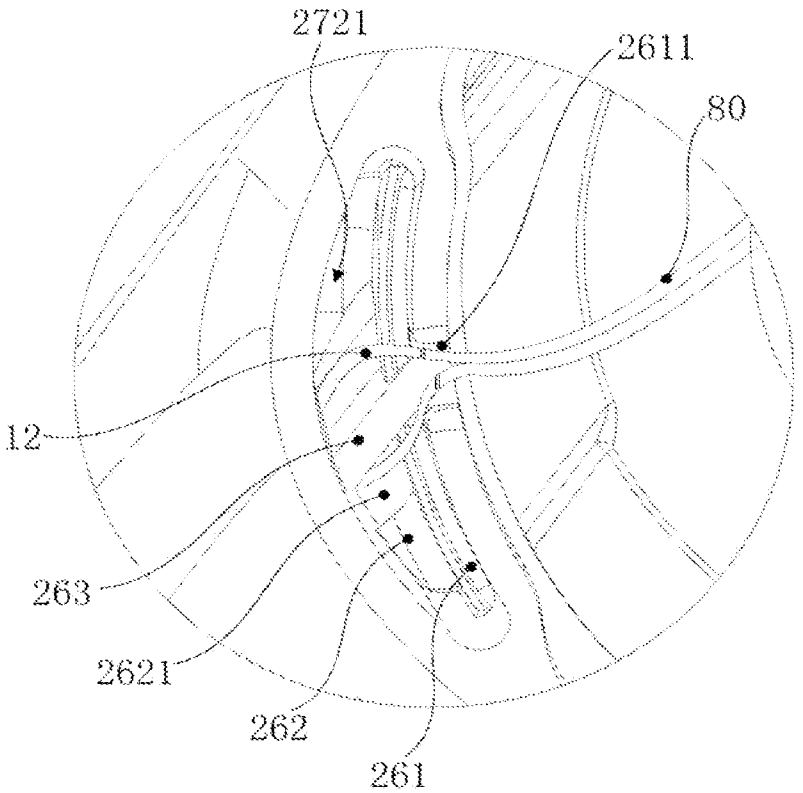


图9

IPR2025-00842; Shokz
Ex. 2018 - Page 1432

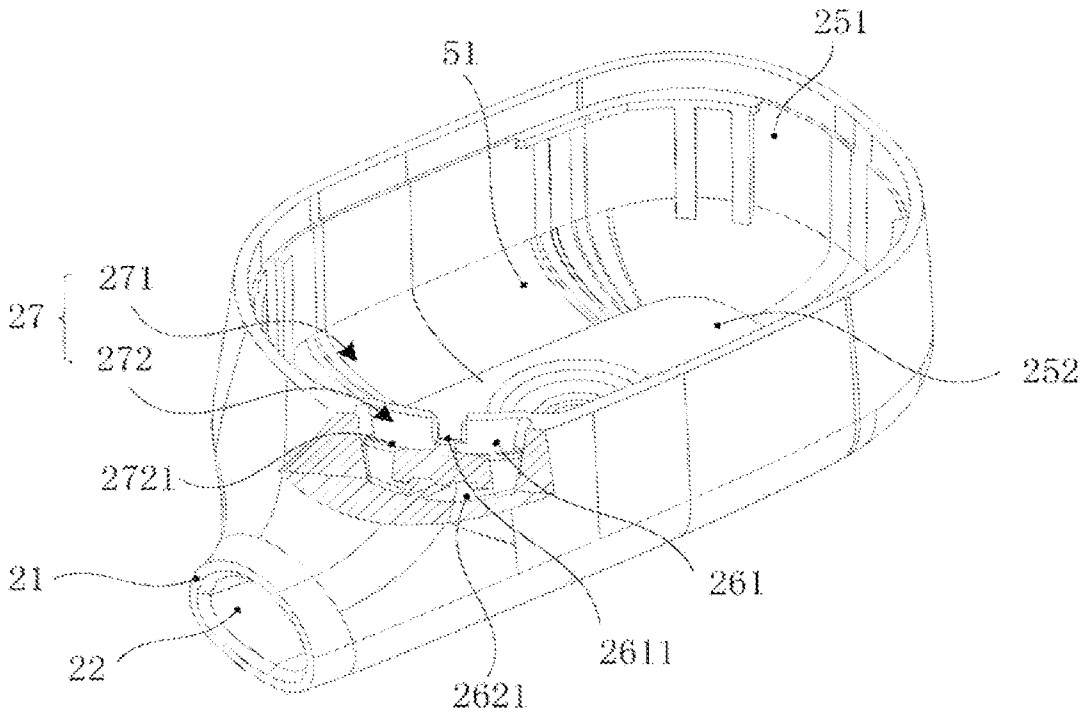


图10

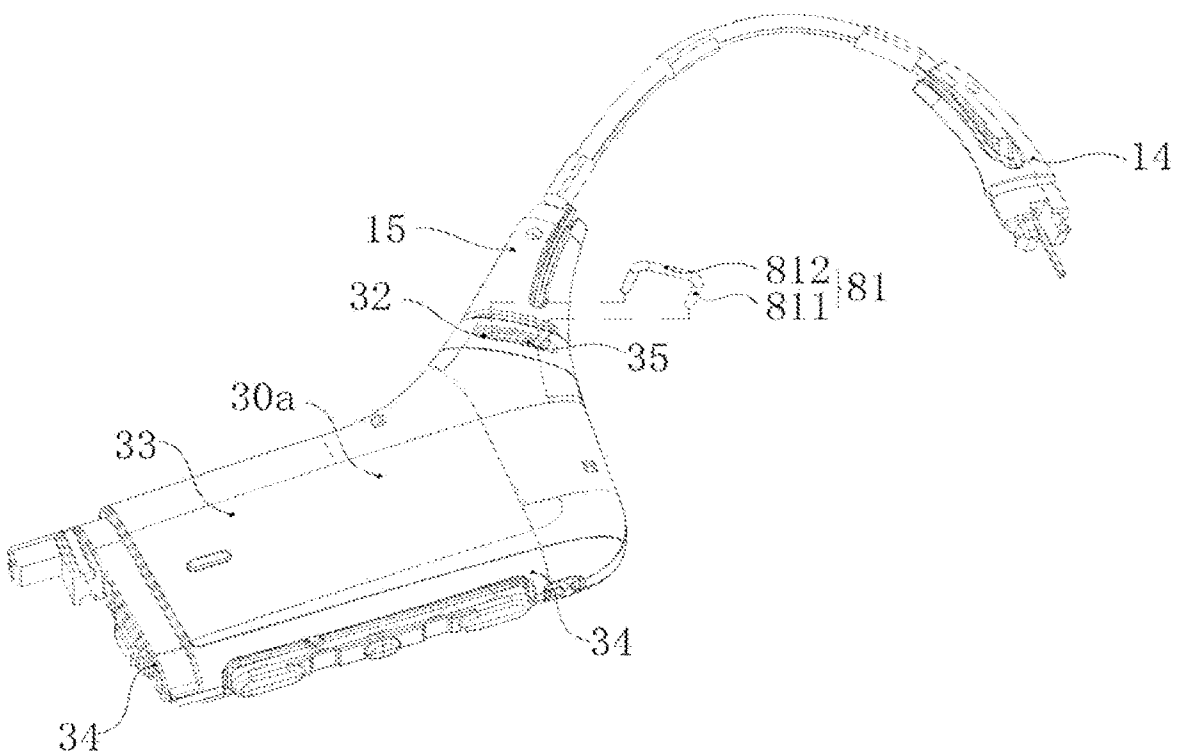


图11

IPR2025-00842; Shokz
Ex. 2018 - Page 1433

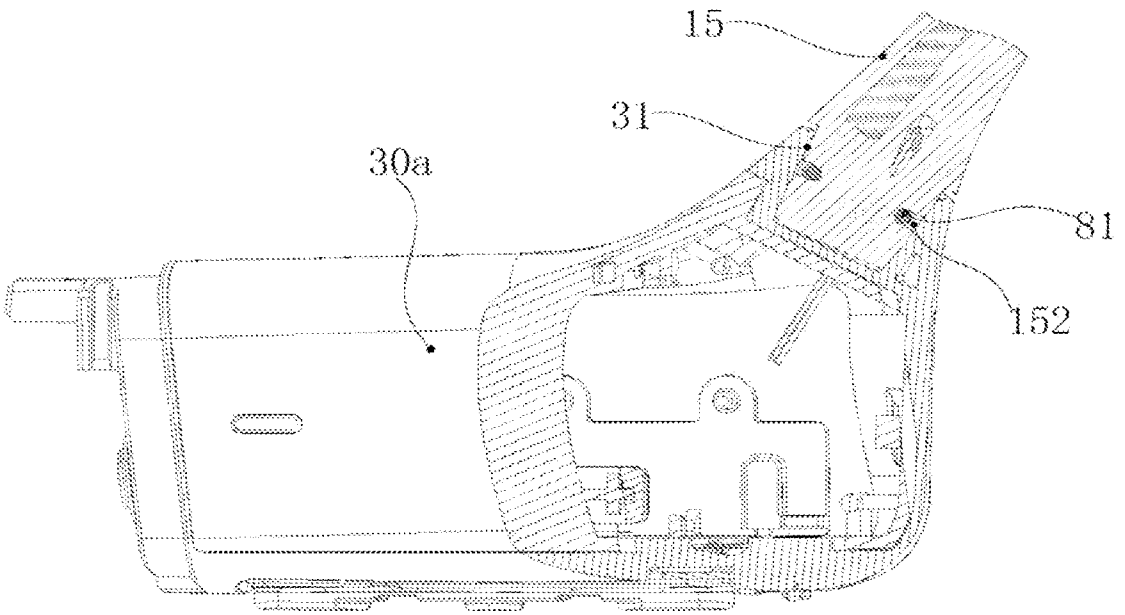


图12

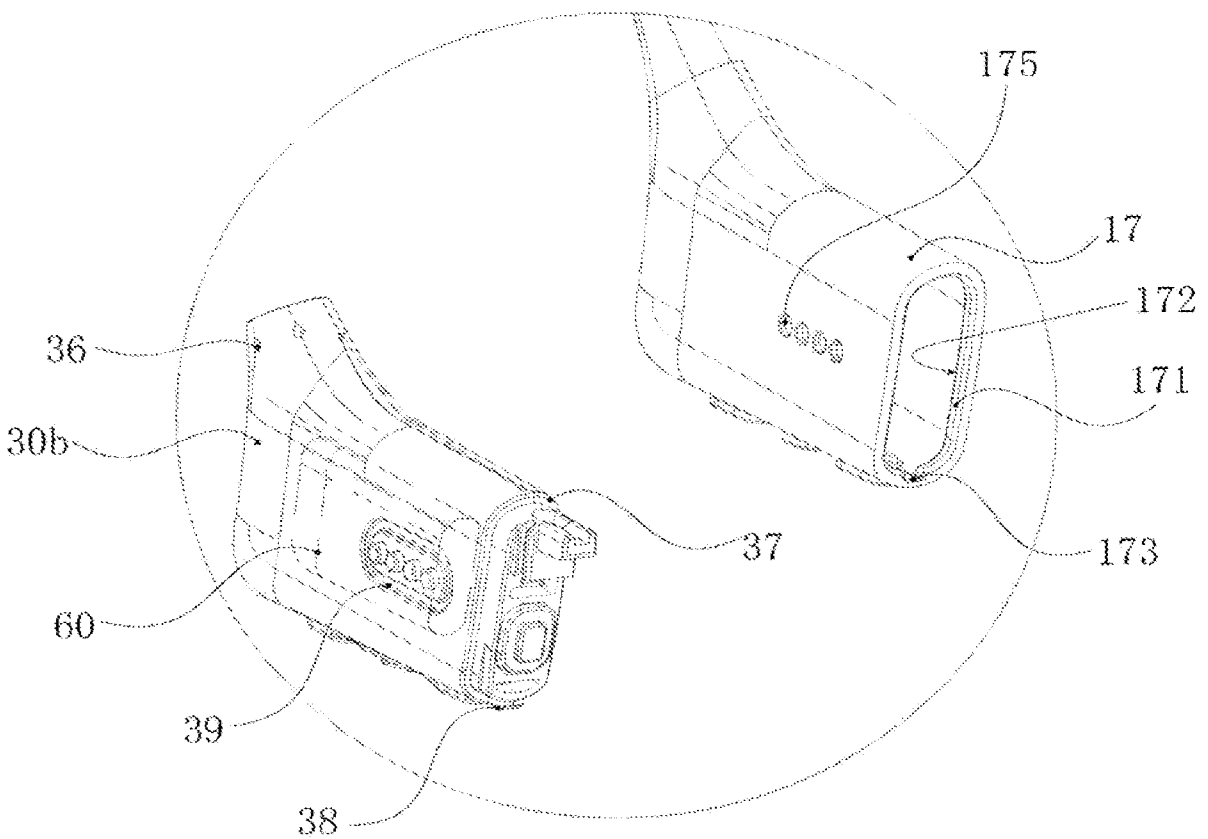


图13

IPR2025-00842; Shokz
Ex. 2018 - Page 1434

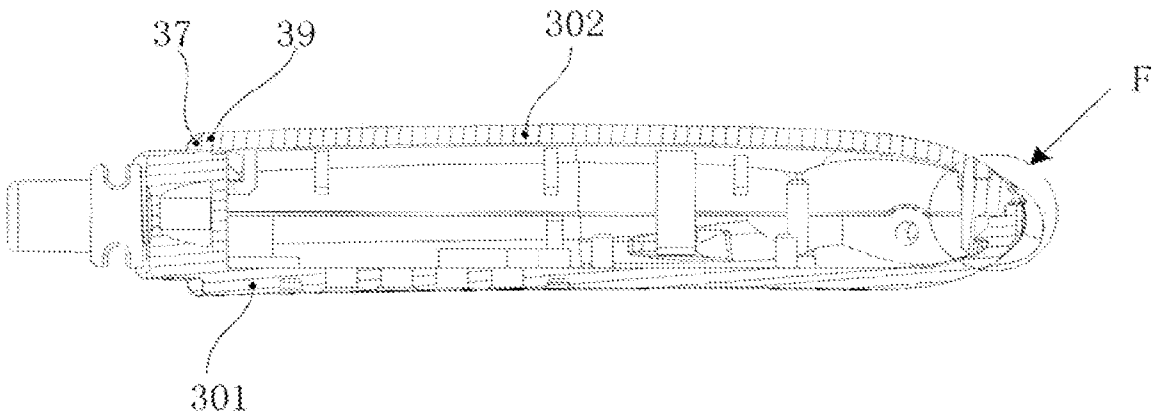


图14

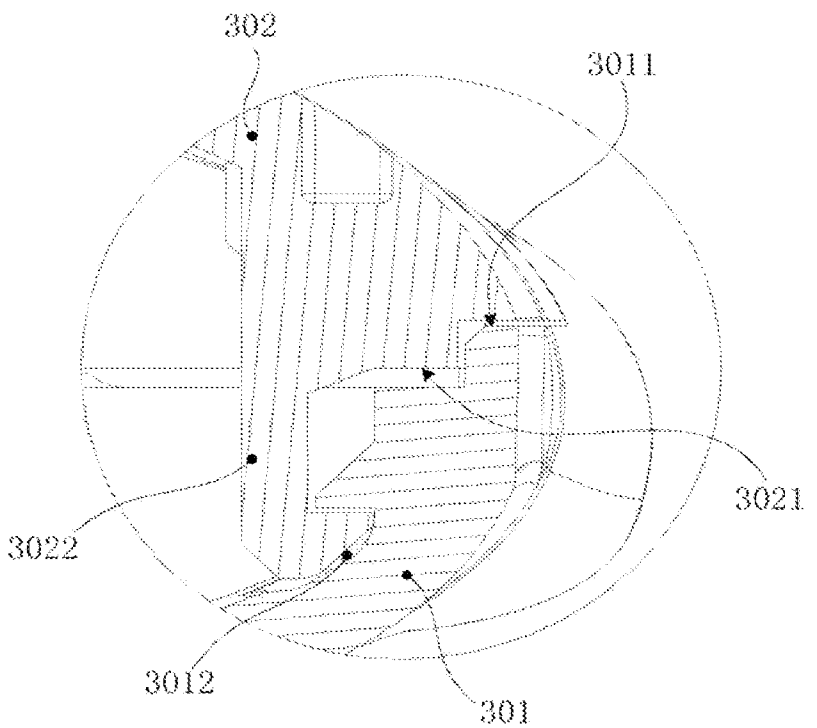


图15

IPR2025-00842; Shokz
Ex. 2018 - Page 1435

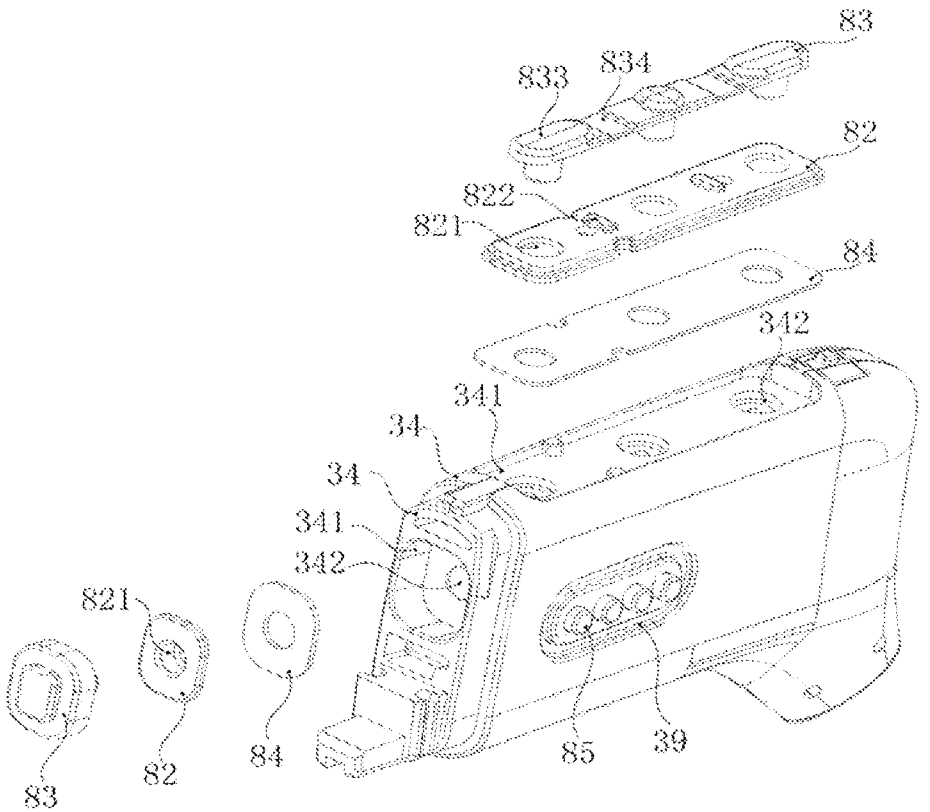


图16

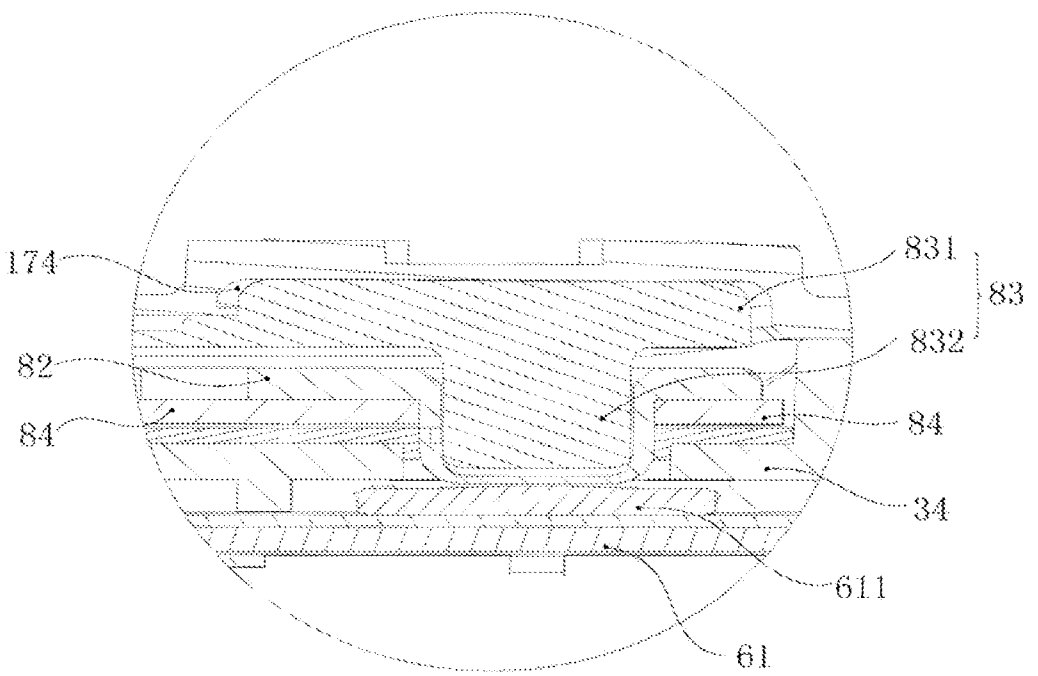


图17

IPR2025-00842; Shokz
Ex. 2018 - Page 1436

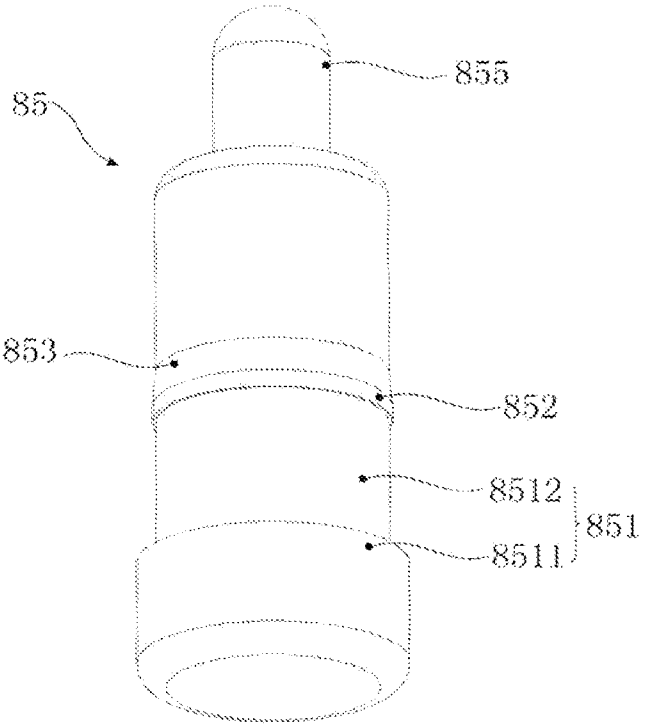


图18

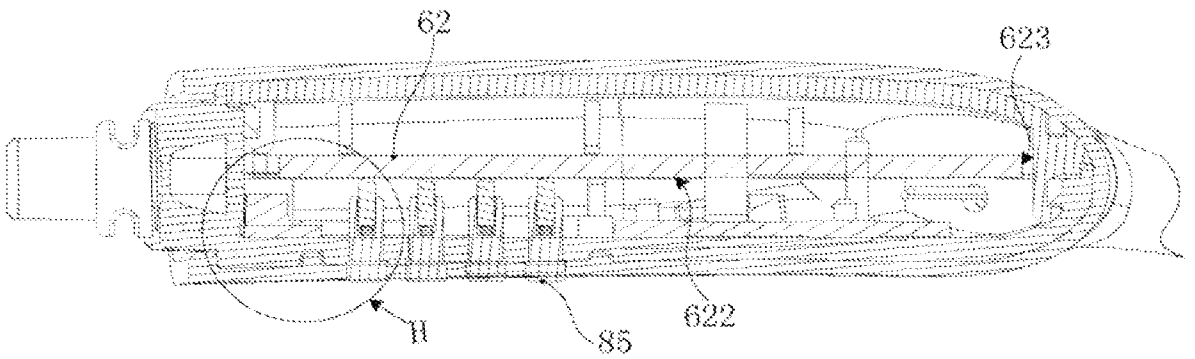


图19

IPR2025-00842; Shokz
Ex. 2018 - Page 1437

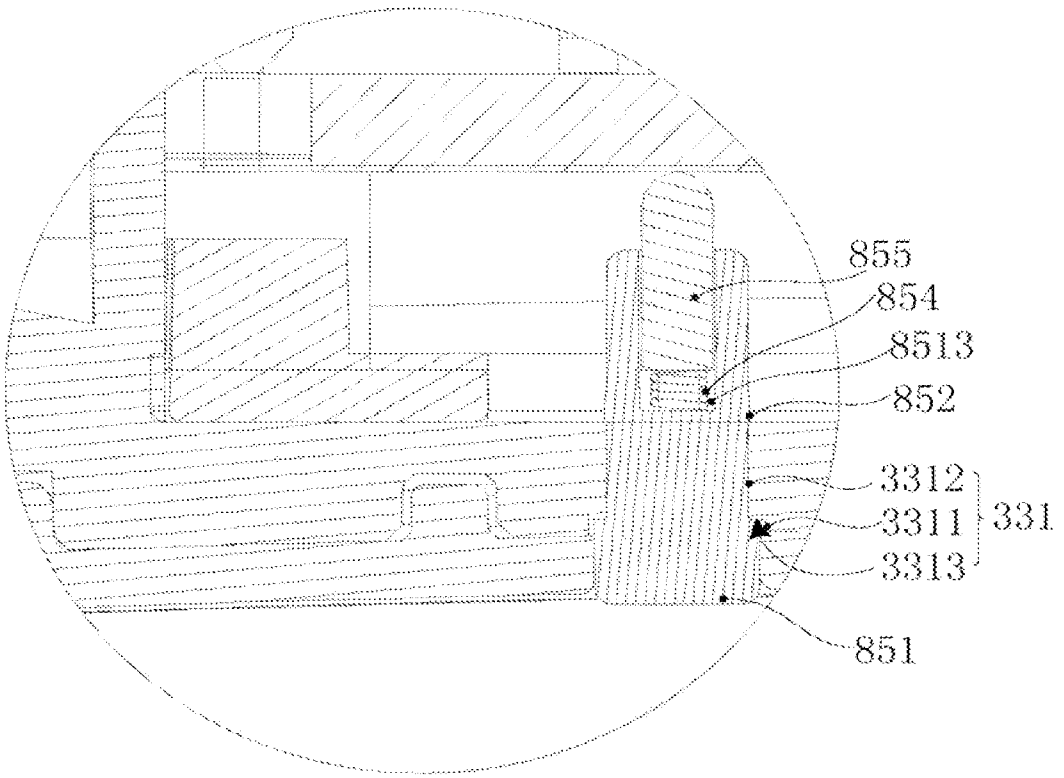


图20

IPR2025-00842; Shokz
Ex. 2018 - Page 1438

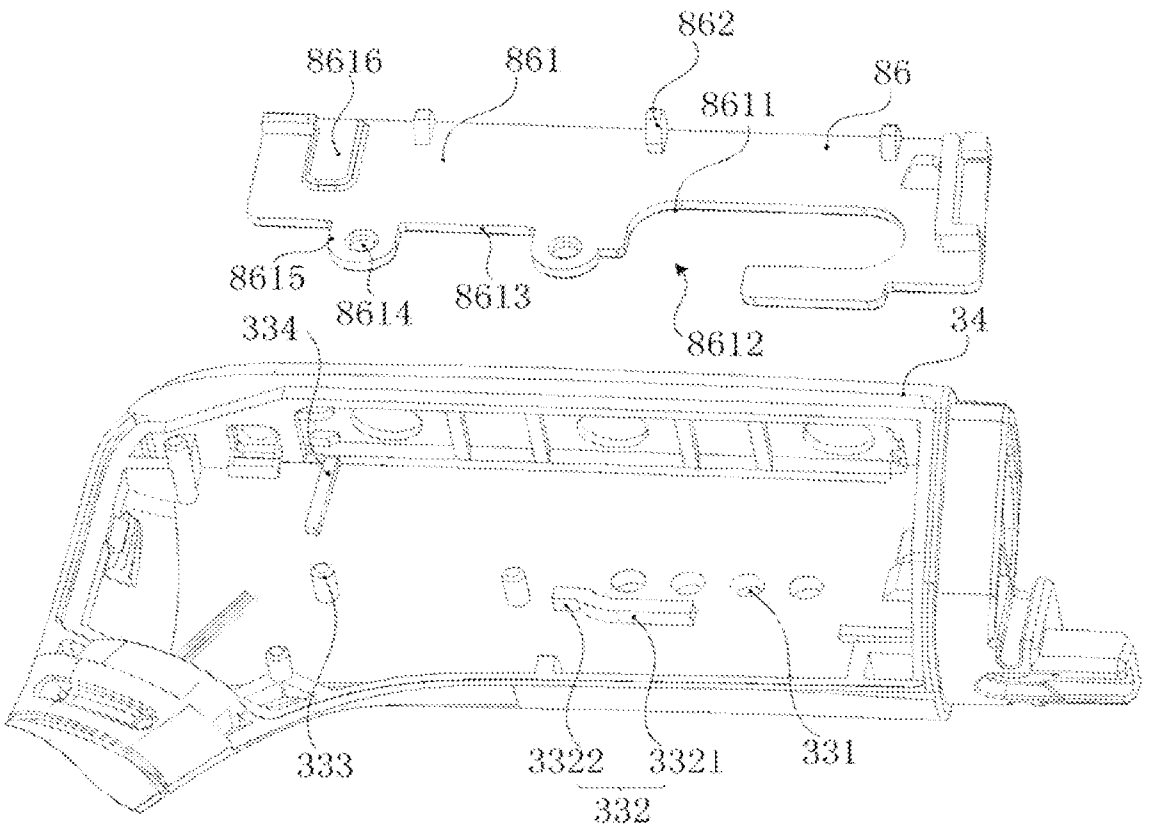


图21

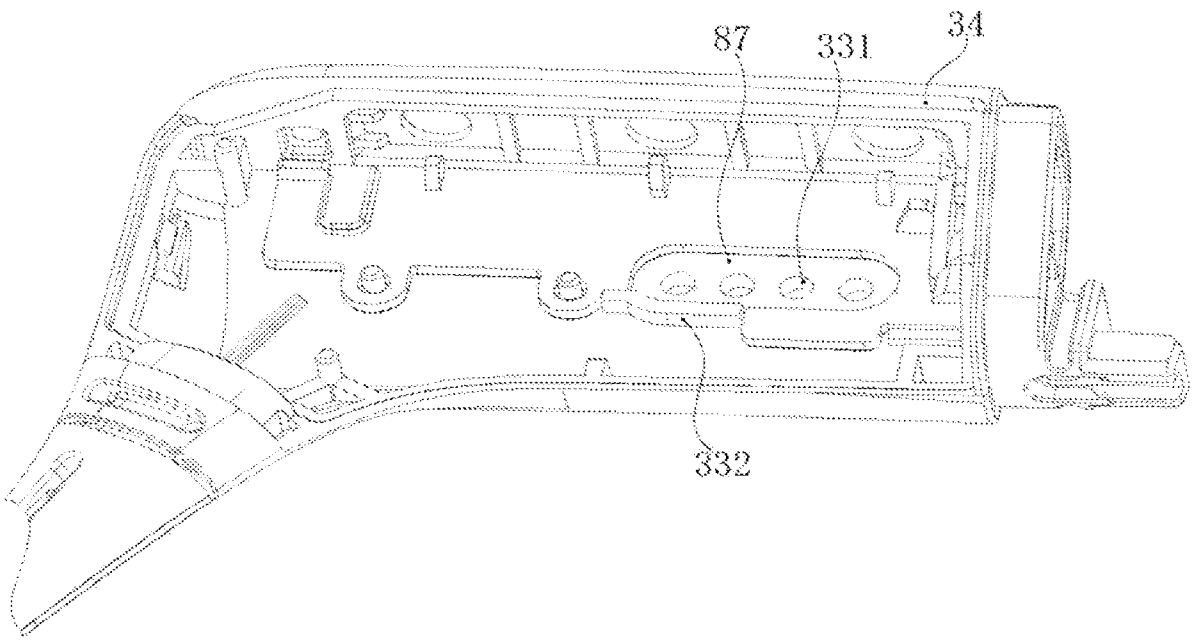


图22

IPR2025-00842; Shokz
Ex. 2018 - Page 1439

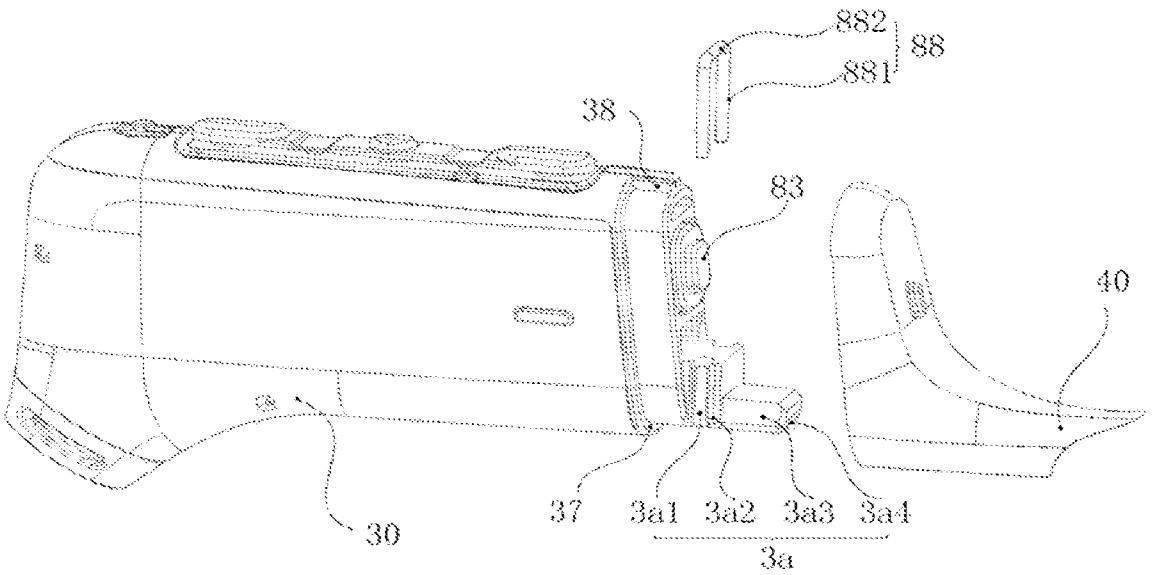


图23

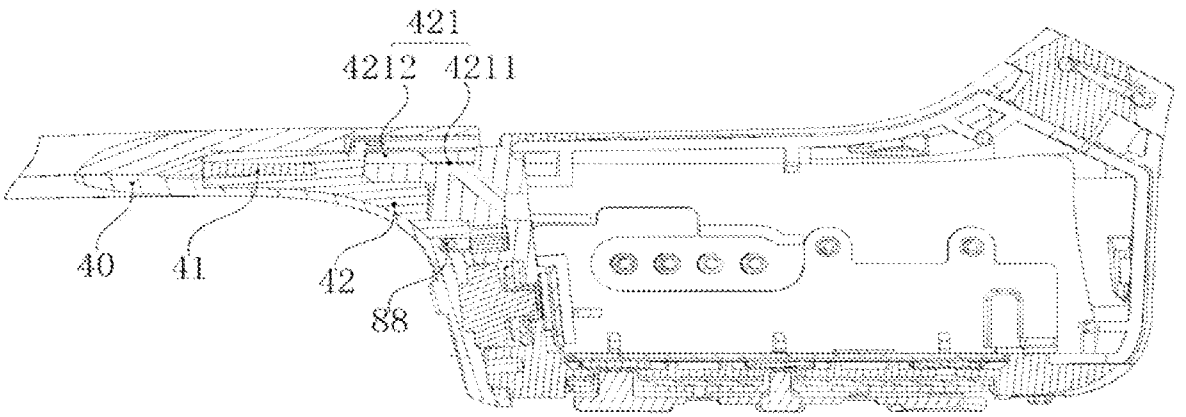


图24

IPR2025-00842; Shokz
Ex. 2018 - Page 1440

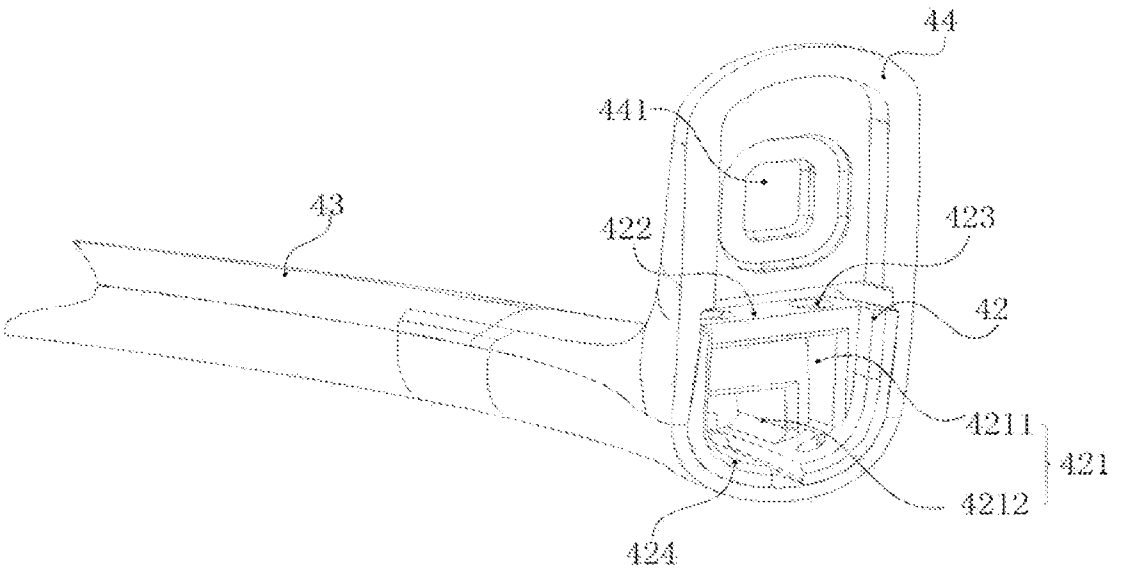


图25

IPR2025-00842; Shokz
Ex. 2018 - Page 1441

(19)中华人民共和国国家知识产权局

(12)实用新型专利

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(51)Int.Cl.
H04R 9/06(2006.01)
H04R 9/02(2006.01)

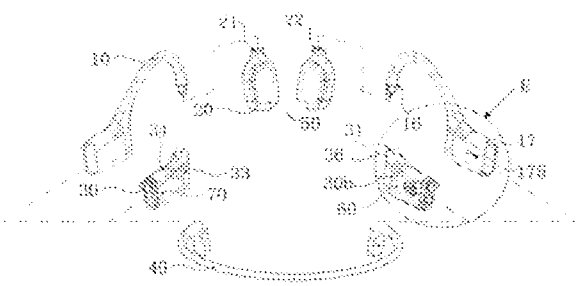
权利要求书1页 说明书19页 附图14页

(54)实用新型名称

骨传导扬声装置

(57)摘要

本申请公开了一种骨传导扬声装置，包括：耳挂及电路壳体；其中，耳挂包括第一弹性金属丝以及设置于第一弹性金属丝一端的第一接插端；电路壳体用于容纳控制电路或电池，并与第一接插端接插固定。通过上述方式，本申请能够降低骨传导扬声装置的生产难度以及生产成本。



CN 209267804 U

1.一种骨传导扬声装置，其特征在于，包括：

耳挂，包括第一弹性金属丝以及设置于所述第一弹性金属丝一端的第一接插端；

电路壳体，用于容纳控制电路或电池，并与所述第一接插端接插固定。

2.根据权利要求1所述的骨传导扬声装置，其特征在于，所述电路壳体设置有第一接插孔，所述第一接插端至少部分插入至所述第一接插孔内，其中在所述第一接插端的相对两侧分别设置有与所述第一接插端相对于所述第一接插孔的插入方向垂直设置的开槽，所述电路壳体的第一侧壁上设置有与两个所述开槽位置对应的两个通孔，所述骨传导扬声装置进一步包括固定件，所述固定件包括两条平行设置的插脚和用于连接所述插脚的连接部，其中所述插脚从所述电路壳体的外侧经第一通孔插入至所述开槽，进而实现所述电路壳体与所述第一接插端的接插固定。

3.根据权利要求2所述的骨传导扬声装置，其特征在于，所述电路壳体的第一侧壁上进一步形成有用于连接所述第一通孔的条状凹槽，所述连接部沉设于所述条状凹槽内。

4.根据权利要求2所述的骨传导扬声装置，其特征在于，所述电路壳体的与所述第一侧壁相对的第二侧壁上进一步设置有与所述第一通孔相对的第二通孔，所述插脚进一步经所述开槽插入至所述第二通孔内。

5.根据权利要求4所述的骨传导扬声装置，其特征在于，所述电路壳体的第一侧壁和第二侧壁分别为所述电路壳体的主侧壁。

6.根据权利要求1所述的骨传导扬声装置，其特征在于，所述电路壳体在远离所述耳挂的一端进一步设置有第二接插端，所述骨传导扬声装置进一步包括后挂，所述后挂包括第二弹性金属丝以及设置于所述第二弹性金属丝的两端的第三接插端，其中所述第二接插端与所述第三接插端彼此接插固定。

7.根据权利要求1所述的骨传导扬声装置，其特征在于，所述耳挂还包括导线、固定套管及保护套管；

所述固定套管将所述导线固定于所述第一弹性金属丝上，所述第一接插端设置于所述第一弹性金属丝的一端，所述保护套管注塑形成于所述第一弹性金属丝、所述导线、所述固定套管及所述第一接插端的外围。

8.根据权利要求7所述的骨传导扬声装置，其特征在于，所述耳挂还包括设置于所述第一弹性金属丝另一端的第四接插端，所述保护套管进一步注塑形成于所述第四接插端的外围，所述骨传导扬声装置进一步包括机芯壳体，所述机芯壳体用于容纳耳机芯，并与所述第四接插端接插固定。

9.根据权利要求7所述的骨传导扬声装置，其特征在于，所述耳挂进一步包括与所述第一接插端外围的所述保护套管一体成型的壳体护套，所述壳体护套以套装方式包覆于所述电路壳体的外围。

10.根据权利要求7所述的骨传导扬声装置，其特征在于，所述固定套管为至少两个，并沿所述第一弹性金属丝间隔设置。

IPR2025-00842; Shokz
Ex. 2018 - Page 1443

骨传导扬声装置

技术领域

[0001] 本申请涉及骨传导技术领域，特别是涉及一种骨传导扬声装置。

背景技术

[0002] 骨传导是一种声音传导方式，骨传导扬声装置利用骨传导技术接收声音，由于其能够开放双耳、不伤害鼓膜等优点而受到广大消费者的青睐。

[0003] 骨传导扬声装置包括有耳挂和用于容纳控制电路或电池的电路壳体，在生产过程当中，可以根据需求将耳挂与电路壳体一体成型为一个整体。然而，这种方式往往需要对应于耳挂和电路壳体整体的尺寸的较大的模具，从而在一定程度上增大模具的加工难度，从而增大骨传导扬声装置的生产难度；而且，在仅对耳挂或者电路壳体中的一个进行尺寸或者结构上的调整时，需要对二者对应的整个模具进行更换，从而提高生产成本。

实用新型内容

[0004] 本申请主要解决的技术问题是提供一种骨传导扬声装置，能够降低骨传导扬声装置的生产难度以及生产成本。

[0005] 为解决上述技术问题，本申请采用的一个技术方案是：提供一种骨传导扬声装置，包括：耳挂，包括第一弹性金属丝以及设置于所述第一弹性金属丝一端的第一接插端；电路壳体，用于容纳控制电路或电池，并与所述第一接插端接插固定。

[0006] 本申请的有益效果是：区别于现有技术的情况，本申请中在对骨传导扬声装置进行生产时，对于耳挂和电路壳体可分别采用各自对应的模具进行成型，而无需采用同一个较大尺寸的模具将二者一体成型，从而可减小模具的尺寸，以降低模具的加工难度，以及成型难度；另外，由于耳挂和电路壳体分别采用不同的模具加工，在生产制造过程中，在需要对耳挂或电路壳体中的某一个的形状或者构造进行调整时，仅调整该结构对应的模具即可，而无需对另外一个结构的模具进行调整，从而能够降低生产成本。

附图说明

[0007] 为了更清楚地说明本申请实施例中的技术方案，下面将对实施例描述中所需要使用的附图作简单地介绍，显而易见地，下面描述中的附图仅仅是本申请的一些实施例，对于本领域普通技术人员来讲，在不付出创造性劳动的前提下，还可以根据这些附图获得其他的附图。其中：

[0008] 图1是本申请骨传导扬声装置一实施方式的爆炸结构示意图；

[0009] 图2是本申请骨传导扬声装置一实施方式中耳挂的部分结构示意图；

[0010] 图3是图2中A部分的局部放大图；

[0011] 图4是本申请骨传导扬声装置一实施方式的局部截面图；

[0012] 图5是图4中B部分的局部放大图；

[0013] 图6是本申请骨传导扬声装置一实施方式的局部结构截面图；

IPR2025-00842; Shokz
Ex. 2018 - Page 1444

[0014] 图7是图6中C部分的局部放大图；

[0015] 图8是本申请骨传导扬声装置一实施方式的机芯壳体的部分结构示意图；

[0016] 图9是图8中D部分的局部放大图；

[0017] 图10是本申请骨传导扬声装置一实施方式的机芯壳体的局部截面图；

[0018] 图11是本申请骨传导扬声装置一实施方式中电路壳体与耳挂的部分爆炸图；

[0019] 图12是本申请骨传导扬声装置一实施方式的部分结构的局部截面图；

[0020] 图13是图1中E部分的局部放大图；

[0021] 图14是本申请骨传导扬声装置一实施方式中电路壳体的截面图；

[0022] 图15是图14中F部分的局部放大图；

[0023] 图16是本申请骨传导扬声装置一实施方式中电路壳体与按键结构的爆炸图；

[0024] 图17是图6中G部分的局部放大图；

[0025] 图18是本申请骨传导扬声装置一实施方式中导电柱的结构示意图；

[0026] 图19是本申请骨传导扬声装置一实施方式中电路壳体、导电柱及主控电路板的截面图；

[0027] 图20是图19中H部分的局部放大图；

[0028] 图21是本申请骨传导扬声装置一实施方式中电路壳体与辅助片的局部结构爆炸图；

[0029] 图22是本申请骨传导扬声装置一实施方式中电路壳体与辅助片的局部结构示意图；

[0030] 图23是本申请骨传导扬声装置一实施方式中电路壳体与后挂的局部结构爆炸图；

[0031] 图24是本申请骨传导扬声装置一实施方式中电路壳体与后挂的局部结构截面图；

[0032] 图25是本申请骨传导扬声装置一实施方式中后挂的局部结构示意图。

具体实施方式

[0033] 下面将结合本申请实施例中的附图，对本申请实施例中的技术方案进行清楚、完整地描述，显然，所描述的实施例仅仅是本申请一部分实施例，而不是全部实施例。基于本申请中的实施例，本领域普通技术人员在没有做出创造性的劳动前提下所获得的所有其他实施例，都属于本申请保护的范围。

[0034] 请一并参阅图1至图25，图1至图25绘示了本申请骨传导扬声装置。本申请中的骨传导扬声装置可以为基于骨传导的耳机、MP3或者其它具有扬声功能的装置。具体地，骨传导扬声装置可包括：耳挂10、机芯壳体20、电路壳体30、后挂40，以及耳机芯50、控制电路60、电池70。其中，机芯壳体20与电路壳体30分别设置于耳挂10的两端，后挂40则进一步设置于电路壳体30远离耳挂10的一端。其中，机芯壳体20的数量为两个，分别用于容纳耳机芯50，电路壳体30的数量也为两个，分别用来容纳控制电路60和电池70，后挂40的两端分别连接对应的电路壳体30。

[0035] 其中，耳挂10是指在用户佩戴骨传导扬声装置时，用于环绕并支撑于用户的耳根部位，进而将机芯壳体20及耳机芯50悬挂并固定于用户耳朵预定位置的结构。

[0036] 具体地，耳挂10包括弹性金属丝11、导线12、固定套管13以及设置于弹性金属丝11两端的接插端14和接插端15，还进一步包括保护套管16以及与保护套管16一体成型的壳体

IPR2025-00842; Shokz
Ex. 2018 - Page 1445

护套17。

[0037] 其中，弹性金属丝11主要用于使耳挂10保持为与用户耳朵匹配的形状，并具有一定的弹性，从而能够在用户佩戴时根据用户的耳型以及头型产生一定的弹性形变以适配不同耳型以及头型的用户。本实施方式中，弹性金属丝11可以由记忆合金制成，具有良好的变形恢复能力，从而即便是耳挂10受到外力作用产生形变，在外力去除时，仍然能够恢复至原来的形状以能够继续为用户所使用，从而延长骨传导扬声装置的使用寿命。当然，在其它实施方式当中，弹性金属丝11也可以由非记忆合金制成。

[0038] 导线12可用于与耳机芯50以及控制电路60、电池70等进行电连接，以为耳机芯50的工作进行电量供应以及数据传输。

[0039] 固定套管13用于将导线12固定于弹性金属丝11上。具体地，固定套管13的数量可以为一个或者多个，具体可根据实际需求而定。本实施方式中，固定套管13为至少两个，至少两个固定套管13可沿弹性金属丝11以及导线12的走向而间隔设置，并通过包裹设置在导线12以及弹性金属丝11的外围而将导线12固定于弹性金属丝11上。

[0040] 接插端14和接插端15可由硬质材料，如塑胶等制成。本实施方式中，在制作该接插端14和接插端15时，可以分别以注塑的方式将二者形成于弹性金属丝11的两端。在其它实施方式中，也可以先对接插端14和接插端15分别进行注塑，并在注塑时分别预留与弹性金属丝11端部的连接孔，从而在注塑完成后，通过连接孔而将该接插端14和接插端15分别插接在弹性金属丝11的对应的端部，或者并通过粘接的方式进行固定均可。

[0041] 需要指出的是，本实施方式中，接插端14和接插端15可以不直接注塑形成在导线12的外围，而是在注塑时避开导线12。具体地，可以在注塑接插端14和接插端15时，对位于弹性金属丝11两端的导线12进行固定，以远离接插端14和接插端15的位置，并进一步在接插端14和接插端15上分别设置第一走线通道141和第二走线通道151，以在注塑完成后，将导线12沿第一走线通道141和第二走线通道151延伸设置。具体地，在形成第一走线通道141和第二走线通道151后，可将导线12以穿线的方式穿入该第一走线通道141和第二走线通道151。

[0042] 当然，在其它实施方式中，也可以根据实际情况，将接插端14和接插端15直接注塑在导线12的外围，此处不做具体限定。

[0043] 具体地，在一实施方式中，第一走线通道141可包括第一走线槽1411和连通第一走线槽1411的第一走线孔1412。其中，第一走线槽1411连通接插端14的侧壁面设置，第一走线孔1412的一端与第一走线槽1411的一端连通，另一端与接插端14的外端面连通。接插端14处的导线12沿第一走线槽1411和第一走线孔1412延伸并外露于接插端14的外端面，以进一步与其它结构连接。

[0044] 相应地，第二走线通道151可包括第二走线槽1511和连通第二走线槽1511的第二走线孔1512。其中，第二走线槽1511连通接插端15的侧壁面设置，第二走线孔1512的一端与第二走线槽1511的一端连通，另一端与接插端15的外端面连通。接插端15处的导线12沿第二走线槽1511和第二走线孔1512延伸并外露于接插端15的外端面，以进一步与其它结构连接。

[0045] 其中，接插端14的外端面是指接插端14远离接插端15的一端的端面；相应地，接插端15的外端面是指接插端15远离接插端14的一端的端面。

IPR2025-00842; Shokz
Ex. 2018 - Page 1446

[0046] 进一步地，保护套管16可注塑形成于弹性金属丝11、导线12、固定套管13、接插端14和接插端15的外围，从而将保护套管16分别与弹性金属丝11、导线12、固定套管13、接插端14和接插端15固定连接，而无需将保护套管16单独注塑形成后再进一步套装在弹性金属丝11以及接插端14、接插端15的外围，从而能够简化制作及装配工序，且通过这种方式，能够使得保护套管16的固定更加牢靠、稳定。

[0047] 进一步地，在成型保护套管16时，同时与该保护套管16一体成型有设置于靠近接插端15一侧的壳体护套17。

[0048] 其中，壳体护套17可与保护套管16一体成型而成为一整体，电路壳体30可通过与接插端15的接插固定而连接设置在耳挂10的一端，壳体护套17则可进一步以套装的方式包覆于在电路壳体30的外围。

[0049] 其中，保护套管16和壳体护套17可以由具有一定弹性的软质材料制成，例如软质的硅胶、橡胶等。

[0050] 具体地，在制造骨传导扬声装置的耳挂10时，可通过如下步骤实现：

[0051] 步骤S101：利用固定套管13将导线12固定于弹性金属丝11上，其中在弹性金属丝11的两端预留出注塑位；

[0052] 具体地，可以先将弹性金属丝11与导线12按照预设的方式，如并排放置在一起，然后，将固定套管13进一步套设在导线12与弹性金属丝11的外围，从而将导线12固定在弹性金属丝11上。

[0053] 其中，由于弹性金属丝11的两端还需要注塑接插端14和接插端15，因此，在固定时，弹性金属丝11的两端不能被固定套管13完全包裹，而需预留出对应的注塑位，以供接插端14和接插端15注塑占用。

[0054] 步骤S102：在弹性金属丝11的两端的注塑位上分别注塑接插端14和接插端15，其中接插端14和接插端15分别设置有第一走线通道141和第二走线通道151；

[0055] 步骤S103：将导线12设置成沿第一走线通道141和第二走线通道151延伸；

[0056] 具体地，此处可在接插端14和接插端15成型完成后，进一步通过手动或者通过机器将导线12的两端分别穿入第一走线通道141和第二走线通道151。其中，导线12位于第一走线通道141和第二走线通道151之间的部分由固定套管13固定于弹性金属丝11上。

[0057] 步骤S104：在弹性金属丝11、导线12、固定套管13、接插端14和接插端15的外围注塑形成保护套管16。

[0058] 在一实施方式中，在执行步骤S104时，进一步以注塑的方式形成与接插端15外围的保护套管16一体成型的壳体护套17。

[0059] 需要指出的是，在其它实施方式中，也可以在安装固定套管13时先不设置导线12，而在接插端14和接插端15注塑之后，再进一步设置导线12，具体步骤如下：

[0060] 步骤S201：将固定套管13套设于弹性金属丝11上，其中在弹性金属丝11的两端预留出注塑位；

[0061] 步骤S202：在弹性金属丝11的两端的注塑位上分别注塑接插端14和接插端15，其中接插端14和接插端15分别设置有第一走线通道141和第二走线通道151；

[0062] 步骤S203：将导线12穿设于固定套管13的内部，以利用固定套管13将导线12固定于弹性金属丝11上，并进一步将导线12设置成沿第一走线通道141和第二走线通道151延

IPR2025-00842; Shokz
Ex. 2018 - Page 1447

伸。

[0063] 需要指出的是，通过这种方式，能够避免在对接插端14和接插端15注塑时受到导线12的干扰，从而有利于成型的顺利进行。

[0064] 其中，本实施方式，以及上述实施方式中方法所涉及到的弹性金属丝11、导线12、固定套管13、接插端14、接插端15与保护套管16的结构、作用以及形成方式等均与上述实施方式中的相同，相关详细内容请参见上述实施方式，此处不再赘述。

[0065] 在一实施方式中，机芯壳体20可用于容纳耳机芯50，并与接插端14接插固定。其中，耳机芯50和机芯壳体20的数量均为两个，分别对应用户的左耳和右耳。

[0066] 具体地，机芯壳体20可以与接插端14通过插接、卡接等方式连接，以将机芯壳体20与耳挂10固定在一起。也就是说，本实施方式中，耳挂10与机芯壳体20可先分别成型，然后再进一步装配在一起，而不是将二者一体直接成型。

[0067] 通过这种方式，可以采用各自对应的模具对耳挂10和机芯壳体20分别成型，而无需采用同一个较大尺寸的模具将二者一体成型，从而可减小模具的尺寸，以降低模具的加工难度，以及成型难度；另外，由于耳挂10和机芯壳体20分别采用不同的模具加工，在生产制造过程中，在需要对耳挂10或机芯壳体20中的某一个的形状或者构造进行调整时，仅调整该结构对应的模具即可，而无需对另外一个结构的模具进行调整，从而能够降低生产成本。

[0068] 当然，在其它实施方式当中，也可以根据情况而使耳挂10与机芯壳体20通过一体成型得到。

[0069] 在一实施方式中，机芯壳体20设置有与机芯壳体20的外端面21连通的接插孔22，接插孔22的内侧壁上设置有止挡块23。

[0070] 其中，机芯壳体20的外端面21是指机芯壳体20朝向耳挂10的端面。接插孔22用于为耳挂10的接插端14插入机芯壳体20提供容置空间，以便进一步实现接插端14与机芯壳体20的接插固定。

[0071] 止挡块23可以由接插孔22的内侧壁沿垂直于该内侧壁的方向凸出形成。具体地，止挡块23可以为多个间隔设置的块状凸起，或者也可以为沿接插孔22内侧壁的环状凸起，此处不做具体限定。

[0072] 其中，接插端14包括插入部142和两个弹性卡勾143。

[0073] 具体地，插入部142至少部分插入于接插孔22内并抵接于止挡块23的外侧面231上。其中，插入部142的外侧壁的形状与接插孔22的内侧壁的形状匹配，以使得插入部142至少部分插入于接插孔22内时，使得插入部142的外侧壁与接插孔22的内侧壁抵接。

[0074] 止挡块23的外侧面231是指止挡块23朝向耳挂10设置的一侧面。插入部142可进一步包括一朝向机芯壳体20的端面1421，该端面1421可与止挡块23的外侧面231匹配，从而在插入部142至少部分插入于接插孔22内时，插入部142的端面1421与止挡块23的外侧面231抵接。

[0075] 具体地，机芯壳体20的接插孔22的沿垂直于接插端14相对于机芯壳体20的插入方向上的截面形状可为椭圆环形或近椭圆环形，对应地，插入部142的横截面可以为与接插孔22匹配的近椭圆形，当然，二者的形状还可以为其它，具体可根据实际需求进行设置。

[0076] 进一步地，两个弹性卡勾143可沿垂直于插入方向并排并间隔且对称设置于插入

IPR2025-00842; Shokz
Ex. 2018 - Page 1448

部142朝向机芯壳体20内部的一侧。其中，每个弹性卡勾143可分别包括梁部1431和勾部1432，梁部1431与插入部142朝向机芯壳体20的一侧连接，勾部1432设置在梁部1431远离插入部142的一端，并沿垂直于插入方向延伸。进一步地，每个勾部1432设置有连接平行于插入方向的侧面与远离插入部142的端面的过渡斜面14321。

[0077] 在耳挂10与机芯壳体20的安装过程当中，接插端14由接插孔22逐渐进入机芯壳体20内部，在到达止挡块23的位置时，两个弹性卡勾143的勾部1432会受到止挡块23的阻挡，在外部推力的作用下，止挡块23逐渐挤压勾部1432的过渡斜面14321而使得两个弹性卡勾143发生弹性形变而彼此并拢，在过渡斜面14321通过止挡块23而到达止挡块23靠近机芯壳体20内部的一侧时，弹性卡勾143因失去止挡块23的阻挡而弹性回复，并卡置于止挡块23朝向机芯壳体20内部的内侧面上，从而将止挡块23卡置于接插端14的插入部142和勾部1432之间，进而实现机芯壳体20与接插端14的接插固定。

[0078] 其中，在一实施方式中，在机芯壳体20与接插端14接插固定后，插入部142部分插入于接插孔22内，且在插入部142的外露部分呈阶梯状设置，进而形成与机芯壳体20的外端面21间隔设置的环形台面1422。

[0079] 需要指出的是，插入部142的外露部分是指插入部142外露于机芯壳体20的部分，具体地，可以是指外露于机芯壳体20且靠近机芯壳体20外端面的部分。

[0080] 其中，环形台面1422可以与机芯壳体20的外端面21相对设置，且二者之间的间隔可以是指沿接插方向间隔以及沿垂直于接插方向的间隔。

[0081] 进一步地，保护套管16延伸至环形台面1422朝向机芯壳体20的外端面21的一侧，并在机芯壳体20的接插孔22与接插端14接插固定时，填充于环形台面1422与机芯壳体20的外端面21之间的间隔内，并与机芯壳体20弹性抵接，从而使得外部液体难以从接插端14与机芯壳体20之间的接合处进入机芯壳体20内部，进而实现接插端14与接插孔22之间的密封，以保护机芯壳体20内部的耳机芯50等，从而能够提高对骨传导扬声装置的防水效果。

[0082] 具体地，在一实施方式当中，保护套管16在环形台面1422朝向机芯壳体20的外端面的21一侧形成一环形抵接面161。其中，该环形抵接面161为保护套管16朝向机芯壳体20一侧的端面。

[0083] 进一步地，保护套管16还包括位于该环形抵接面161内部且相对于环形抵接面161凸出设置的环形凸台162。具体地，该环形凸台162具体形成于环形抵接面161朝向接插端14的一侧，并相对于该环形抵接面161沿朝向机芯壳体20的方向凸出设置，进一步地，该环形凸台162还可直接形成于环形台面1422的外围，并覆盖该环形台面1422。

[0084] 进一步地，机芯壳体20包括用于连接机芯壳体20的外端面21和接插孔22的内侧壁的连接斜面24。其中，该连接斜面24具体为机芯壳体20的外端面21与接插孔22的内侧壁之间的过渡面，该连接斜面24与机芯壳体20的外端面21和接插孔22的内侧壁均不在同一平面上。其中，该连接斜面24可以为平面，或者也可以根据实际需求而设置成曲面，或者其它形状，此处不做具体限定。

[0085] 具体地，在机芯壳体20与接插端14接插固定时，环形抵接面161和环形凸台162分别与机芯壳体20的外端面和连接斜面24弹性抵接。

[0086] 需要指出的是，由于机芯壳体20的外端面21和连接斜面24不在同一平面上，从而使得保护套管16与机芯壳体20之间的弹性抵接处不位于同一平面上，从而使得外部液体难

IPR2025-00842; Shokz
Ex. 2018 - Page 1449

以由保护套管16与机芯壳体20之间进入机芯壳体20以进一步进入耳机芯50，从而能够提高骨传导扬声装置的防水效果，以对内部功能结构起到保护作用，进而延长骨传导扬声装置的使用寿命。

[0087] 其中，在一实施方式中，插入部142在环形台面1422朝向机芯壳体20的外端面21的一侧进一步形成有与环形台面1422邻接的环形凹槽1423，其中，环形凸台162可形成于环形凹槽1423内。

[0088] 本实施方式中，环形凹槽1423可形成于环形台面1422朝向机芯壳体20的一侧。在一个应用场景中，环形台面1422为环形凹槽1423的朝向机芯壳体20一侧的侧壁面，此时，环形凸台162沿该侧壁面形成于环形凹槽1423内。

[0089] 在一实施方式中，耳挂10的导线12的位于机芯壳体20的外部的一端可穿过第二走线通道151而进一步连接电路壳体30所容纳的控制电路60、电池70等机芯壳体20外部的外部电路，另一端则沿第一走线通道141而露出于接插端14的外端面，并进一步随插入部142而通过接插孔22而进入机芯壳体20内部。

[0090] 在一实施方式中，机芯壳体20可包括主壳体25以及隔板组件26，其中，隔板组件26位于主壳体25内部，并与主壳体25连接，进而将主壳体25的内部空间27分隔成第一容置空间271和靠近接插孔22一侧的第二容置空间272。

[0091] 具体地，主壳体25包括周侧壁251以及与周侧壁251的一端面连接的底端壁252，周侧壁251与底端壁252共同围绕形成一主壳体25的内部空间27。

[0092] 隔板组件26位于主壳体25的靠近接插孔22的一侧，并包括侧隔板261以及底隔板262。其中，侧隔板261可沿垂直于底端壁252的方向设置，且侧隔板261的两端均与周侧壁251连接，从而对主壳体25的内部空间27进行分隔。底隔板262可与底端壁252平行或者接近平行且间隔设置，并进一步分别与周侧壁251和侧隔板261连接，从而将主壳体25所形成的内部空间27一分为二而形成由侧隔板261、底隔板262和远离接插孔22的周侧壁251、底端壁252共同围成的第一容置空间271，以及由底隔板262与侧隔板261和靠近接插孔22的周侧壁251共同围成的第二容置空间272。其中，第二容置空间272可小于第一容置空间271。

[0093] 当然，隔板组件26也可以通过其它的设置方式对主壳体25的内部空间27进行划分，此处不做具体限定。

[0094] 进一步地，耳机芯50包括功能组件51，该功能组件51设置于第一容置空间271内，可用于振动发声。骨传导扬声装置可进一步包括一端与功能组件51连接的导线80，该导线80的另一端可由第一容置空间271而延伸至第二容置空间272内。

[0095] 具体地，侧隔板261可在远离底端壁252的顶部边缘设置走线槽2611，该走线槽2611可连通第一容置空间271和第二容置空间272。进一步地，导线12的远离功能组件的一端经由该走线槽延伸至第二容置空间272内。

[0096] 另外，耳挂10的导线12的远离电路壳体30的一端随插入部142进入机芯壳体20内部后，可进一步延伸入第二容置空间272内，并在第二容置空间272内与导线80电连接，以形成从第一容置空间271经由第二容置空间272而连接至外部电路的导线通路，从而通过该导线通路将功能组件51与位于机芯壳体20外部的外部电路电连接。

[0097] 具体地，底隔板262上可设置有走线孔2621，该走线孔2621将接插孔22与第二容置空间272连通，从而使得由接插孔22进入机芯壳体20的导线12能够经由该走线孔2621而延

IPR2025-00842; Shokz
Ex. 2018 - Page 1450

伸至第二容置空间272。

[0098] 其中，导线12与导线80在第二容置空间272内连接后，盘绕设置于第二容置空间272内。具体可通过焊接的方式将导线12与导线80连接于一起，进而将功能组件51与外部电路电连接，以通过外部电路为功能组件51的正常工作提供电量或者为耳机芯50传输数据。

[0099] 需要指出的是，在对骨传导扬声装置装配时，导线往往会长于实际需求，以便于装配。然而耳机芯50处多余的导线若不能够进行合理的放置，则容易在功能组件51工作时产生振动而发出异响，从而降低骨传导扬声装置的声音质量，从而影响用户的听音感受。本实施方式中，在机芯壳体20的主壳体25所形成的内部空间27当中分离出第二容置空间272以用于容置多余的导线12和导线80，从而避免或者减少多余的导线对因振动而对骨传导扬声装置所发出的声音的影响，以提高声音质量。

[0100] 在一实施方式中，隔板组件26进一步包括内隔板263，内隔板263进一步将第二容置空间272分隔成两个子容置空间2721。具体地，该内隔板263垂直于主壳体25的底端壁252设置，分别与侧隔板261和周侧壁251连接，并进一步延伸至走线孔2621处，从而在将第二容置空间272分隔为两个子容置空间2721的同时，还进一步将走线孔2621划分为两个，两个走线孔2621可分别与对应的子容置空间2721连通。

[0101] 本实施方式中，导线12和导线80可分别为两根，其中两根导线12分别沿对应的走线孔2621而分开延伸至各自的子容置空间2721内，而两根导线80则仍一起通过走线槽2611而进入第二容置空间272，并在进入第二容置空间272后分开，并分别在对应的子容置空间2721内与对应的导线12焊接于一起，并进一步盘绕设置于对应的子容置空间2721内。

[0102] 进一步地，在一实施方式中，第二容置空间272可进一步由密封胶进行填充。通过这种方式，能够将第二容置空间272内所容置的导线12和导线80进一步固定，以进一步降低由于导线振动而对声音质量造成的不良影响，从而提高骨传导扬声装置的声音质量，同时能够对导线12与导线80之间的焊接点起到保护作用，另外，将第二容置空间272密封设置还能够达到防水防尘的目的。

[0103] 在一实施方式中，电路壳体30与接插端15接插固定，从而将电路壳体30固定在耳挂10远离机芯壳体20的一端。其中，在用户佩戴使用时，容纳电池70的电路壳体30和容纳控制电路60的电路壳体30可分别对应用户的左侧和右侧，二者在与对应的接插端15的接插方式上可以不同。

[0104] 具体地，电路壳体30可以与接插端15通过插接、卡接等方式连接。也就是说，本实施方式中，耳挂10与电路壳体30可先分别独立成型，然后并在成型完成后再进一步装配在一起，而不是直接将二者一体成型。

[0105] 通过这种方式，可以采用各自对应的模具对耳挂10和电路壳体30分别成型，而无需采用同一个较大尺寸的模具将二者一体成型，从而可减小成型模具的尺寸，以降低模具的加工难度，以及成型难度；另外，由于耳挂10和电路壳体30分别采用不同的模具加工，在生产制造过程中，在需要对耳挂10或电路壳体30中的某一个的形状或者构造进行调整时，仅调整该结构对应的模具即可，而无需对另外一个结构的模具进行调整，从而能够降低生产成本。

[0106] 进一步地，在一实施方式中，电路壳体30设置有接插孔31，该接插孔31的内表面的形状可与接插端15的至少部分外表面的形状匹配，从而使得接插端15能够至少部分插入至

IPR2025-00842; Shokz
Ex. 2018 - Page 1451

接插孔31内。

[0107] 进一步地，在接插端15的相对两侧分别设置有与接插端15相对于接插孔31的插入方向垂直设置的开槽152。具体地，两个开槽152对称且间隔设置于接插端15的相对两侧，且均在沿插入方向的垂直方向上连通接插端15的侧壁。

[0108] 相应地，电路壳体30的第一侧壁30a上设置有与两个开槽152位置对应的贯穿该第一侧壁30a的两个通孔32。

[0109] 其中，电路壳体30可以呈扁平状设置，例如，电路壳体30于第二接插孔31处的横截面可以为椭圆形，或者能够形成扁平状设置的其它形状。本实施方式中，电路壳体30的面积较大的两个相对设置的侧壁为主侧壁33，连接两个主侧壁33的面积较小的且相对设置的两对侧壁为辅侧壁34。本实施方式中，电路壳体30的第一侧壁30a既可以为该电路壳体30的主侧壁33也可以为电路壳体30的辅侧壁34，具体可以根据实际需求进行设定。

[0110] 当然，在其它实施方式中，电路壳体30于接插孔31处的横截面还可以为圆形等其它形状，具体可根据实际需求进行设置。

[0111] 进一步地，骨传导扬声装置还可以包括固定件81，固定件81包括两条平行设置的插脚811和用于连接插脚811的连接部812。具体地，连接部812可垂直连接设置于两条插脚811的朝向同一方向的一端，从而形成U型的固定件81。

[0112] 其中，两个插脚811远离连接部812的一端从电路壳体30的外侧经通孔32插入至开槽152，而将连接部812阻挡于电路壳体30的外侧，进而实现电路壳体30与接插端15的接插固定。

[0113] 进一步地，在一实施方式中，电路壳体30的第一侧壁30a上进一步形成有用于连接两个通孔32的条状凹槽35，在利用固定件81接插固定时，连接部812能够进一步部分或者全部沉设于条状凹槽35内。从而一方面能够使得骨传导扬声装置整体更加统一，进而使得套装在电路壳体30外围的壳体护套17上无需专门成型设置与连接部812对应的凹槽，简化壳体护套17的模具；另一方面，还能够在一定程度上减小骨传导扬声装置整体所占用的空间。

[0114] 其中，在一个应用场景中，可以在将连接部812部分或者全部沉设于条状凹槽35内后，进一步在条状凹槽35内施胶，通过这种方式，一方面能够将固定件81固定在电路壳体30上，从而使得接插端15与接插孔31之间的接插更加稳固；另一方面，在连接部812沉设于条状凹槽35后，进一步通过施胶将凹槽35填平，以与电路壳体30的第一侧壁30a保持一致，从而在套设壳体护套17后，使得该凹槽35与周边结构之间更加平整连贯。

[0115] 其中，在一实施方式中，与电路壳体30的第一侧壁30a相对的电路壳体30的第二侧壁30b上进一步设置有与通孔32相对的通孔36，插脚811进一步经开槽152插入至通孔36内。

[0116] 具体地，电路壳体30的第一侧壁30a和电路壳体30的第二侧壁30b均可为电路壳体30的主侧壁33或者辅侧壁34。在本实施方式中，电路壳体30的第一侧壁30a和第二侧壁30b分别为电路壳体30的两个相对设置的主侧壁33。也就是说，两个通孔32以及两个通孔36分别设置于电路壳体30的面积较大的侧壁上，进而固定件81的两个插脚811之间可以设置较大的间隔，以增大固定件81的跨度，从而能够提高接插端15与接插孔31之间接插的稳定性。

[0117] 本实施方式中，插脚811经通孔32插入至开槽152内，并进一步经开槽152插入至通孔36内，也就是说插脚811能够将电路壳体30的两相对主侧壁33以及接插端15完全贯穿并固定于一起，从而能够使得接插端15与电路壳体30之间接插更加牢固。

IPR2025-00842; Shokz
Ex. 2018 - Page 1452

[0118] 进一步地，如上述实施方式中所述，在保护套管16成型时，同时与该保护套管16一体成型有设置于靠近接插端15一侧的壳体护套17。

[0119] 其中，该壳体护套17与电路壳体30分别成型，并使得该壳体护套17的内侧壁的形状与电路壳体30的外侧壁匹配，进而在二者分别成型完成之后，将壳体护套17以套装的方式包覆于电路壳体30的外围。

[0120] 需要指出的是，由于在壳体护套17成型时的环境温度较高，而高温环境可能会对电路壳体30所容纳的控制电路60或电池70造成一定的损伤，因此，在成型阶段，将电路壳体30和壳体护套17分别成型，然后再套装在一起，从而能够避免壳体护套17在成型时，高温对控制电路60或电池70所带来的损伤，从而降低成型对控制电路60或电池70所带来的不利影响。

[0121] 进一步地，壳体护套17可以为一端开口的袋状结构，以使得电路壳体30经由壳体护套17的开口端进入壳体护套17的内部。

[0122] 本实施方式中，壳体护套17在与保护套管16一体成型而形成之后，可以通过从开口端对壳体护套17进行翻卷而将其从模具上取下；在对壳体护套17进行外观检查以及丝印等表面处理时，可进一步将壳体护套17通过开口而套设在预设结构上进行操作，并在操作完成后，进一步通过从开口处对壳体护套17进行翻卷而将其从该预设结构上取下；在检查及处理等操作完成后，可进一步通过开口而将壳体护套17套装在电路壳体30的外围。上述操作中，在将壳体护套17取下并不限定于上述翻卷的方式，还可通过充气等方式，此处不做具体限定。

[0123] 具体地，壳体护套17的开口端为壳体护套17背离保护套管16的一端，从而该电路壳体30从壳体护套17远离保护套管16的一端进入壳体护套17的内部，以为该壳体护套17所包覆。

[0124] 在一实施方式中，壳体护套17的开口端设置有向内凸出的环状凸缘171。进一步地，电路壳体30远离耳挂10的端部呈阶梯状设置，进而形成环形台面37。当壳体护套17包覆于电路壳体30的外围时，环状凸缘171抵接于环形台面37上。

[0125] 具体地，环状凸缘171由壳体护套17的开口端的内壁面朝向壳体护套17内部凸出一定的厚度形成，并包括一朝向耳挂10的凸缘面172。

[0126] 其中，环形台面37与凸缘面172相对，并朝向电路壳体30背离耳挂10的方向。

[0127] 该环状凸缘171的凸缘面172的高度不大于环形台面37的高度，从而使得在环状凸缘171的凸缘面172与环形台面37相抵接时，壳体护套17的内壁面能够与电路壳体30的侧壁面充分抵接，从而使得壳体护套17能够紧密包覆于电路壳体30的外围。

[0128] 进一步地，在一实施方式中，在环状凸缘171与环形台面37上的接合区域内可进一步施加有密封胶。具体地，在对壳体护套17进行套装时，可以在环形台面37上涂覆密封胶，从而将壳体护套17与电路壳体30进行密封连接。

[0129] 其中，在一实施方式中，电路壳体30上还设置有定位块38，该定位块38设置于环形台面37上，并沿电路壳体30背离耳挂10的方向延伸。具体地，该定位块38可设置于电路壳体30的辅侧壁34上，且该定位块38在辅侧壁34上凸出的厚度与环形台面37的高度一致。其中，定位块38的数量可以根据需求设置一个或者多个。

[0130] 相应地，壳体护套17的环状凸缘171处设置有与定位块38对应的定位槽173，从而

IPR2025-00842; Shokz
Ex. 2018 - Page 1453

在壳体护套17包覆于电路壳体30的外围时，该定位槽173覆盖在至少部分定位块38上。

[0131] 通过这种方式，在对壳体护套17进行套装时，可以根据定位块38和定位槽173的位置对壳体护套17进行定位，以方便操作人员快速、准确得安装。当然，在其它实施方式中，也可以根据实际需求不设置定位块。

[0132] 在一实施方式中，电路壳体30包括彼此扣合的两个子壳体，分别为第一子壳体301和第二子壳体302。具体地，两个子壳体可以沿电路壳体30的中线而对称扣合，或者也可以根据实际需求通过其他方式进行扣合。另外，用于容纳控制电路60的电路壳体30的两个子壳体的扣合方式可以与用于容纳电池70的电路壳体30的两个子壳体的扣合方式可以相同，也可以不同。

[0133] 在一个应用场景中，电路壳体30的环形台面37可形成于第一子壳体301上，两个子壳体在环形台面37朝向耳挂10的一侧接合，从而使得壳体护套17能够对两个子壳体的接合缝进行全覆盖，从而能够在一定程度上对电路壳体30的内部空间进行密封，以提高骨传导扬声装置的防水效果。

[0134] 在另一应用场景中，电路壳体30的环形台面37还可以由两个子壳体共同形成，从而使得二者至少部分部位在环形台面37背离耳挂10的一侧结合。此时，壳体护套17不能够覆盖两个子壳体的位于环形台面37背离耳挂10一侧的接合缝。本应用场景中，可以进一步通过其它方式对该部分的接合缝进行覆盖。

[0135] 进一步地，在一实施方式中，两个子壳体彼此对接的接合面为互相契合的阶梯形状。

[0136] 具体地，第一子壳体301的朝向第二子壳体302的端面为阶梯状的第一阶梯面3011，第二子壳体302的朝向第一子壳体301的端面为阶梯状的第二阶梯面3021。第一阶梯面3011和第二阶梯面3021的形状及尺寸均一致，从而能够互相配合抵接在一起。

[0137] 通过这种方式，电路壳体30的两个子壳体互相抵接的结合面成阶梯状而不在同一平面上，从而能够阻挡电路壳体30外部的液体由电路壳体30的外围进入电路壳体30的内部，进而进一步提高骨传导扬声装置的防水效果，以对电路壳体30内部的控制电路60或者电池70等进行保护。

[0138] 进一步地，在第二子壳体302的第二阶梯面3021上设置有朝向第一子壳体30a的安装卡勾3022，对应地，第一子壳体301的内部设置有与该安装卡勾3022匹配的安装勾槽3012。在对第一子壳体301和第二子壳体302进行安装时，安装卡勾3022能够在外部推力越过安装勾槽3012的外侧壁而进入该安装勾槽3012，并使得安装卡勾3022的勾部勾接安装勾槽3012的内侧壁，从而实现第一子壳体301与第二子壳体302的扣合。

[0139] 在一实施方式中，骨传导扬声装置进一步设置有按键机构。

[0140] 具体地，电路壳体30的辅侧壁34的外表面上设置有第一凹陷区341，该第一凹陷区341内进一步设置有按键孔342，该按键孔342连通辅侧壁34的外表面和内表面。

[0141] 其中，电路壳体30的辅侧壁34可以包括，在用户佩戴该骨传导扬声装置时，朝向用户头部后侧的辅侧壁34，也可以包括在用户佩戴时，朝向用户头部下侧的辅侧壁34。

[0142] 第一凹陷区341的数量可以为一个或者多个，且每个第一凹陷区341内可以设置一个或者多个按键孔342，具体可以根据实际需求设置，此处不做具体限定。

[0143] 本实施方式中，骨传导扬声装置还进一步包括弹性衬垫82、按键83，控制电路60包

IPR2025-00842; Shokz
Ex. 2018 - Page 1454

括按键电路板61。

[0144] 其中，弹性衬垫82设置于第一凹陷区341，具体固定于第一凹陷区341对应的辅侧壁34的外表面上，以覆盖于按键孔342的外部从而避免外部液体通过按键孔342进入到电路壳体30的内部，以起到密封防水的作用。

[0145] 进一步地，该弹性衬垫82上设置有与按键孔342对应的第二凹陷区821，该第二凹陷区821延伸至按键孔342的内部。

[0146] 具体地，该弹性衬垫82可以由软性材质制成，例如软性的硅胶、橡胶等。且该弹性衬垫82较薄，直接与辅侧壁34的外表面粘接时，难以粘接牢靠。

[0147] 因此，在一实施方式中，可进一步在弹性衬垫82与电路壳体30之间设置刚性衬垫84，该钢性衬垫84与弹性衬垫82彼此贴靠固定，具体可以通过贴合、粘接、注塑等的方式实现，并进一步将钢性衬垫84与辅侧壁34进行粘接，具体可以通过采用双面胶进行粘接，以在钢性衬垫84与辅侧壁34之间形成一粘胶层，从而使得弹性衬垫82能够牢靠地固定在辅侧壁34的外表面。而且，由于弹性衬垫82质软且薄，因此在用户按压按键的过程当中难以保持平整状态，而通过与钢性衬垫84的贴靠固定，能够使弹性衬垫82保持平整。

[0148] 进一步地，钢性衬垫84上设置有允许第二凹陷区821通过的通孔841，从而使得弹性衬垫82的第二凹陷区821能够进一步通过通孔841而延伸至按键孔342的内部。

[0149] 具体地，钢性衬垫84可以由不锈钢制成，或者其它钢性材料，如塑胶等硬质材料。并可通过一体成型而与弹性衬垫82贴靠在一起。

[0150] 另外，按键83包括按键本体831，以及设置在按键本体831一侧凸出设置的按键触头832。其中，按键本体831设置于弹性衬垫82远离电路壳体30的一侧，且按键触头832延伸至第二凹陷区821内，以随第二凹陷区821而延伸至按键孔342内部。

[0151] 进一步地，由于本实施方式中骨传导扬声装置较为轻薄，按键83的按压行程较短，若采用软质的按键则会降低用户按压手感而带来不好的体验。本实施方式中，按键83可由硬质的塑胶材料制成，以使得用户按压时能够具有良好的手感。

[0152] 进一步地，按键电路板61设置于电路壳体30的内部，其上设置有与按键孔342对应的按键开关611。从而在用户按压按键时，按键触头832接触并触发按键开关611，以进一步实现相应的功能。

[0153] 本实施方式中，通过在弹性衬垫82上设置第二凹陷区821，一方面，第二凹陷区821的设置能够覆盖整个按键孔342，从而能够同时提高防水效果；另一方面，在自然状态下，按键触头832便能够通过第二凹陷区821而延伸入按键孔342内部，从而能够缩短按键按压的行程，以减小按键结构所占用的空间，进而使骨传导扬声装置既能够有好的防水性能，又占用较少的空间。

[0154] 在一实施方式中，按键83可包括按键单体833，按键单体833的数量可以为一个或者多个。

[0155] 在一个应用场景中，按键83可包括至少两个彼此间隔设置的按键单体833以及用于连接按键单体833的连接部834。其中，多个按键单体833以及连接部834可一体成型。对应地，每个按键单体833对应设置有一个按键触头832，并进而对应一个按键孔342以及一个按键开关611。

[0156] 也就是说，本实施方式中，对应于一个第一凹陷区341可以设置多个按键单体833，

IPR2025-00842; Shokz
Ex. 2018 - Page 1455

用户可通过按压不同的按键单体833而触发不同的按键开关611，并进而实现多种功能。

[0157] 进一步地，弹性衬垫82上可设置用于支撑连接部834的弹性凸块822。由于按键83包括连接设置的多个按键单体833，弹性凸块822的设置使得用户在按压其中一个按键单体833时，能够使得该按键单体833受到单独的按压，而避免通过联动而将其它的按键单体833一并按压的情况发生，从而能够准确得触发对应的按键开关611。需要指出的，该弹性凸块822并非是必要的，例如也可以是不具有弹性的凸出结构，或者也可以不设置凸出结构，具体可根据实际情况进行设置。

[0158] 在一实施方式中，壳体护套17的内壁上设置有与按键对应的凹槽174，从而能够以套装方式包覆于电路壳体30和按键的外围。

[0159] 在一实施方式中，骨传导扬声装置还进一步包括有至少一个导电柱85，容纳于电路壳体30内部的控制电路60还包括主控电路板62，该导电柱85可用于连接电路壳体30内部的主控电路板62以及电路壳体30外部的充电电路和/或数据传输线路等，以对骨传导扬声装置进行充电和/或数据传输等。

[0160] 相应地，电路壳体30的主侧壁33上设置至少一个安装孔331，导电柱85可插置于对应的安装孔331内。其中，导电柱85和安装孔331可一一对应，本实施方式中，导电柱85和安装孔331的数量均为四个，四个导电柱85分别插置于对应的安装孔331内，并排呈一条直线而均匀间隔设置。其中，位于外侧的两个导电柱85可作为充电接口，而位于中间的两个导电柱85可作为数据传输接口。当然，导电柱85以及安装孔331也可以按照其它的排布方式进行设置，此处不做具体限定。

[0161] 其中，导电柱85可包括插置于安装孔331内的柱状本体851。其中柱状本体851的外周面上设置有定位凸台852，该定位凸台852可用于与主侧壁33的内表面卡接，进而将导电柱85固定于安装孔331。

[0162] 具体地，定位凸台852可以绕柱状本体851的周向呈环形设置，进一步地，在环形的定位凸台852朝向电路壳体30内部的一侧设置有连接柱状本体851外周面以及定位凸台852的延伸斜面853。在安装导电柱85时，将该导电柱85由电路壳体30的外部，沿延伸斜面853而逐渐插入安装孔331而进入电路壳体30的内部，并进而通过定位凸台852，在定位凸台852完全通过安装孔331之后，该定位凸台852朝向电路壳体30外部的台面与主侧壁33的内表面卡接，进而将导电柱85固定于安装孔331内。

[0163] 上述方式中，定位凸台852的设置使得在装配过程中，导电柱85能够从电路壳体30的主侧壁33的外表面插入安装孔331后，并可通过按压的方式即可将定位凸台852按压入安装孔331内，从而与电路壳体30的主侧壁33的内表面卡接固定，而无需从电路壳体30的内部进行安装，从而使得骨传导扬声装置的装配更加便捷，提高生产装配效率.进一步地，延伸斜面853的设置使得在装配过程中，定位凸台852能够更加顺利地通过安装孔331。定位凸台852的设置则能够使得导电柱85进入安装孔331内时与主侧壁33的内表面卡接而不易从导电孔内划出，从而能够将导电柱85牢靠地固定于安装孔331内。

[0164] 具体地，在一实施方式中，柱状本体851沿柱状本体851相对于安装孔331的插入方向划分为第一柱状本体8511和第二柱状本体8512，二者可由导电的金属材质，如铜、银或者合金等一体成型而为一整体结构。其中，在垂直于导电柱85插入安装孔331的插入方向上，第一柱状本体8511的横截面可大于第二柱状本体8512的横截面。其中，定位凸台852可设置

IPR2025-00842; Shokz
Ex. 2018 - Page 1456

于第二柱状本体8512上。

[0165] 相应地，安装孔331沿插入方向划分为横截面与第一柱状本体851和第二柱状本体851对应的第一孔段3311和第二孔段3312，进而在第一孔段3311和第二孔段3312的连接处形成一环形台面3313，其中，该环形台面3313与主侧壁33的外表面连通。

[0166] 进一步地，当柱状本体851插置于安装孔331内时，第一柱状本体8511朝向第二柱状本体8512的一侧支撑于环形台面3313上，同时，位于第二柱状本体8512外周面上的定位凸台852朝向第一柱状本体8511的一侧卡接于主侧壁33的内表面上，进而将导电柱85从安装孔331周围的主侧壁33的内外两侧面同时卡接，从而将导电柱85固定于安装孔331内。

[0167] 在一实施方式中，柱状本体851沿轴向设置有容置腔8513，容置腔8513的开口端于第二柱状本体8512朝向电路壳体30内部的端面上。具体地，该容置腔8513可沿平行于插入方向而贯通至第二柱状本体8512的位于电路壳体30内部一侧的部分，并在到达定位凸台852之前终止。当然，在其它实施方式当中，可以根据需求设置容置腔8513的具体位置，此处不做限定。

[0168] 进一步地，导电柱85包括设置于容置腔8513内的弹簧854以及导电触头855，导电触头855的一端可于容置腔8513内部与弹簧854抵接，另一端从容置腔8513的开口端外露于电路壳体30的内部。其中，导电触头855的材质可与柱状本体851的材质相同，弹簧854可以通过一定的手段如粘接、焊接等方式与第二柱状本体851以及导电触头855连接，或者还可以直接放置于容置腔8513内，并通过柱状本体851与电路壳体30的主侧壁33的卡接以及导电触头855与主控电路板62的抵接而弹性夹持于容置腔8513内部。

[0169] 进一步地，电路壳体30内部的主控电路板62上设置有与导电柱85位置对应的触点621，具体如图7所示。具体地，主控电路板62包括面积较大的主表面622以及连接主表面622的面积较小的侧表面623，其中，主控电路板62的主表面622可平行或者近似平行于电路壳体30的主侧壁33，其中，触点621对应设置于主控电路板62的主表面622上。

[0170] 其中，导电柱85插入安装孔331的插入方向与导电柱85的轴向平行，并垂直于主侧壁33，进而垂直于主控电路板62的主表面622。在将导电柱85安装于安装孔331内后，弹簧854受到导电触头855以及柱状本体851的夹持而产生弹性形变，以将导电触头855弹性压持于对应的触点621上，从而实现导电柱85与主控电路板62的电连接。

[0171] 在一实施方式中，骨传导扬声装置还进一步包括一位于电路壳体30内部的辅助片86。

[0172] 该辅助片86包括一板体861，该板体861上设置有镂空区8611，该板体861可通过热熔或者热压、粘接等方式设置于主侧壁33的内表面上，并使得设置于主侧壁33上的安装孔331位于镂空区8611内部。具体地，板体861的板面可平行贴靠于主侧壁33的内表面上。

[0173] 其中，该辅助片86具有一定的厚度，在其设置于主侧壁33的内表面上后，与该辅助片86的镂空区8611的内侧壁与主侧壁33共同构成一位于插置于安装孔331内的导电柱85外围的胶槽87。

[0174] 进一步地，可在胶槽87内施加密封胶，从而从电路壳体30的内部对安装孔331进行密封，以提高电路壳体30的密闭性，进而提高骨传导扬声装置的防水性能。

[0175] 其中，该辅助片86的材质可与电路壳体30的材质相同，并与电路壳体30分别成型。需要指出的是，在电路壳体30成型阶段，安装孔331附近往往还具有其它结构，例如需要成

IPR2025-00842; Shokz
Ex. 2018 - Page 1457

型按键孔342等，这些结构在成型时所对应的模具可能需要从电路壳体30的内部退出，而此时若直接在电路壳体30内部一体成型对应于安装孔331的胶槽87，则胶槽87的凸起可能会干涉这些结构的模具的顺利退出，从而为生产带来不便。本实施方式中，辅助片86与电路壳体30分别为独立的结构，在二者分别成型后，可通过将辅助片86安装于电路壳体30的内部而与电路壳体30的主侧壁33共同构成胶槽87，从而在电路壳体30的成型阶段不会阻挡部分结构的模具从电路壳体30的内部退出，从而有利于生产的顺利进行。

[0176] 在一实施方式中，在对电路壳体30进行成型时，模具的退出仅占用胶槽87所占据的空间的部分空间，从而，可以在不影响退模的情况下，在主侧壁33的内表面上一体成型胶槽87的一部分，而胶槽87的另一部分仍可由辅助片86辅助构成。

[0177] 具体地，主侧壁33的内表面上一体成型有第一条状凸肋332，该第一条状凸肋332所在的位置不影响电路壳体30的模具退模。辅助片86的镂空区8611设置有一缺口8612。其中，第一条状凸肋332与该缺口8612对应。在电路壳体30和辅助片86分别成型之后，可将该辅助片86于主侧壁33的内表面，以使得第一条状凸肋332至少部分嵌合于缺口8612处，进而利用第一条状凸肋332和辅助片86配合使得胶槽87呈闭合设置。

[0178] 本实施方式中，由于第一条状凸肋332不会对模具的退出产生阻挡，因此，胶槽87的侧壁可由一体成型于主侧壁33内表面的第一条状凸肋332与辅助片86共同构成。

[0179] 进一步地，在一实施方式中，第一条状凸肋332还进一步延伸成与板体861的侧边缘8613抵接，进而对板体861进行定位。

[0180] 具体地，该第一条状凸肋332包括凸肋主体3321和定位臂3322，其中，凸肋主体3321用于与镂空区8611的缺口8612匹配并与其嵌合，从而共同形成胶槽87的侧壁；而定位臂3322则由凸肋主体3321的一端进一步延伸而成，并延伸至板体861的一侧边缘8613处与该侧边缘8613抵接，从而对该板体861于该侧边缘8613处进行定位。

[0181] 其中，第一条状凸肋332在主侧壁33的内表面上凸出的高度可大于辅助片86的厚度，当然，也可以小于或者等于，只要能够与辅助片86共同构成胶槽87，以及能够对辅助片86的板体861起到定位作用即可，此处不做具体限定。

[0182] 在一实施方式中，板体861上进一步设置有定位孔8614，其中，定位孔8614贯通板体861的主板面设置。进一步地，主侧壁33的内表面上一体成型有与定位孔8614对应的定位柱333，在将辅助片86设置在主侧壁33的内表面后，该定位柱333插置于定位孔8614内，从而进一步对辅助片进行定位。

[0183] 其中，定位孔8614和定位柱333的数量一致，本实施方式中，二者的数量均为两个。

[0184] 在一个应用场景中，板体861的侧边缘8613形成有至少两个凸耳8615，两个定位孔8614可分别设置于对应的凸耳8615上。

[0185] 进一步地，主侧壁33的内表面上一体成型有一第二条状凸肋334，该第二条状凸肋334可沿朝向辅侧壁34的方向延伸设置，并可与第一条状凸肋332的定位臂3322的延伸方向互相垂直。

[0186] 对应地，板体861上还设置有与第二条状凸肋334对应的条状定位槽8616，该定位槽8616沿远离该主侧壁33的方向凹陷设置，且其一端与板体861的侧边缘8613连接并可与该侧边缘8613垂直设置。

[0187] 在一个应用场景中，定位槽8616可以仅由板体861的贴合主侧壁33的表面凹陷形

IPR2025-00842; Shokz
Ex. 2018 - Page 1458

成，定位槽8616的深度小于板体861的厚度，此时，板体861的与凹陷的表面相背设置的面不受定位槽8616的影响；在另一个应用场景中，定位槽8616的深度大于板体861的深度，从而使得在板体861的靠近主侧壁33的表面凹陷时，另一相对表面朝向凹陷的方向凸出，从而配合形成定位槽8616。

[0188] 具体地，在将辅助片86设置在主侧壁33的内表面后，第二条状凸肋334嵌入于条状定位槽8616内，以进一步对板体861进行定位。

[0189] 在一实施方式中，按键电路板61垂直于主控电路板62而与电路壳体30的辅侧壁34平行间隔设置。具体地，如上所述，按键机构所对应的辅侧壁34可包括两种，一种是在用户佩戴该骨传导扬声装置时，朝向用户头部后侧的辅侧壁34，另一种是在用户佩戴时朝向用户头部下侧的辅侧壁34。本实施方式中，按键电路板61可以为两个，并分别与对应的两种辅侧壁34平行间隔设置。

[0190] 其中，按键电路板61可设置于辅助片86的板体861的朝向辅侧壁34的一侧。进一步地，辅助片86包括相对于板体861凸出设置的压持脚862。具体地，压持脚862沿垂直于板体861的主表面的方向凸出设置于板体861的朝向辅侧壁34的侧边缘处，且压持脚862的数量可以为一个或者多个。本实施方式中，压持脚862可通过其朝向辅侧壁34的侧面而将按键电路板61压持于辅侧壁34的内表面上，从而对按键电路板61起到固定的作用。

[0191] 在一实施方式中，主控电路板62与主侧壁33间隔设置，而辅助片86的板体861的主表面与主侧壁33平行而进一步与主控电路板62间隔设置。

[0192] 其中，压持脚862具体由板体861沿背离辅助片86所靠近的电路壳体30的主侧壁33且朝向主控电路板62的方向凸出，并延伸至主控电路板62的板面处以对主控电路板62起到压持作用，从而使得主控电路板62支撑于至少部分压持脚862上。

[0193] 在一实施方式中，壳体护套17上设置有与所述导电柱85对应的外露孔175，在将壳体护套17套装在电路壳体30外围后，导电柱85位于电路壳体30外部的一端进一步通过该外露孔175外露，进而与骨传导扬声装置外部的电路连接，以使得该骨传导扬声装置通过导电柱进行电量供应或者数据传输。

[0194] 进一步地，电路壳体30的外表面凹陷设置有环绕多个安装孔331的胶槽39。具体地，胶槽39可为椭圆环形，多个安装孔331分别设置于椭圆环形的胶槽39所环绕的电路壳体30上。

[0195] 本实施方式中，该胶槽39内施加有密封胶，进而壳体护套17与电路壳体30装配完成后，壳体护套17能够通过该密封胶在安装孔331的外围与电路壳体30密封连接，从而避免外部液体通过外露孔175而进入壳体护套17内部时，壳体护套17在电路壳体30外围产生滑动，且能够进一步从电路壳体30的外部对安装孔331进行密封，以进一步提高电路壳体30的密闭性，进而进一步提高骨传导扬声装置的防水性能。

[0196] 在一实施方式中，电路壳体30在远离耳挂10的一端进一步设置有接插端3a，后挂40包括弹性金属丝41以及设置于弹性金属丝41的两端的接插端42，其中接插端3a与接插端42彼此接插固定。

[0197] 其中，由于骨传导扬声装置的耳机芯50分别为左右两个，对应的机芯壳体20、耳挂10以及电路壳体30也设置为左右两个，后挂40通过分别与两个电路壳体30接插固定的方式将位于两侧的机芯壳体20、耳挂10以及电路壳体30连接在一起，并在用户佩戴时悬挂设置

IPR2025-00842; Shokz
Ex. 2018 - Page 1459

于用户头部后侧。

[0198] 具体地，弹性金属丝41的材质与性能等可以与弹性金属丝11相同，相关详细内容请参见前述对弹性金属丝11的相关描述，此处不再赘述。

[0199] 接插端42可以通过注塑的方式形成在弹性金属丝41的两端。具体地，接插端42可以由塑胶等材料制成。

[0200] 在一实施方式中，接插端42设置有接插孔421，该接插端3a至少部分插入至接插孔421内，本实施方式中，接插端3a可具体设置在环形台面37背离耳挂10的一侧。接插端3a与接插孔421之间的接插方式和接插端15与接插孔31之间的接插方式可以相同，也可以不同。

[0201] 其中，在接插端3a的相对两侧分别设置有与接插端3a相对于接插孔421的插入方向垂直设置的开槽3a1。两个开槽3a1可间隔且对称设置于接插端3a的两侧。进一步地，该两个开槽3a1可均在垂直于插入方向上与接插端3a的对应的侧壁连通。

[0202] 相应地，接插端42的第一侧壁422上设置有与两个开槽3a1位置对应的通孔423。其中，接插端42包括用于定义接插孔421的环绕设置的侧壁，接插端42的第一侧壁422可以是在接插端3a与接插端42接插固定时，接插端42的能够与开槽3a1的延伸方向相交的侧壁。

[0203] 其中，骨传导扬声装置进一步包括固定件88，固定件88包括两条平行设置的插脚881和用于连接插脚881的连接部882。本实施方式中，两条插脚881平行设置，连接部882可垂直连接设置于两条插脚881的同一侧，从而形成与固定件81形状相似的U型的固定件88。

[0204] 需要指出的是，固定件88可与固定件81的形状相似，但是具体的尺寸参数可以适应于周边结构而不同，本实施方式中，插脚881的长度大于插脚811的长度，连接部812长度小于连接部882的长度等，此处不做具体限定。

[0205] 进一步地，插脚881可从接插端42的外侧经通孔423插入至开槽3a1，而将连接部882阻挡于接插端3a的外侧，进而实现接插端42与接插端3a的接插固定。

[0206] 通过上述方式，骨传导扬声装置的固定件88包括两条平行设置的插脚881和用于连接插脚881的连接部882，以使得固定件88在一定跨度上对接插端3a和接插端42进行接插固定，从而使得电路壳体30与后挂40之间的固定更加稳定、牢靠；而且固定件88结构简单，插入和取出方便，从而使得接插端3a与接插端42之间的接插固定为可拆卸，且能够使得骨传导扬声装置的装配更加方便。

[0207] 进一步地，在一实施方式中，接插端42的与第一侧壁422相对的第二侧壁424上进一步设置有与通孔423相对的通孔425，插脚881进一步经开槽3a1插入至通孔425内。

[0208] 在本实施方式中，插脚881经通孔423插入至开槽3a1内，并进一步经开槽3a1插入至通孔425内，也就是说插脚881能够将后挂40的接插端42的相对两侧壁以及接插端3a完全贯穿并连接于一起，从而能够使得电路壳体30与后挂40之间接插更加牢固。

[0209] 具体地，在一实施方式中，接插端3a沿接插端3a相对于接插孔421的插入方向进一步划分为第一接插段3a2和第二接插段3a3。

[0210] 其中，接插端3a可设置在电路壳体30的端部的靠近一辅侧壁34一侧，该辅侧壁34具体可以是与上述实施方式中的定位块38所在的辅侧壁34相对的另一辅侧壁34。

[0211] 进一步地，第一接插段3a2和第二接插段3a3可在靠近定位块38的一侧沿接插端3a相对于接插孔421的插入方向而呈阶梯状设置，从而使得在垂直于插入方向的截面方向上，第一接插段3a2的截面大于第二接插段3a3的截面。

IPR2025-00842; Shokz
Ex. 2018 - Page 1460

[0212] 相应地，接插孔421沿接插端3a相对于接插孔421的插入方向进一步划分为形状分别与第一接插段3a2和第二接插段3a3相匹配的第一孔段4211和第二孔段4212，从而使得在接插端3a插入至接插孔421内时，第一接插段3a2和第二接插段3a3分别插置于第一孔段4211和第二孔段内4212。

[0213] 进一步地，开槽3a1可设置于第一接插段3a2上，具体地，开槽3a1可沿接插端3a到定位块38的方向，即电路壳体30的两个辅侧壁34相对的方向而延伸设置，从而贯通第一接插段3a2的与电路壳体30的主侧壁33垂直的两侧壁，且进一步沿垂直插入方向贯穿第一接插段3a2的平行于电路壳体30的主侧壁33的两侧壁。

[0214] 其中，接插端42上设置的通孔423可与开槽3a1的朝向定位块38的一侧对应，而通孔425则可与开槽3a1的远离定位块38的一侧对应。

[0215] 进一步地，在一实施方式中，第一接插段3a2和第二接插段3a3的顶侧彼此共面设置。其中，第一接插段3a2和第二接插段3a3的顶侧是指在用户正常佩戴骨传导扬声装置时，第一接插段3a2和第二接插段3a3的朝向头部顶侧的一侧，也即与第一接插段3a2和第二接插段3a3所形成的阶梯状相背的一侧。

[0216] 进一步地，第一接插段3a2和第二接插段3a3的顶侧共面且形成有用于容纳导线的走线槽3a4。该走线槽3a4可沿接插端3a与接插孔421的接插方向延伸，可用于容纳经过后挂40而连通控制电路60和电池70的导线。

[0217] 本实施方式中，可先将接插端3a插置于接插孔421内，然后从第一接插段3a2的朝向定位块38的一侧插入开槽3a1。具体地，本实施方式中，接插端3a设置于电路壳体30的朝向后挂40的端面的远离定位块38的一侧，因此，在接插端3a朝向定位块38的一侧还具有一定的空间，从而在对电路壳体30以及后挂40进行插接安装时，可以将固定件88从接插端3a2的底侧，即第一接插段3a2朝向定位块38的一侧由通孔423插入至开槽3a1并进而插入至通孔425内，以实现电路壳体30与后挂40的插接固定。通过这种方式，能够将固定件88完全隐藏于电路壳体30与后挂40所形成的内部空间当中而不外露，从而无需占用额外的空间。

[0218] 进一步地，在一实施方式中，后挂40还包括注塑于弹性金属丝41以及接插端42外围的第二保护套管43以及与第二保护套管43一体成型的端部保护盖44。

[0219] 其中，第二保护套管43以及端部保护盖44的材质均可以与保护套管16及壳体护套17的材质相同，例如均可以为具有一定弹性的软质材料，例如软质的硅胶、橡胶等。

[0220] 端部保护盖44具体可形成于弹性金属丝41的两端，可以与位于弹性金属丝41的两端的接插端42一体成型于该接插端42的外围。

[0221] 需要指出的是，壳体护套17仅由电路壳体30的朝向耳挂10的一端包裹至电路壳体30的环形台面37处，因此，电路壳体30的环形台面37的朝向后挂40的部分则外露于壳体护套17的外围。进一步地，本实施方式中，端部保护盖44以及接插端42共同形成的内侧壁的形状与该电路壳体30所外露的端部的形状匹配，以进一步覆盖于该外露的电路壳体30的端部的外围，且该端部保护盖44的朝向电路壳体30的端面与壳体护套17的朝向后挂40的端面弹性抵接，以进一步提供密封。

[0222] 进一步地，在一实施方式中，壳体护套17所外露的电路壳体30的端部还设置有按键孔342，对应地，按键孔342内设置有按键83，端部保护盖44覆盖该按键83，并设置有用于容纳按键83的按键容置槽441。

IPR2025-00842; Shokz
Ex. 2018 - Page 1461

[0223] 具体地，该按键孔342可间隔设置于接插端3a朝向定位块38的一侧，且按键孔342的数量可以为一个或者多个，具体可根据电路壳体30内部的控制电路60的具体结构以及电路壳体30本身的结构来确定，此处不做具体限定。

[0224] 以上所述仅为本申请的实施方式，并非因此限制本申请的专利范围，凡是利用本申请说明书及附图内容所作的等效结构或等效流程变换，或直接或间接运用在其他相关的技术领域，均同理包括在本申请的专利保护范围内。

IPR2025-00842; Shokz
Ex. 2018 - Page 1462

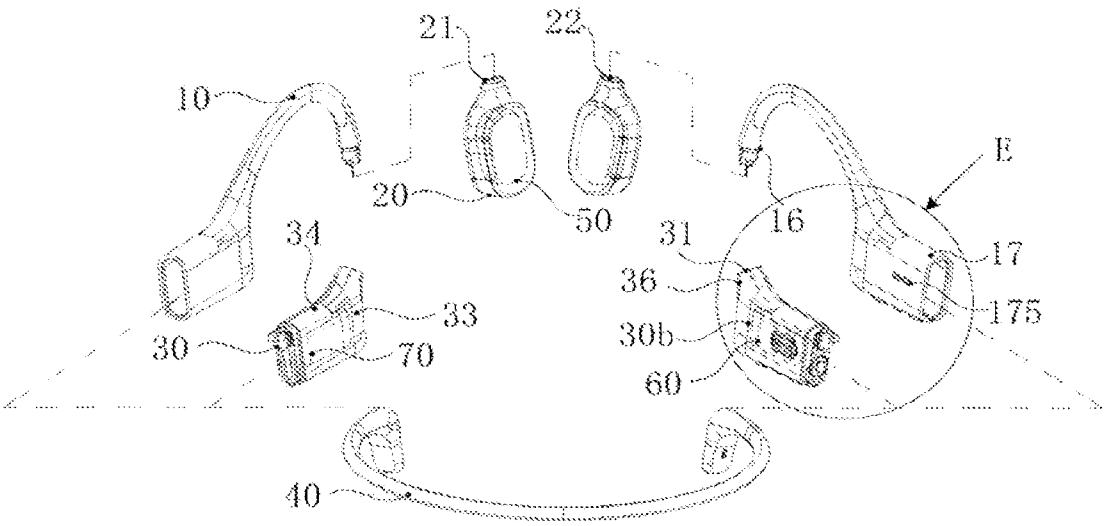


图1

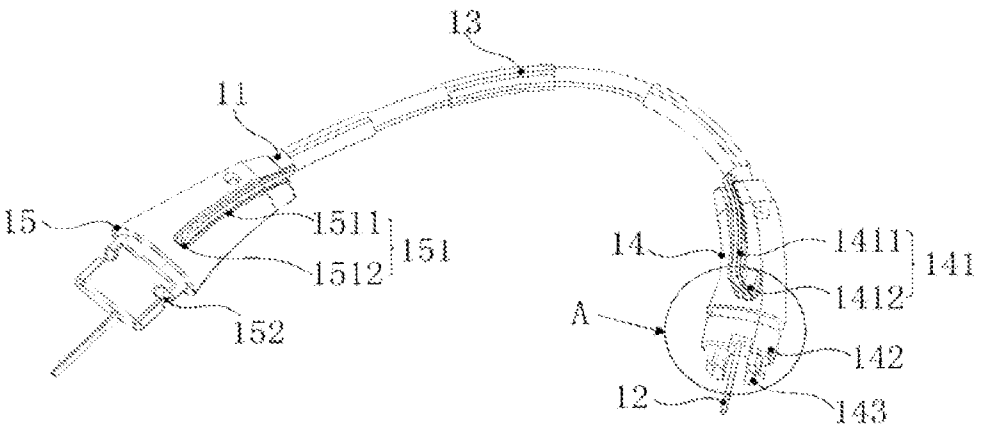


图2

IPR2025-00842; Shokz
Ex. 2018 - Page 1463

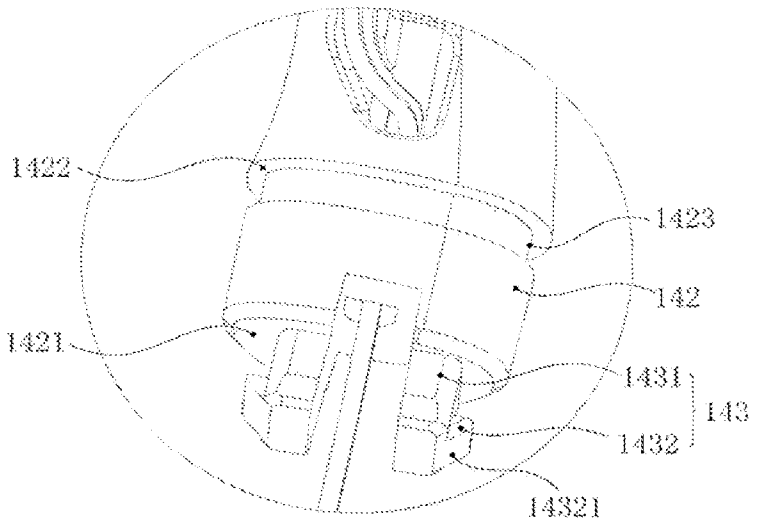


图3

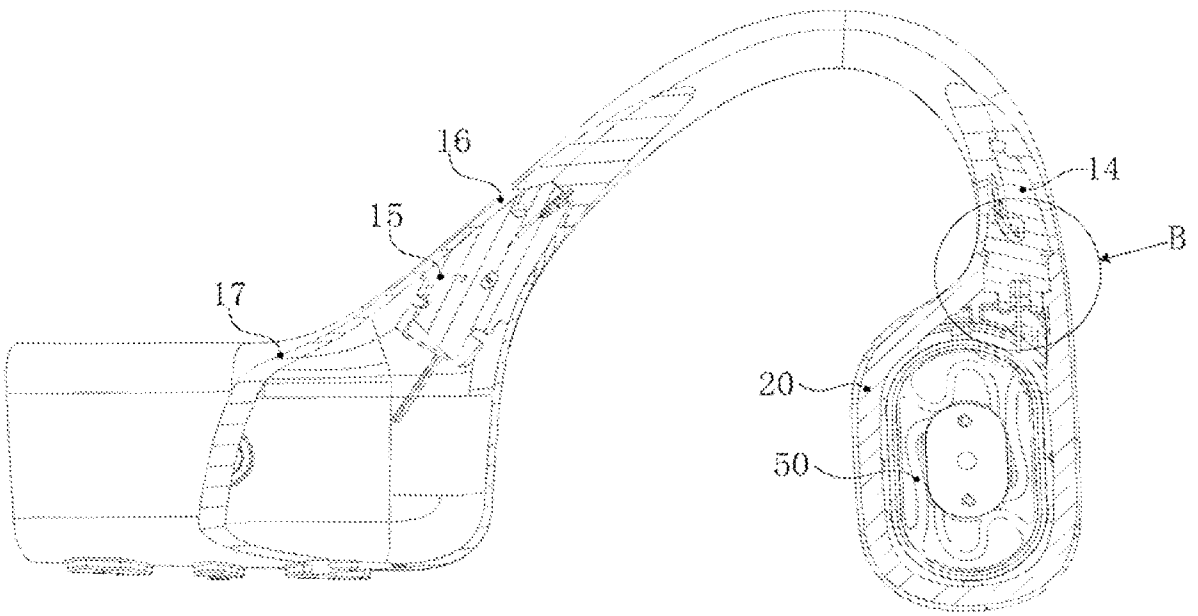


图4

IPR2025-00842; Shokz
Ex. 2018 - Page 1464

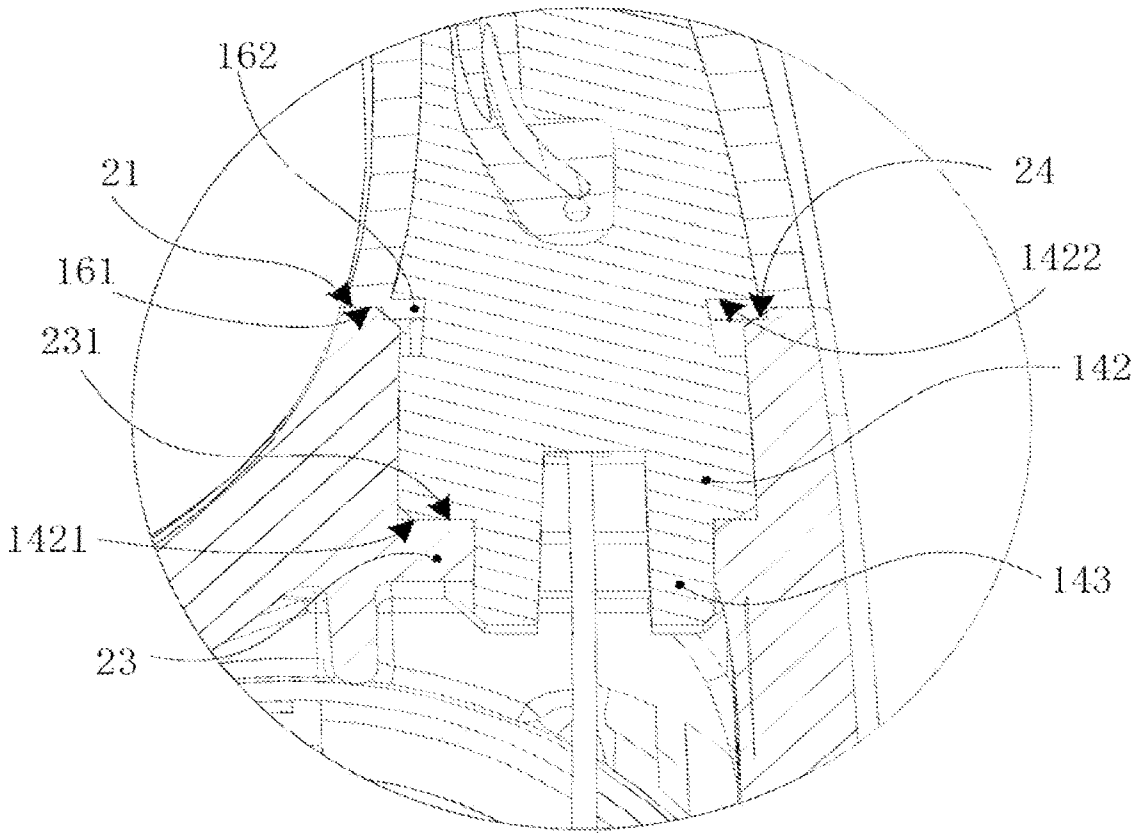


图5

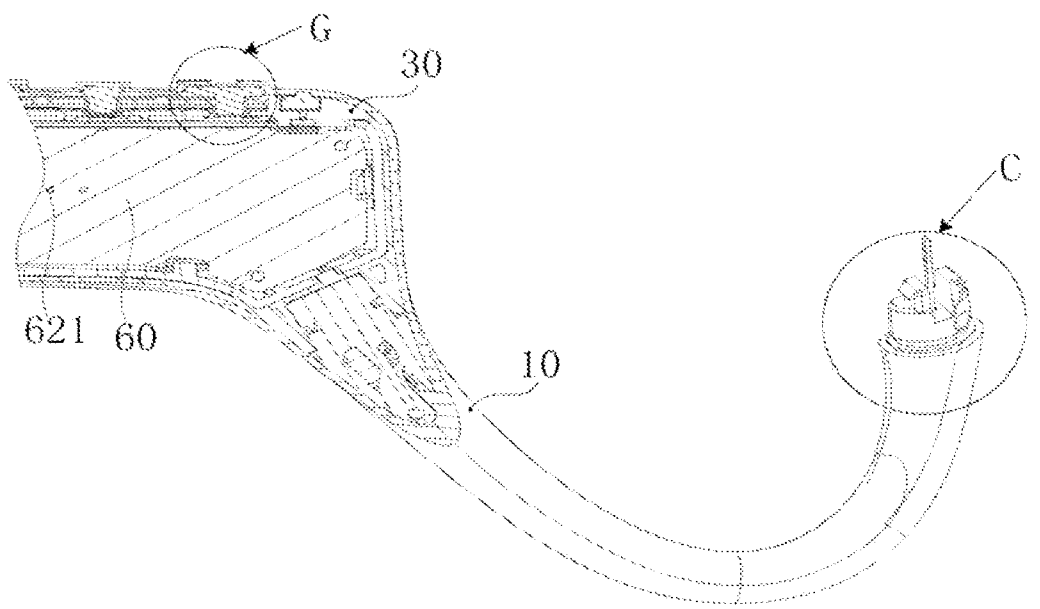


图6

IPR2025-00842; Shokz
Ex. 2018 - Page 1465

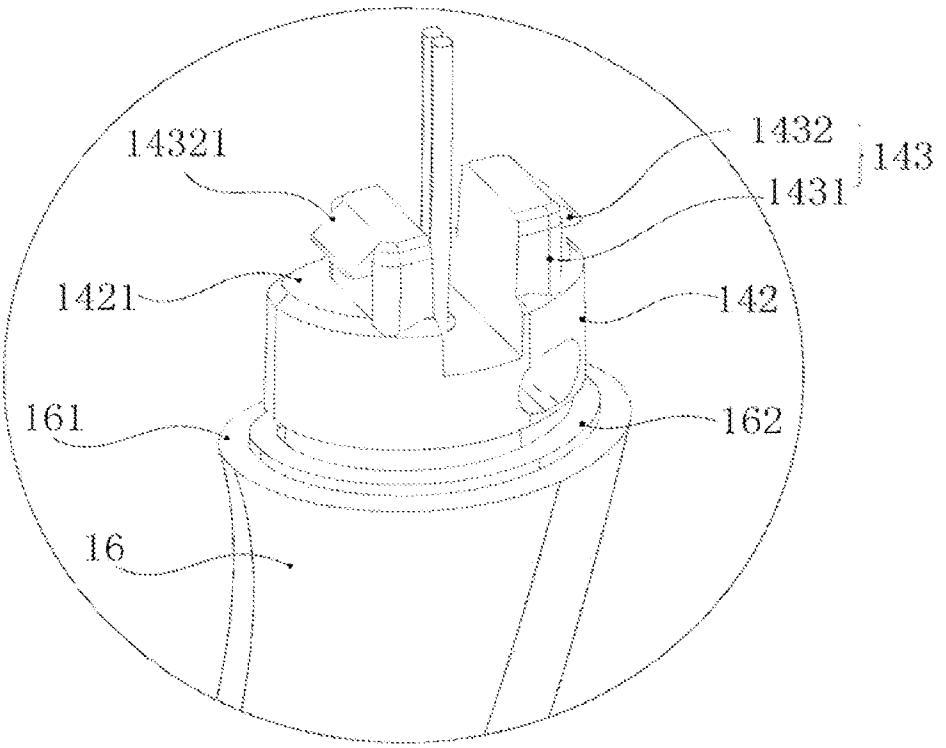


图7

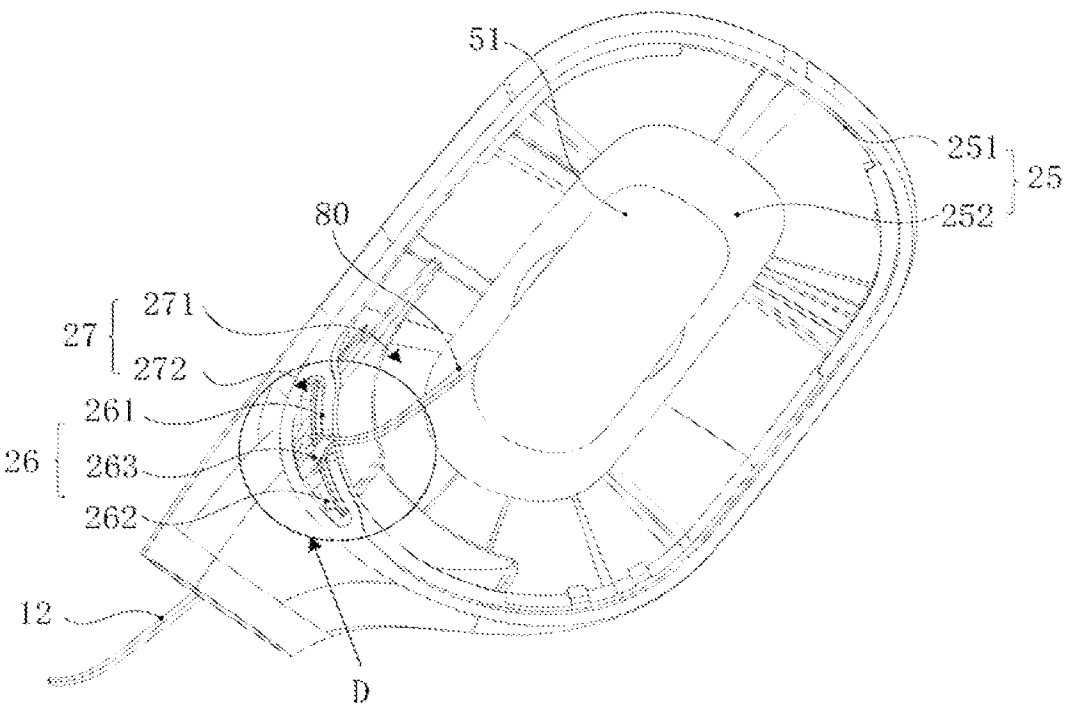


图8

IPR2025-00842; Shokz
Ex. 2018 - Page 1466

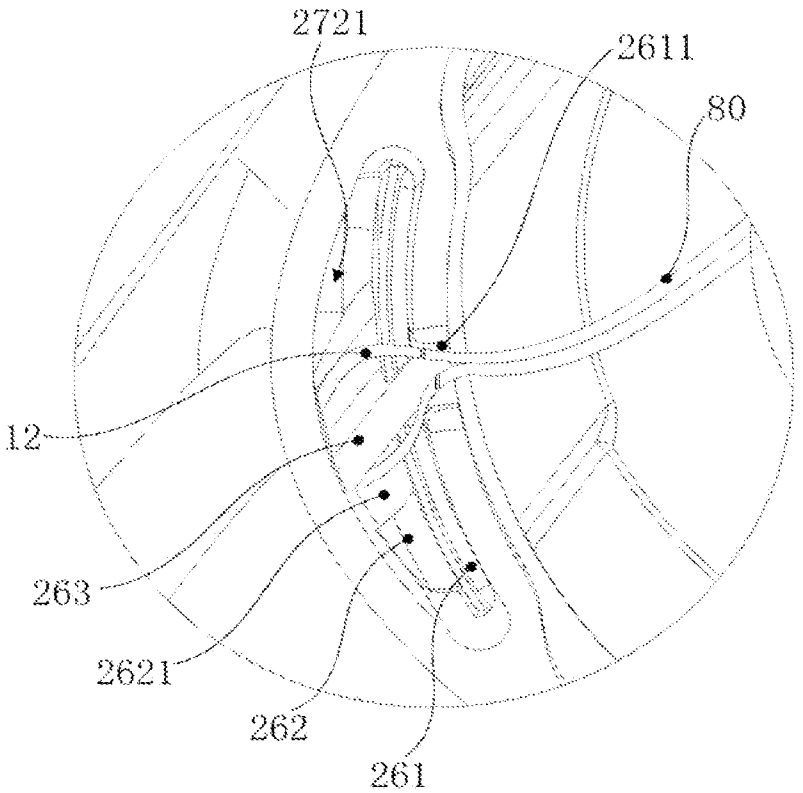


图9

IPR2025-00842; Shokz
Ex. 2018 - Page 1467

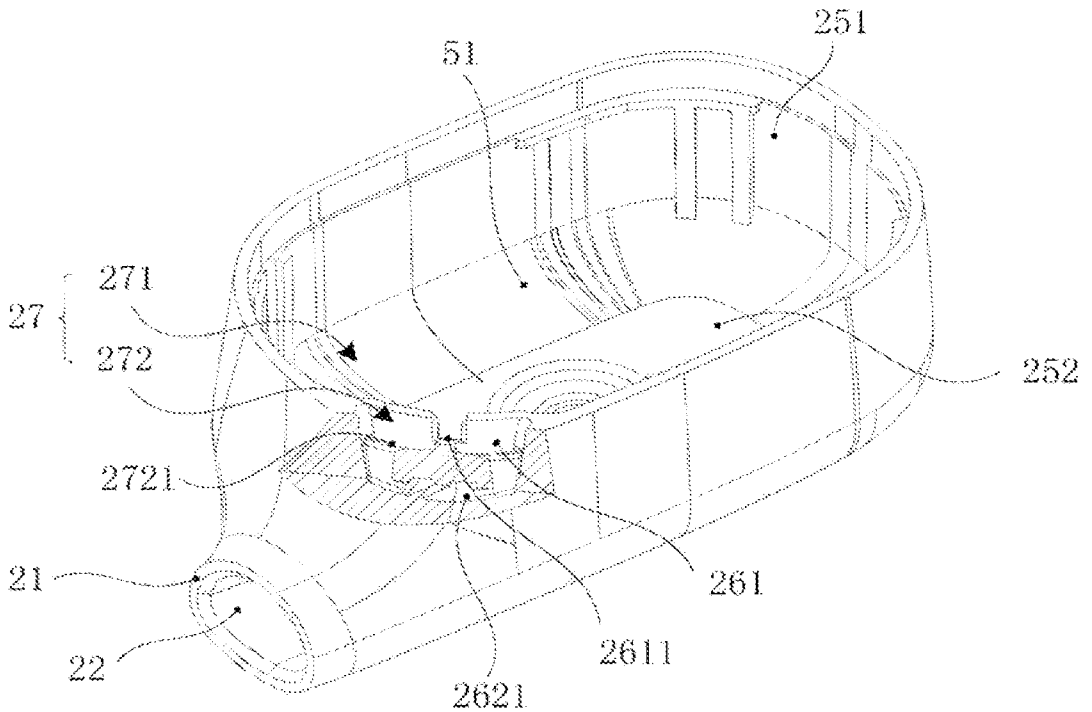


图10

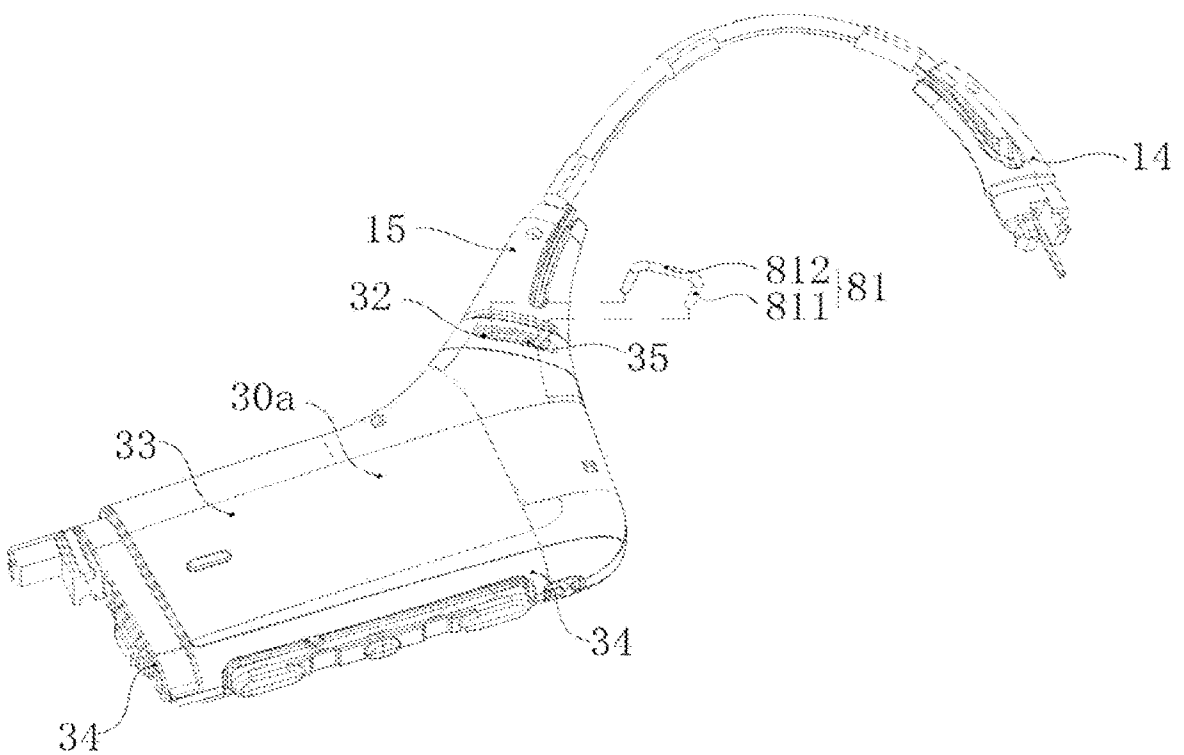


图11

IPR2025-00842; Shokz
Ex. 2018 - Page 1468

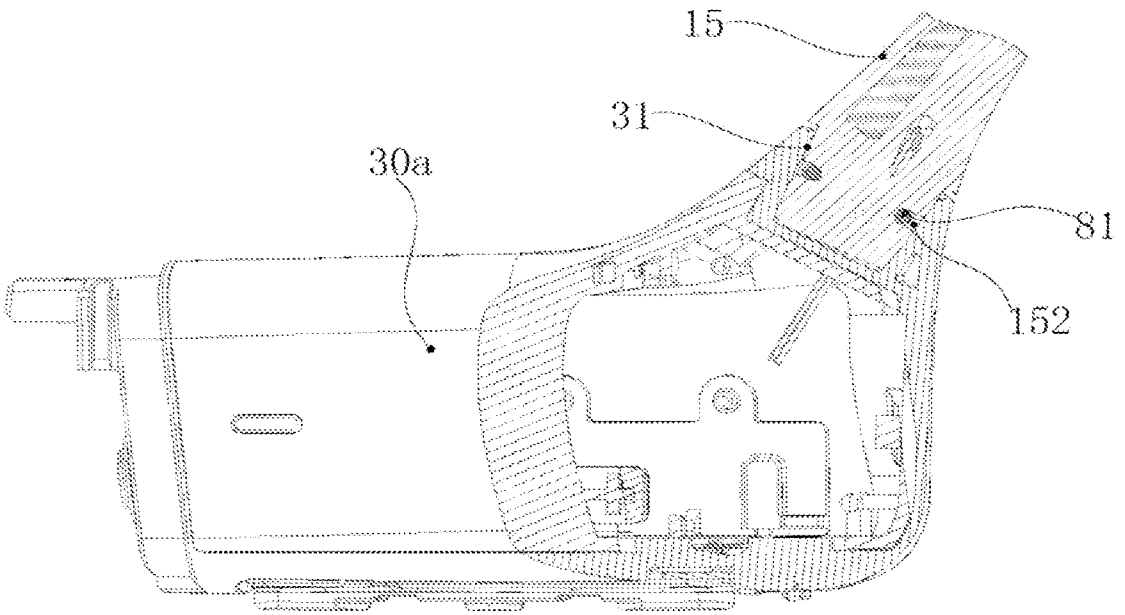


图12

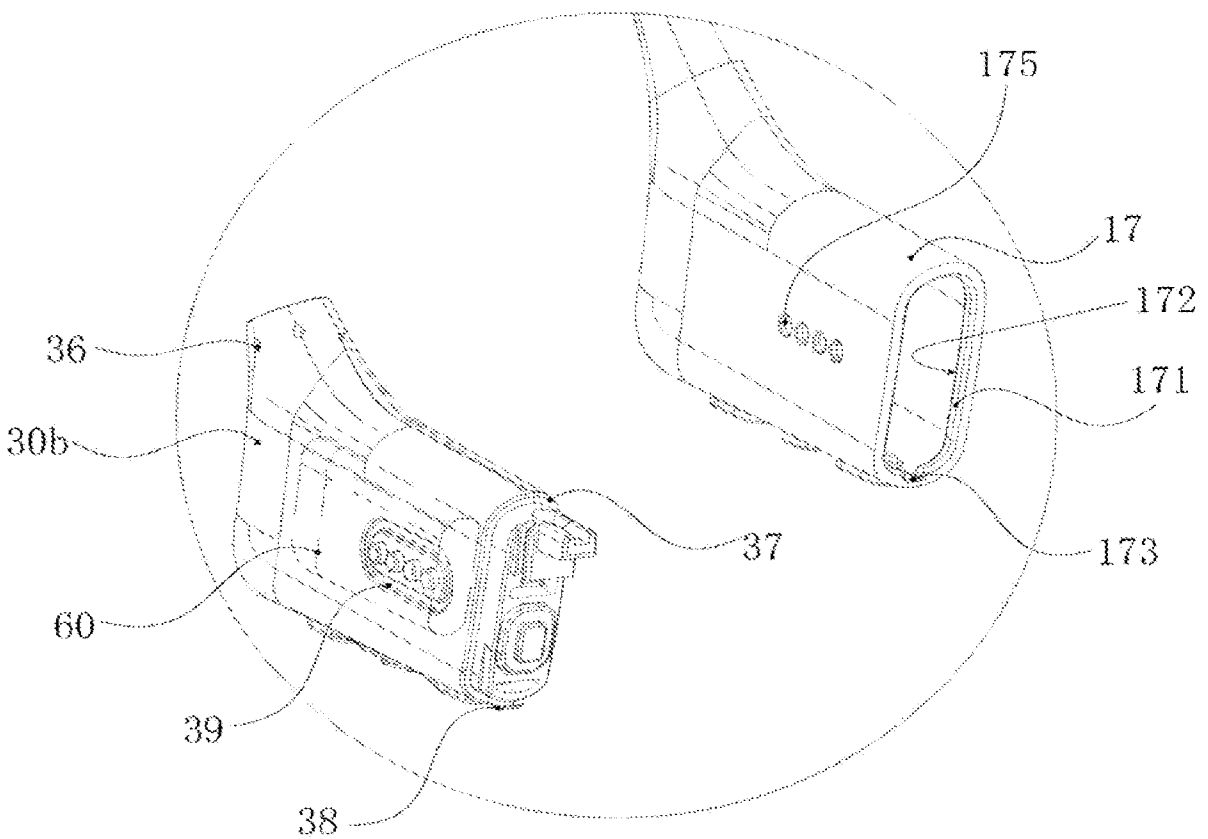


图13

IPR2025-00842; Shokz
Ex. 2018 - Page 1469

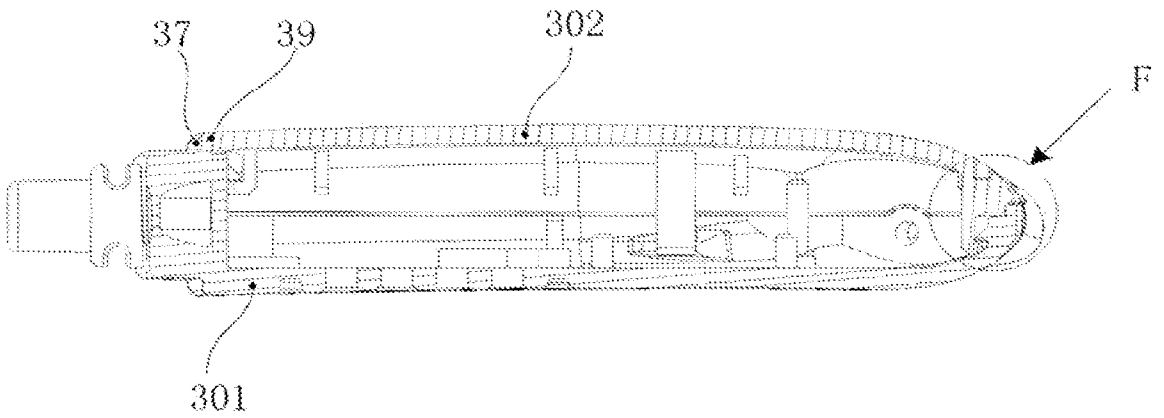


图14

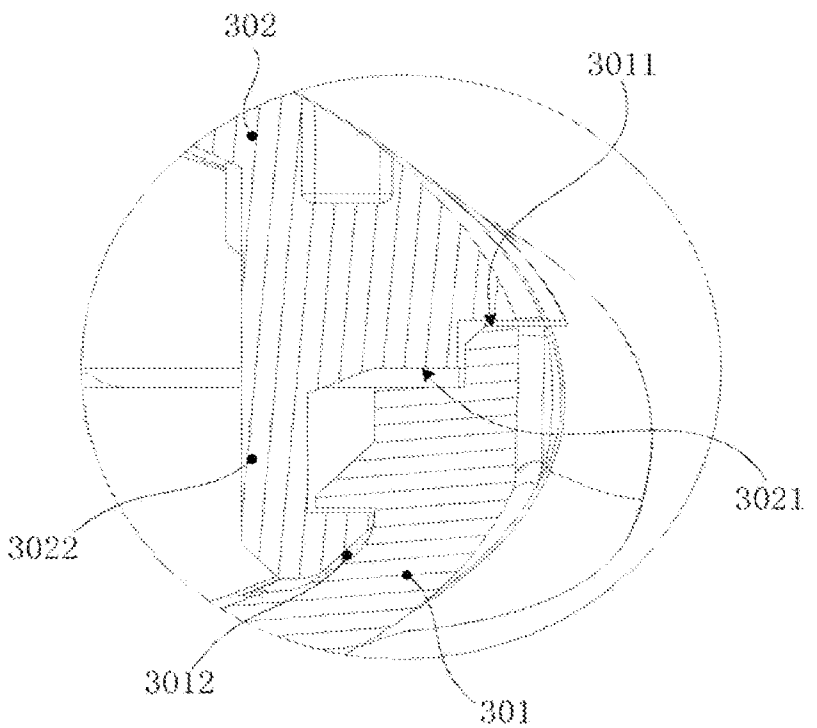


图15

IPR2025-00842; Shokz
Ex. 2018 - Page 1470

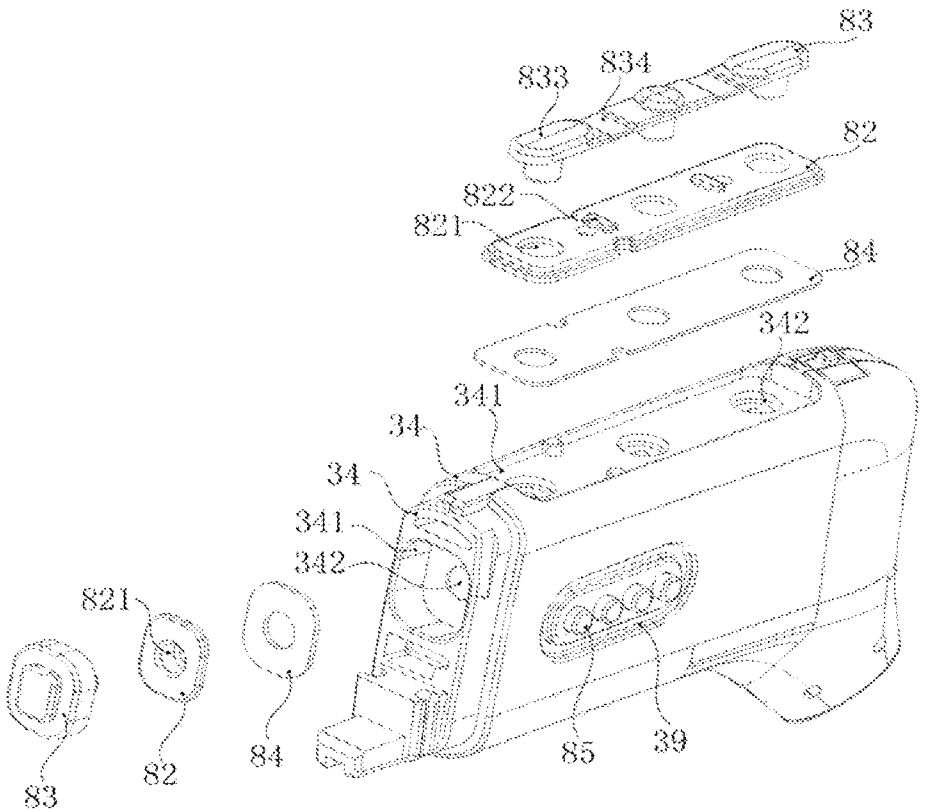


图16

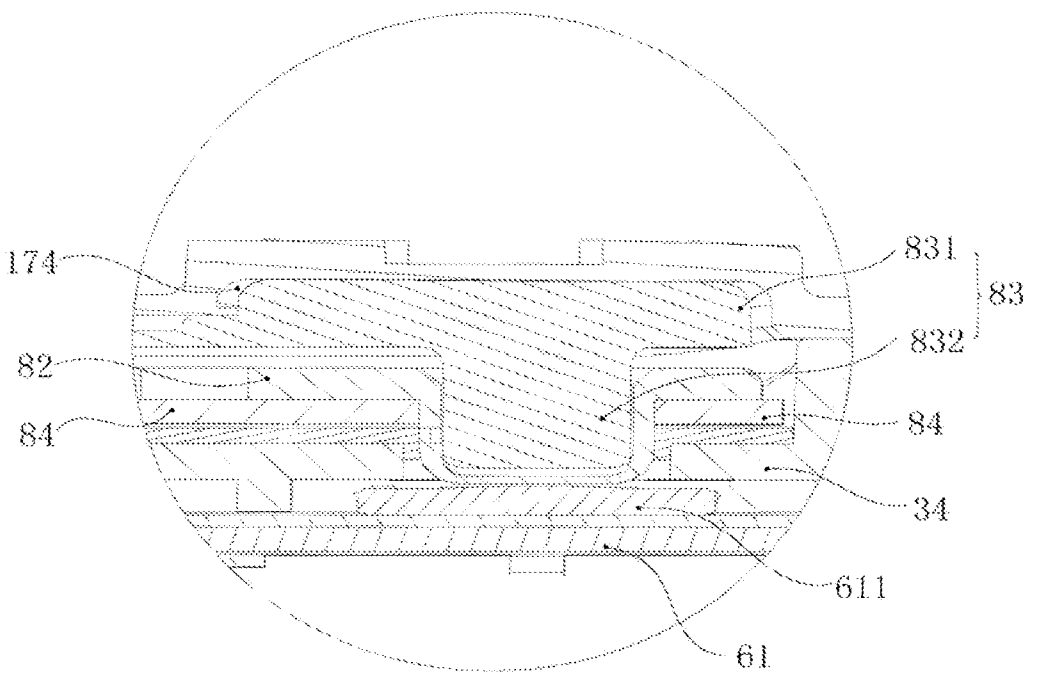


图17

IPR2025-00842; Shokz
Ex. 2018 - Page 1471

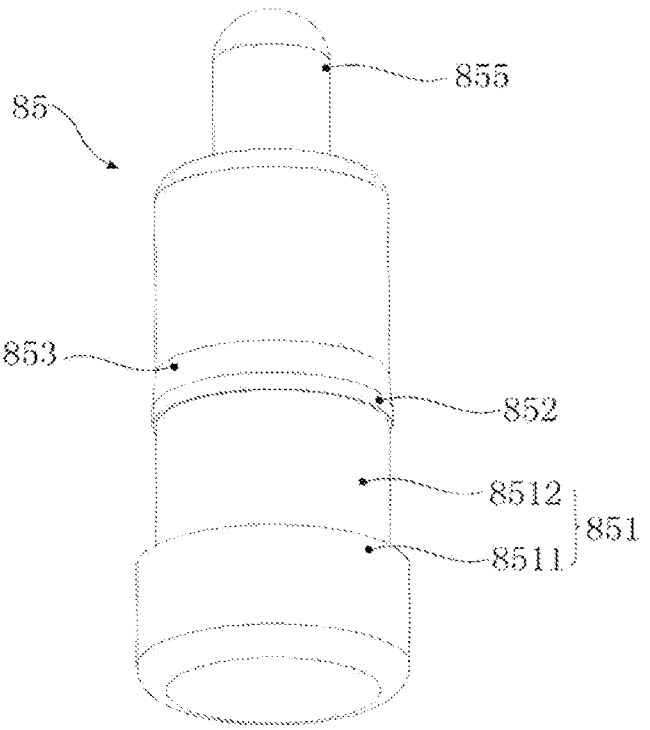


图18

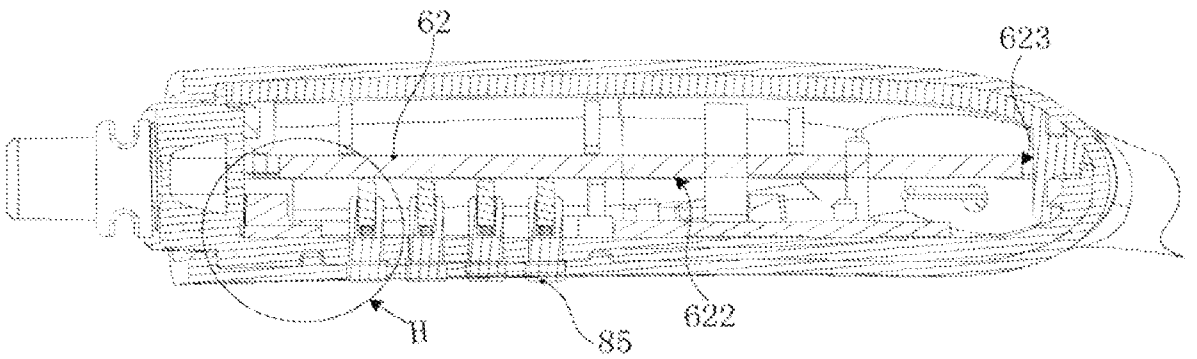


图19

IPR2025-00842; Shokz
Ex. 2018 - Page 1472

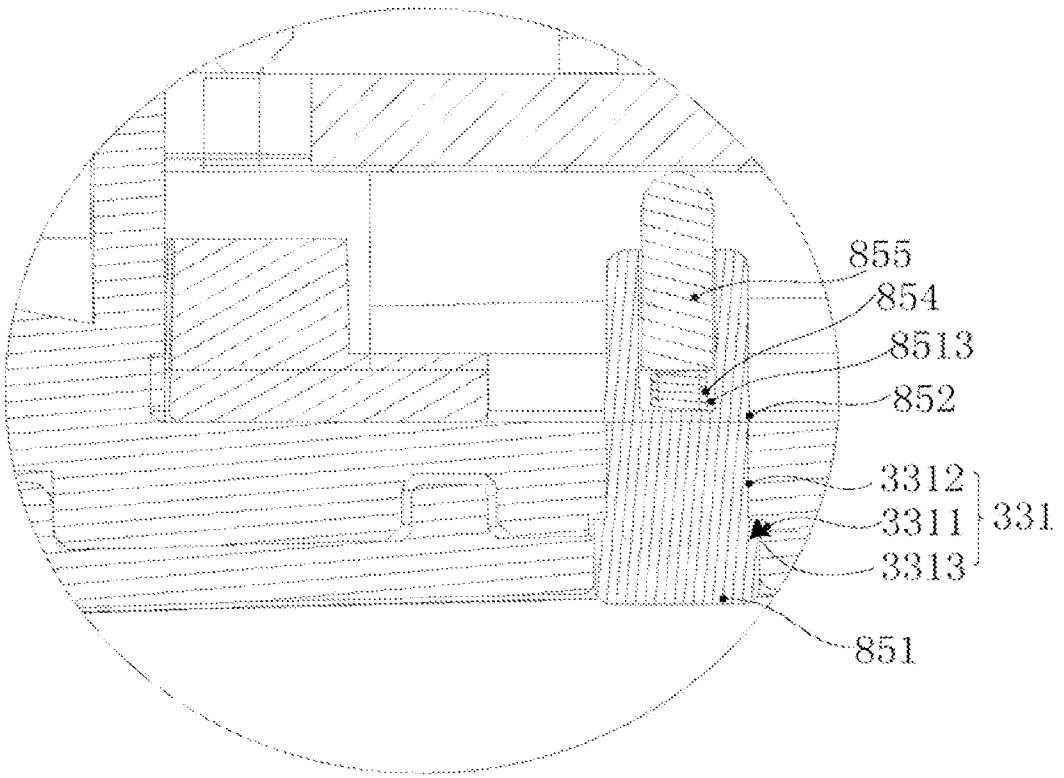


图20

IPR2025-00842; Shokz
Ex. 2018 - Page 1473

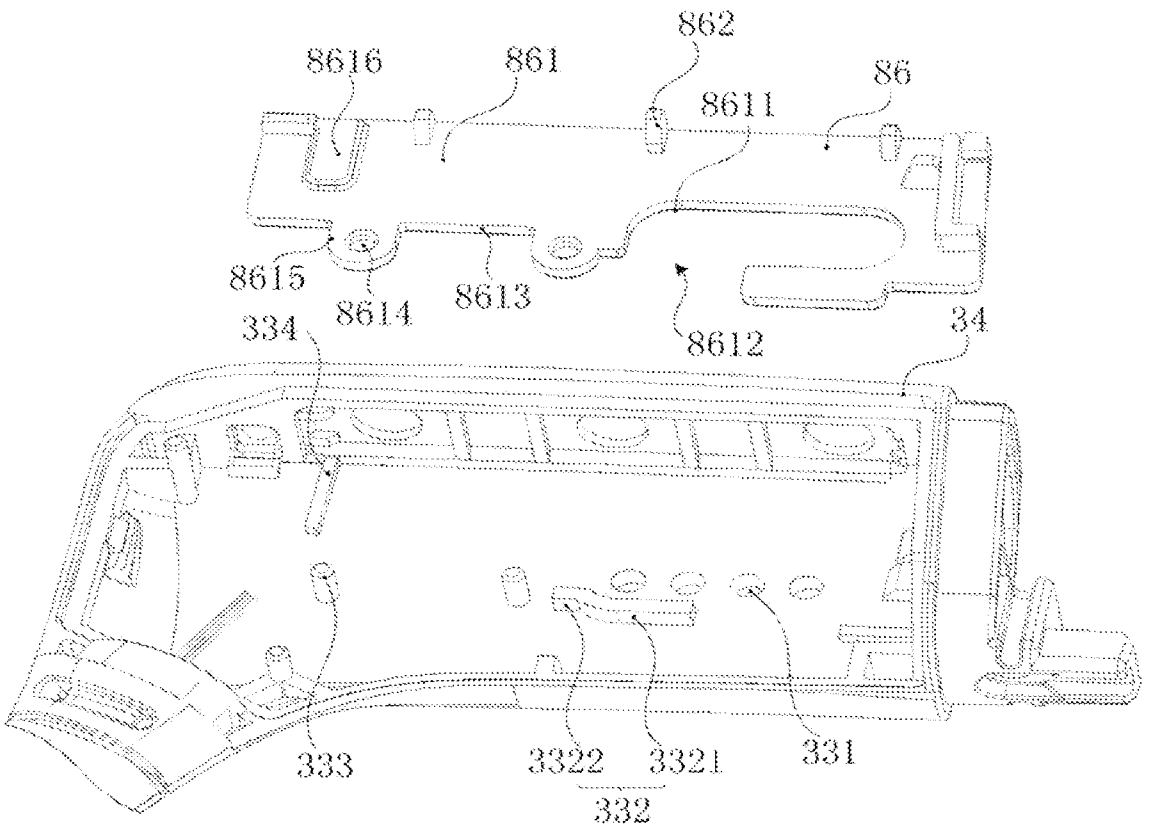


图21

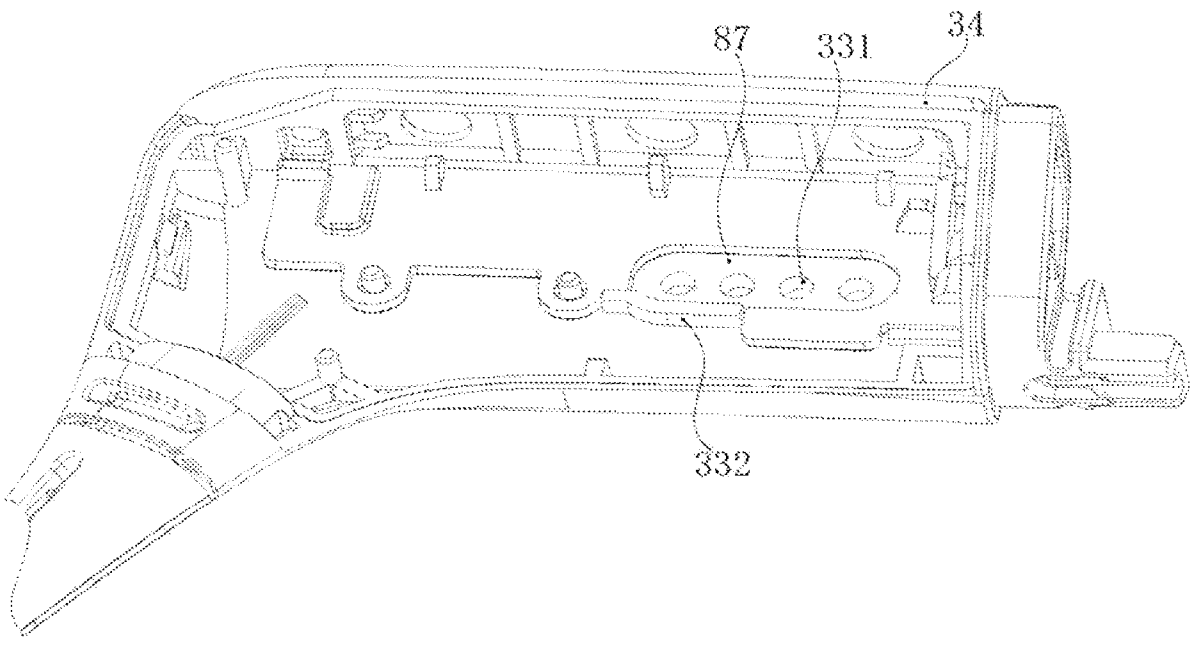


图22

IPR2025-00842; Shokz
Ex. 2018 - Page 1474

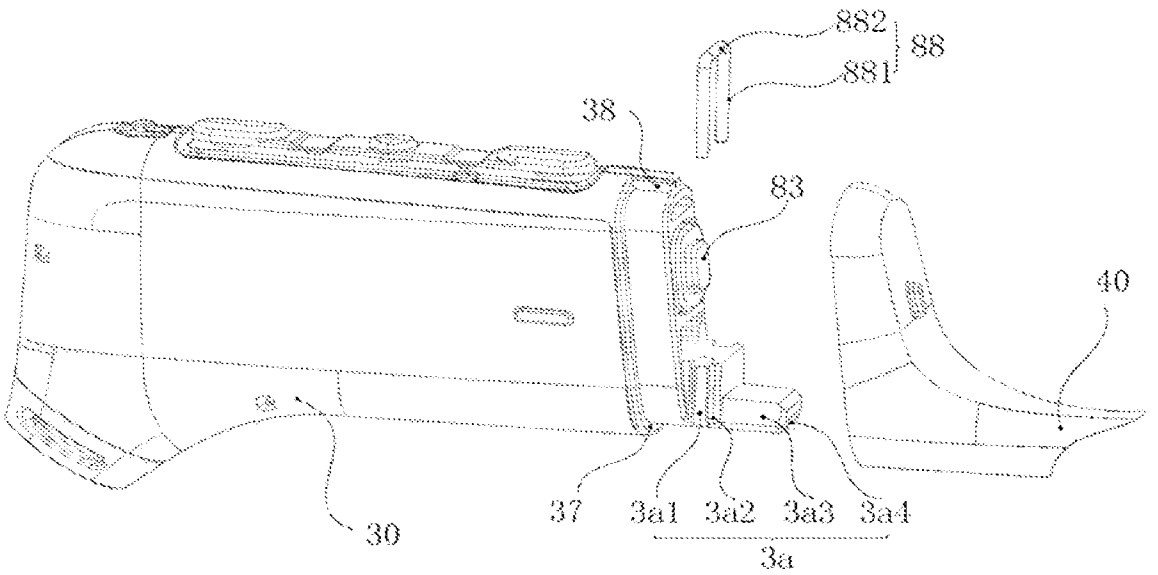


图23

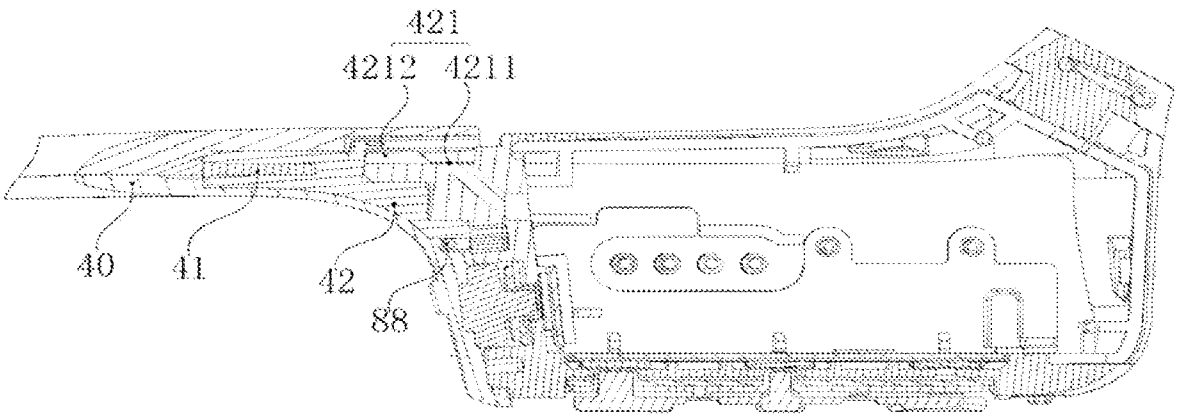


图24

IPR2025-00842; Shokz
Ex. 2018 - Page 1475

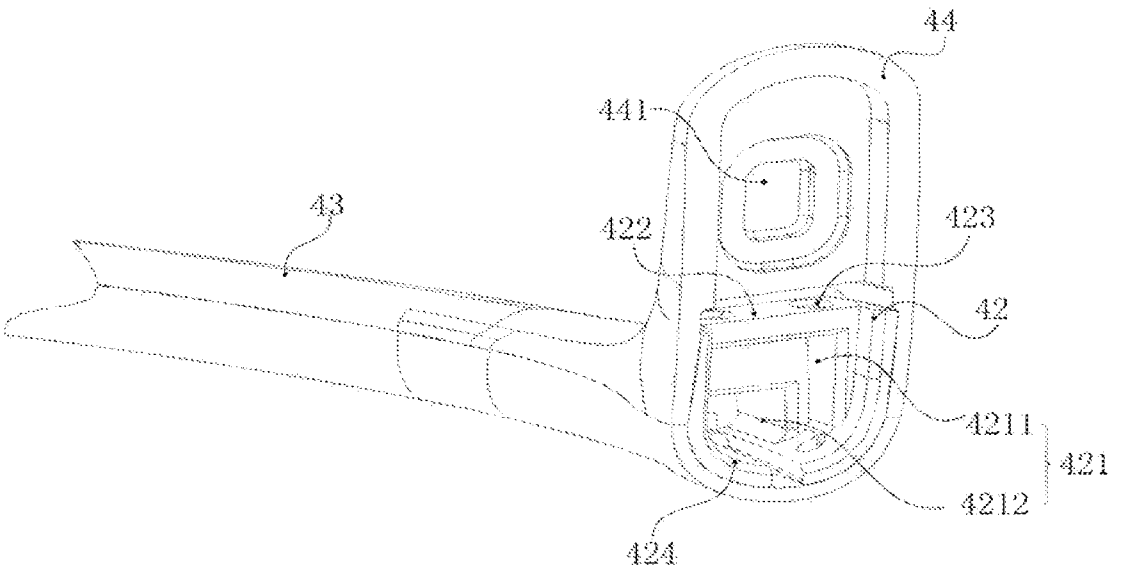


图25

IPR2025-00842; Shokz
Ex. 2018 - Page 1476

Osteoacusis loudspeaker arrangement

Abstract

This application discloses a kind of osteoacusis loudspeaker arrangement, which includes ear-hang, and ear-hang includes elastic metallic yarn, conducting wire and fixed sleeving, first patches end and second and patch end and protection sleeve pipe ; Wherein, conducting wire is fixed on elastic metallic yarn by fixed sleeving; first, which patches end and second, patches end and is respectively arranged at the both ends of elastic metallic yarn, and protection sleeve pipe is formed in elastic metallic yarn, conducting wire, fixed sleeving, first patches end and second and patch the periphery at end to be molded.By the above-mentioned means, the application can simplify production and the assembly process of osteoacusis loudspeaker arrangement, and makes the protection sleeve pipe in the ear-hang of osteoacusis loudspeaker arrangement fix more firm, stablizes.

CN209358729U

China

Other languages: Chinese

Inventor: 李朝武, 王旭东, 李永堡

Worldwide applications

2019 CN

Application CN201920031889.8U events

2019-01-05	Application filed by 深圳市新音科技有限公司
2019-01-05	Priority to CN201920031889.8U
2019-09-06	Application granted
2019-09-06	Publication of CN209358729U

Info: Cited by (1), Legal events, Similar documents, Priority and Related Applications

External links: Espacenet, Global Dossier, Discuss

Description

Osteoacusis loudspeaker arrangement

Technical field

This application involves bone conduction technology fields, more particularly to a kind of osteoacusis loudspeaker arrangement.

Background technique

Osteoacusis is a kind of sound conduction mode, and osteoacusis loudspeaker arrangement receives sound using bone conduction technology, due to it Ears can be opened, do not injure the advantages that eardrum and the favor by the majority of consumers.

Osteoacusis loudspeaker arrangement includes ear-hang, and in the production process of ear-hang, can will be arranged can in peripheral protection sleeve pipe it is separately formed with internal structure, and protection sleeve pipe after molding is set in the periphery of internal structure in turn.However this mode Process is tedious for the production and assembly for often making ear-hang, and leans between ear-hang and internal structure it is

Claims (10)

Hide Dependent

1. a kind of osteoacusis loudspeaker arrangement, which is characterized in that the osteoacusis loudspeaker arrangement includes ear-hang, and the ear-hang includes:

Elastic metallic yarn ;

The conducting wire is fixed on the elastic metallic yarn by conducting wire and fixed sleeving, the fixed sleeving ;

First, which patches end and second, patches end, is respectively arranged at the both ends of the elastic metallic yarn ;

Protection sleeve pipe is formed in the elastic metallic yarn with injection molding, the conducting wire, the fixed sleeving, described first patches end The periphery for patching end with second.

2. osteoacusis loudspeaker arrangement according to claim 1, which is characterized in that described first, which patches end and

possible that being not fixed firmly Situation, to reduce the quality of osteoacusis loudspeaker arrangement.

Utility model content

The application can simplify osteoacusis loudspeaking dress mainly solving the technical problems that provide a kind of osteoacusis loudspeaker arrangement The production set and assembly process, and make the protection sleeve pipe in the ear-hang of osteoacusis loudspeaker arrangement fix more firm, stablize.

In order to solve the above technical problems, the technical solution that the application uses is: a kind of osteoacusis loudspeaker arrangement is provided, The osteoacusis loudspeaker arrangement includes ear-hang, and the ear-hang includes: elastic metallic yarn ; Conducting wire and fixed sleeving, the fixing sleeve The conducting wire is fixed on the elastic metallic yarn by pipe ; First, which patches end and second, patches end, is respectively arranged at the elasticity The both ends of wire ; Protection sleeve pipe is formed in the elastic metallic yarn, the conducting wire, the fixed sleeving, described the with injection molding One, which patches end and second, patches the periphery at end.

The beneficial effect of the application is: It is in contrast to the prior art, in the application osteoacusis loudspeaker arrangement, and protective case Pipe can be molded be formed in elastic metallic yarn, conducting wire, fixed sleeving, first patch end and second patch end periphery, to will protect Protecting pipe patches end and second with elastic metallic yarn, conducting wire, fixed sleeving, first respectively and patches end and be fixedly connected, without will Protection sleeve pipe be individually molded formed after be further sleeved on elastic metallic yarn and first patch end, second patch end outside It encloses, so as to simplify production and assembly process, and in this way, the fixation of protection sleeve pipe can be made more firm, steady It is fixed.

Detailed description of the invention

In order to more clearly explain the technical solutions in the embodiments of the present application, make required in being described below to embodiment Attached drawing is briefly described, it should be apparent that, the drawings in the following description are only some examples of the present application, for For those of ordinary skill in the art, without creative efforts, it can also be obtained according to these attached drawings other Attached drawing.Wherein:

Fig. 1 is the configuration schematic diagram of one embodiment of the application osteoacusis loudspeaker arrangement ;

Fig. 2 is the partial structure diagram of ear-hang in one embodiment of the application osteoacusis loudspeaker arrangement ;

second, patches end It is formed in the both ends of the elastic metallic yarn with injection molding manner respectively, described first, which patches end and second, patches and be respectively set on end There are the first cable tray and the second cable tray, the conducting wire extends along first cable tray and the second cable tray.

3. osteoacusis loudspeaker arrangement according to claim 2, which is characterized in that the conducting wire is penetrated described in a manner of threading First cable tray and second cable tray.

4. osteoacusis loudspeaker arrangement according to claim 2, which is characterized in that first cable tray is walked including first Wire casing be connected to first cabling channel and described first patch end outer end face the first cable hole, the conducting wire is along described One cabling channel and first cable hole extend and expose to the described first outer end face for patching end ; The second cable tray packet Include the second cabling channel be connected to second cabling channel and described first patch end outer end face the second cable hole, the conducting wire Extend along second cabling channel and second cable hole and exposes to the described second outer end face for patching end.

5. osteoacusis loudspeaker arrangement according to claim 1, which is characterized in that the fixed sleeving is at least two, and It is arranged along the elastic metallic yarn interval.

6. osteoacusis loudspeaker arrangement according to claim 1, which is characterized in that the osteoacusis loudspeaker arrangement further wraps It includes:

Machine core shell for accommodating earphone core, and patches termination with described first and inserts fixation ;

Circuit shell for accommodating control circuit or battery, and patches termination with described second and inserts fixation.

7. osteoacusis loudspeaker arrangement according to claim 6, which is characterized in that the machine core shell is provided with and the machine First jointing holes of the outer end face connection of core shell body, are provided with stop block on the inner sidewall of first jointing holes, and described first Patching end includes:

Fig. 3 is the partial enlarged view of part A in Fig. 2 ;

Fig. 4 is the partial cross-sectional view of one embodiment of the application osteoacusis loudspeaker arrangement ;

Fig. 5 is the partial enlarged view of part B in Fig. 4 ;

Fig. 6 is the partial structurtes sectional view of one embodiment of the application osteoacusis loudspeaker arrangement ;

Fig. 7 is the partial enlarged view of C portion in Fig. 6 ;

Fig. 8 is the partial structure diagram of the machine core shell of one embodiment of the application osteoacusis loudspeaker arrangement ;

Fig. 9 is the partial enlarged view of the part D in Fig. 8 ;

Figure 10 is the partial cross-sectional view of the machine core shell of one embodiment of the application osteoacusis loudspeaker arrangement ;

Figure 11 is the part explosive view of circuit shell and ear-hang in one embodiment of the application osteoacusis loudspeaker arrangement ;

Figure 12 is the partial cross-sectional view of the part-structure of one embodiment of the application osteoacusis loudspeaker arrangement ;

Figure 13 is the partial enlarged view of the part E in Fig. 1 ;

Figure 14 is the sectional view of circuit shell in one embodiment of the application osteoacusis loudspeaker arrangement ;

Figure 15 is the partial enlarged view of the part F in Figure 14 ;

Figure 16 is the explosive view of circuit shell and press-key structure in one embodiment of the application osteoacusis loudspeaker arrangement ;

Figure 17 is the partial enlarged view of the part G in Fig. 6 ;

Figure 18 is the structural schematic diagram of conductive column in one embodiment of the application osteoacusis loudspeaker arrangement ;

Figure 19 is cutting for circuit shell in one embodiment of the application osteoacusis loudspeaker arrangement, conductive column and main control board Face figure ;

Figure 20 is the partial enlarged view of the part H in Figure 19 ;

Figure 21 is that the partial structurtes of circuit shell and auxiliary piece are exploded in one embodiment of the application osteoacusis loudspeaker arrangement Figure ;

Insertion section is at least partially inserted into first jointing holes and being connected on the lateral surface of the stop block ;

Two elastic clamping hooks are set to the insertion section towards the side of the machine core enclosure interior, and two elastic clamping hooks can Close up each other under the action of external thrust and the stop block, and after the stop block elastic recovery at being placed in State on the medial surface of stop block, so realize the machine core shell with described first patch end patch fixation.

8. osteoacusis loudspeaker arrangement according to claim 7, which is characterized in that the insertion section partial insertion is in described The stepped setting of exposed parts in one jointing holes, and in the insertion section, and then form the outer end with the machine core shell The circular table of face interval setting, the protection sleeve pipe further extend to the circular table towards the outer of the machine core shell The side of end face, and patch in the machine core shell with described first and abutted when termination inserts fixed with the machine core shell body elasticity, And then realize sealing.

9. osteoacusis loudspeaker arrangement according to claim 6, which is characterized in that the circuit shell is provided with second and patches Hole, described second, which patches end, is at least partially inserted into second jointing holes, wherein patching opposite the two of end described second Side, which is respectively arranged with, patches the vertically disposed fluting of direction of insertion held relative to second jointing holes with described second, described Two through-holes corresponding with two slotting positions, the osteoacusis loudspeaker arrangement are provided on the first side wall of circuit shell It further comprise fixing piece, the fixing piece includes two pins disposed in parallel and the interconnecting piece for connecting the pin, Wherein the pin is inserted into the fluting through the through-hole from the outside of the circuit shell, and then realizes the circuit shell With described second patch end patch fixation.

10. osteoacusis loudspeaker arrangement according to claim 6, which is characterized in that the ear-hang further comprise with it is described Second patches the integrally formed shell sheath of the protection sleeve pipe of end periphery, and the shell sheath is coated on institute in a manner of being set with State the periphery of circuit shell.

Figure 22 is that the partial structurtes of circuit shell and auxiliary piece are illustrated in one embodiment of the application osteoacusis loudspeaker arrangement Figure ;

Figure 23 is circuit shell and the partial structurtes explosive view hung afterwards in one embodiment of the application osteoacusis loudspeaker arrangement ;

Figure 24 is circuit shell and the partial structurtes sectional view hung afterwards in one embodiment of the application osteoacusis loudspeaker arrangement ;

Figure 25 is the rear partial structural diagram hung in one embodiment of the application osteoacusis loudspeaker arrangement.

Specific embodiment

Below in conjunction with the attached drawing in the embodiment of the present application, technical solutions in the embodiments of the present application carries out clear, complete Site preparation description, it is clear that described embodiments are only a part of embodiments of the present application, rather than whole embodiments.Based on this Embodiment in application, those of ordinary skill in the art are obtained every other under the premise of not making creative labor Embodiment shall fall in the protection scope of this application.

Also referring to Fig. 1 to Figure 25, Fig. 1 to Figure 25 depicts the application osteoacusis loudspeaker arrangement.Bone in the application Conducting loudspeaker arrangement can be earphone, MP3 or other devices with loud-speaking function based on osteoacusis.Specifically, bone passes Lead loudspeaker arrangement can include: ear-hang 10, machine core shell 20, circuit shell 30, hang afterwards 40 and earphone core 50, control circuit 60, Battery 70.Wherein, machine core shell 20 and circuit shell 30 are respectively arranged at the both ends of ear-hang 10, and rear extension 40 is then further disposed upon The one end of circuit shell 30 far from ear-hang 10.Wherein, the quantity of machine core shell 20 is two, is respectively used to accommodate earphone core 50, The quantity of circuit shell 30 is also two, is respectively intended to accommodate control circuit 60 and battery 70, the both ends of rear extension 40 are separately connected Corresponding circuit shell 30.

Wherein, ear-hang 10 refers to when user wears osteoacusis loudspeaker arrangement, for surrounding and supporting the basal part of the ear in user Position, and then machine core shell 20 and earphone core 50 are hung and are fixed on the structure in user's ear predetermined position.

Specifically, ear-hang 10 includes elastic metallic yarn 11, conducting wire 12, fixed sleeving 13 and is set to elastic metallic yarn 11 The end that patches at both ends 14 and patches end 15, still further comprise protection sleeve

pipe 16 and with the integrally formed shell of protection sleeve pipe 16 Sheath 17.

Wherein, elastic metallic yarn 11 be mainly used for making ear-hang 10 remain with the matched shape of user's ear, and have one Fixed elasticity generates certain elastic deformation so as to the ear type and head dummy when user wears according to user to be adapted to not With the user of ear type and head dummy.In present embodiment, elastic metallic yarn 11 can be made of memorial alloy, have good change Shape recovery capability, in external force removal, still is able to restore to original so that even ear-hang 10 is by external force generation deformation The shape come is can continue to be used by user, to extend the service life of osteoacusis loudspeaker arrangement.Certainly, in other realities It applies in mode, elastic metallic yarn 11 can also be made of non-memory alloy.

Conducting wire 12 can be used for being electrically connected with earphone core 50 and control circuit 60, battery 70 etc., for earphone core 50 Work carry out electricity supply and data transmission.

Fixed sleeving 13 is used to conducting wire 12 being fixed on elastic metallic yarn 11.Specifically, the quantity of fixed sleeving 13 can Think one or more, specifically depending on actual needs In present embodiment, fixed sleeving 13 is at least two, until Few two fixed sleevings 13 can be spaced setting along the trend of elastic metallic yarn 11 and conducting wire 12, and led by wrapping up setting The periphery of line 12 and elastic metallic yarn 11 and conducting wire 12 is fixed on elastic metallic yarn 11.

Patching end 14 and patching end 15 can be made of hard material, such as plastic cement.In present embodiment, patched making this When end 14 is with end 15 is patched, the two can be formed in the both ends of elastic metallic yarn 11 in a manner of injection molding respectively.In other realities It applies in mode, can also first dock spigot 14 and patch and hold 15 to be molded respectively, and be reserved respectively and elasticity gold in injection molding Belong to the connecting hole of 11 end of silk, to patch end 14 by this by connecting hole after the completion of injection molding and patch end 15 and insert respectively It connects in the corresponding end of elastic metallic yarn 11, or and is fixed by way of bonding.

It should be pointed out that patching end 14 and patching end 15 can not directly be molded and be formed in conducting wire in present embodiment 12 periphery, but conducting wire 12 is avoided in injection molding.It specifically, can be when injection molding patches end 14 and patches end 15, to being located at The conducting wire 12 at 11 both ends of elastic metallic yarn is fixed, and with the separate position for patching end 14 and patching end 15, and is further connecing It spigot 14 and patches the first cable tray 141 and the second cable tray 151 is respectively set on end 15, it, will with after the completion

of injection molding Conducting wire 12 is extended along the first cable tray 141 and the second cable tray 151.Specifically, the first cable tray 141 is being formed After the second cable tray 151, conducting wire 12 can be penetrated to first cable tray 141 and the second cable tray in a manner of threading 151。

Certainly, in other embodiments, it will can also patch end 14 according to the actual situation and patch the directly injection molding of end 15 In the periphery of conducting wire 12, it is not specifically limited herein.

Specifically, in one embodiment, the first cable tray 141 may include that the first cabling channel 1411 is walked with being connected to first First cable hole 1412 of wire casing 1411.Wherein, the connection of the first cabling channel 1411 patches the side wall surface setting at end 14, the first cabling The one end in hole 1412 is connected to one end of the first cabling channel 1411, and the other end is connected to the outer end face for patching end 14.Patch end 14 The conducting wire 12 at place extends along the first cabling channel 1411 and the first cable hole 1412 and exposes to the outer end face for patching end 14, with into one Step is connect with other structures.

Correspondingly, the second cable tray 151 may include the second cabling channel 1511 and be connected to the second of the second cabling channel 1511 Cable hole 1512.Wherein, the second cabling channel 1511 connection patches end 15 side wall surface setting, one end of the second cable hole 1512 with One end of second cabling channel 1511 is connected to, and the other end is connected to the outer end face for patching end 15.The conducting wire 12 at end 15 is patched along the Two cabling channels 1511 and the second cable hole 1512 extend and expose to the outer end face for patching end 15, further to connect with other structures It connects.

Wherein, the outer end face for patching end 14, which refers to, patches end face of the end 14 far from the one end for patching end 15 ; Correspondingly, it patches The outer end face at end 15, which refers to, patches end face of the end 15 far from the one end for patching end 14.

Further, protection sleeve pipe 16, which can be molded, is formed in elastic metallic yarn 11, conducting wire 12, fixed sleeving 13, patches end 14 and patch end 15 periphery, thus by protection sleeve pipe 16 respectively with elastic metallic yarn 11, conducting wire 12, fixed sleeving 13, patch End 14 is fixedly connected with end 15 is patched, without protection sleeve pipe 16 is individually further sleeved on elastic metallic after injection molding is formed Silk 11 and the periphery for patching end 14, patching end 15, so as to simplify production and assembly process, and in this way, energy Enough so that the fixation of protection sleeve pipe 16 is more firm, stablizes.

Further, in ovennold pipe 16, while with the protection sleeve pipe 16 integrally formed with being disposed in

proximity to connect The shell sheath 17 of 15 side of spigot.

Wherein, shell sheath 17 can be made of one piece with protection sleeve pipe 16 and be integral, circuit shell 30 can by with Patch patching fixed and connecting one end that ear-hang 10 is set for end 15, shell sheath 17 then can the further packet in a manner of suit It is overlying in the periphery of circuit shell 30.

Wherein, protection sleeve pipe 16 and shell sheath 17 can be made of the soft material with certain elasticity, such as soft Silica gel, rubber etc..

Specifically, it when manufacturing the ear-hang 10 of osteoacusis loudspeaker arrangement, can be achieved by the steps of:

Step S101: conducting wire 12 is fixed on elastic metallic yarn 11 using fixed sleeving 13, wherein in elastic metallic yarn 11 both ends reserve injection molding position ;

Specifically, can by first by elastic metallic yarn 11 and conducting wire 12 according in a manner of preset, such as it is placed side by side together, so Afterwards, fixed sleeving 13 is further set in the periphery of conducting wire 12 Yu elastic metallic yarn 11, so that conducting wire 12 is fixed on elasticity On wire 11.

Wherein, since the both ends of elastic metallic yarn 11 also need injection molding to patch end 14 and patch end 15, in fixation When, it is fully wrapped around that the both ends of elastic metallic yarn 11 cannot be fixed casing 13, and need to reserve corresponding injection molding position, for patching End 14 is occupied with 15 injection molding of end is patched.

Step S102: injection molding patches end 14 and patches end 15 respectively on the injection molding position at the both ends of elastic metallic yarn 11, In patch end 14 and patch end and 15 be respectively arranged with the first cable tray 141 and the second cable tray 151 ;

Step S103: conducting wire 12 is arranged to extend along the first cable tray 141 and the second cable tray 151 ;

It specifically, herein can be after the completion of patching end 14 and patching 15 molding of end, further by either manually or by machine The both ends of conducting wire 12 are respectively penetrated the first cable tray 141 and the second cable tray 151 by device.Wherein, conducting wire 12 is located at first Part between cable tray 141 and the second cable tray 151 is fixed on elastic metallic yarn 11 by fixed sleeving 13.

Step S104: it in elastic metallic yarn 11, conducting wire 12, fixed sleeving 13, patches end 14 and patches the peripheral of end 15 and infuse Moulding is at protection sleeve pipe 16.

In one embodiment, when executing step S104,15 periphery of end is further formed and patched in a manner

of injection molding The integrally formed shell sheath 17 of protection sleeve pipe 16.

It should be pointed out that in other embodiments, conducting wire 12 can also be first not provided with when installing fixed sleeving 13, And it is patching end 14 and is patching 15 injection molding of end and then further setting conducting wire 12, the specific steps are as follows:

Step S201: fixed sleeving 13 is sheathed on elastic metallic yarn 11, wherein pre- at the both ends of elastic metallic yarn 11 Reserve injection molding position ;

Step S202: injection molding patches end 14 and patches end 15 respectively on the injection molding position at the both ends of elastic metallic yarn 11, In patch end 14 and patch end and 15 be respectively arranged with the first cable tray 141 and the second cable tray 151 ;

Conducting wire 12: being arranged in the inside of fixed sleeving 13 by step S203, with using fixed sleeving 13 that conducting wire 12 is fixed In on elastic metallic yarn 11, and further conducting wire 12 is arranged to prolong along the first cable tray 141 and the second cable tray 151 It stretches.

It should be pointed out that in this way, can be avoided and led when docking spigot 14 and patching 15 injection molding of end The interference of line 12, to be conducive to molding go on smoothly.

Wherein, elastic metallic yarn 11 involved by method in present embodiment and above embodiment, conducting wire 12, Fixed sleeving 13, patch end 14, patch end 15 and structure, effect and the generation type of protection sleeve pipe 16 etc. with above-mentioned implementation Identical in mode, related detailed content refers to above embodiment, and details are not described herein again.

In one embodiment, machine core shell 20 can be used for accommodating earphone core 50, and patch fixation with end 14 is patched.Its In, the quantity of earphone core 50 and machine core shell 20 is two, respectively corresponds the left and right ear of user.

Specifically, machine core shell 20 can be connect with end 14 is patched by modes such as grafting, clampings, by machine core shell 20 It is fixed together with ear-hang 10.That is, ear-hang 10 can be first separately formed with machine core shell 20, then in present embodiment Further it is assembled together, rather than by the two one straight forming.

In this way, ear-hang 10 and machine core shell 20 can be separately formed using corresponding mold, and nothing The two need to be integrally formed using the mold of the same larger size, so as to reduce the size of mold, to reduce adding for mold Work difficulty, and molding difficulty ; In addition, being produced since different mold processing is respectively adopted in ear-hang 10 and

machine core shell 20 In manufacturing process, need in ear-hang 10 or machine core shell 20 the shape of some or construction be adjusted when, only adjust The corresponding mold of the whole structure, is adjusted without the mold to another structure, is produced into so as to reduce This.

Certainly, in other embodiment, according to circumstances ear-hang 10 and machine core shell 20 can also be made to pass through one Molding obtains.

In one embodiment, machine core shell 20 is provided with the jointing holes 22 being connected to the outer end face 21 of machine core shell 20, Stop block 23 is provided on the inner sidewall of jointing holes 22.

Wherein, the outer end face 21 of machine core shell 20 refers to machine core shell 20 towards the end face of ear-hang 10.Jointing holes 22 are used for Accommodating space is provided for the 14 insertion machine core shell 20 of end that patches of ear-hang 10, patches end 14 and machine core shell to further realize 20 patch fixation.

Stop block 23, which can be protruded by the inner sidewall of jointing holes 22 along the direction perpendicular to the inner sidewall, to be formed.Specifically, Stop block 23 can be multiple spaced block-shaped protrusions, or may be the annular projection along 22 inner sidewall of jointing holes, It is not specifically limited herein.

Wherein, patching end 14 includes insertion section 142 and two elastic clamping hooks 143.

Specifically, insertion section 142 is at least partially inserted into jointing holes 22 and being connected to the lateral surface 231 of stop block 23 On.Wherein, the shape of the inner sidewall of the shape with jointing holes 22 of the lateral wall of insertion section 142 maiches so that insertion section 142 to When small part is inserted in jointing holes 22, so that the lateral wall of insertion section 142 is abutted with the inner sidewall of jointing holes 22.

The lateral surface 231 of stop block 23 refers to the one side that stop block 23 is arranged towards ear-hang 10.It insertion section 142 can be into one Step includes one towards the end face of machine core shell 20 1421, which can match with the lateral surface 231 of stop block 23, thus Insertion section 142 is at least partially inserted into when in jointing holes 22, the end face 1421 of insertion section 142 and the lateral surface 231 of stop block 23 It abuts.

Specifically, the edge of the jointing holes 22 of machine core shell 20 is perpendicular to patching 14 insertion side relative to machine core shell 20 of end Upward cross sectional shape can be oval ring or nearly oval ring, and accordingly, the cross section of insertion section 142 can be and jointing holes 22 matched nearly ellipses, certainly, the shape of the two can also be it is other, can specifically be configured according to actual needs.

Further, two elastic clamping hooks 143 can be along being perpendicularly to the insertion direction side by side and be spaced and be symmetrically disposed on insertion Portion 142 is towards the side inside machine core shell 20.Wherein, each elastic clamping hook 143 can respectively include beam portion 1431 and hook part 1432, beam portion 1431 is connect with the side of insertion section 142 towards machine core shell 20, and the setting of hook part 1432 is in beam portion 1431 far from slotting Enter the one end in portion 142, and edge is perpendicularly to the insertion direction extension.Further, each hook part 1432 be provided with connection be parallel to it is slotting Enter the side in direction and the intermediate incline 14321 of the end face far from insertion section 142.

In the installation process of ear-hang 10 and machine core shell 20, patches end 14 and progress into machine core shell by jointing holes 22 inside 20, when reaching the position of stop block 23, the hook part 1432 of two elastic clamping hooks 143 will receive the blocking of stop block 23, Under the action of external thrust, stop block 23 gradually squeezes the intermediate incline 14321 of hook part 1432 and makes two elastic clamping hooks 143 occur elastic deformations and close up each other, reach stop block 23 close to machine core shell by stop block 23 in intermediate incline 14321 When side inside body 20, elastic clamping hook 143 is placed in 23 court of stop block because losing the blocking of stop block 23 due to elastic recovery To on the medial surface inside machine core shell 20, so that stop block 23 to be placed in the insertion section 142 and hook part 1432 for patching end 14 Between, and then realize that machine core shell 20 patches fixation with end 14 is patched.

Wherein, in one embodiment, machine core shell 20 and patch end 14 patch it is fixed after, 142 part of insertion section is inserted Enter in jointing holes 22, and the stepped setting of the exposed parts in insertion section 142, and then forms the outer end with machine core shell 20 The spaced circular table 1422 in face 21.

It should be pointed out that the exposed parts of insertion section 142 refer to that insertion section 142 exposes to the part of machine core shell 20, Specifically, it can refer to and expose to machine core shell 20 and the part close to 20 outer end face of machine core shell.

Wherein, circular table 1422 can be oppositely arranged with the outer end face 21 of machine core shell 20, and interval between the two It can refer to that edge patches direction interval and along perpendicular to the interval for patching direction.

Further, protection sleeve pipe 16 extend to circular table 1422 towards machine core shell 20 outer end face 21 side, And in the jointing holes of machine core shell 20 22 and when patching end 14 and patching fixed, it is filled in circular table 1422 and machine core shell 20 In interval between outer end face 21, and is abutted with the

elasticity of machine core shell 20 so that outside liquid be difficult to from patch end 14 and Joint between machine core shell 20 enters inside machine core shell 20, so realize patch end 14 and jointing holes 22 between it is close Envelope, to protect the earphone core 50 etc. inside machine core shell 20, so as to improve the waterproof effect to osteoacusis loudspeaker arrangement.

Specifically, in an embodiment, protection sleeve pipe 16 is in circular table 1422 towards the outer end of machine core shell 20 21 sides in face form an annular abutment face 161.Wherein, which is protection sleeve pipe 16 towards machine core shell 20 The end face of side.

Further, protection sleeve pipe 16 further includes being located at 161 inside of annular abutment face and relative to annular abutment face 161 Protrude the annular convex platform 162 of setting.Specifically, which is specifically formed in annular abutment face 161 towards patching end 14 Side, and relative to the annular abutment face 161 along towards the direction of machine core shell 20 protrude be arranged, further, the annular Boss 162 is also formed directly in the periphery of circular table 1422, and covers the circular table 1422.

Further, machine core shell 20 includes the inner sidewall of the outer end face 21 for connecting machine core shell 20 and jointing holes 22 Connection inclined-plane 24.Wherein, the connection inclined-plane 24 be specially machine core shell 20 outer end face 21 and jointing holes 22 inner sidewall it Between transition face, the outer end face 21 of the connection inclined-plane 24 and machine core shell 20 and the inner sidewall of jointing holes 22 be not in same plane On.Wherein, which can be plane, perhaps can also be arranged to curved surface or other shapes according to actual needs Shape is not specifically limited herein.

Specifically, machine core shell 20 and patch end 14 patch fixed when, annular abutment face 161 and annular convex platform 162 divide Not with the outer end face of machine core shell 20 and connect the elasticity of inclined-plane 24 and abut.

It should be pointed out that due to machine core shell 20 outer end face 21 and connection inclined-plane 24 not in the same plane, thus So that the elastic place of abutting between protection sleeve pipe 16 and machine core shell 20 is not in the same plane, so that outside liquid is difficult By entering machine core shell 20 between protection sleeve pipe 16 and machine core shell 20 to travel further into earphone core 50, so as to improve The waterproof effect of osteoacusis loudspeaker arrangement to play a protective role to internal functional architecture, and then extends osteoacusis loudspeaker arrangement Service life.

Wherein, in one embodiment, insertion section 142 is in circular table 1422 towards the outer end face 21 of machine core shell 20 Side is formed further with the

annular groove 1423 adjacent with circular table 1422, wherein annular convex platform 162 can be formed in annular In groove 1423.

In present embodiment, annular groove 1423 can be formed in circular table 1422 towards the side of machine core shell 20.? In one application scenarios, circular table 1422 is the side wall surface towards 20 side of machine core shell of annular groove 1423, at this point, ring Shape boss 162 is formed in annular groove 1423 along the side wall surface.

In one embodiment, one end of the outside positioned at machine core shell 20 of the conducting wire 12 of ear-hang 10 may pass through second and walk Line passage 151 and further connect outer outside the machine cores shells 20 such as control circuit 60, battery 70 that circuit shell 30 is accommodated Portion's circuit, the other end are then exposed to the outer end face for patching end 14 along the first cable tray 141, and further with insertion section 142 And entered inside machine core shell 20 by jointing holes 22.

In one embodiment, machine core shell 20 may include main casing 25 and baffle assembly 26, wherein baffle assembly 26 It is connect inside main casing 25, and with main casing 25, and then the inner space of main casing 25 27 is separated into the first accommodating sky Between 271 and close to 22 side of jointing holes the second accommodating space 272.

Specifically, main casing 25 includes all side walls 251 and the base end wall 252 connecting with an end face of all side walls 251, week Side wall 251 and base end wall 252 are jointly around the inner space 27 for forming a main casing 25.

Baffle assembly 26 is located at the side of the close jointing holes 22 of main casing 25, and including side partition 261 and base spacer 262.Wherein, side partition 261 can along perpendicular to base end wall 252 direction be arranged, and the both ends of side partition 261 with all side walls 251 connections, so that the inner space 27 to main casing 25 is separated.Base spacer 262 can be parallel or close with base end wall 252 Parallel and interval setting, and further connect respectively with all side walls 251 and side partition 261, so that main casing 25 is formed by Inner space 27 is divided into two and is formed by side partition 261, base spacer 262 and all side walls 251 far from jointing holes 22, base end wall 252 the first accommodating spaces 271 surrounded jointly, and by base spacer 262 and side partition 261 and close to all side walls of jointing holes 22 251 the second accommodating spaces 272 surrounded jointly.Wherein, the second accommodating space 272 is smaller than the first accommodating space 271.

Certainly, baffle assembly 26 can also be drawn by inner space 27 of other set-up modes to main casing 25 Point, it is not specifically limited herein.

Further, earphone core 50 includes functional unit 51, which is set in the first accommodating space 271, It can be used for vibration sounding.Osteoacusis loudspeaker arrangement can further comprise the conducting wire 80 that one end is connect with functional unit 51, the conducting wire 80 other end can be extended in the second accommodating space 272 by the first accommodating space 271.

Specifically, cabling channel 2611, the cabling channel can be arranged in the top edge far from base end wall 252 in side partition 261 2611 can be connected to the first accommodating space 271 and the second accommodating space 272.Further, the one of the separate functional unit of conducting wire 12 End extends in the second accommodating space 272 via the cabling channel.

In addition, one end of the separate circuit shell 30 of the conducting wire 12 of ear-hang 10 enters in machine core shell 20 with insertion section 142 It behind portion, may be further extended in the second accommodating space 272, and be electrically connected in the second accommodating space 272 with conducting wire 80, with shape At the conductive paths for being connected to external circuit via the second accommodating space 272 from the first accommodating space 271, to be led by this Functional unit 51 is electrically connected by line access with the external circuit being located at outside machine core shell 20.

Specifically, it may be provided with cable hole 2621 on base spacer 262, which accommodates jointing holes 22 and second Space 272 is connected to, so that can be prolonged via the cable hole 2621 by the conducting wire 12 that jointing holes 22 enter machine core shell 20 Extend to the second accommodating space 272.

Wherein, after conducting wire 12 and conducting wire 80 connect in the second accommodating space 272, coiling is set to the second accommodating space In 272.Specifically conducting wire 12 and conducting wire 80 can be connected together by welding, and then by functional unit 51 and external electrical Road electrical connection, to provide electricity as the normal work of functional unit 51 by external circuit or be that earphone core 50 transmits data.

It should be pointed out that conducting wire is often longer than actual demand, when assembling to osteoacusis loudspeaker arrangement in order to fill Match.If however conducting wire extra at earphone core 50 can not be placed reasonably, and the production when functional unit 51 works is easy Life is vibrated and issues abnormal sound, so that the sound quality of osteoacusis loudspeaker arrangement is reduced, to influence the audition impression of user.This reality Apply in mode, the main casing 25 of machine core shell 20 be formed by inner space 27 isolate the second accommodating space 272 with For accommodating extra conducting wire 12 and conducting wire 80, thus avoid or reduce extra conducting

wire to due to vibration to osteoacusis loudspeaking The influence for the sound that device is issued, to improve sound quality.

In one embodiment, baffle assembly 26 further comprises internal partition 263, and internal partition 263 further holds second 272 are separated into two sub-accommodating spaces 2721 between emptying.Specifically, base end wall 252 of the internal partition 263 perpendicular to main casing 25 Setting connect with side partition 261 and all side walls 251 respectively, and further extends at cable hole 2621, to hold by second 272 while be divided into two sub-accommodating space 2721 between emptying, and cable hole 2621 is further also divided into two, two are walked String holes 2621 can be connected to corresponding sub-accommodating space 2721 respectively

In present embodiment, conducting wire 12 and conducting wire 80 may respectively be two, wherein two conducting wires 12 respectively along it is corresponding walk String holes 2621 and separately extend in respective sub-accommodating space 2721, and two conducting wires 80 then still together pass through cabling channel 2611 And enter the second accommodating space 272, and separate after entering the second accommodating space 272, and respectively in corresponding sub- accommodating space It is welded in together in 2721 with corresponding conducting wire 12, and further coiling is set in corresponding sub- accommodating space 2721.

Further, in one embodiment, the second accommodating space 272 can be further filled by sealant.Pass through This mode can further fix the conducting wire 12 accommodated in the second accommodating space 272 and conducting wire 80, to further decrease The adverse effect caused by sound quality as conductor vibration, to improve the sound quality of osteoacusis loudspeaker arrangement, simultaneously It can play a protective role to the pad between conducting wire 12 and conducting wire 80, in addition, also by 272 sealed set of the second accommodating space It can achieve the purpose that water proof and dust proof.

In one embodiment, circuit shell 30 patches fixation with end 15 is patched, so that circuit shell 30 is fixed on ear Hang 10 one end far from machine core shell 20.Wherein, it is worn in user in use, accommodating the circuit shell 30 of battery 70 and accommodating control The circuit shell 30 of circuit 60 processed can respectively correspond the left and right side of user, the two with the corresponding side of patching for patching end 15 It can be different in formula.

Specifically, circuit shell 30 can be connect with end 15 is patched by modes such as grafting, clampings.That is, this reality It applies in mode, ear-hang 10 first can be formed independently with circuit shell 30, then and after the completion of molding be further assembled in Together, rather than directly the two is integrally formed.

In this way, ear-hang 10 and circuit shell 30 can be separately formed using corresponding mold, and nothing The two need to be integrally formed using the mold of the same larger size, so as to reduce the size of molding die, to reduce mold Difficulty of processing, and molding difficulty ; In addition, since different mold processing is respectively adopted in ear-hang 10 and circuit shell 30, During the manufacturing, need in ear-hang 10 or circuit shell 30 the shape of some or construction be adjusted when, The corresponding mold of the structure is only adjusted, is adjusted without the mold to another structure, so as to reduce life Produce cost.

Further, in one embodiment, circuit shell 30 is provided with jointing holes 31, the inner surface of the jointing holes 31 Shape can match with the shape of at least partly outer surface for patching end 15 so that patch hold 15 can be at least partially inserted into In jointing holes 31.

Further, insertion of the end 15 relative to jointing holes 31 is respectively arranged with and patched in the opposite sides for patching end 15 The vertically disposed fluting 152 in direction.Specifically, two flutings 152 are symmetrical and are arranged at intervals at the opposite sides for patching end 15, and Connection patches the side wall at end 15 in the vertical direction along direction of insertion.

Correspondingly, be provided on the first side wall 30a of circuit shell 30 it is corresponding with two 152 positions of fluting through this Two through-holes 32 of one side wall 30a.

Wherein, circuit shell 30 can be in flat setting, for example, circuit shell 30 is transversal at the second jointing holes 31 Face can be ellipse, or be capable of forming the other shapes of flat setting.In present embodiment, the area of circuit shell 30 Biggish two side walls being oppositely arranged be major side wall 33, connect two major side walls 33 area it is lesser and be oppositely arranged two To sidewall 34 supplemented by side wall.In present embodiment, the first side wall 30a of circuit shell 30 both can be the master of the circuit shell 30 The auxiliary sidewall 34 of side wall 33 or circuit shell 30, can specifically be set according to actual needs.

Certainly, in other embodiments, cross section of the circuit shell 30 at jointing holes 31 can also wait it to be round Its shape can be specifically configured according to actual needs.

Further, osteoacusis loudspeaker arrangement can also include fixing piece 81, and fixing piece 81 includes two disposed in parallel Pin 811 and interconnecting piece 812 for connecting pin 811.Specifically, interconnecting piece 812 can vertically be connected in two pins 811 towards unidirectional one end, to form U-shaped fixing piece 81.

Wherein, two one end of pin 811 far from interconnecting piece 812 are inserted into out from the outside via through

holes 32 of circuit shell 30 Slot 152, and interconnecting piece 812 is barred to the outside of circuit shell 30, and then realize circuit shell 30 and patch patching for end 15 It is fixed.

Further, in one embodiment, it is formed further on the first side wall 30a of circuit shell 30 for connecting The strip groove 35 of two through-holes 32, when patching fixed using fixing piece 81, interconnecting piece 812 can be further partially or complete Portion is heavy to be set in strip groove 35.To on the one hand enable to osteoacusis loudspeaker arrangement whole more unified, so that set Groove corresponding with interconnecting piece 812 is set without special molding on the shell sheath 17 of 30 periphery of circuit shell, simplifies shell The mold of body sheath 17 ; On the other hand, additionally it is possible to reduce osteoacusis loudspeaker arrangement integrally occupied space to a certain extent.

It wherein, can be some or all of heavy in strip groove 35 by interconnecting piece 812 in an application scenarios Afterwards, further in 35 internal sizing of strip groove, in this way, on the one hand fixing piece 81 can be fixed on circuit shell 30 On, it is more consolidated so that patching patching between end 15 and jointing holes 31 ; On the other hand, heavy set on item in interconnecting piece 812 After shape groove 35, further groove 35 is filled and led up by sizing, is consistent with the first side wall 30a with circuit shell 30, from And after being arranged shell sheath 17, so that more smooth coherent between the groove 35 and peripheral structure.

Wherein, in one embodiment, second side of the circuit shell 30 opposite with the first side wall 30a of circuit shell 30 The through-hole 36 opposite with through-hole 32 is further provided on wall 30b, pin 811 is further inserted into through-hole 36 through fluting 152.

Specifically, the first side wall 30a of the circuit shell 30 and second sidewall 30b of circuit shell 30 can be circuit shell 30 major side wall 33 or auxiliary sidewall 34.In the present embodiment, the first side wall 30a and second sidewall 30b of circuit shell 30 The respectively major side wall 33 that is oppositely arranged of two of circuit shell 30.That is, two through-holes 32 and two through-holes 36 divide Be not set on the biggish side wall of area of circuit shell 30, so can be set between two pins 811 of fixing piece 81 compared with Big interval, to increase the span of fixing piece 81, so as to improve the stability for patching and patching between end 15 and jointing holes 31.

In present embodiment, 811 via through holes 32 of pin be inserted into fluting 152 in, and further through fluting 152 be inserted into it is logical In hole 36, that is to say, that pin 811 by two opposing major side walls 33 of circuit shell 30 and can patch end 15 completely through simultaneously Be fixed together so that patch end 15 and circuit shell 30 between patch it is stronger.

Further, as described in above embodiment, protection sleeve pipe 16 form when, while with the protection sleeve pipe 16 1 It is body formed to have the shell sheath 17 for being disposed in proximity to patch 15 sides of end.

Wherein, which is separately formed with circuit shell 30, and makes the shape of the inner sidewall of the shell sheath 17 Shape is matched with the lateral wall of circuit shell 30, and then after the two is separately formed completion, by shell sheath 17 with the side of suit Formula is coated on the periphery of circuit shell 30.

It should be pointed out that since the environment temperature when shell sheath 17 forms is higher, and hot environment may be right The control circuit 60 or battery 70 that circuit shell 30 is accommodated cause certain damage, therefore, in formative stage, by circuit shell 30 and shell sheath 17 be separately formed, be then set in together again, so as to avoid shell sheath 17 at the time of molding, high temperature pair Damage brought by control circuit 60 or battery 70, to reduce molding to unfavorable shadow brought by control circuit 60 or battery 70 It rings.

Further, shell sheath 17 can be bag shaped structure open at one end, so that circuit shell 30 is via shell The open end of sheath 17 enters the inside of shell sheath 17.

In present embodiment, shell sheath 17 be integrally formed with protection sleeve pipe 16 and after being formed, can be by from opening Mouth end carries out turnup to shell sheath 17 and is removed from the mold ; Visual examination and silk-screen are being carried out to shell sheath 17 When Deng being surface-treated, further shell sheath 17 can be set in preset structure by opening and be operated, and operated After the completion, further it is removed from the preset structure and carrying out turnup to shell sheath 17 from opening ; It is checking And after the completion of the operations such as processing, shell sheath 17 can be further sleeved on to the periphery of circuit shell 30 by being open.It is above-mentioned In operation, shell sheath 17 is being removed to the mode for being not limited to above-mentioned turnup, can not also done herein by modes such as inflations It is specific to limit.

Specifically, the open end of shell sheath 17 is one end that shell sheath 17 deviates from protection sleeve pipe 16, thus the circuit Shell 30 enters the inside of shell sheath 17 from shell sheath 17 far from one end of protection sleeve pipe 16, for 17 institute of shell sheath Cladding.

In one embodiment, the open end of shell sheath 17 is provided with inwardly projecting collar flange 171.Further Ground, the stepped setting in end of the circuit shell 30 far from ear-hang 10, and then form circular table 37.When shell sheath 17 coats When the periphery of circuit shell 30, collar flange 171 is connected on circular table 37.

Specifically, collar flange 171 by shell sheath 17 open end inner wall towards protruding inside shell sheath 17 Certain

thickness is formed, and including one towards ear-hang 10 flange surface 172.

Wherein, circular table 37 and flange surface 172 are opposite, and deviate from the direction of ear-hang 10 towards circuit shell 30.

The height of the flange surface 172 of the collar flange 171 is not more than the height of circular table 37, so that cyclic annular convex When the flange surface 172 and circular table 37 of edge 171 abut against, the inner wall of shell sheath 17 can be with the side wall of circuit shell 30 Face sufficiently abuts, so that shell sheath 17 can closely be coated on the periphery of circuit shell 30.

It further, in one embodiment, can be into one in the engaging zones on collar flange 171 and circular table 37 Step is applied with sealant.Specifically, when being set with to shell sheath 17, sealant can be coated on circular table 37, To which shell sheath 17 and circuit shell 30 are connected and sealed.

Wherein, in one embodiment, it is additionally provided with locating piece 38 in circuit shell 30, which is set to annular On table top 37, and extend along circuit shell 30 away from the direction of ear-hang 10.Specifically, which may be disposed at circuit shell In 30 auxiliary sidewall 34, and the thickness that the locating piece 38 is protruded above in auxiliary sidewall 34 is consistent with the height of circular table 37.Wherein, One or more can be arranged in the quantity of locating piece 38 according to demand.

Correspondingly, it is provided with locating slot 173 corresponding with locating piece 38 at the collar flange 171 of shell sheath 17, thus When shell sheath 17 is coated on the periphery of circuit shell 30, which is covered at least partly locating piece 38.

It in this way, can be according to the position of locating piece 38 and locating slot 173 when being set with to shell sheath 17 It sets and shell sheath 17 is positioned, it is quick to facilitate operation personnel, accurate to install.Certainly, in other embodiments, It can be not provided with locating piece according to actual needs.

In one embodiment, circuit shell 30 includes the two sub-shells fastened each other, the respectively first sub- shell 301 With the second sub- shell 302.Specifically, two sub-shells can along circuit shell 30 middle line and symmetrically fasten, or can also be with It is fastened by other means according to actual needs.In addition, two sons of the circuit shell 30 for accommodating control circuit 60 The manner of shell can be identical with the manner of two sub- shells of the circuit shell 30 for accommodating battery 70, It can also be different.

In an application scenarios, the circular table 37 of circuit shell 30 can be formed on the first sub- shell 301, two sons Shell is engaged in circular table 37 towards the side of ear-hang 10, so that shell sheath 17 can be to the engagement of two sub- shells Seam carries out all

standing, is sealed so as to the inner space to a certain extent to circuit shell 30, to improve osteoacusis The waterproof effect of loudspeaker arrangement.

In another application scene, the circular table 37 of circuit shell 30 can also be collectively formed by two sub- shells, from And the two at least partly position is combined in circular table 37 away from the side of ear-hang 10.At this point, shell sheath 17 can not The joint close for being located at circular table 37 and deviating from 10 side of ear-hang of two sub- shells of covering.It, can be further in this application scene The joint close of the part is covered otherwise.

Further, in one embodiment, the joint surface that two sub-shells abut each other is the stairstepping agreed with mutually Shape.

Specifically, the end face of the second sub- shell 302 of direction of the first sub- shell 301 is stair-stepping first cascaded surface 3011, the end face of the first sub- shell 301 of direction of the second sub- shell 302 is stair-stepping second cascaded surface 3021.First ladder The shape and size uniformity of face 3011 and the second cascaded surface 3021 cause, and abut together so as to work in coordination.

In this way, the faying face that two sub- shells of circuit shell 30 mutually abut against is into a ladder without same In plane, so as to stop the liquid outside circuit shell 30 to be entered in circuit shell 30 by the periphery of circuit shell 30 Portion, and then further increase the waterproof effect of osteoacusis loudspeaker arrangement, with to inside circuit shell 30 control circuit 60 or Battery 70 etc. is protected.

Further, the peace towards the first sub- shell 30a is provided on the second cascaded surface 3021 of the second sub- shell 302 Be loaded hook 3022, and accordingly, being internally provided with for the first sub-shell 301 hooks slot with the matched installation of the installation hook 3022 3012.When installing to the first sub-shell 301 and the second sub- shell 302, installation hook 3022 can be got in external thrust It crosses installation to hook the lateral wall of slot 3012 and enter the installation and hook slot 3012, and the hook part hook joint installation for installing hook 3022 is hooked The inner sidewall of slot 3012, to realize the fastening of the first sub- shell 301 and the second sub- shell 302.

In one embodiment, osteoacusis loudspeaker arrangement is further provided with press button mechanism.

Specifically, it is provided with the first depressed area 341 on the outer surface of the auxiliary sidewall 34 of circuit shell 30, first depressed area Key hole 342 is further provided in 341, which is connected to outer surface and the inner surface of auxiliary sidewall 34.

Wherein, the auxiliary sidewall 34 of circuit shell 30 may include that, when user wears the osteoacusis

loudspeaker arrangement, direction is used The auxiliary sidewall 34 of family back head, also may include user wear when, towards user's head on the downside of auxiliary sidewall 34.

The quantity of first depressed area 341 can be one or more, and can be set one in each first depressed area 341 A or multiple key holes 342, can specifically be arranged according to actual needs, be not specifically limited herein.

In present embodiment, osteoacusis loudspeaker arrangement still further comprises elastic backing 82, key 83, and control circuit 60 is wrapped include button circuit board 61.

Wherein, elastic backing 82 is set to the first depressed area 341, is specifically fixed on the corresponding auxiliary side in the first depressed area 341 On the outer surface of wall 34, to be covered in the outside of key hole 342 to avoid outside liquid from entering circuit by key hole 342 The inside of shell 30, to play the role of sealing waterproof.

Further, second depressed area 821 corresponding with key hole 342 is provided on the elastic backing 82, this is second recessed Fall into the inside that area 821 extends to key hole 342.

Specifically, which can be made of soft materials, such as soft silica gel, rubber etc..And the elasticity Pad it is 82 relatively thin, when directly Nian Jie with the outer surface of auxiliary sidewall 34, it is difficult to which it is firm to be bonded.

Therefore, in one embodiment, rigid liner further can be set between elastic backing 82 and circuit shell 30 84, rigidity liner 84 is fixed against each other with elastic backing 82, specifically can be real by way of fitting, bonding, injection molding etc. It is existing, and further carry out with auxiliary sidewall 34 rigidity liner 84 be bonded, can be specifically bonded by using double-sided adhesive, with An adhesive-layer is formed between rigidity liner 84 and auxiliary sidewall 34, so that elastic backing 82 can be clamped securely to auxiliary side wall 34 outer surface.Moreover, because 82 matter of elastic backing is soft and thin, therefore it is difficult to keep flat in the process of user's pressing keys Whole state, and by the fixation that reclines with rigidity liner 84, elastic backing 82 can be made to keep smooth.

Further, it is provided with the through-hole 841 for allowing the second depressed area 821 to pass through on rigidity liner 84, so that bullet Property liner 82 the second depressed area 821 inside of key hole 342 can be further extended to by through-hole 841.

Specifically, rigidity liner 84 can be made of stainless steel or other rigid materials, such as plastic cement hard material. And it can be sticked together by integrated molding and elastic backing 82.

In addition, key 83 includes keying body 831, and the key touching of 831 side of keying body protrusion setting is set First 832.Wherein, keying body 831 is set to side of the elastic backing 82 far from circuit shell 30, and key contact 832 extends To the second depressed area 821, to be extended to inside key hole 342 with the second depressed area 821.

Further, due in present embodiment osteoacusis loudspeaker arrangement it is more frivolous, the pressing stroke of key 83 is shorter, User can be then reduced according to soft key to press feel and bring bad experience.In present embodiment, key 83 can be by The plastic material of hard is made, so that user can have good feel when pressing.

Further, button circuit board 61 is set to the inside of circuit shell 30, is provided with corresponding with key hole 342 Key switch 611.To which in user's pressing keys, key contact 832 contacts and triggers key switch 611, with further Realize corresponding function.

In present embodiment, by the way that the second depressed area 821 is arranged on elastic backing 82, on the one hand, the second depressed area 821 Setting can cover entire key hole 342, so as to improve waterproof effect simultaneously ; On the other hand, in its natural state, press Key contact 832 just can be extended into inside key hole 342 by the second depressed area 821, so as to shorten key press Stroke to reduce the occupied space of press-key structure, and then the waterproof performance that have osteoacusis loudspeaker arrangement can either, and accounts for With less space.

In one embodiment, key 83 may include key monomer 833, the quantity of key monomer 833 can for one or Person is multiple.

In an application scenarios, key 83 may include at least two key monomers 833 being intervally installed and use In the interconnecting piece 834 of connection key monomer 833.Wherein, multiple key monomers 833 and interconnecting piece 834 can be integrally formed.It is corresponding Ground, each key monomer 833 are correspondingly arranged on a key contact 832, and correspond to a key hole 342 and one in turn and press Key switch 611.

That is, multiple key monomers 833 can be set corresponding to first depressed area 341 in present embodiment, User can trigger different key switches 611 by pressing different key monomers 833, and realize multiple functions in turn.

Further, the settable elastic projection 822 for being used to support interconnecting piece 834 on elastic backing 82.Due to key 83 Multiple key monomers 833 including connection setting, the setting of elastic projection 822 is so that user is pressing one of key monomer When 833, the key monomer 833 is enabled to individually to be

pressed, and avoid passing through linkage and by other key monomers 833 The case where pressing together must trigger corresponding key switch 611 so as to accurate.it is noted that the elastic projection 822 are not necessary, such as are also possible to the projective structure without elasticity, or can also be not provided with projective structure, have Body can be configured according to the actual situation.

In one embodiment, groove 174 corresponding with key is provided on the inner wall of shell sheath 17, so as to Suit mode is coated on the periphery of circuit shell 30 and key.

In one embodiment, osteoacusis loudspeaker arrangement further comprises at least one conductive column 85, is contained in electricity Control circuit 60 inside road shell 30 further includes main control board 62, which can be used for connecting inside circuit shell 30 Main control board 62 and circuit shell 30 outside charging circuit and/or data transmission link etc., to osteoacusis loudspeaking Device carries out charging and/or data transmission etc..

Correspondingly, at least one mounting hole 331 is set in the major side wall 33 of circuit shell 30, and conductive column 85 can be inserted in pair In the mounting hole 331 answered.Wherein, conductive column 85 and mounting hole 331 can correspond, in present embodiment, conductive column 85 and peace The quantity for filling hole 331 is four, and four conductive columns 85 are inserted in respectively in corresponding mounting hole 331, is side by side in straight line And uniform intervals are arranged.Wherein, two conductive columns 85 positioned at outside can be used as charging interface, and be located in the middle two conductions Column 85 can be used as data transmission interface.Certainly, conductive column 85 and mounting hole 331 can also be carried out according to other arrangement modes Setting, is not specifically limited herein.

Wherein, conductive column 85 may include the cylindrical body 851 being inserted in mounting hole 331.Wherein cylindrical body 851 is outer Positioning convex platform 852 is provided on circumferential surface, which can be used for being clamped with the inner surface of major side wall 33, and then will be conductive Column 85 is fixed on mounting hole 331.

Specifically, positioning convex platform 852 can be arranged in a ring around the circumferential direction of cylindrical body 851, further, in annular Positioning convex platform 852 is provided with connection 851 outer peripheral surface of cylindrical body and positioning convex platform 852 towards the side inside circuit shell 30 Extension inclined-plane 853.When installing conductive column 85, by the conductive column 85 by the outside of circuit shell 30, along extending inclined-plane 853 It is gradually inserted the inside of mounting hole 331 and entrance circuit shell 30, and in turn by positioning convex platform 852, it is complete in positioning convex platform 852 After mounting hole 331, inner surface card of the

positioning convex platform 852 towards table top and major side wall 33 outside circuit shell 30 It connects, and then conductive column 85 is fixed in mounting hole 331.

In aforesaid way, so that in assembling process, conductive column 85 can be from circuit shell 30 for the setting of positioning convex platform 852 Major side wall 33 outer surface insertion mounting hole 331 after, and positioning convex platform 852 can be pressed into peace by way of pressing It fills in hole 331, to be connected and fixed with the inner surface of the major side wall 33 of circuit shell 30, without from the inside of circuit shell 30 It is installed, so that the assembly of osteoacusis loudspeaker arrangement is more convenient, improves production assembly efficiency further, extend So that in assembling process, positioning convex platform 852 can more be smoothly through mounting hole 331 for the setting on inclined-plane 853.Positioning convex platform 852 setting then enables to conductive column 85 to be clamped when entering in mounting hole 331 with the inner surface of major side wall 33 and is not easy from leading It is marked in electric hole, so as to which conductive column 85 to be stably attached in mounting hole 331.

Specifically, in one embodiment, insertion side of the cylindrical body 851 along cylindrical body 851 relative to mounting hole 331 To being divided into the first cylindrical body 8511 and the second cylindrical body 8512, the two can by conductive metal material, as copper, silver or Alloy etc. is integrally formed and is integral structure.Wherein, it is being inserted into the direction of insertion of mounting hole 331 perpendicular to conductive column 85, The cross section of first cylindrical body 8511 can be greater than the cross section of the second cylindrical body 8512.Wherein, positioning convex platform 852 is settable In in the second cylindrical body 8512.

Correspondingly, mounting hole 331 is divided into cross section and the first cylindrical body 851 and the second cylindrical body along direction of insertion 851 corresponding first hole sections 3311 and the second hole section 3312, and then in the junction of the first hole section 3311 and the second hole section 3312 Form a circular table 3313, wherein the circular table 3313 is connected to the outer surface of major side wall 33.

Further, when cylindrical body 851 is inserted in mounting hole 331, the first cylindrical body 8511 is towards the second column The side of shape ontology 8512 is supported on circular table 3313, meanwhile, the positioning on 8512 outer peripheral surface of the second cylindrical body The side of boss 852 towards the first cylindrical body 8511 is connected on the inner surface of major side wall 33, and then by conductive column 85 from peace Face is clamped simultaneously inside and outside major side wall 33 around dress hole 331, so that conductive column 85 is fixed in mounting hole 331.

In one embodiment, cylindrical body 851 is axially disposed an accommodating cavity 8513, the open end of

accommodating cavity 8513 in Second cylindrical body 8512 is towards on the end face inside circuit shell 30.Specifically, which can be inserted into along being parallel to Direction and penetrate through to the part positioned at 30 interior side of circuit shell of the second cylindrical body 8512, and reach positioning convex platform It is terminated before 852.Certainly, in other embodiment, the specific location of accommodating cavity 8513 can be set according to demand, herein Without limitation.

Further, conductive column 85 includes the spring 854 and conductive contact 855 being set in accommodating cavity 8513, conductive One end of contact 855 can be abutted in 8513 inside of accommodating cavity with spring 854, and the other end is exposed to from the open end of accommodating cavity 8513 The inside of circuit shell 30.Wherein, the material of conductive contact 855 can be identical as the material of cylindrical body 851, and spring 854 can be with It is such as bonded by certain means, welds mode and connect with the second cylindrical body 851 and conductive contact 855, or may be used also To be placed directly in accommodating cavity 8513, and passes through the clamping of cylindrical body 851 and the major side wall 33 of circuit shell 30 and lead The abutting of electrical contact 855 and main control board 62 and resilient clamp are inside accommodating cavity 8513.

Further, contact corresponding with 85 position of conductive column is provided on the main control board 62 inside circuit shell 30 621, it is specific as shown in Figure 7.Specifically, main control board 62 includes the biggish main surface 622 of area and connection main surface 622 The lesser side surface 623 of area, wherein the main surface 622 of main control board 62 can be parallel or be approximately parallel to circuit shell The major side wall 33 of body 30, wherein contact 621 is correspondingly arranged in the main surface 622 of main control board 62.

Wherein, the direction of insertion of the insertion of conductive column 85 mounting hole 331 is axial parallel with conductive column 85, and perpendicular to main side Wall 33, and then perpendicular to the main surface of main control board 62 622.After conductive column 85 is installed in mounting hole 331, spring 854 by conductive contact 855 and cylindrical body 851 clamping and generate elastic deformation, the elasticity of conductive contact 855 is pressed in on corresponding contact 621, to realize being electrically connected for conductive column 85 and main control board 62.

In one embodiment, osteoacusis loudspeaker arrangement still further comprises an auxiliary piece being located inside circuit shell 30 86。

The auxiliary piece 86 includes a plate body 861, is provided with vacancy section 8611 on the plate body 861, which can pass through heat The modes such as molten or hot pressing, bonding are set on the inner surface of major side wall 33, and make the mounting hole being set in

major side wall 33 331 are located inside vacancy section 8611.Specifically, the plate face of plate body 861 can be posted by parallel on the inner surface of major side wall 33.

Wherein, the auxiliary piece 85 have certain thickness, on the inner surface that it is set to major side wall 33 after, with the auxiliary The inner sidewall and major side wall 33 of the vacancy section 8611 of piece 86 collectively form one and are located at outside the conductive column 85 being inserted in mounting hole 331 The glue groove 87 enclosed.

Further, sealant can be applied in glue groove 87, to carry out from the inside of circuit shell 30 to mounting hole 331 Sealing to improve the airtightness of circuit shell 30, and then improves the waterproof performance of osteoacusis loudspeaker arrangement.

Wherein, the material of the auxiliary piece 86 can be identical as the material of circuit shell 30, and is separately formed with circuit shell 30. It should be pointed out that mounting hole 331 nearby has other structures toward contact, such as needs into 30 formative stage of circuit shell Type key hole 342 etc., corresponding mold may need the inside from circuit shell 30 to exit to these structures at the time of molding, and this If when directly inside circuit shell 30 be integrally formed correspond to mounting hole 331 glue groove 87, the protrusion of glue groove 87 may interfere smoothly exiting for the mold of these structures, to make troubles for production.In present embodiment, auxiliary piece 86 and circuit shell Body 30 is independent structure respectively, can be by the way that auxiliary piece 86 to be installed on to the inside of circuit shell 30 after the two is separately formed And glue groove 87 is collectively formed with the major side wall of circuit shell 30 33, so that the formative stage in circuit shell 30 will not stop portions The mold of structure is exited from the inside of circuit shell 30, to be conducive to going on smoothly for production.

In one embodiment, when forming to circuit shell 30, exiting for mold is only taken up occupied by glue groove 87 Space segment space, it is thus possible to be integrally formed glue on the inner surface of major side wall 33 in the case where not influencing to move back mould A part of slot 87, and another part of glue groove 87 still can be assisted constituting by auxiliary piece 86.

Specifically, integrally formed with the first strip fin 332, the first strip fin 332 on the inner surface of major side wall 33 The mold that the position at place does not influence circuit shell 30 moves back mould.The vacancy section 8611 of auxiliary piece 86 is provided with a notch 8612.Ita In, the first strip fin 332 is corresponding with the notch 8612.It, can should after circuit shell 30 and auxiliary piece 86 are separately formed Auxiliary piece 86 is in the inner surface of major side wall 33, so that the first strip fin 332 is at least partly embedded at notch 8612, in turn

Cooperated using the first strip fin 332 and auxiliary piece 86 so that glue groove 87 is in closure setting.

In present embodiment, since the first strip fin 332 will not exit generation blocking to mold, glue groove 87 Side wall can be collectively formed by the first strip fin 332 for being shaped in 33 inner surface of major side wall with auxiliary piece 86.

Further, in one embodiment, the first strip fin 332 also further extends into the side with plate body 861 Edge 8613 abuts, and then positions to plate body 861

Specifically, which includes fin main body 3321 and registration arm 3322, wherein fin main body 3321 for the notch 8612 of vacancy section 8611 matching and chimeric with its, so that the side wall of glue groove 87 be collectively formed ; And it positions Arm 3322 is then further extended by one end of fin main body 3321, and extend at the one side edge 8613 of plate body 861 with The side edge 8613 abuts, to position at the side edge 8613 to the plate body 861.

Wherein, the first strip fin 332 can be greater than the thickness of auxiliary piece 86 in the height that the inner surface of major side wall 33 protrudes above Degree, it is of course also possible to be less than or equal to, as long as glue groove 87 can be collectively formed with auxiliary piece 86, and can be to auxiliary piece 86 plate body 861 plays positioning action, is not specifically limited herein.

In one embodiment, location hole 8614 is further provided on plate body 861, wherein 8614 run-through board of location hole The mainboard face of body 861 is arranged.Further, integrally formed with positioning corresponding with location hole 8614 on the inner surface of major side wall 33 Column 333, after the inner surface of major side wall 33 is arranged in auxiliary piece 86, which is inserted in location hole 8614, thus Further auxiliary piece is positioned.

Wherein, location hole 8614 is consistent with the quantity of positioning column 333, and in present embodiment, the quantity of the two is two.

In an application scenarios, the side edge 8613 of plate body 861 is formed at least two lugs 8615, two location holes 8614 can be respectively arranged on corresponding lug 8615.

Further, integrally formed with one second strip fin 334, the second strip fin on the inner surface of major side wall 33 334 can be extended along towards the direction of auxiliary sidewall 34, and can be with the extending direction of the registration arm 3322 of the first strip fin 332 It is orthogonal.

Accordingly, strip locating slot 8616 corresponding with the second strip fin 334, the positioning are additionally provided on plate body 861 Slot 8616 is recessed setting along the direction far from the major side wall 33, and one

end is connect and can be with the side edge 8613 of plate body 861 The side edge 8613 is vertically arranged.

In an application scenarios, locating slot 8616 can be only by the surface indentation shape of the fitting major side wall 33 of plate body 861 At the depth of locating slot 8616 is less than the thickness of plate body 861, at this point, the face of plate body 861 being arranged with the surface opposite of recess is not It is influenced by locating slot 8616 ; In another application scenarios, the depth of locating slot 8616 is greater than the depth of plate body 861, thus So that another apparent surface is towards the direction of recess protrusion, to match in the surface indentation of the close major side wall 33 of plate body 861 Conjunction forms locating slot 8616.

Specifically, after the inner surface of major side wall 33 is arranged in auxiliary piece 86, the second strip fin 334 is embedded in strip In locating slot 8616, further to be positioned to plate body 861.

In one embodiment, button circuit board 61 perpendicular to main control board 62 the auxiliary sidewall 34 with circuit shell 30 Parallel interval setting.Specifically, as described above, auxiliary sidewall 34 corresponding to press button mechanism may include two kinds, one is in user When wearing the osteoacusis loudspeaker arrangement, towards user's head on rear side of auxiliary sidewall 34, another kind be user wear when towards use The auxiliary sidewall 34 of account subordinate side.In present embodiment, button circuit board 61 can be two, and auxiliary with corresponding two kinds respectively The setting of sidewall 34 parallel interval.

Wherein, button circuit board 61 may be disposed at the side towards auxiliary sidewall 34 of the plate body 861 of auxiliary piece 86.Further Ground, auxiliary piece 86 include the pressure holding foot 862 relative to the protrusion setting of plate body 861.Specifically, pressure holding foot 862 is along perpendicular to plate body The direction protrusion of 861 main surface is set at the side edge towards auxiliary sidewall 34 of plate body 861, and presses the quantity of foot 862 It can be one or more.In present embodiment, pressure holding foot 862 can be electric by key towards the side of auxiliary sidewall 34 by it The pressure holding of road plate 61 is on the inner surface of auxiliary sidewall 34, to play fixed effect to button circuit board 61.

In one embodiment, main control board 62 and the interval of major side wall 33 are arranged, and the master of the plate body 861 of auxiliary piece 86 Surface is parallel with major side wall 33 and is further spaced and is arranged with main control board 62.

Wherein, pressure holding foot 862 is specifically by plate body 861 along the major side wall 33 away from the close circuit shell 30 of auxiliary piece 86 And it is protruded towards the direction of main control board 62, and extend at the plate face of main control board 62 to be played to

main control board 62 Chip hold down at least partly presses on foot 862 so that main control board 62 is supported in.

In one embodiment, exposed hole 175 corresponding with the conductive column 85 is provided on shell sheath 17, by shell After body sheath 17 is sleeved on 30 periphery of circuit shell, it is outer that one end that conductive column 85 is located at outside circuit shell 30 further passes through this Reveal hole 175 it is exposed, and then with the circuit connection outside osteoacusis loudspeaker arrangement so that the osteoacusis loudspeaker arrangement passes through conduction Column carries out electricity supply or data transmission.

Further, the outer surface depressions of circuit shell 30 are provided with the glue groove 39 around multiple mounting holes 331.Specifically Ground, glue groove 39 can be oval ring, and multiple mounting holes 331 are respectively arranged at the circular circuit shell of glue groove 39 of oval ring On 30.

In present embodiment, sealant is applied in the glue groove 39, and then shell sheath 17 has been assembled with circuit shell 30 Cheng Hou, shell sheath 17 can be tightly connected in the periphery of mounting hole 331 with circuit shell 30 by the sealant, to avoid When outside liquid enters 17 inside of shell sheath by exposed hole 175, shell sheath 17 generates cunning in 30 periphery of circuit shell It is dynamic, and further mounting hole 331 can be sealed from the outside of circuit shell 30, to further increase circuit shell 30 Airtightness, and then further increase the waterproof performance of osteoacusis loudspeaker arrangement.

In one embodiment, circuit shell 30 is further provided in one end far from ear-hang 10 and patches end 3a, rear to hang 40 include elastic metallic yarn 41 and are set to the both ends of elastic metallic yarn 41 and patch end 42, wherein patching end 3a and patching end 42 patch fixation each other.

Wherein, since the earphone core 50 of osteoacusis loudspeaker arrangement is respectively left and right two, corresponding machine core shell 20, ear-hang 10 and circuit shell 30 be also configured as left and right two, it is rear to hang 40 by patching fixed mode with two circuit shells 30 respectively The machine core shell 20, ear-hang 10 and the circuit shell 30 that are located at two sides are linked together, and the suspension setting when user wears On rear side of user's head.

Specifically, material with performance of elastic metallic yarn 41 etc. can be identical as elastic metallic yarn 11, related detailed content The aforementioned associated description to elastic metallic yarn 11 is referred to, details are not described herein again.

Patch the both ends that end 42 can be formed in elastic metallic yarn 41 by way of injection moiding.Specifically,

patching end 42 can To be made of materials such as plastic cement.

In one embodiment, it patches end 42 and is provided with jointing holes 421, this patches end 3a and is at least partially inserted into jointing holes In 421, in present embodiment, the side that circular table 37 deviates from ear-hang 10 can be specifically located at by patching end 3a.Patch end 3a with Plugging mode between jointing holes 421 and the plugging mode patched between end 15 and jointing holes 31 may be the same or different.

Wherein, insertion side of the end 3a relative to jointing holes 421 is respectively arranged with and patched in the opposite sides for patching end 3a To vertically disposed fluting 3a1.Two fluting 3a1 can be spaced and be symmetrically disposed on the two sides for patching end 3a.Further, this two A fluting 3a1 can be connected in the corresponding side wall for being perpendicularly to the insertion direction with patching end 3a.

Correspondingly, it patches and is provided with through-hole 423 corresponding with two fluting positions 3a1 on the first side wall 422 at end 42.Its In, patching end 42 includes the side wall around setting for defining jointing holes 421, and the first side wall 422 for patching end 42 can be Patch end 3a and patch end 42 patch fixed when, patch end 42 can be with the side wall that intersect of extending direction of fluting 3a1.

Wherein, osteoacusis loudspeaker arrangement further comprises fixing piece 88, and fixing piece 88 includes two pins disposed in parallel 881 and the interconnecting piece 882 for connecting pin 881.In present embodiment, two pins 881 are arranged in parallel, and interconnecting piece 882 can It is vertically connected in the same side of two pins 881, to form U-shaped fixing piece 88 similar with 81 shape of fixing piece.

It should be pointed out that fixing piece 88 can be similar to the shape of fixing piece 81, but specific dimensional parameters can fit Should be different in peripheral structure, in present embodiment, the length of pin 881 is greater than the length of pin 811,812 length of interconnecting piece Less than the length etc. of interconnecting piece 882, it is not specifically limited herein.

Further, pin 881 can be inserted into fluting 3a1 from the outside via through holes 423 for patching end 42, and by interconnecting piece 882 are barred from the outside for patching end 3a, and then realize to patch end 42 and patch and hold 3a's to patch fixation.

By the above-mentioned means, the fixing piece 88 of osteoacusis loudspeaker arrangement includes two pins 881 disposed in parallel and is used for The interconnecting piece 882 of pin 881 is connected, is patched so that fixing piece 88 docks spigot 3a in certain span and patches end 42 It is fixed, so that circuit shell 30

and the rear fixation hung between 40 are more stable, firm ; And 88 structure of fixing piece is simple, It is inserted and removed from conveniently, is fixed as detachably so that patching end 3a and patching patching between end 42, and enable to bone The assembly for conducting loudspeaker arrangement is more convenient.

Further, in one embodiment, the second sidewall 424 opposite with the first side wall 422 for patching end 42 is enterprising One step is provided with the through-hole 425 opposite with through-hole 423, and pin 881 is further inserted into through-hole 425 through fluting 3a1.

In the present embodiment, 881 via through holes 423 of pin are inserted into fluting 3a1, and further through fluting 3a1 insertion To through-hole 425, that is to say, that pin 881 can by it is rear hang 40 patch end 42 two lateral walls and patch end 3a it is complete Run through and be connected together, so that being patched between circuit shell 30 and rear extension 40 stronger.

Specifically, in one embodiment, patch end 3a along patch end 3a relative to jointing holes 421 direction of insertion into one Step, which is divided into first and patches section 3a2 and second, patches a section 3a3.

Wherein, patching end 3a may be provided at a close auxiliary sidewall 34 side for end for circuit shell 30, the auxiliary sidewall 34 It specifically can be another auxiliary sidewall 34 opposite with the auxiliary sidewall 34 where the locating piece 38 in above embodiment.

Further, first patch section 3a2 and second patch section 3a3 can close to locating piece 38 a lateral edge patch end 3a Relative to jointing holes 421 direction of insertion and stepped setting so that in the cross-wise direction being perpendicularly to the insertion direction, First section for patching section 3a2 is greater than the second section for patching section 3a3.

Correspondingly, jointing holes 421 are further divided into shape point relative to the direction of insertion of jointing holes 421 along patching end 3a Section 3a2 and second is not patched with first and patches the first hole section 4211 and the second hole section 4212 that section 3a3 matches, so that End 3a is patched when being inserted into jointing holes 421, first, which patches section 3a2 and second, patches section 3a3 and be inserted in the first hole section respectively 4211 and second 4212 in hole section.

Further, fluting 3a1 may be disposed at first and patch on section 3a2, and specifically, fluting 3a1 can be arrived along end 3a is patched The direction of locating piece 38, the i.e. opposite direction of the auxiliary sidewall 34 of the two of circuit shell 30 and be extended, so that perforation first connects The two sidewalls vertical with the major side wall 33 of circuit shell 30 of section 3a2 are inserted, and are further connect through first along being inserted perpendicularly into direction insert the two sidewalls of

the major side wall 33 for being parallel to circuit shell 30 of section 3a2.

Wherein, patching the through-hole 423 being arranged on end 42 can be corresponding with the fluting side towards locating piece 38 of 3a1, and leads to It hole 425 then can be corresponding with fluting remotely located piece 38 of the side of 3a1.

Further, in one embodiment, it first patches section 3a2 and second and patches the top side of section 3a3 and coplanar with each other set It sets.Wherein, the first top side for patching that section 3a2 and second patches section 3a3 refers to when user normally wears osteoacusis loudspeaker arrangement, First patches the side that section 3a2 and second patches the headward top side of section 3a3, namely patches section 3a2 and second with first and connect It inserts section 3a3 and is formed by ladder-like opposite side.

Further, first patch section 3a2 and second patch section 3a3 top side it is coplanar and be formed with for accommodating conducting wire Cabling channel 3a4.Cabling channel 3a4 can extend along the direction that patches for patching end 3a and jointing holes 421, can be used for accommodating passing through and hang later 40 and be connected to the conducting wire of control circuit 60 and battery 70.

In present embodiment, it will can first patch end 3a and be inserted in jointing holes 421, the court for then patching section 3a2 from first Fluting 3a1 is inserted into the side of locating piece 38.Specifically, in present embodiment, the court that end 3a is set to circuit shell 30 is patched Remotely located piece 38 of side of 40 end face is hung backward, therefore, also has one in the side for patching end 3a towards locating piece 38 Fixed space, thus to circuit shell 30 and it is rear hang 40 and carry out grafting installation when, can be by fixing piece 88 from patching end 3a2 Bottom side, i.e., first patch section 3a2 towards the side of locating piece 38 by through-hole 423 is inserted into fluting 3a1 and in turn be inserted into it is logical In hole 425, to realize that circuit shell 30 is hung 40 and be plugged and fixed with rear.It in this way, can be completely hidden by fixing piece 88 It is hidden in circuit shell 30 to be formed by inner space with rear extension 40 without exposed, without occupying additional space.

Further, in one embodiment, rear extension 40 further includes injection molding in elastic metallic yarn 41 and patches outside end 42 The second protection sleeve pipe 43 for enclosing and with the integrally formed end protection cap 44 of the second protection sleeve pipe 43.

Wherein, the material of the second protection sleeve pipe 43 and end protection cap 44 can be with protection sleeve pipe 16 and shell sheath 17 material is identical, such as all can be have the soft material, such as soft silica gel, rubber etc. of certain elasticity.

End protection cap 44 can specifically be formed in the both ends of elastic metallic yarn 41, can be located at elastic metallic yarn 41 two The end 42 that patches at end is shaped in the periphery for patching end 42.

It should be pointed out that shell sheath 17 is only wrapped up by one end towards ear-hang 10 of circuit shell 30 to circuit shell At 30 circular table 37, therefore, the part that 40 are hung after the direction of the circular table 37 of circuit shell 30 then exposes to shell shield The periphery of set 17.Further, in present embodiment, end protection cap 44 and the shape for patching the inner sidewall that end 42 is collectively formed The shape of the shape end exposed with the circuit shell 30 matches, to be further covered in the end of the exposed circuit shell 30 Periphery, and hung after the direction of the end face towards circuit shell 30 of the end protection cap 44 and shell sheath 17 40 end face bullet Property abut, to further provide for sealing.

Further, in one embodiment, the end of the exposed circuit shell 30 of shell sheath 17 be additionally provided with by Keyhole 342 is accordingly provided with key 83, end protection cap 44 covers the key 83, and is provided with and is used in key hole 342 Accommodate the key accommodation groove 441 of key 83.

Specifically, 342 space set of key hole is in patching end 3a towards the side of locating piece 33, and key hole 342 Quantity can be one or more, specifically can be according to the specific structure and electricity of the control circuit 60 inside circuit shell 30 The structure of road shell 30 itself determines, is not specifically limited herein.

The foregoing is merely presently filed embodiments, are not intended to limit the scope of the patents of the application, all to utilize this Equivalent structure or equivalent flow shift made by application specification and accompanying drawing content, it is relevant to be applied directly or indirectly in other Technical field similarly includes in the scope of patent protection of the application.

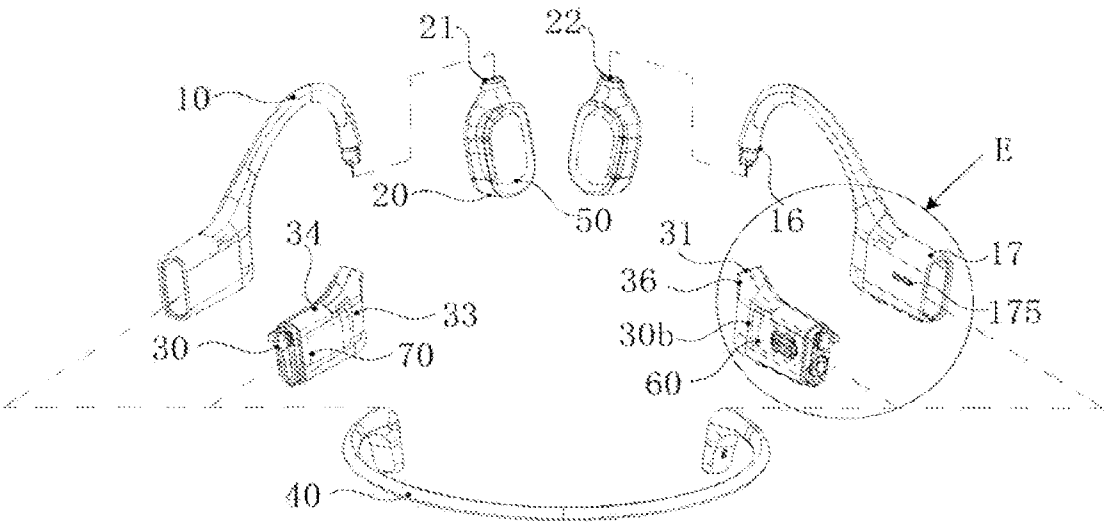


图1

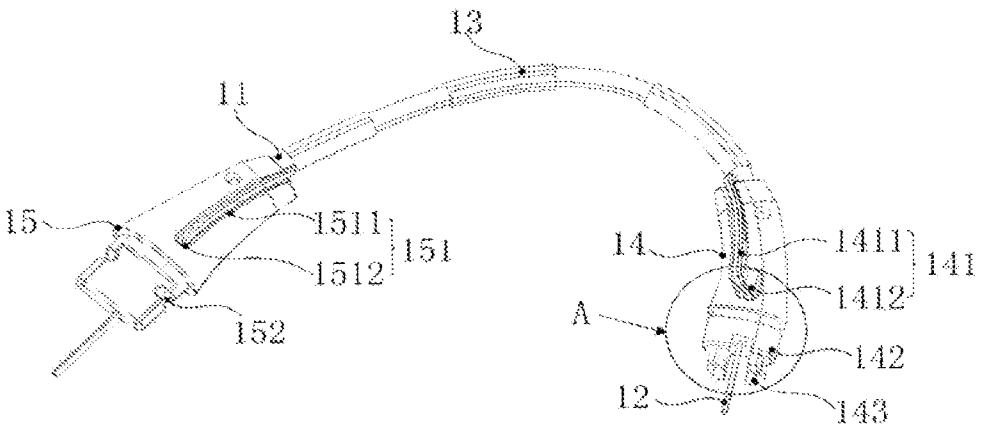


图2

IPR2025-00842; Shokz
Ex. 2018 - Page 1509

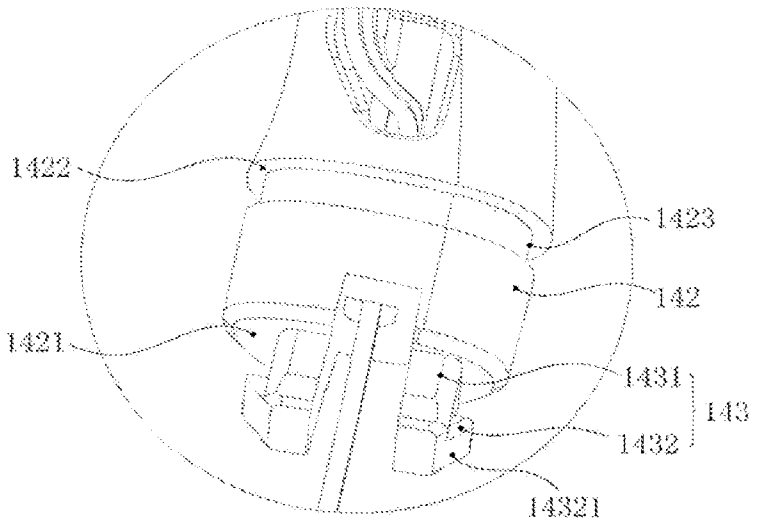


图3

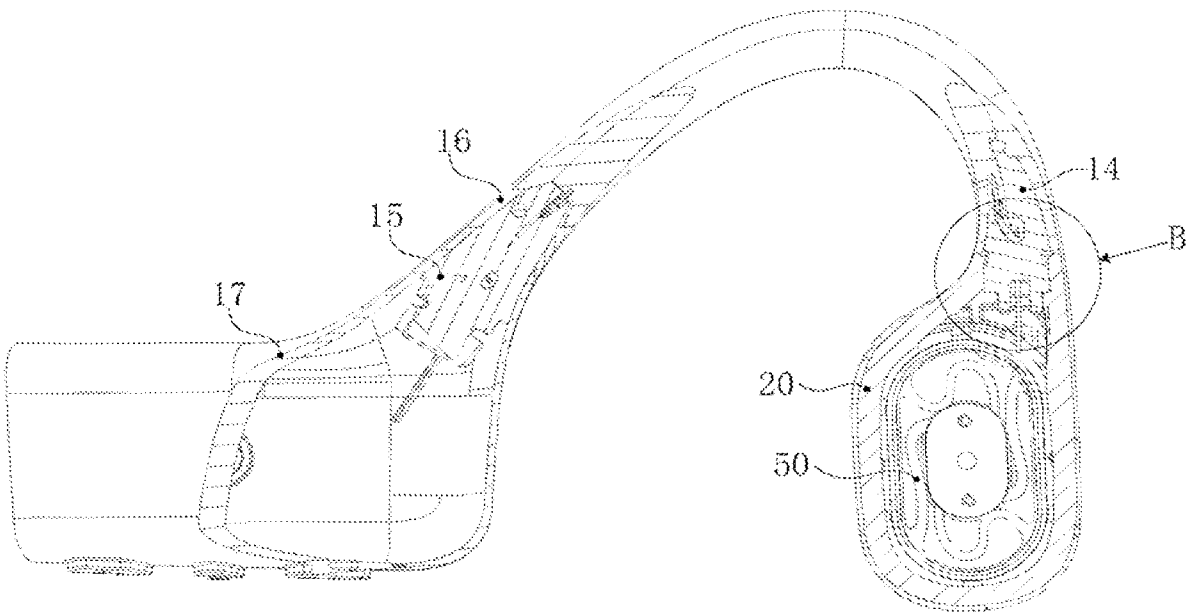


图4

IPR2025-00842; Shokz
Ex. 2018 - Page 1510

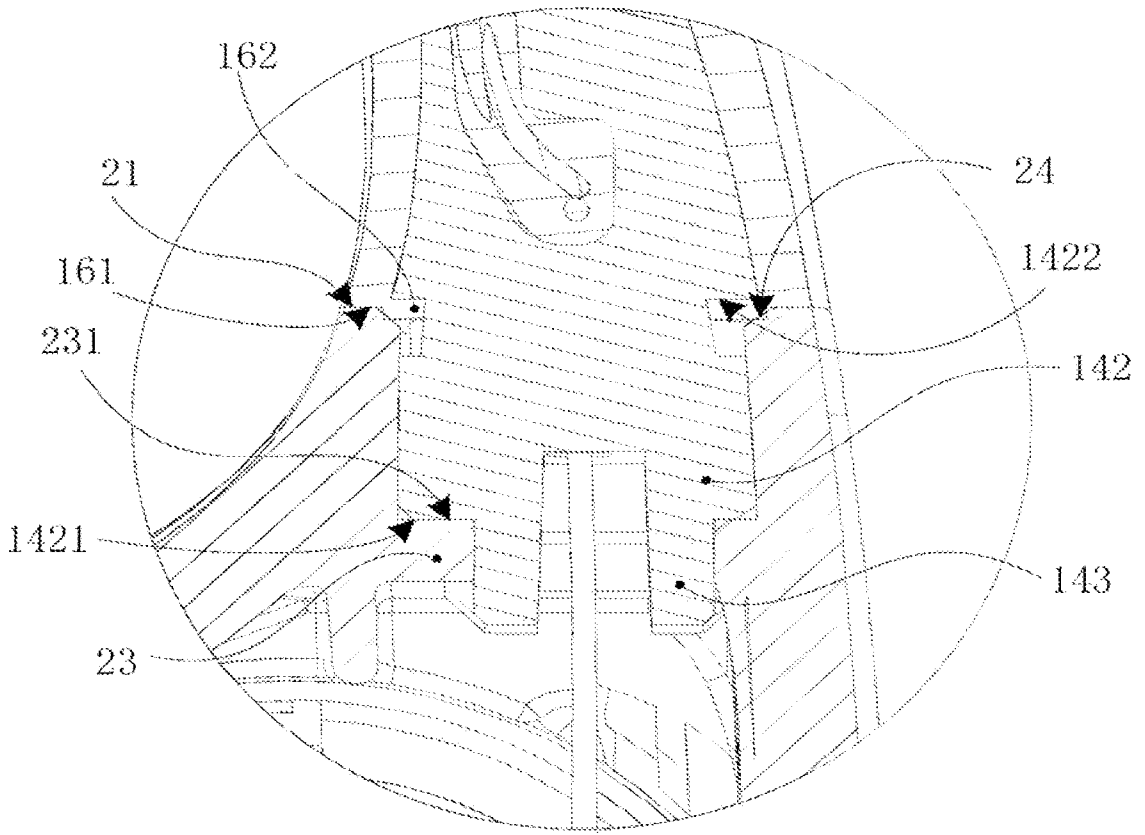


图5

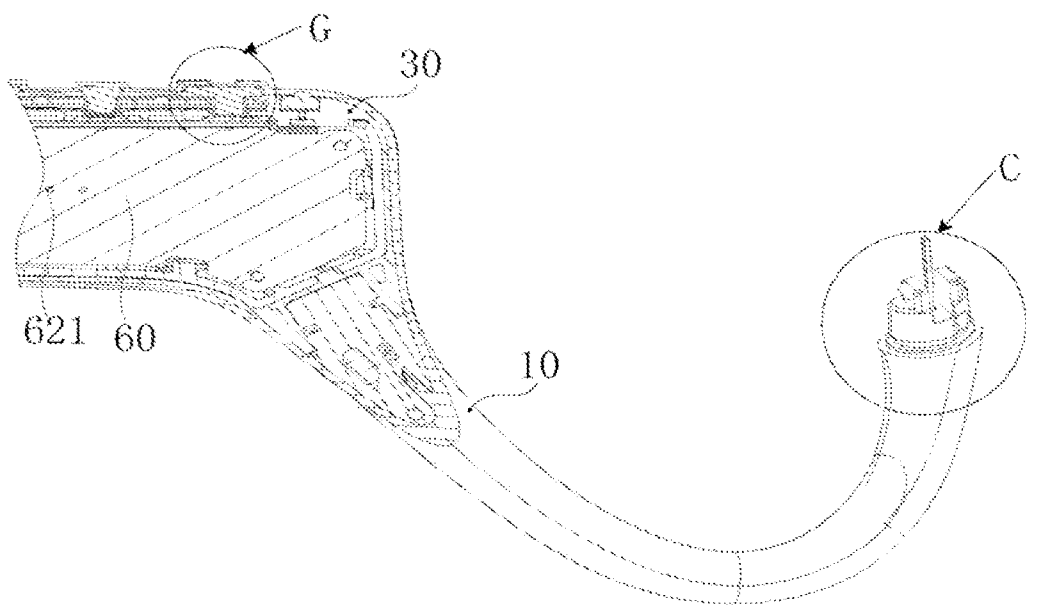


图6

IPR2025-00842; Shokz
Ex. 2018 - Page 1511

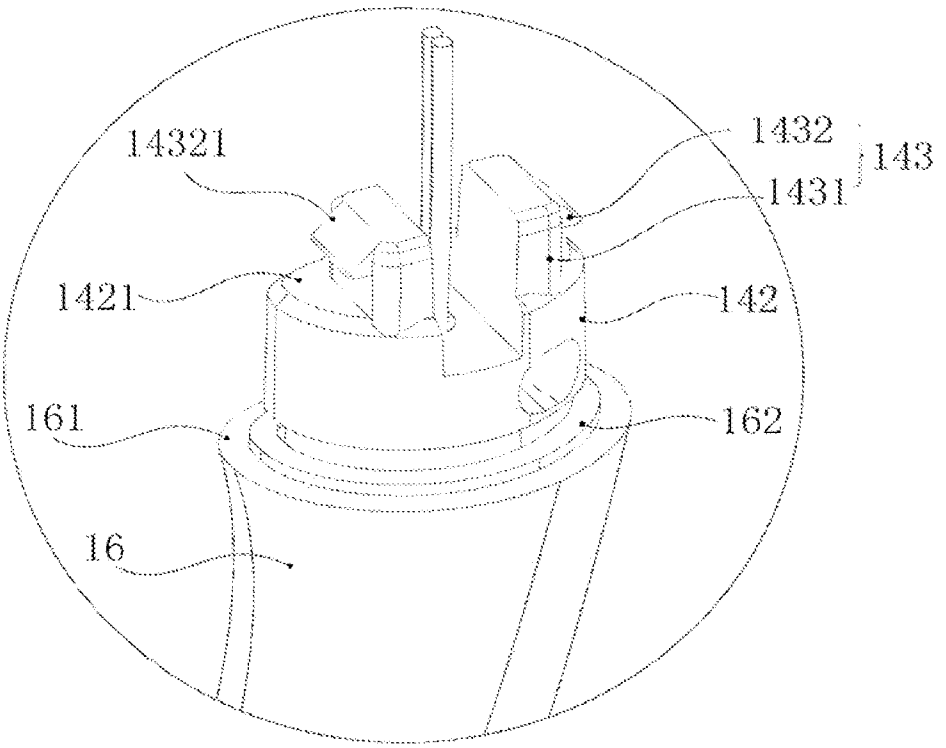


图7

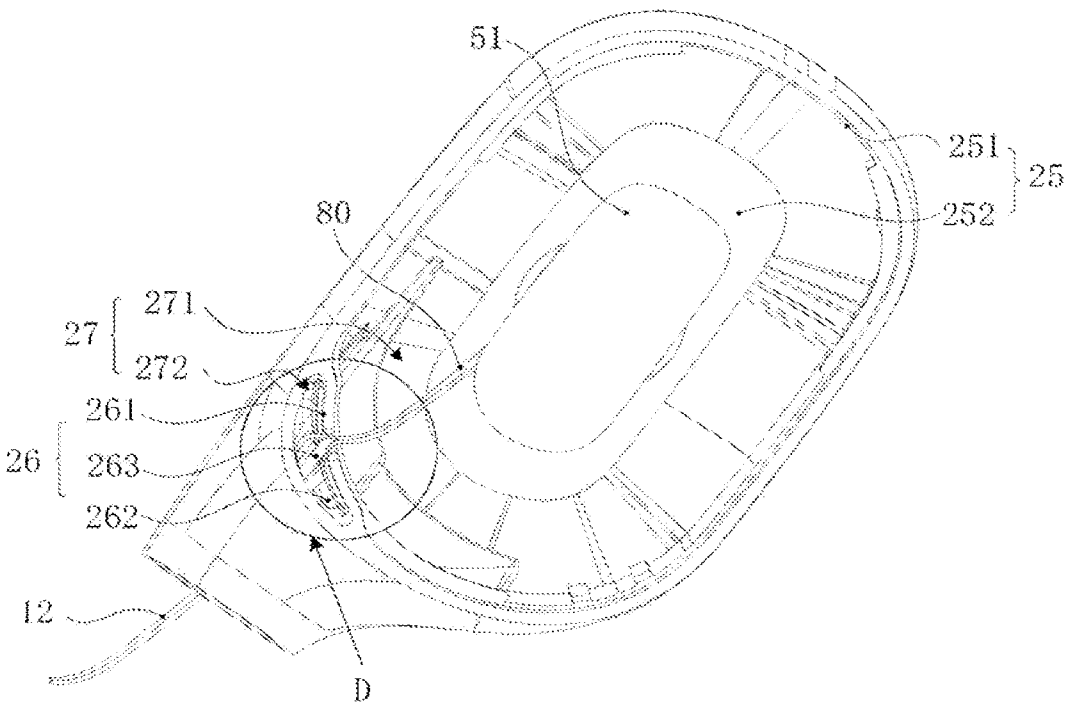


图8

IPR2025-00842; Shokz
Ex. 2018 - Page 1512

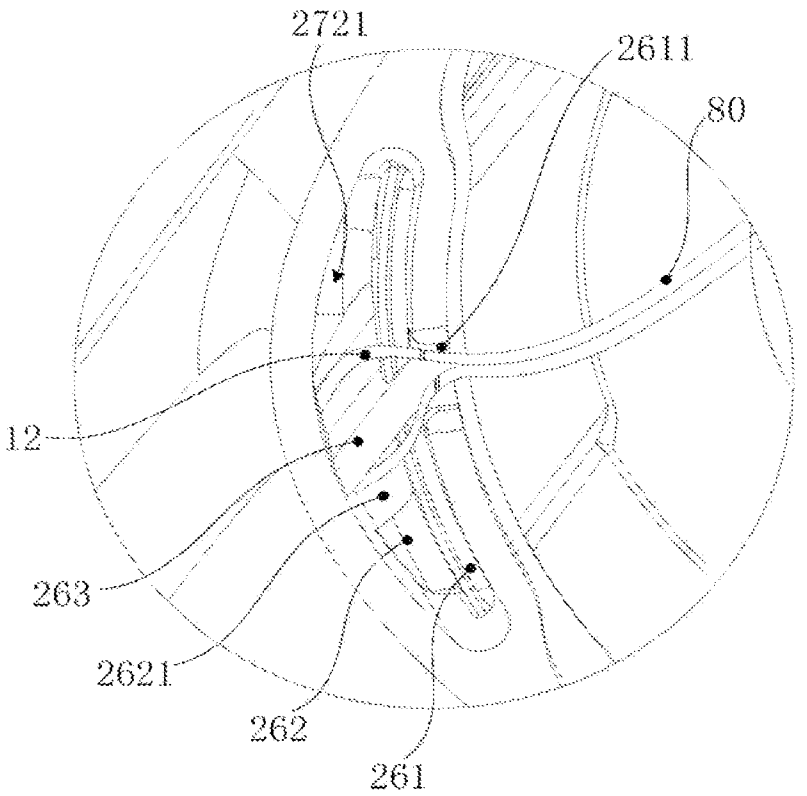


图9

IPR2025-00842; Shokz
Ex. 2018 - Page 1513

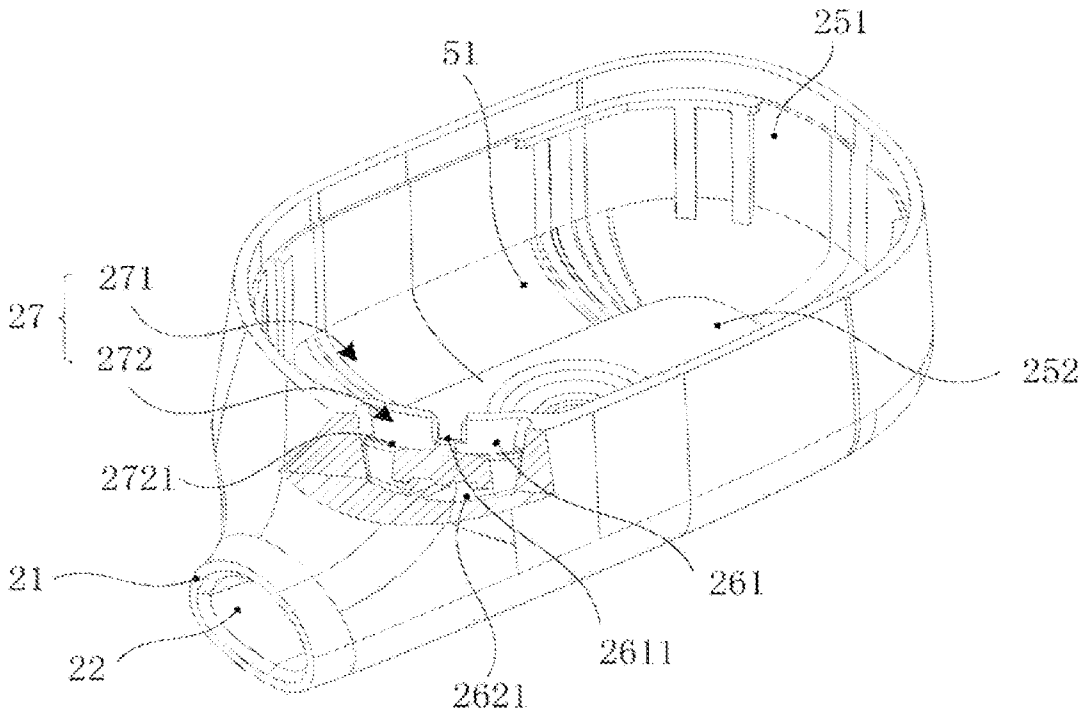


图10

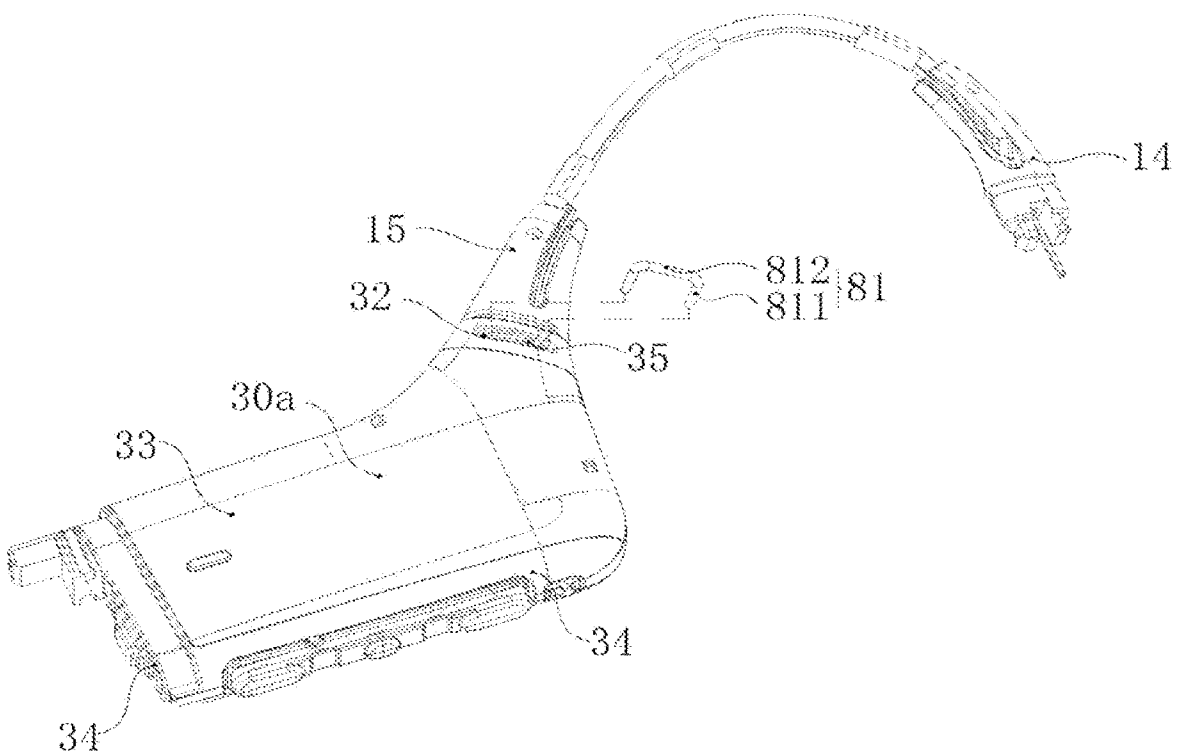


图11

IPR2025-00842; Shokz
Ex. 2018 - Page 1514

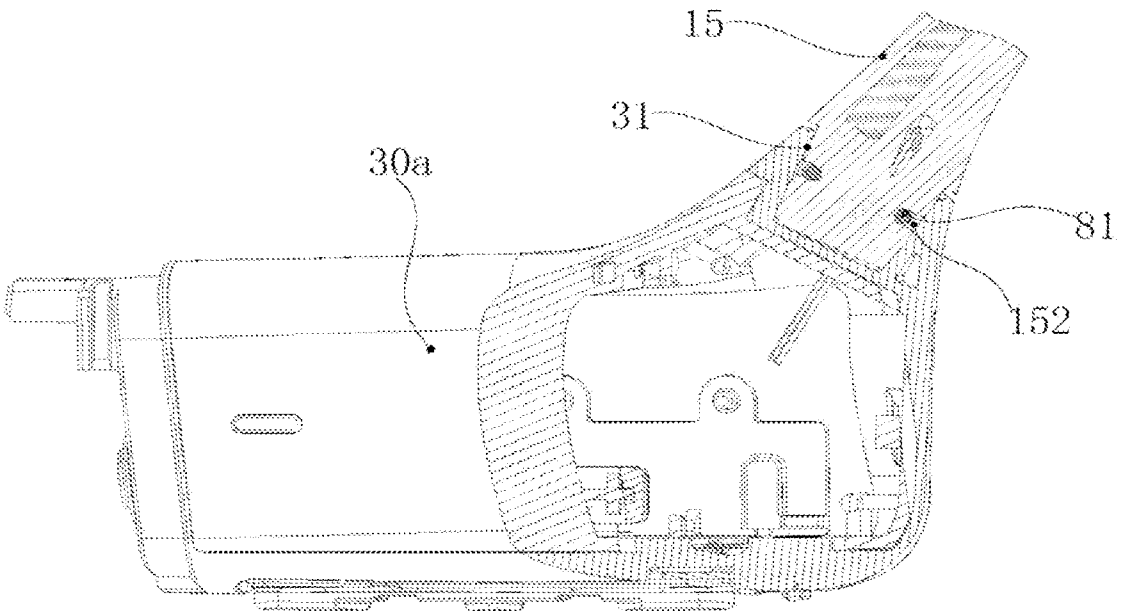


图12

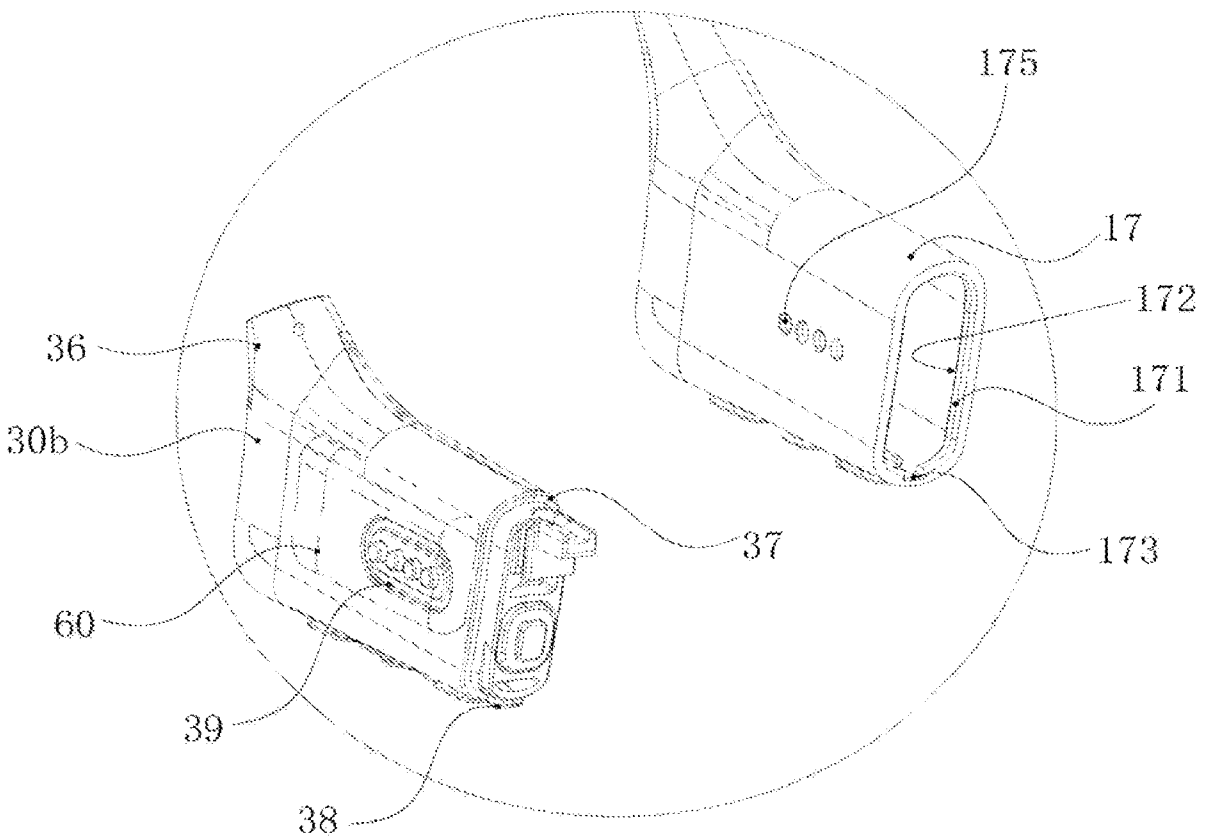


图13

IPR2025-00842; Shokz
Ex. 2018 - Page 1515

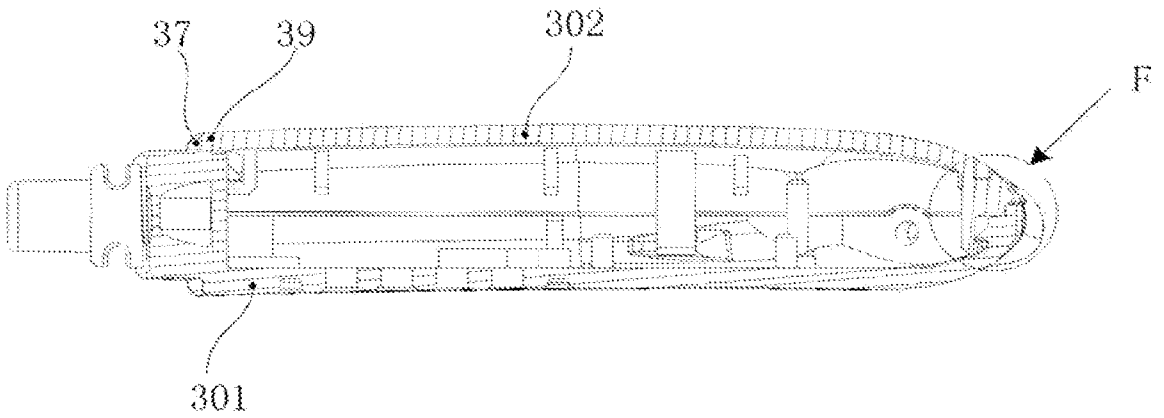


图14

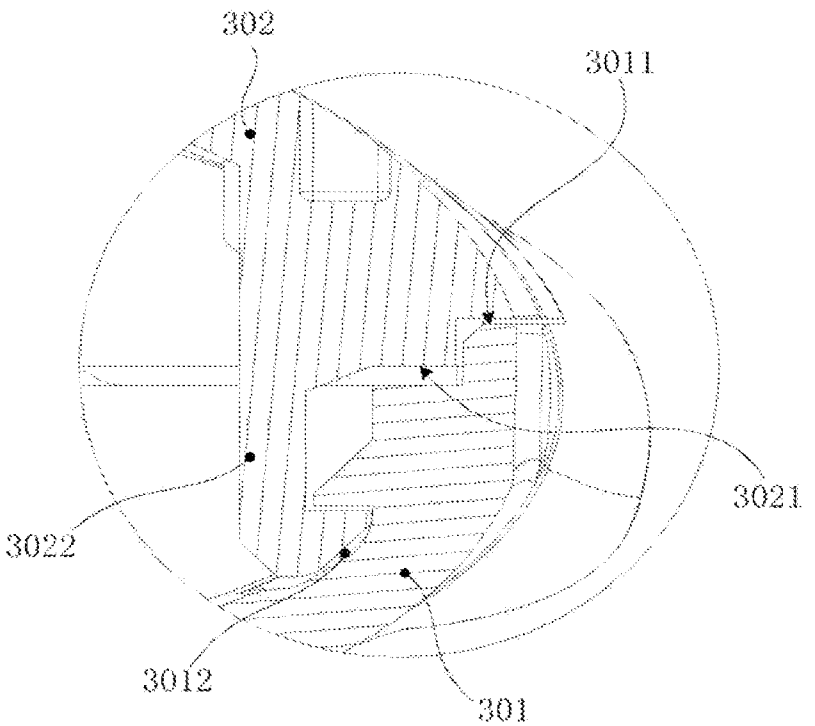


图15

IPR2025-00842; Shokz
Ex. 2018 - Page 1516

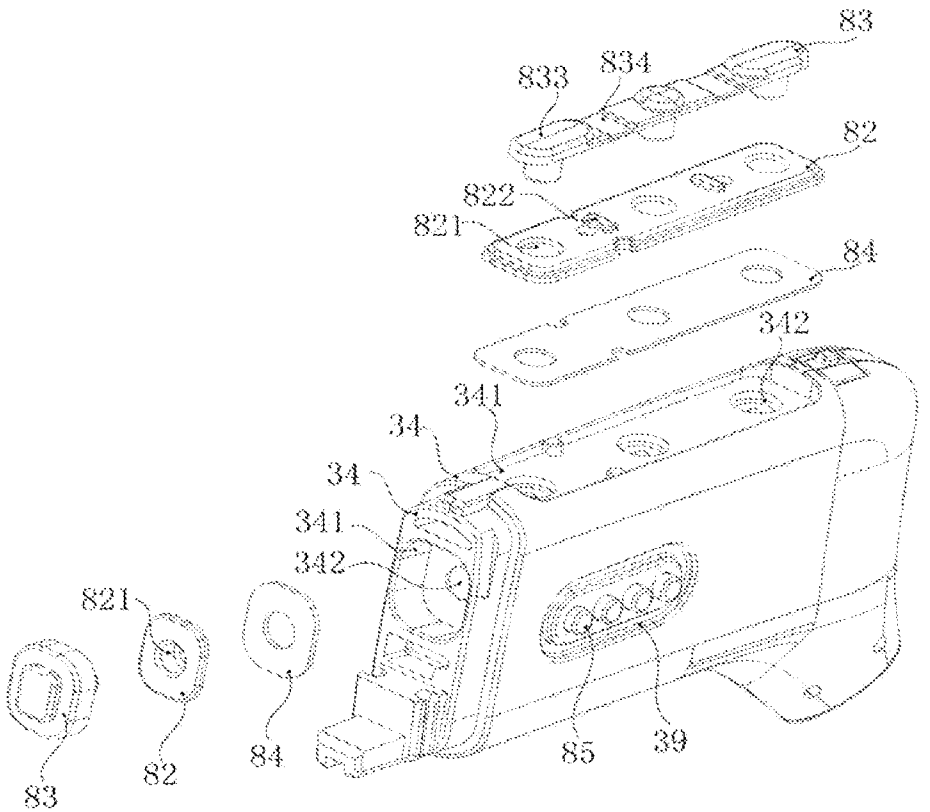


图16

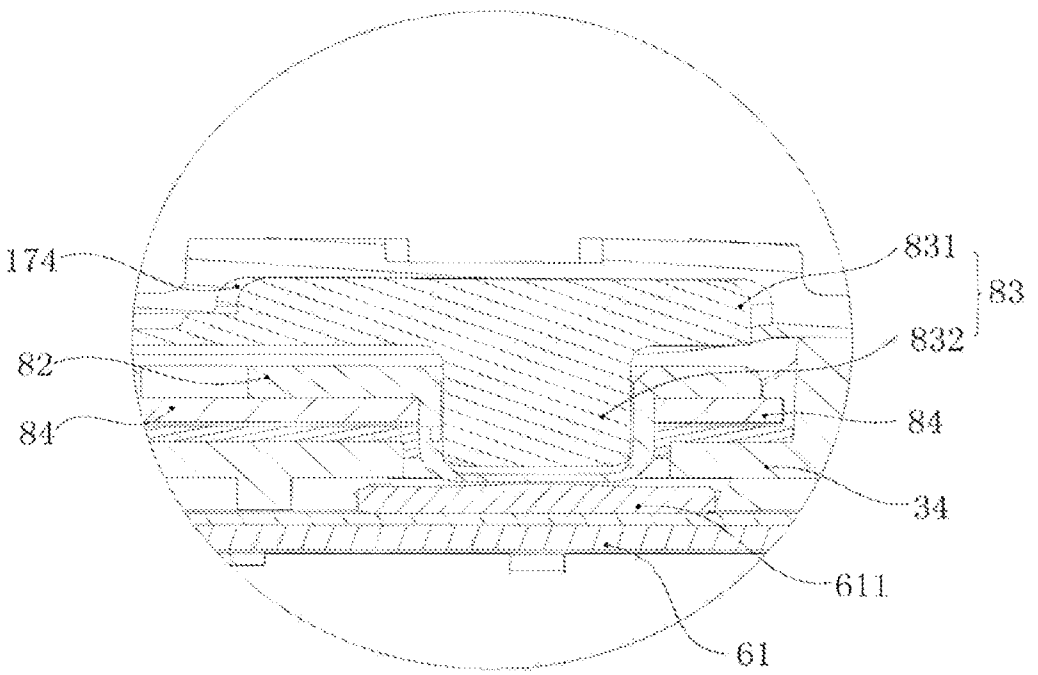


图17

IPR2025-00842; Shokz
Ex. 2018 - Page 1517

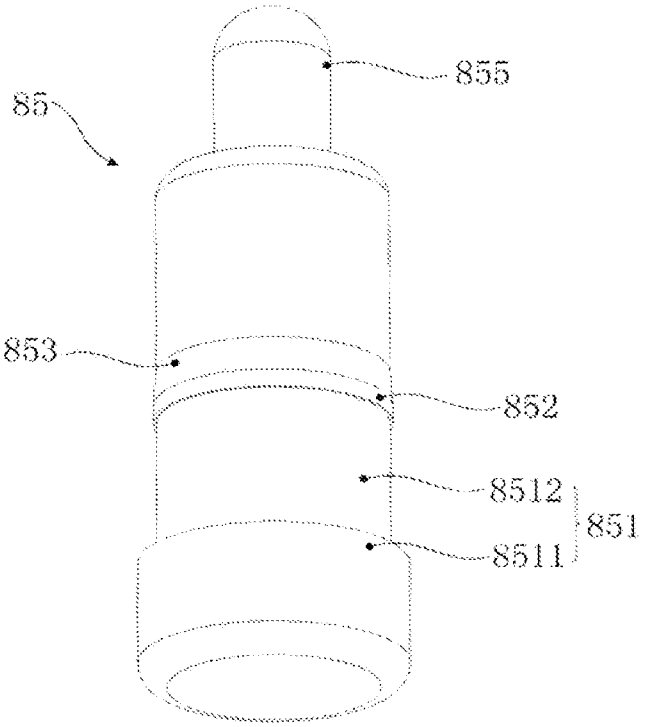


图18

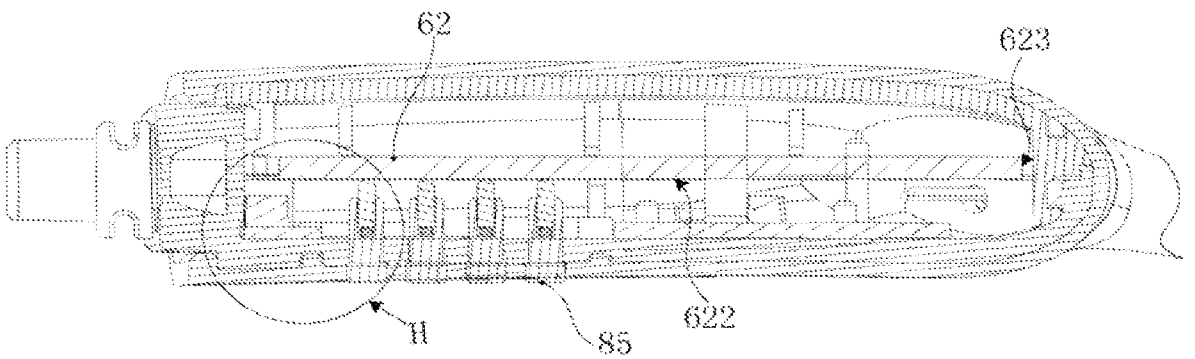


图19

IPR2025-00842; Shokz
Ex. 2018 - Page 1518

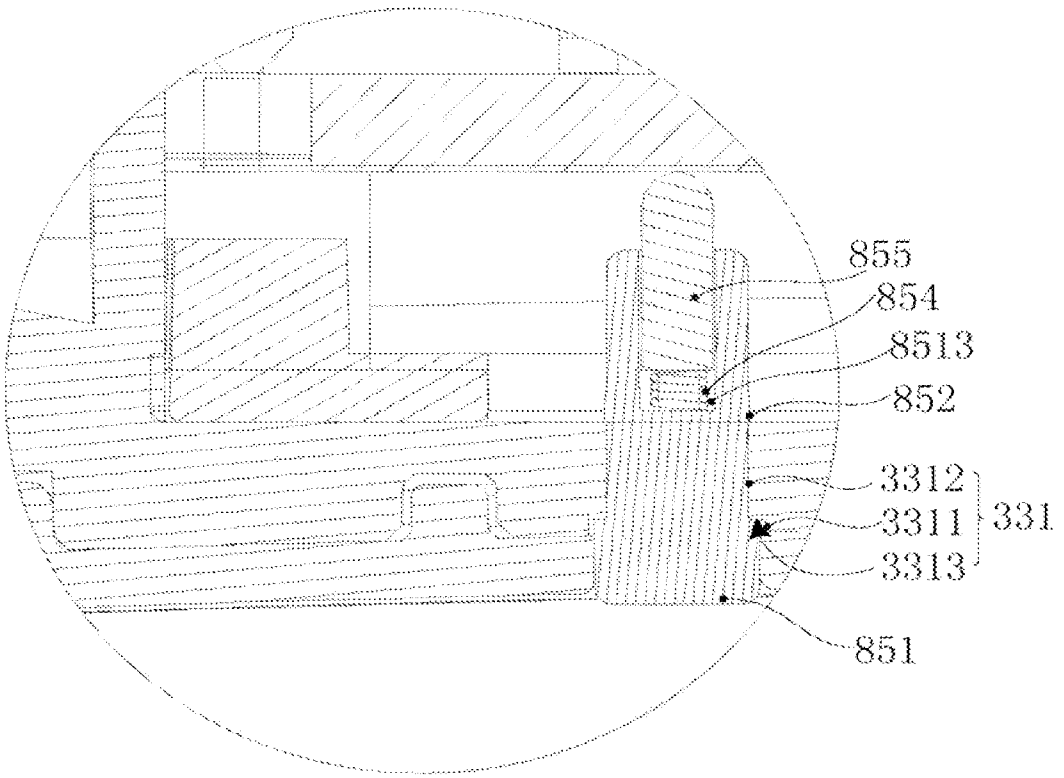


图20

IPR2025-00842; Shokz
Ex. 2018 - Page 1519

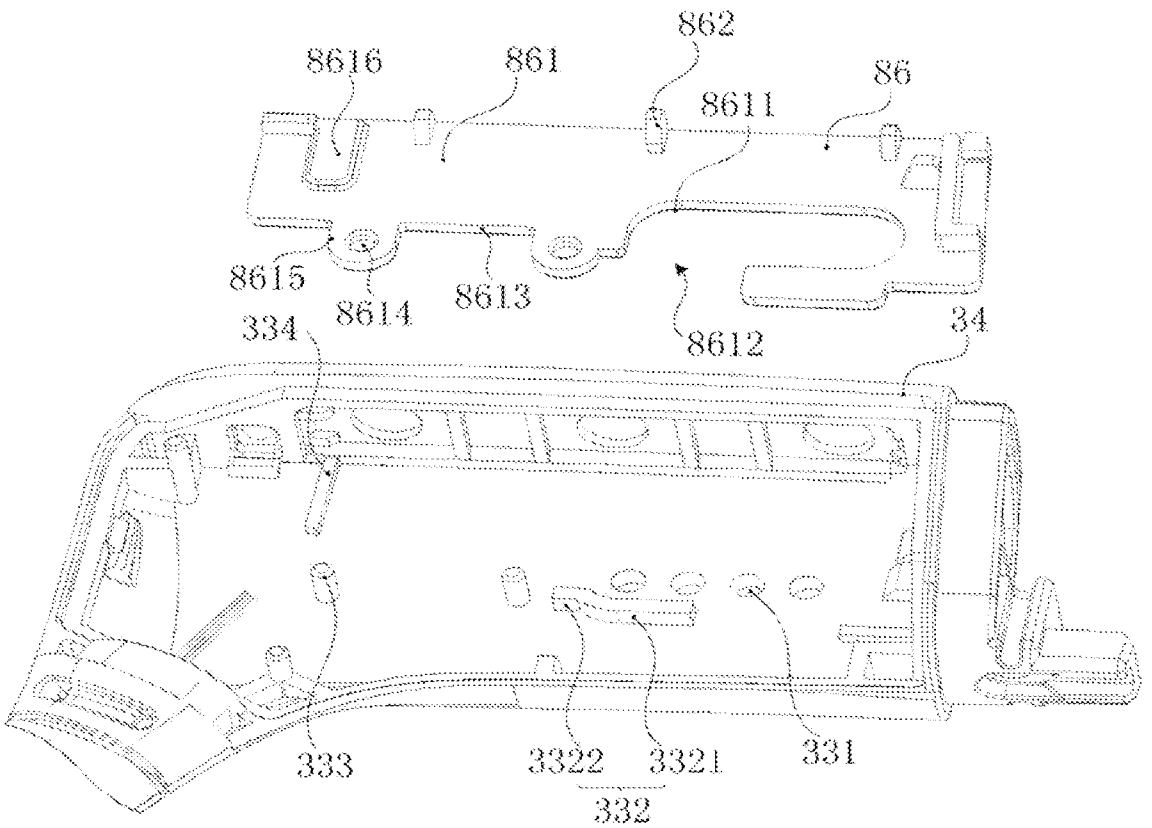


图21

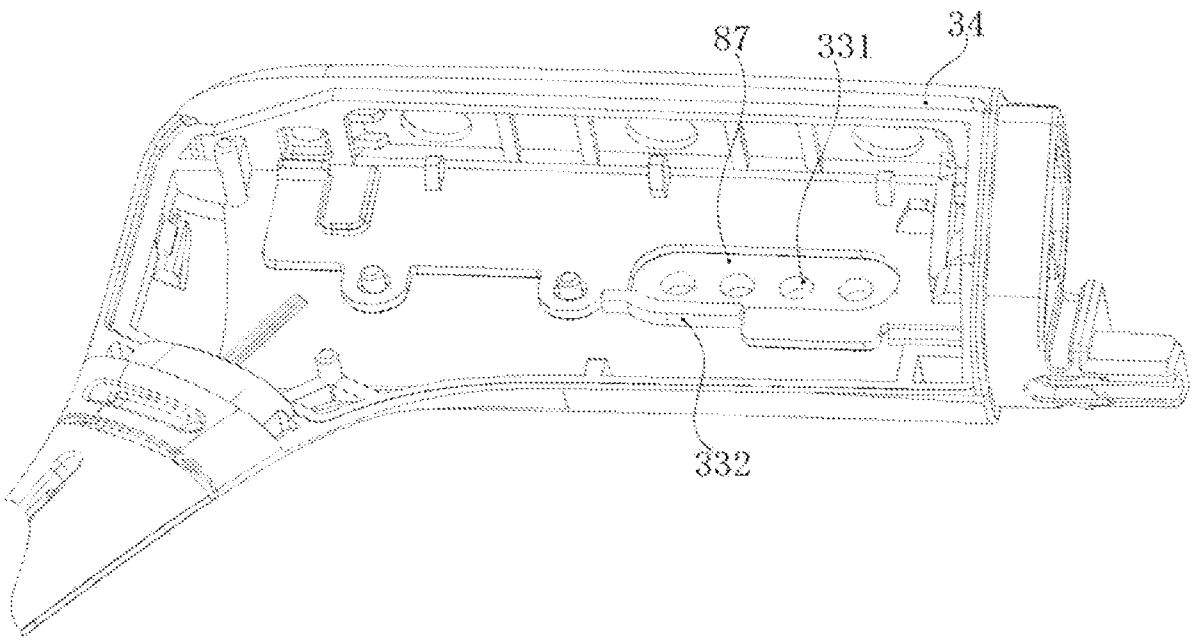


图22

IPR2025-00842; Shokz
Ex. 2018 - Page 1520

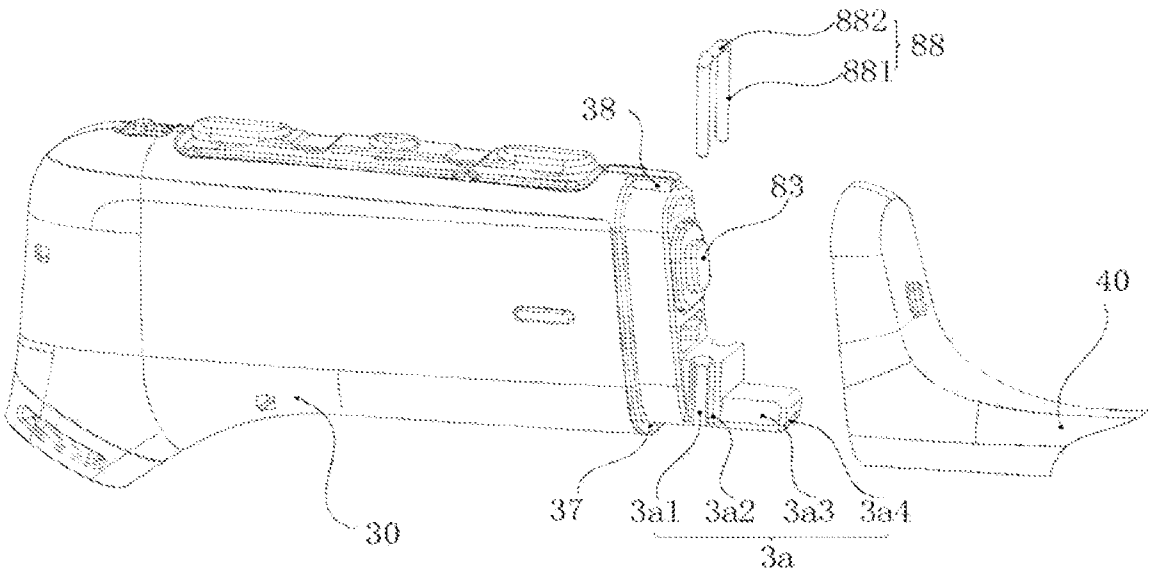


图23

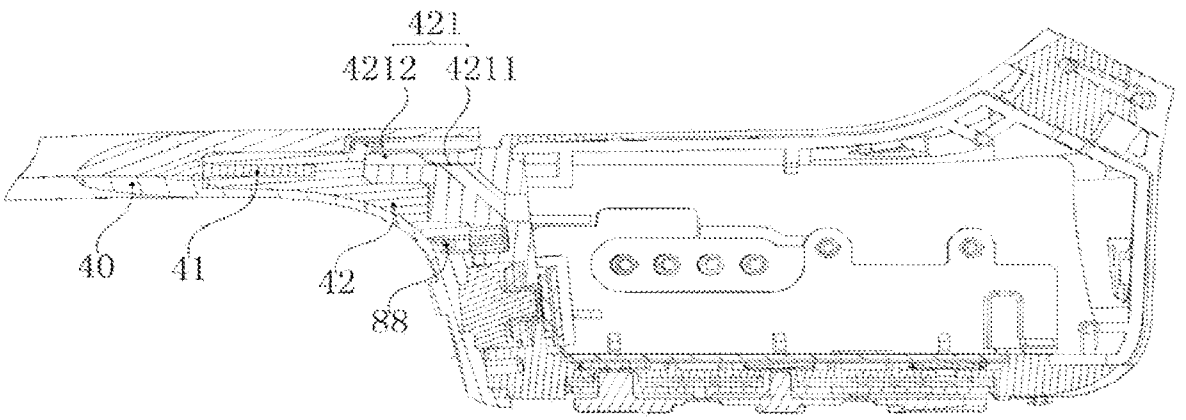


图24

IPR2025-00842; Shokz
Ex. 2018 - Page 1521

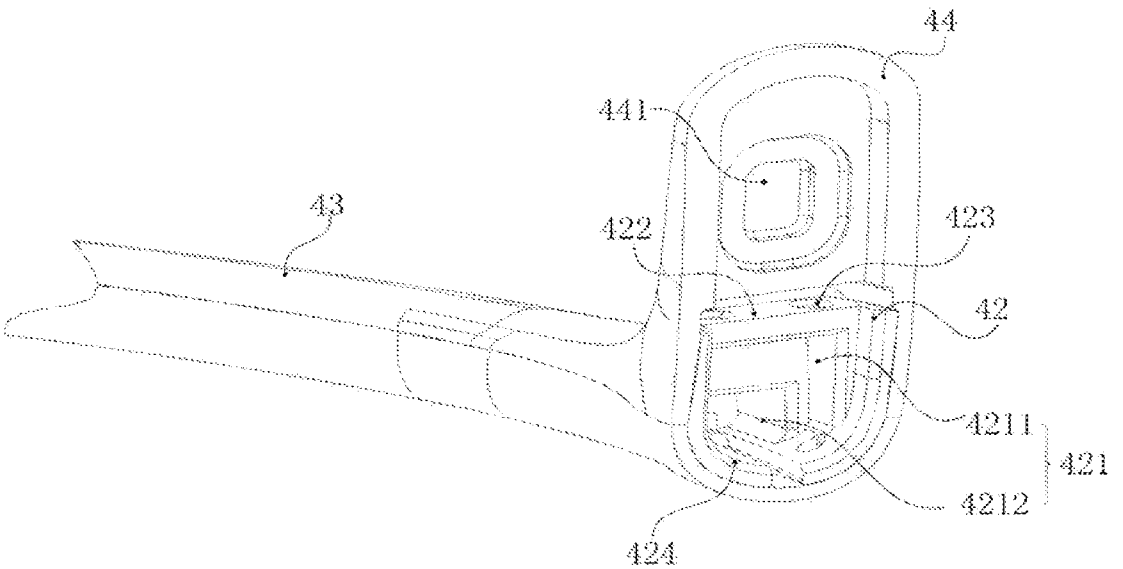


图25

IPR2025-00842; Shokz
Ex. 2018 - Page 1522

(19)中华人民共和国国家知识产权局

(12)实用新型专利

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代理人 李庆波

(51)Int.Cl.
H04R 1/10(2006.01)

(ESM)同样的发明创造已同日申请发明专利

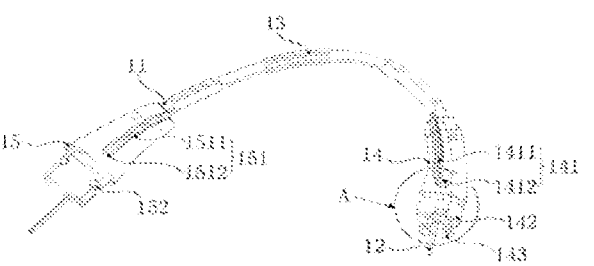
权利要求书2页 说明书19页 附图14页

(54)实用新型名称

骨传导扬声装置

(57)摘要

本申请公开了一种骨传导扬声装置，该骨传导扬声装置包括耳挂，耳挂包括弹性金属丝、导线及固定套管、第一接插端和第二接插端以及保护套管；其中，固定套管将导线固定于弹性金属丝上，第一接插端和第二接插端分别设置于弹性金属丝的两端，保护套管以注塑形成于弹性金属丝、导线、固定套管、第一接插端和第二接插端的外围。通过上述方式，本申请能够简化骨传导扬声装置的制作及装配工序，并使得骨传导扬声装置的耳挂中的保护套管固定得更加牢靠、稳定。



CN 209358729 U

1.一种骨传导扬声装置，其特征在于，所述骨传导扬声装置包括耳挂，所述耳挂包括：

弹性金属丝；

导线及固定套管，所述固定套管将所述导线固定于所述弹性金属丝上；

第一接插端和第二接插端，分别设置于所述弹性金属丝的两端；

保护套管，以注塑形成于所述弹性金属丝、所述导线、所述固定套管、所述第一接插端和第二接插端的外围。

2.根据权利要求1所述的骨传导扬声装置，其特征在于，所述第一接插端和第二接插端分别以注塑方式形成于所述弹性金属丝的两端，所述第一接插端和第二接插端上分别设置有第一走线通道和第二走线通道，所述导线沿所述第一走线通道和第二走线通道延伸。

3.根据权利要求2所述的骨传导扬声装置，其特征在于，所述导线以穿线方式穿入所述第一走线通道和所述第二走线通道。

4.根据权利要求2所述的骨传导扬声装置，其特征在于，所述第一走线通道包括第一走线槽和连通所述第一走线槽和所述第一接插端的外端面的第一走线孔，所述导线沿所述第一走线槽和所述第一走线孔延伸并外露于所述第一接插端的外端面；所述第二走线通道包括第二走线槽和连通所述第二走线槽和所述第一接插端的外端面的第二走线孔，所述导线沿所述第二走线槽和所述第二走线孔延伸并外露于所述第二接插端的外端面。

5.根据权利要求1所述的骨传导扬声装置，其特征在于，所述固定套管为至少两个，并沿所述弹性金属丝间隔设置。

6.根据权利要求1所述的骨传导扬声装置，其特征在于，所述骨传导扬声装置进一步包括：

机芯壳体，用于容纳耳机芯，并与所述第一接插端接插固定；

电路壳体，用于容纳控制电路或电池，并与所述第二接插端接插固定。

7.根据权利要求6所述的骨传导扬声装置，其特征在于，所述机芯壳体设置有与所述机芯壳体的外端面连通的第一接插孔，所述第一接插孔的内侧壁上设置有止挡块，所述第一接插端包括：

插入部，至少部分插入于所述第一接插孔内并抵接于所述止挡块的外侧面上；

两个弹性卡勾，设置于所述插入部朝向所述机芯壳体内部的一侧，两个弹性卡勾能够在外部推力和所述止挡块的作用下彼此并拢，并在经过所述止挡块后弹性回复成卡置于所述止挡块的内侧面上，进而实现所述机芯壳体与所述第一接插端的接插固定。

8.根据权利要求7所述的骨传导扬声装置，其特征在于，所述插入部部分插入于所述第一接插孔内，且在所述插入部的外露部分呈阶梯状设置，进而形成与所述机芯壳体的外端面间隔设置的环形台面，所述保护套管进一步延伸至所述环形台面朝向所述机芯壳体的外端面的一侧，并在所述机芯壳体与所述第一接插端接插固定时与所述机芯壳体弹性抵接，进而实现密封。

9.根据权利要求6所述的骨传导扬声装置，其特征在于，所述电路壳体设置有第二接插孔，所述第二接插端至少部分插入至所述第二接插孔内，其中在所述第二接插端的相对两侧分别设置有与所述第二接插端相对于所述第二接插孔的插入方向垂直设置的开槽，所述电路壳体的第一侧壁上设置有与两个所述开槽位置对应的两个通孔，所述骨传导扬声装置进一步包括固定件，所述固定件包括两条平行设置的插脚和用于连接所述插脚的连接部，

IPR2025-00842; Shokz
Ex. 2018 - Page 1524

其中所述插脚从所述电路壳体的外侧经所述通孔插入至所述开槽，进而实现所述电路壳体与所述第二接插端的接插固定。

10.根据权利要求6所述的骨传导扬声装置，其特征在于，所述耳挂进一步包括与所述第二接插端外围的所述保护套管一体成型的壳体护套，所述壳体护套以套装方式包覆于所述电路壳体的外围。

IPR2025-00842; Shokz
Ex. 2018 - Page 1525

骨传导扬声装置

技术领域

[0001] 本申请涉及骨传导技术领域，特别是涉及一种骨传导扬声装置。

背景技术

[0002] 骨传导是一种声音传导方式，骨传导扬声装置利用骨传导技术接收声音，由于其能够开放双耳、不伤害鼓膜等优点而受到广大消费者的青睐。

[0003] 骨传导扬声装置包括耳挂，在耳挂的生产过程中，可以将设置在外围保护套管可与内部结构分别成型，并进而将成型后的保护套管套设在内部结构的外围。然而这种方式往往使得耳挂的生产及装配的工序繁琐，且耳挂与内部结构之间可能会出现固定不牢靠的情况，从而降低骨传导扬声装置的质量。

实用新型内容

[0004] 本申请主要解决的技术问题是提供一种骨传导扬声装置，能够简化骨传导扬声装置的制作及装配工序，并使得骨传导扬声装置的耳挂中的保护套管固定得更加牢靠、稳定。

[0005] 为解决上述技术问题，本申请采用的一个技术方案是：提供一种骨传导扬声装置，所述骨传导扬声装置包括耳挂，所述耳挂包括：弹性金属丝；导线及固定套管，所述固定套管将所述导线固定于所述弹性金属丝上；第一接插端和第二接插端，分别设置于所述弹性金属丝的两端；保护套管，以注塑形成于所述弹性金属丝、所述导线、所述固定套管、所述第一接插端和第二接插端的外围。

[0006] 本申请的有益效果是：区别于现有技术的情况，本申请骨传导扬声装置中，保护套管可注塑形成于弹性金属丝、导线、固定套管、第一接插端和第二接插端的外围，从而将保护套管分别与弹性金属丝、导线、固定套管、第一接插端和第二接插端固定连接，而无需将保护套管单独注塑形成后再进一步套装在弹性金属丝以及第一接插端、第二接插端的外围，从而能够简化制作及装配工序，且通过这种方式，能够使保护套管的固定更加牢靠、稳定。

附图说明

[0007] 为了更清楚地说明本申请实施例中的技术方案，下面将对实施例描述中所需要使用的附图作简单地介绍，显而易见地，下面描述中的附图仅仅是本申请的一些实施例，对于本领域普通技术人员来讲，在不付出创造性劳动的前提下，还可以根据这些附图获得其他的附图。其中：

[0008] 图1是本申请骨传导扬声装置一实施方式的爆炸结构示意图；

[0009] 图2是本申请骨传导扬声装置一实施方式中耳挂的部分结构示意图；

[0010] 图3是图2中A部分的局部放大图；

[0011] 图4是本申请骨传导扬声装置一实施方式的局部截面图；

[0012] 图5是图4中B部分的局部放大图；

IPR2025-00842; Shokz
Ex. 2018 - Page 1526

[0013] 图6是本申请骨传导扬声装置一实施方式的局部结构截面图；

[0014] 图7是图6中C部分的局部放大图；

[0015] 图8是本申请骨传导扬声装置一实施方式的机芯壳体的部分结构示意图；

[0016] 图9是图8中D部分的局部放大图；

[0017] 图10是本申请骨传导扬声装置一实施方式的机芯壳体的局部截面图；

[0018] 图11是本申请骨传导扬声装置一实施方式中电路壳体与耳挂的部分爆炸图；

[0019] 图12是本申请骨传导扬声装置一实施方式的部分结构的局部截面图；

[0020] 图13是图1中E部分的局部放大图；

[0021] 图14是本申请骨传导扬声装置一实施方式中电路壳体的截面图；

[0022] 图15是图14中F部分的局部放大图；

[0023] 图16是本申请骨传导扬声装置一实施方式中电路壳体与按键结构的爆炸图；

[0024] 图17是图6中G部分的局部放大图；

[0025] 图18是本申请骨传导扬声装置一实施方式中导电柱的结构示意图；

[0026] 图19是本申请骨传导扬声装置一实施方式中电路壳体、导电柱及主控电路板的截面图；

[0027] 图20是图19中H部分的局部放大图；

[0028] 图21是本申请骨传导扬声装置一实施方式中电路壳体与辅助片的局部结构爆炸图；

[0029] 图22是本申请骨传导扬声装置一实施方式中电路壳体与辅助片的局部结构示意图；

[0030] 图23是本申请骨传导扬声装置一实施方式中电路壳体与后挂的局部结构爆炸图；

[0031] 图24是本申请骨传导扬声装置一实施方式中电路壳体与后挂的局部结构截面图；

[0032] 图25是本申请骨传导扬声装置一实施方式中后挂的局部结构示意图。

具体实施方式

[0033] 下面将结合本申请实施例中的附图，对本申请实施例中的技术方案进行清楚、完整地描述，显然，所描述的实施例仅仅是本申请一部分实施例，而不是全部实施例。基于本申请中的实施例，本领域普通技术人员在没有做出创造性的劳动前提下所获得的所有其他实施例，都属于本申请保护的范围。

[0034] 请一并参阅图1至图25，图1至图25绘示了本申请骨传导扬声装置。本申请中的骨传导扬声装置可以为基于骨传导的耳机、MP3或者其它具有扬声功能的装置。具体地，骨传导扬声装置可包括：耳挂10、机芯壳体20、电路壳体30、后挂40，以及耳机芯50、控制电路60、电池70。其中，机芯壳体20与电路壳体30分别设置于耳挂10的两端，后挂40则进一步设置于电路壳体30远离耳挂10的一端。其中，机芯壳体20的数量为两个，分别用于容纳耳机芯50，电路壳体30的数量也为两个，分别用来容纳控制电路60和电池70，后挂40的两端分别连接对应的电路壳体30。

[0035] 其中，耳挂10是指在用户佩戴骨传导扬声装置时，用于环绕并支撑于用户的耳根部位，进而将机芯壳体20及耳机芯50悬挂并固定于用户耳朵预定位置的结构。

[0036] 具体地，耳挂10包括弹性金属丝11、导线12、固定套管13以及设置于弹性金属丝11

IPR2025-00842; Shokz
Ex. 2018 - Page 1527

两端的接插端14和接插端15，还进一步包括保护套管16以及与保护套管16一体成型的壳体护套17。

[0037] 其中，弹性金属丝11主要用于使耳挂10保持为与用户耳朵匹配的形状，并具有一定的弹性，从而能够在用户佩戴时根据用户的耳型以及头型产生一定的弹性形变以适配不同耳型以及头型的用户。本实施方式中，弹性金属丝11可以由记忆合金制成，具有良好的变形恢复能力，从而即便是耳挂10受到外力作用产生形变，在外力去除时，仍然能够恢复至原来的形状以能够继续为用户所使用，从而延长骨传导扬声装置的使用寿命。当然，在其它实施方式当中，弹性金属丝11也可以由非记忆合金制成。

[0038] 导线12可用于与耳机芯50以及控制电路60、电池70等进行电连接，以为耳机芯50的工作进行电量供应以及数据传输。

[0039] 固定套管13用于将导线12固定于弹性金属丝11上。具体地，固定套管13的数量可以为一个或者多个，具体可根据实际需求而定。本实施方式中，固定套管13为至少两个，至少两个固定套管13可沿弹性金属丝11以及导线12的走向而间隔设置，并通过包裹设置在导线12以及弹性金属丝11的外围而将导线12固定于弹性金属丝11上。

[0040] 接插端14和接插端15可由硬质材料，如塑胶等制成。本实施方式中，在制作该接插端14和接插端15时，可以分别以注塑的方式将二者形成于弹性金属丝11的两端。在其它实施方式中，也可以先对接插端14和接插端15分别进行注塑，并在注塑时分别预留与弹性金属丝11端部的连接孔，从而在注塑完成后，通过连接孔而将该接插端14和接插端15分别插接在弹性金属丝11的对应的端部，或者并通过粘接的方式进行固定均可。

[0041] 需要指出的是，本实施方式中，接插端14和接插端15可以不直接注塑形成在导线12的外围，而是在注塑时避开导线12。具体地，可以在注塑接插端14和接插端15时，对位于弹性金属丝11两端的导线12进行固定，以远离接插端14和接插端15的位置，并进一步在接插端14和接插端15上分别设置第一走线通道141和第二走线通道151，以在注塑完成后，将导线12沿第一走线通道141和第二走线通道151延伸设置。具体地，在形成第一走线通道141和第二走线通道151后，可将导线12以穿线的方式穿入该第一走线通道141和第二走线通道151。

[0042] 当然，在其它实施方式中，也可以根据实际情况，将接插端14和接插端15直接注塑在导线12的外围，此处不做具体限定。

[0043] 具体地，在一实施方式中，第一走线通道141可包括第一走线槽1411和连通第一走线槽1411的第一走线孔1412。其中，第一走线槽1411连通接插端14的侧壁面设置，第一走线孔1412的一端与第一走线槽1411的一端连通，另一端与接插端14的外端面连通。接插端14处的导线12沿第一走线槽1411和第一走线孔1412延伸并外露于接插端14的外端面，以进一步与其它结构连接。

[0044] 相应地，第二走线通道151可包括第二走线槽1511和连通第二走线槽1511的第二走线孔1512。其中，第二走线槽1511连通接插端15的侧壁面设置，第二走线孔1512的一端与第二走线槽1511的一端连通，另一端与接插端15的外端面连通。接插端15处的导线12沿第二走线槽1511和第二走线孔1512延伸并外露于接插端15的外端面，以进一步与其它结构连接。

[0045] 其中，接插端14的外端面是指接插端14远离接插端15的一端的端面；相应地，接插

IPR2025-00842; Shokz
Ex. 2018 - Page 1528

端15的外端面是指接插端15远离接插端14的一端的端面。

[0046] 进一步地，保护套管16可注塑形成于弹性金属丝11、导线12、固定套管13、接插端14和接插端15的外围，从而将保护套管16分别与弹性金属丝11、导线12、固定套管13、接插端14和接插端15固定连接，而无需将保护套管16单独注塑形成后再进一步套装在弹性金属丝11以及接插端14、接插端15的外围，从而能够简化制作及装配工序，且通过这种方式，能够使得保护套管16的固定更加牢靠、稳定。

[0047] 进一步地，在成型保护套管16时，同时与该保护套管16一体成型有设置于靠近接插端15一侧的壳体护套17。

[0048] 其中，壳体护套17可与保护套管16一体成型而成为一整体，电路壳体30可通过与接插端15的接插固定而连接设置在耳挂10的一端，壳体护套17则可进一步以套装的方式包覆于在电路壳体30的外围。

[0049] 其中，保护套管16和壳体护套17可以由具有一定弹性的软质材料制成，例如软质的硅胶、橡胶等。

[0050] 具体地，在制造骨传导扬声装置的耳挂10时，可通过如下步骤实现：

[0051] 步骤S101：利用固定套管13将导线12固定于弹性金属丝11上，其中在弹性金属丝11的两端预留出注塑位；

[0052] 具体地，可以先将弹性金属丝11与导线12按照预设的方式，如并排放置在一起，然后，将固定套管13进一步套设在导线12与弹性金属丝11的外围，从而将导线12固定在弹性金属丝11上。

[0053] 其中，由于弹性金属丝11的两端还需要注塑接插端14和接插端15，因此，在固定时，弹性金属丝11的两端不能被固定套管13完全包裹，而需预留出对应的注塑位，以供接插端14和接插端15注塑占用。

[0054] 步骤S102：在弹性金属丝11的两端的注塑位上分别注塑接插端14和接插端15，其中接插端14和接插端15分别设置有第一走线通道141和第二走线通道151；

[0055] 步骤S103：将导线12设置成沿第一走线通道141和第二走线通道151延伸；

[0056] 具体地，此处可在接插端14和接插端15成型完成后，进一步通过手动或者通过机器将导线12的两端分别穿入第一走线通道141和第二走线通道151。其中，导线12位于第一走线通道141和第二走线通道151之间的部分由固定套管13固定于弹性金属丝11上。

[0057] 步骤S104：在弹性金属丝11、导线12、固定套管13、接插端14和接插端15的外围注塑形成保护套管16。

[0058] 在一实施方式中，在执行步骤S104时，进一步以注塑的方式形成与接插端15外围的保护套管16一体成型的壳体护套17。

[0059] 需要指出的是，在其它实施方式中，也可以在安装固定套管13时先不设置导线12，而在接插端14和接插端15注塑之后，再进一步设置导线12，具体步骤如下：

[0060] 步骤S201：将固定套管13套设于弹性金属丝11上，其中在弹性金属丝11的两端预留出注塑位；

[0061] 步骤S202：在弹性金属丝11的两端的注塑位上分别注塑接插端14和接插端15，其中接插端14和接插端15分别设置有第一走线通道141和第二走线通道151；

[0062] 步骤S203：将导线12穿设于固定套管13的内部，以利用固定套管13将导线12固定

IPR2025-00842; Shokz
Ex. 2018 - Page 1529

于弹性金属丝11上，并进一步将导线12设置成沿第一走线通道141和第二走线通道151延伸。

[0063] 需要指出的是，通过这种方式，能够避免在对接插端14和接插端15注塑时受到导线12的干扰，从而有利于成型的顺利进行。

[0064] 其中，本实施方式，以及上述实施方式中方法所涉及到的弹性金属丝11、导线12、固定套管13、接插端14、接插端15与保护套管16的结构、作用以及形成方式等均与上述实施方式中的相同，相关详细内容请参见上述实施方式，此处不再赘述。

[0065] 在一实施方式中，机芯壳体20可用于容纳耳机芯50，并与接插端14接插固定。其中，耳机芯50和机芯壳体20的数量均为两个，分别对应用户的左耳和右耳。

[0066] 具体地，机芯壳体20可以与接插端14通过插接、卡接等方式连接，以将机芯壳体20与耳挂10固定在一起。也就是说，本实施方式中，耳挂10与机芯壳体20可先分别成型，然后再进一步装配在一起，而不是将二者一体直接成型。

[0067] 通过这种方式，可以采用各自对应的模具对耳挂10和机芯壳体20分别成型，而无需采用同一个较大尺寸的模具将二者一体成型，从而可减小模具的尺寸，以降低模具的加工难度，以及成型难度；另外，由于耳挂10和机芯壳体20分别采用不同的模具加工，在生产制造过程中，在需要对耳挂10或机芯壳体20中的某一个的形状或者构造进行调整时，仅调整该结构对应的模具即可，而无需对另外一个结构的模具进行调整，从而能够降低生产成本。

[0068] 当然，在其它实施方式当中，也可以根据情况而使耳挂10与机芯壳体20通过一体成型得到。

[0069] 在一实施方式中，机芯壳体20设置有与机芯壳体20的外端面21连通的接插孔22，接插孔22的内侧壁上设置有止挡块23。

[0070] 其中，机芯壳体20的外端面21是指机芯壳体20朝向耳挂10的端面。接插孔22用于为耳挂10的接插端14插入机芯壳体20提供容置空间，以便进一步实现接插端14与机芯壳体20的接插固定。

[0071] 止挡块23可以由接插孔22的内侧壁沿垂直于该内侧壁的方向凸出形成。具体地，止挡块23可以为多个间隔设置的块状凸起，或者也可以为沿接插孔22内侧壁的环状凸起，此处不做具体限定。

[0072] 其中，接插端14包括插入部142和两个弹性卡勾143。

[0073] 具体地，插入部142至少部分插入于接插孔22内并抵接于止挡块23的外侧面231上。其中，插入部142的外侧壁的形状与接插孔22的内侧壁的形状匹配，以使得插入部142至少部分插入于接插孔22内时，使得插入部142的外侧壁与接插孔22的内侧壁抵接。

[0074] 止挡块23的外侧面231是指止挡块23朝向耳挂10设置的一侧面。插入部142可进一步包括一朝向机芯壳体20的端面1421，该端面1421可与止挡块23的外侧面231匹配，从而在插入部142至少部分插入于接插孔22内时，插入部142的端面1421与止挡块23的外侧面231抵接。

[0075] 具体地，机芯壳体20的接插孔22的沿垂直于接插端14相对于机芯壳体20的插入方向上的截面形状可为椭圆环形或近椭圆环形，对应地，插入部142的横截面可以为与接插孔22匹配的近椭圆形，当然，二者的形状还可以为其它，具体可根据实际需求进行设置。

IPR2025-00842; Shokz
Ex. 2018 - Page 1530

[0076] 进一步地，两个弹性卡勾143可沿垂直于插入方向并排并间隔且对称设置于插入部142朝向机芯壳体20内部的一侧。其中，每个弹性卡勾143可分别包括梁部1431和勾部1432，梁部1431与插入部142朝向机芯壳体20的一侧连接，勾部1432设置在梁部1431远离插入部142的一端，并沿垂直于插入方向延伸。进一步地，每个勾部1432设置有连接平行于插入方向的侧面与远离插入部142的端面的过渡斜面14321。

[0077] 在耳挂10与机芯壳体20的安装过程当中，接插端14由接插孔22逐渐进入机芯壳体20内部，在到达止挡块23的位置时，两个弹性卡勾143的勾部1432会受到止挡块23的阻挡，在外部推力的作用下，止挡块23逐渐挤压勾部1432的过渡斜面14321而使得两个弹性卡勾143发生弹性形变而彼此并拢，在过渡斜面14321通过止挡块23而到达止挡块23靠近机芯壳体20内部的一侧时，弹性卡勾143因失去止挡块23的阻挡而弹性回复，并卡置于止挡块23朝向机芯壳体20内部的内侧面上，从而将止挡块23卡置于接插端14的插入部142和勾部1432之间，进而实现机芯壳体20与接插端14的接插固定。

[0078] 其中，在一实施方式中，在机芯壳体20与接插端14接插固定后，插入部142部分插入于接插孔22内，且在插入部142的外露部分呈阶梯状设置，进而形成与机芯壳体20的外端面21间隔设置的环形台面1422。

[0079] 需要指出的是，插入部142的外露部分是指插入部142外露于机芯壳体20的部分，具体地，可以是指外露于机芯壳体20且靠近机芯壳体20外端面的部分。

[0080] 其中，环形台面1422可以与机芯壳体20的外端面21相对设置，且二者之间的间隔可以是指沿接插方向间隔以及沿垂直于接插方向的间隔。

[0081] 进一步地，保护套管16延伸至环形台面1422朝向机芯壳体20的外端面21的一侧，并在机芯壳体20的接插孔22与接插端14接插固定时，填充于环形台面1422与机芯壳体20的外端面21之间的间隔内，并与机芯壳体20弹性抵接，从而使得外部液体难以从接插端14与机芯壳体20之间的接合处进入机芯壳体20内部，进而实现接插端14与接插孔22之间的密封，以保护机芯壳体20内部的耳机芯50等，从而能够提高对骨传导扬声装置的防水效果。

[0082] 具体地，在一实施方式当中，保护套管16在环形台面1422朝向机芯壳体20的外端面的21一侧形成一环形抵接面161。其中，该环形抵接面161为保护套管16朝向机芯壳体20一侧的端面。

[0083] 进一步地，保护套管16还包括位于该环形抵接面161内部且相对于环形抵接面161凸出设置的环形凸台162。具体地，该环形凸台162具体形成于环形抵接面161朝向接插端14的一侧，并相对于该环形抵接面161沿朝向机芯壳体20的方向凸出设置，进一步地，该环形凸台162还可直接形成于环形台面1422的外围，并覆盖该环形台面1422。

[0084] 进一步地，机芯壳体20包括用于连接机芯壳体20的外端面21和接插孔22的内侧壁的连接斜面24。其中，该连接斜面24具体为机芯壳体20的外端面21与接插孔22的内侧壁之间的过渡面，该连接斜面24与机芯壳体20的外端面21和接插孔22的内侧壁均不在同一平面上。其中，该连接斜面24可以为平面，或者也可以根据实际需求而设置成曲面，或者其它形状，此处不做具体限定。

[0085] 具体地，在机芯壳体20与接插端14接插固定时，环形抵接面161和环形凸台162分别与机芯壳体20的外端面和连接斜面24弹性抵接。

[0086] 需要指出的是，由于机芯壳体20的外端面21和连接斜面24不在同一平面上，从而

IPR2025-00842; Shokz
Ex. 2018 - Page 1531

使得保护套管16与机芯壳体20之间的弹性抵接处不位于同一平面上，从而使得外部液体难以由保护套管16与机芯壳体20之间进入机芯壳体20以进一步进入耳机芯50，从而能够提高骨传导扬声装置的防水效果，以对内部功能结构起到保护作用，进而延长骨传导扬声装置的使用寿命。

[0087] 其中，在一实施方式中，插入部142在环形台面1422朝向机芯壳体20的外端面21的一侧进一步形成有与环形台面1422邻接的环形凹槽1423，其中，环形凸台162可形成于环形凹槽1423内。

[0088] 本实施方式中，环形凹槽1423可形成于环形台面1422朝向机芯壳体20的一侧。在一个应用场景中，环形台面1422为环形凹槽1423的朝向机芯壳体20一侧的侧壁面，此时，环形凸台162沿该侧壁面形成于环形凹槽1423内。

[0089] 在一实施方式中，耳挂10的导线12的位于机芯壳体20的外部的一端可穿过第二走线通道151而进一步连接电路壳体30所容纳的控制电路60、电池70等机芯壳体20外部的外部电路，另一端则沿第一走线通道141而露出于接插端14的外端面，并进一步随插入部142而通过接插孔22而进入机芯壳体20内部。

[0090] 在一实施方式中，机芯壳体20可包括主壳体25以及隔板组件26，其中，隔板组件26位于主壳体25内部，并与主壳体25连接，进而将主壳体25的内部空间27分隔成第一容置空间271和靠近接插孔22一侧的第二容置空间272。

[0091] 具体地，主壳体25包括周侧壁251以及与周侧壁251的一端面连接的底端壁252，周侧壁251与底端壁252共同围绕形成一主壳体25的内部空间27。

[0092] 隔板组件26位于主壳体25的靠近接插孔22的一侧，并包括侧隔板261以及底隔板262。其中，侧隔板261可沿垂直于底端壁252的方向设置，且侧隔板261的两端均与周侧壁251连接，从而对主壳体25的内部空间27进行分隔。底隔板262可与底端壁252平行或者接近平行且间隔设置，并进一步分别与周侧壁251和侧隔板261连接，从而将主壳体25所形成的内部空间27一分为二而形成由侧隔板261、底隔板262和远离接插孔22的周侧壁251、底端壁252共同围成的第一容置空间271，以及由底隔板262与侧隔板261和靠近接插孔22的周侧壁251共同围成的第二容置空间272。其中，第二容置空间272可小于第一容置空间271。

[0093] 当然，隔板组件26也可以通过其它的设置方式对主壳体25的内部空间27进行划分，此处不做具体限定。

[0094] 进一步地，耳机芯50包括功能组件51，该功能组件51设置于第一容置空间271内，可用于振动发声。骨传导扬声装置可进一步包括一端与功能组件51连接的导线80，该导线80的另一端可由第一容置空间271而延伸至第二容置空间272内。

[0095] 具体地，侧隔板261可在远离底端壁252的顶部边缘设置走线槽2611，该走线槽2611可连通第一容置空间271和第二容置空间272。进一步地，导线12的远离功能组件的一端经由该走线槽延伸至第二容置空间272内。

[0096] 另外，耳挂10的导线12的远离电路壳体30的一端随插入部142进入机芯壳体20内部后，可进一步延伸入第二容置空间272内，并在第二容置空间272内与导线80电连接，以形成从第一容置空间271经由第二容置空间272而连接至外部电路的导线通路，从而通过该导线通路将功能组件51与位于机芯壳体20外部的外部电路电连接。

[0097] 具体地，底隔板262上可设置有走线孔2621，该走线孔2621将接插孔22与第二容置

IPR2025-00842; Shokz
Ex. 2018 - Page 1532

空间272连通，从而使得由接插孔22进入机芯壳体20的导线12能够经由该走线孔2621而延伸至第二容置空间272。

[0098] 其中，导线12与导线80在第二容置空间272内连接后，盘绕设置于第二容置空间272内。具体可通过焊接的方式将导线12与导线80连接于一起，进而将功能组件51与外部电路电连接，以通过外部电路为功能组件51的正常工作提供电量或者为耳机芯50传输数据。

[0099] 需要指出的是，在对骨传导扬声装置装配时，导线往往会长于实际需求，以便于装配。然而耳机芯50处多余的导线若不能够进行合理的放置，则容易在功能组件51工作时产生振动而发出异响，从而降低骨传导扬声装置的声音质量，从而影响用户的听音感受。本实施方式中，在机芯壳体20的主壳体25所形成的内部空间27当中分离出第二容置空间272以用于容置多余的导线12和导线80，从而避免或者减少多余的导线对因振动而对骨传导扬声装置所发出的声音的影响，以提高声音质量。

[0100] 在一实施方式中，隔板组件26进一步包括内隔板263，内隔板263进一步将第二容置空间272分隔成两个子容置空间2721。具体地，该内隔板263垂直于主壳体25的底端壁252设置，分别与侧隔板261和周侧壁251连接，并进一步延伸至走线孔2621处，从而在将第二容置空间272分隔为两个子容置空间2721的同时，还进一步将走线孔2621划分为两个，两个走线孔2621可分别与对应的子容置空间2721连通。

[0101] 本实施方式中，导线12和导线80可分别为两根，其中两根导线12分别沿对应的走线孔2621而分开延伸至各自的子容置空间2721内，而两根导线80则仍一起通过走线槽2611而进入第二容置空间272，并在进入第二容置空间272后分开，并分别在对应的子容置空间2721内与对应的导线12焊接于一起，并进一步盘绕设置于对应的子容置空间2721内。

[0102] 进一步地，在一实施方式中，第二容置空间272可进一步由密封胶进行填充。通过这种方式，能够将第二容置空间272内所容置的导线12和导线80进一步固定，以进一步降低由于导线振动而对声音质量造成的不良影响，从而提高骨传导扬声装置的声音质量，同时能够对导线12与导线80之间的焊接点起到保护作用，另外，将第二容置空间272密封设置还能够达到防水防尘的目的。

[0103] 在一实施方式中，电路壳体30与接插端15接插固定，从而将电路壳体30固定在耳挂10远离机芯壳体20的一端。其中，在用户佩戴使用时，容纳电池70的电路壳体30和容纳控制电路60的电路壳体30可分别对应用户的左侧和右侧，二者在与对应的接插端15的接插方式上可以不同。

[0104] 具体地，电路壳体30可以与接插端15通过插接、卡接等方式连接。也就是说，本实施方式中，耳挂10与电路壳体30可先分别独立成型，然后并在成型完成后再进一步装配在一起，而不是直接将二者一体成型。

[0105] 通过这种方式，可以采用各自对应的模具对耳挂10和电路壳体30分别成型，而无需采用同一个较大尺寸的模具将二者一体成型，从而可减小成型模具的尺寸，以降低模具的加工难度，以及成型难度；另外，由于耳挂10和电路壳体30分别采用不同的模具加工，在生产制造过程中，在需要对耳挂10或电路壳体30中的某一个的形状或者构造进行调整时，仅调整该结构对应的模具即可，而无需对另外一个结构的模具进行调整，从而能够降低生产成本。

[0106] 进一步地，在一实施方式中，电路壳体30设置有接插孔31，该接插孔31的内表面的

IPR2025-00842; Shokz
Ex. 2018 - Page 1533

形状可与接插端15的至少部分外表面的形状匹配，从而使得接插端15能够至少部分插入至接插孔31内。

[0107] 进一步地，在接插端15的相对两侧分别设置有与接插端15相对于接插孔31的插入方向垂直设置的开槽152。具体地，两个开槽152对称且间隔设置于接插端15的相对两侧，且均在沿插入方向的垂直方向上连通接插端15的侧壁。

[0108] 相应地，电路壳体30的第一侧壁30a上设置有与两个开槽152位置对应的贯穿该第一侧壁30a的两个通孔32。

[0109] 其中，电路壳体30可以呈扁平状设置，例如，电路壳体30于第二接插孔31处的横截面可以为椭圆形，或者能够形成扁平状设置的其它形状。本实施方式中，电路壳体30的面积较大的两个相对设置的侧壁为主侧壁33，连接两个主侧壁33的面积较小的且相对设置的两对侧壁为辅侧壁34。本实施方式中，电路壳体30的第一侧壁30a既可以为该电路壳体30的主侧壁33也可以为电路壳体30的辅侧壁34，具体可以根据实际需求进行设定。

[0110] 当然，在其它实施方式中，电路壳体30于接插孔31处的横截面还可以为圆形等其它形状，具体可根据实际需求进行设置。

[0111] 进一步地，骨传导扬声装置还可以包括固定件81，固定件81包括两条平行设置的插脚811和用于连接插脚811的连接部812。具体地，连接部812可垂直连接设置于两条插脚811的朝向同一方向的一端，从而形成U型的固定件81。

[0112] 其中，两个插脚811远离连接部812的一端从电路壳体30的外侧经通孔32插入至开槽152，而将连接部812阻挡于电路壳体30的外侧，进而实现电路壳体30与接插端15的接插固定。

[0113] 进一步地，在一实施方式中，电路壳体30的第一侧壁30a上进一步形成有用于连接两个通孔32的条状凹槽35，在利用固定件81接插固定时，连接部812能够进一步部分或者全部沉设于条状凹槽35内。从而一方面能够使得骨传导扬声装置整体更加统一，进而使得套装在电路壳体30外围的壳体护套17上无需专门成型设置与连接部812对应的凹槽，简化壳体护套17的模具；另一方面，还能够在一定程度上减小骨传导扬声装置整体所占用的空间。

[0114] 其中，在一个应用场景中，可以在将连接部812部分或者全部沉设于条状凹槽35内后，进一步在条状凹槽35内施胶，通过这种方式，一方面能够将固定件81固定在电路壳体30上，从而使得接插端15与接插孔31之间的接插更加稳固；另一方面，在连接部812沉设于条状凹槽35后，进一步通过施胶将凹槽35填平，以与电路壳体30的第一侧壁30a保持一致，从而在套设壳体护套17后，使得该凹槽35与周边结构之间更加平整连贯。

[0115] 其中，在一实施方式中，与电路壳体30的第一侧壁30a相对的电路壳体30的第二侧壁30b上进一步设置有与通孔32相对的通孔36，插脚811进一步经开槽152插入至通孔36内。

[0116] 具体地，电路壳体30的第一侧壁30a和电路壳体30的第二侧壁30b均可为电路壳体30的主侧壁33或者辅侧壁34。在本实施方式中，电路壳体30的第一侧壁30a和第二侧壁30b分别为电路壳体30的两个相对设置的主侧壁33。也就是说，两个通孔32以及两个通孔36分别设置于电路壳体30的面积较大的侧壁上，进而固定件81的两个插脚811之间可以设置较大的间隔，以增大固定件81的跨度，从而能够提高接插端15与接插孔31之间接插的稳定性。

[0117] 本实施方式中，插脚811经通孔32插入至开槽152内，并进一步经开槽152插入至通孔36内，也就是说插脚811能够将电路壳体30的两相对主侧壁33以及接插端15完全贯穿并

IPR2025-00842; Shokz
Ex. 2018 - Page 1534

固定于一起，从而能够使得接插端15与电路壳体30之间接插更加牢固。

[0118] 进一步地，如上述实施方式中所述，在保护套管16成型时，同时与该保护套管16一体成型有设置于靠近接插端15一侧的壳体护套17。

[0119] 其中，该壳体护套17与电路壳体30分别成型，并使得该壳体护套17的内侧壁的形状与电路壳体30的外侧壁匹配，进而在二者分别成型完成之后，将壳体护套17以套装的方式包覆于电路壳体30的外围。

[0120] 需要指出的是，由于在壳体护套17成型时的环境温度较高，而高温环境可能会对电路壳体30所容纳的控制电路60或电池70造成一定的损伤，因此，在成型阶段，将电路壳体30和壳体护套17分别成型，然后再套装在一起，从而能够避免壳体护套17在成型时，高温对控制电路60或电池70所带来的损伤，从而降低成型对控制电路60或电池70所带来的不利影响。

[0121] 进一步地，壳体护套17可以为一端开口的袋状结构，以使得电路壳体30经由壳体护套17的开口端进入壳体护套17的内部。

[0122] 本实施方式中，壳体护套17在与保护套管16一体成型而形成之后，可以通过从开口端对壳体护套17进行翻卷而将其从模具上取下；在对壳体护套17进行外观检查以及丝印等表面处理时，可进一步将壳体护套17通过开口而套设在预设结构上进行操作，并在操作完成后，进一步通过从开口处对壳体护套17进行翻卷而将其从该预设结构上取下；在检查及处理等操作完成后，可进一步通过开口而将壳体护套17套装在电路壳体30的外围。上述操作中，在将壳体护套17取下并不限定于上述翻卷的方式，还可通过充气等方式，此处不做具体限定。

[0123] 具体地，壳体护套17的开口端为壳体护套17背离保护套管16的一端，从而该电路壳体30从壳体护套17远离保护套管16的一端进入壳体护套17的内部，以为该壳体护套17所包覆。

[0124] 在一实施方式中，壳体护套17的开口端设置有向内凸出的环状凸缘171。进一步地，电路壳体30远离耳挂10的端部呈阶梯状设置，进而形成环形台面37。当壳体护套17包覆于电路壳体30的外围时，环状凸缘171抵接于环形台面37上。

[0125] 具体地，环状凸缘171由壳体护套17的开口端的内壁面朝向壳体护套17内部凸出一定的厚度形成，并包括一朝向耳挂10的凸缘面172。

[0126] 其中，环形台面37与凸缘面172相对，并朝向电路壳体30背离耳挂10的方向。

[0127] 该环状凸缘171的凸缘面172的高度不大于环形台面37的高度，从而使得在环状凸缘171的凸缘面172与环形台面37相抵接时，壳体护套17的内壁面能够与电路壳体30的侧壁面充分抵接，从而使得壳体护套17能够紧密包覆于电路壳体30的外围。

[0128] 进一步地，在一实施方式中，在环状凸缘171与环形台面37上的接合区域内可进一步施加有密封胶。具体地，在对壳体护套17进行套装时，可以在环形台面37上涂覆密封胶，从而将壳体护套17与电路壳体30进行密封连接。

[0129] 其中，在一实施方式中，电路壳体30上还设置有定位块38，该定位块38设置于环形台面37上，并沿电路壳体30背离耳挂10的方向延伸。具体地，该定位块38可设置于电路壳体30的辅侧壁34上，且该定位块38在辅侧壁34上凸出的厚度与环形台面37的高度一致。其中，定位块38的数量可以根据需求设置一个或者多个。

IPR2025-00842; Shokz
Ex. 2018 - Page 1535

[0130] 相应地，壳体护套17的环状凸缘171处设置有与定位块38对应的定位槽173，从而在壳体护套17包覆于电路壳体30的外围时，该定位槽173覆盖在至少部分定位块38上。

[0131] 通过这种方式，在对壳体护套17进行套装时，可以根据定位块38和定位槽173的位置对壳体护套17进行定位，以方便操作人员快速、准确得安装。当然，在其它实施方式中，也可以根据实际需求不设置定位块。

[0132] 在一实施方式中，电路壳体30包括彼此扣合的两个子壳体，分别为第一子壳体301和第二子壳体302。具体地，两个子壳体可以沿电路壳体30的中线而对称扣合，或者也可以根据实际需求通过其他方式进行扣合。另外，用于容纳控制电路60的电路壳体30的两个子壳体的扣合方式可以与用于容纳电池70的电路壳体30的两个子壳体的扣合方式可以相同，也可以不同。

[0133] 在一个应用场景中，电路壳体30的环形台面37可形成于第一子壳体301上，两个子壳体在环形台面37朝向耳挂10的一侧接合，从而使得壳体护套17能够对两个子壳体的接合缝进行全覆盖，从而能够在一定程度上对电路壳体30的内部空间进行密封，以提高骨传导扬声装置的防水效果。

[0134] 在另一应用场景中，电路壳体30的环形台面37还可以由两个子壳体共同形成，从而使得二者至少部分部位在环形台面37背离耳挂10的一侧结合。此时，壳体护套17不能够覆盖两个子壳体的位于环形台面37背离耳挂10一侧的接合缝。本应用场景中，可以进一步通过其它方式对该部分的接合缝进行覆盖。

[0135] 进一步地，在一实施方式中，两个子壳体彼此对接的接合面为互相契合的阶梯形状。

[0136] 具体地，第一子壳体301的朝向第二子壳体302的端面为阶梯状的第一阶梯面3011，第二子壳体302的朝向第一子壳体301的端面为阶梯状的第二阶梯面3021。第一阶梯面3011和第二阶梯面3021的形状及尺寸均一致，从而能够互相配合抵接在一起。

[0137] 通过这种方式，电路壳体30的两个子壳体互相抵接的结合面成阶梯状而不在同一平面上，从而能够阻挡电路壳体30外部的液体由电路壳体30的外围进入电路壳体30的内部，进而进一步提高骨传导扬声装置的防水效果，以对电路壳体30内部的控制电路60或者电池70等进行保护。

[0138] 进一步地，在第二子壳体302的第二阶梯面3021上设置有朝向第一子壳体30a的安装卡勾3022，对应地，第一子壳体301的内部设置有与该安装卡勾3022匹配的安装勾槽3012。在对第一子壳体301和第二子壳体302进行安装时，安装卡勾3022能够在外部推力越过安装勾槽3012的外侧壁而进入该安装勾槽3012，并使得安装卡勾3022的勾部勾接安装勾槽3012的内侧壁，从而实现第一子壳体301与第二子壳体302的扣合。

[0139] 在一实施方式中，骨传导扬声装置进一步设置有按键机构。

[0140] 具体地，电路壳体30的辅侧壁34的外表面上设置有第一凹陷区341，该第一凹陷区341内进一步设置有按键孔342，该按键孔342连通辅侧壁34的外表面和内表面。

[0141] 其中，电路壳体30的辅侧壁34可以包括，在用户佩戴该骨传导扬声装置时，朝向用户头部后侧的辅侧壁34，也可以包括在用户佩戴时，朝向用户头部下侧的辅侧壁34。

[0142] 第一凹陷区341的数量可以为一个或者多个，且每个第一凹陷区341内可以设置一个或者多个按键孔342，具体可以根据实际需求设置，此处不做具体限定。

IPR2025-00842; Shokz
Ex. 2018 - Page 1536

[0143] 本实施方式中，骨传导扬声装置还进一步包括弹性衬垫82、按键83，控制电路60包括按键电路板61。

[0144] 其中，弹性衬垫82设置于第一凹陷区341，具体固定于第一凹陷区341对应的辅侧壁34的外表面上，以覆盖于按键孔342的外部从而避免外部液体通过按键孔342进入到电路壳体30的内部，以起到密封防水的作用。

[0145] 进一步地，该弹性衬垫82上设置有与按键孔342对应的第二凹陷区821，该第二凹陷区821延伸至按键孔342的内部。

[0146] 具体地，该弹性衬垫82可以由软性材质制成，例如软性的硅胶、橡胶等。且该弹性衬垫82较薄，直接与辅侧壁34的外表面粘接时，难以粘接牢靠。

[0147] 因此，在一实施方式中，可进一步在弹性衬垫82与电路壳体30之间设置刚性衬垫84，该钢性衬垫84与弹性衬垫82彼此贴靠固定，具体可以通过贴合、粘接、注塑等的方式实现，并进一步将钢性衬垫84与辅侧壁34进行粘接，具体可以通过采用双面胶进行粘接，以在钢性衬垫84与辅侧壁34之间形成一粘胶层，从而使得弹性衬垫82能够牢靠地固定在辅侧壁34的外表面。而且，由于弹性衬垫82质软且薄，因此在用户按压按键的过程当中难以保持平整状态，而通过与钢性衬垫84的贴靠固定，能够使弹性衬垫82保持平整。

[0148] 进一步地，钢性衬垫84上设置有允许第二凹陷区821通过的通孔841，从而使得弹性衬垫82的第二凹陷区821能够进一步通过通孔841而延伸至按键孔342的内部。

[0149] 具体地，钢性衬垫84可以由不锈钢制成，或者其它钢性材料，如塑胶等硬质材料。并可通过一体成型而与弹性衬垫82贴靠在一起。

[0150] 另外，按键83包括按键本体831，以及设置在按键本体831一侧凸出设置的按键触头832。其中，按键本体831设置于弹性衬垫82远离电路壳体30的一侧，且按键触头832延伸至第二凹陷区821内，以随第二凹陷区821而延伸至按键孔342内部。

[0151] 进一步地，由于本实施方式中骨传导扬声装置较为轻薄，按键83的按压行程较短，若采用软质的按键则会降低用户按压手感而带来不好的体验。本实施方式中，按键83可由硬质的塑胶材料制成，以使得用户按压时能够具有良好的手感。

[0152] 进一步地，按键电路板61设置于电路壳体30的内部，其上设置有与按键孔342对应的按键开关611。从而在用户按压按键时，按键触头832接触并触发按键开关611，以进一步实现相应的功能。

[0153] 本实施方式中，通过在弹性衬垫82上设置第二凹陷区821，一方面，第二凹陷区821的设置能够覆盖整个按键孔342，从而能够同时提高防水效果；另一方面，在自然状态下，按键触头832便能够通过第二凹陷区821而延伸入按键孔342内部，从而能够缩短按键按压的行程，以减小按键结构所占用的空间，进而使骨传导扬声装置既能够有好的防水性能，又占用较少的空间。

[0154] 在一实施方式中，按键83可包括按键单体833，按键单体833的数量可以为一个或者多个。

[0155] 在一个应用场景中，按键83可包括至少两个彼此间隔设置的按键单体833以及用于连接按键单体833的连接部834。其中，多个按键单体833以及连接部834可一体成型。对应地，每个按键单体833对应设置有一个按键触头832，并进而对应一个按键孔342以及一个按键开关611。

IPR2025-00842; Shokz
Ex. 2018 - Page 1537

[0156] 也就是说，本实施方式中，对应于一个第一凹陷区341可以设置多个按键单体833，用户可通过按压不同的按键单体833而触发不同的按键开关611，并进而实现多种功能。

[0157] 进一步地，弹性衬垫82上可设置用于支撑连接部834的弹性凸块822。由于按键83包括连接设置的多个按键单体833，弹性凸块822的设置使得用户在按压其中一个按键单体833时，能够使得该按键单体833受到单独的按压，而避免通过联动而将其它的按键单体833一并按压的情况发生，从而能够准确得触发对应的按键开关611。需要指出的，该弹性凸块822并非是必要的，例如也可以是不具有弹性的凸出结构，或者也可以不设置凸出结构，具体可根据实际情况进行设置。

[0158] 在一实施方式中，壳体护套17的内壁上设置有与按键对应的凹槽174，从而能够以套装方式包覆于电路壳体30和按键的外围。

[0159] 在一实施方式中，骨传导扬声装置还进一步包括有至少一个导电柱85，容纳于电路壳体30内部的控制电路60还包括主控电路板62，该导电柱85可用于连接电路壳体30内部的主控电路板62以及电路壳体30外部的充电电路和/或数据传输线路等，以对骨传导扬声装置进行充电和/或数据传输等。

[0160] 相应地，电路壳体30的主侧壁33上设置至少一个安装孔331，导电柱85可插置于对应的安装孔331内。其中，导电柱85和安装孔331可一一对应，本实施方式中，导电柱85和安装孔331的数量均为四个，四个导电柱85分别插置于对应的安装孔331内，并排呈一条直线而均匀间隔设置。其中，位于外侧的两个导电柱85可作为充电接口，而位于中间的两个导电柱85可作为数据传输接口。当然，导电柱85以及安装孔331也可以按照其它的排布方式进行设置，此处不做具体限定。

[0161] 其中，导电柱85可包括插置于安装孔331内的柱状本体851。其中柱状本体851的外周面上设置有定位凸台852，该定位凸台852可用于与主侧壁33的内表面卡接，进而将导电柱85固定于安装孔331。

[0162] 具体地，定位凸台852可以绕柱状本体851的周向呈环形设置，进一步地，在环形的定位凸台852朝向电路壳体30内部的一侧设置有连接柱状本体851外周面以及定位凸台852的延伸斜面853。在安装导电柱85时，将该导电柱85由电路壳体30的外部，沿延伸斜面853而逐渐插入安装孔331而进入电路壳体30的内部，并进而通过定位凸台852，在定位凸台852完全通过安装孔331之后，该定位凸台852朝向电路壳体30外部的台面与主侧壁33的内表面卡接，进而将导电柱85固定于安装孔331内。

[0163] 上述方式中，定位凸台852的设置使得在装配过程中，导电柱85能够从电路壳体30的主侧壁33的外表面插入安装孔331后，并可通过按压的方式即可将定位凸台852按压入安装孔331内，从而与电路壳体30的主侧壁33的内表面卡接固定，而无需从电路壳体30的内部进行安装，从而使得骨传导扬声装置的装配更加便捷，提高生产装配效率.进一步地，延伸斜面853的设置使得在装配过程中，定位凸台852能够更加顺利地通过安装孔331。定位凸台852的设置则能够使得导电柱85进入安装孔331内时与主侧壁33的内表面卡接而不易从导电孔内划出，从而能够将导电柱85牢靠地固定于安装孔331内。

[0164] 具体地，在一实施方式中，柱状本体851沿柱状本体851相对于安装孔331的插入方向划分为第一柱状本体8511和第二柱状本体8512，二者可由导电的金属材质，如铜、银或者合金等一体成型而为一整体结构。其中，在垂直于导电柱85插入安装孔331的插入方向上，

IPR2025-00842; Shokz
Ex. 2018 - Page 1538

第一柱状本体8511的横截面可大于第二柱状本体8512的横截面。其中，定位凸台852可设置于第二柱状本体8512上。

[0165] 相应地，安装孔331沿插入方向划分为横截面与第一柱状本体851和第二柱状本体851对应的第一孔段3311和第二孔段3312，进而在第一孔段3311和第二孔段3312的连接处形成一环形台面3313，其中，该环形台面3313与主侧壁33的外表面连通。

[0166] 进一步地，当柱状本体851插置于安装孔331内时，第一柱状本体8511朝向第二柱状本体8512的一侧支撑于环形台面3313上，同时，位于第二柱状本体8512外周面上的定位凸台852朝向第一柱状本体8511的一侧卡接于主侧壁33的内表面上，进而将导电柱85从安装孔331周围的主侧壁33的内外两侧面同时卡接，从而将导电柱85固定于安装孔331内。

[0167] 在一实施方式中，柱状本体851沿轴向设置有容置腔8513，容置腔8513的开口端于第二柱状本体8512朝向电路壳体30内部的端面上。具体地，该容置腔8513可沿平行于插入方向而贯通至第二柱状本体8512的位于电路壳体30内部一侧的部分，并在到达定位凸台852之前终止。当然，在其它实施方式当中，可以根据需求设置容置腔8513的具体位置，此处不做限定。

[0168] 进一步地，导电柱85包括设置于容置腔8513内的弹簧854以及导电触头855，导电触头855的一端可于容置腔8513内部与弹簧854抵接，另一端从容置腔8513的开口端外露于电路壳体30的内部。其中，导电触头855的材质可与柱状本体851的材质相同，弹簧854可以通过一定的手段如粘接、焊接等方式与第二柱状本体851以及导电触头855连接，或者还可以直接放置于容置腔8513内，并通过柱状本体851与电路壳体30的主侧壁33的卡接以及导电触头855与主控电路板62的抵接而弹性夹持于容置腔8513内部。

[0169] 进一步地，电路壳体30内部的主控电路板62上设置有与导电柱85位置对应的触点621，具体如图7所示。具体地，主控电路板62包括面积较大的主表面622以及连接主表面622的面积较小的侧表面623，其中，主控电路板62的主表面622可平行或者近似平行于电路壳体30的主侧壁33，其中，触点621对应设置于主控电路板62的主表面622上。

[0170] 其中，导电柱85插入安装孔331的插入方向与导电柱85的轴向平行，并垂直于主侧壁33，进而垂直于主控电路板62的主表面622。在将导电柱85安装于安装孔331内后，弹簧854受到导电触头855以及柱状本体851的夹持而产生弹性形变，以将导电触头855弹性压持于对应的触点621上，从而实现导电柱85与主控电路板62的电连接。

[0171] 在一实施方式中，骨传导扬声装置还进一步包括一位于电路壳体30内部的辅助片86。

[0172] 该辅助片86包括一板体861，该板体861上设置有镂空区8611，该板体861可通过热熔或者热压、粘接等方式设置于主侧壁33的内表面上，并使得设置于主侧壁33上的安装孔331位于镂空区8611内部。具体地，板体861的板面可平行贴靠于主侧壁33的内表面上。

[0173] 其中，该辅助片86具有一定的厚度，在其设置于主侧壁33的内表面上后，与该辅助片86的镂空区8611的内侧壁与主侧壁33共同构成一位于插置于安装孔331内的导电柱85外围的胶槽87。

[0174] 进一步地，可在胶槽87内施加密封胶，从而从电路壳体30的内部对安装孔331进行密封，以提高电路壳体30的密闭性，进而提高骨传导扬声装置的防水性能。

[0175] 其中，该辅助片86的材质可与电路壳体30的材质相同，并与电路壳体30分别成型。

IPR2025-00842; Shokz
Ex. 2018 - Page 1539

需要指出的是，在电路壳体30成型阶段，安装孔331附近往往还具有其它结构，例如需要成型按键孔342等，这些结构在成型时所对应的模具可能需要从电路壳体30的内部退出，而此时若直接在电路壳体30内部一体成型对应于安装孔331的胶槽87，则胶槽87的凸起可能会干涉这些结构的模具的顺利退出，从而为生产带来不便。本实施方式中，辅助片86与电路壳体30分别为独立的结构，在二者分别成型后，可通过将辅助片86安装于电路壳体30的内部而与电路壳体30的主侧壁33共同构成胶槽87，从而在电路壳体30的成型阶段不会阻挡部分结构的模具从电路壳体30的内部退出，从而有利于生产的顺利进行。

[0176] 在一实施方式中，在对电路壳体30进行成型时，模具的退出仅占用胶槽87所占据的空间的部分空间，从而，可以在不影响退模的情况下，在主侧壁33的内表面上一体成型胶槽87的一部分，而胶槽87的另一部分仍可由辅助片86辅助构成。

[0177] 具体地，主侧壁33的内表面上一体成型有第一条状凸肋332，该第一条状凸肋332所在的位置不影响电路壳体30的模具退模。辅助片86的镂空区8611设置有一缺口8612。其中，第一条状凸肋332与该缺口8612对应。在电路壳体30和辅助片86分别成型之后，可将该辅助片86于主侧壁33的内表面，以使得第一条状凸肋332至少部分嵌合于缺口8612处，进而利用第一条状凸肋332和辅助片86配合使得胶槽87呈闭合设置。

[0178] 本实施方式中，由于第一条状凸肋332不会对模具的退出产生阻挡，因此，胶槽87的侧壁可由一体成型于主侧壁33内表面的第一条状凸肋332与辅助片86共同构成。

[0179] 进一步地，在一实施方式中，第一条状凸肋332还进一步延伸成与板体861的侧边缘8613抵接，进而对板体861进行定位。

[0180] 具体地，该第一条状凸肋332包括凸肋主体3321和定位臂3322，其中，凸肋主体3321用于与镂空区8611的缺口8612匹配并与其嵌合，从而共同形成胶槽87的侧壁；而定位臂3322则由凸肋主体3321的一端进一步延伸而成，并延伸至板体861的一侧边缘8613处与该侧边缘8613抵接，从而对该板体861于该侧边缘8613处进行定位。

[0181] 其中，第一条状凸肋332在主侧壁33的内表面上凸出的高度可大于辅助片86的厚度，当然，也可以小于或者等于，只要能够与辅助片86共同构成胶槽87，以及能够对辅助片86的板体861起到定位作用即可，此处不做具体限定。

[0182] 在一实施方式中，板体861上进一步设置有定位孔8614，其中，定位孔8614贯通板体861的主板面设置。进一步地，主侧壁33的内表面上一体成型有与定位孔8614对应的定位柱333，在将辅助片86设置在主侧壁33的内表面后，该定位柱333插置于定位孔8614内，从而进一步对辅助片进行定位。

[0183] 其中，定位孔8614和定位柱333的数量一致，本实施方式中，二者的数量均为两个。

[0184] 在一个应用场景中，板体861的侧边缘8613形成有至少两个凸耳8615，两个定位孔8614可分别设置于对应的凸耳8615上。

[0185] 进一步地，主侧壁33的内表面上一体成型有一第二条状凸肋334，该第二条状凸肋334可沿朝向辅侧壁34的方向延伸设置，并可与第一条状凸肋332的定位臂3322的延伸方向互相垂直。

[0186] 对应地，板体861上还设置有与第二条状凸肋334对应的条状定位槽8616，该定位槽8616沿远离该主侧壁33的方向凹陷设置，且其一端与板体861的侧边缘8613连接并可与该侧边缘8613垂直设置。

IPR2025-00842; Shokz
Ex. 2018 - Page 1540

[0187] 在一个应用场景中，定位槽8616可以仅由板体861的贴合主侧壁33的表面凹陷形成，定位槽8616的深度小于板体861的厚度，此时，板体861的与凹陷的表面相背设置的面不受定位槽8616的影响；在另一个应用场景中，定位槽8616的深度大于板体861的深度，从而使得在板体861的靠近主侧壁33的表面凹陷时，另一相对表面朝向凹陷的方向凸出，从而配合形成定位槽8616。

[0188] 具体地，在将辅助片86设置在主侧壁33的内表面后，第二条状凸肋334嵌入于条状定位槽8616内，以进一步对板体861进行定位。

[0189] 在一实施方式中，按键电路板61垂直于主控电路板62而与电路壳体30的辅侧壁34平行间隔设置。具体地，如上所述，按键机构所对应的辅侧壁34可包括两种，一种是在用户佩戴该骨传导扬声装置时，朝向用户头部后侧的辅侧壁34，另一种是在用户佩戴时朝向用户头部下侧的辅侧壁34。本实施方式中，按键电路板61可以为两个，并分别与对应的两种辅侧壁34平行间隔设置。

[0190] 其中，按键电路板61可设置于辅助片86的板体861的朝向辅侧壁34的一侧。进一步地，辅助片86包括相对于板体861凸出设置的压持脚862。具体地，压持脚862沿垂直于板体861的主表面的方向凸出设置于板体861的朝向辅侧壁34的侧边缘处，且压持脚862的数量可以为一个或者多个。本实施方式中，压持脚862可通过其朝向辅侧壁34的侧面而将按键电路板61压持于辅侧壁34的内表面上，从而对按键电路板61起到固定的作用。

[0191] 在一实施方式中，主控电路板62与主侧壁33间隔设置，而辅助片86的板体861的主表面与主侧壁33平行而进一步与主控电路板62间隔设置。

[0192] 其中，压持脚862具体由板体861沿背离辅助片86所靠近的电路壳体30的主侧壁33且朝向主控电路板62的方向凸出，并延伸至主控电路板62的板面处以对主控电路板62起到压持作用，从而使得主控电路板62支撑于至少部分压持脚862上。

[0193] 在一实施方式中，壳体护套17上设置有与所述导电柱85对应的外露孔175，在将壳体护套17套装在电路壳体30外围后，导电柱85位于电路壳体30外部的一端进一步通过该外露孔175外露，进而与骨传导扬声装置外部的电路连接，以使得该骨传导扬声装置通过导电柱进行电量供应或者数据传输。

[0194] 进一步地，电路壳体30的外表面凹陷设置有环绕多个安装孔331的胶槽39。具体地，胶槽39可为椭圆环形，多个安装孔331分别设置于椭圆环形的胶槽39所环绕的电路壳体30上。

[0195] 本实施方式中，该胶槽39内施加有密封胶，进而壳体护套17与电路壳体30装配完成后，壳体护套17能够通过该密封胶在安装孔331的外围与电路壳体30密封连接，从而避免外部液体通过外露孔175而进入壳体护套17内部时，壳体护套17在电路壳体30外围产生滑动，且能够进一步从电路壳体30的外部对安装孔331进行密封，以进一步提高电路壳体30的密闭性，进而进一步提高骨传导扬声装置的防水性能。

[0196] 在一实施方式中，电路壳体30在远离耳挂10的一端进一步设置有接插端3a，后挂40包括弹性金属丝41以及设置于弹性金属丝41的两端的接插端42，其中接插端3a与接插端42彼此接插固定。

[0197] 其中，由于骨传导扬声装置的耳机芯50分别为左右两个，对应的机芯壳体20、耳挂10以及电路壳体30也设置为左右两个，后挂40通过分别与两个电路壳体30接插固定的方式

IPR2025-00842; Shokz
Ex. 2018 - Page 1541

将位于两侧的机芯壳体20、耳挂10以及电路壳体30连接在一起，并在用户佩戴时悬挂设置于用户头部后侧。

[0198] 具体地，弹性金属丝41的材质与性能等可以与弹性金属丝11相同，相关详细内容请参见前述对弹性金属丝11的相关描述，此处不再赘述。

[0199] 接插端42可以通过注塑的方式形成在弹性金属丝41的两端。具体地，接插端42可以由塑胶等材料制成。

[0200] 在一实施方式中，接插端42设置有接插孔421，该接插端3a至少部分插入至接插孔421内，本实施方式中，接插端3a可具体设置在环形台面37背离耳挂10的一侧。接插端3a与接插孔421之间的接插方式和接插端15与接插孔31之间的接插方式可以相同，也可以不同。

[0201] 其中，在接插端3a的相对两侧分别设置有与接插端3a相对于接插孔421的插入方向垂直设置的开槽3a1。两个开槽3a1可间隔且对称设置于接插端3a的两侧。进一步地，该两个开槽3a1可均在垂直于插入方向上与接插端3a的对应的侧壁连通。

[0202] 相应地，接插端42的第一侧壁422上设置有与两个开槽3a1位置对应的通孔423。其中，接插端42包括用于定义接插孔421的环绕设置的侧壁，接插端42的第一侧壁422可以是在接插端3a与接插端42接插固定时，接插端42的能够与开槽3a1的延伸方向相交的侧壁。

[0203] 其中，骨传导扬声装置进一步包括固定件88，固定件88包括两条平行设置的插脚881和用于连接插脚881的连接部882。本实施方式中，两条插脚881平行设置，连接部882可垂直连接设置于两条插脚881的同一侧，从而形成与固定件81形状相似的U型的固定件88。

[0204] 需要指出的是，固定件88可与固定件81的形状相似，但是具体的尺寸参数可以适应于周边结构而不同，本实施方式中，插脚881的长度大于插脚811的长度，连接部812长度小于连接部882的长度等，此处不做具体限定。

[0205] 进一步地，插脚881可从接插端42的外侧经通孔423插入至开槽3a1，而将连接部882阻挡于接插端3a的外侧，进而实现接插端42与接插端3a的接插固定。

[0206] 通过上述方式，骨传导扬声装置的固定件88包括两条平行设置的插脚881和用于连接插脚881的连接部882，以使得固定件88在一定跨度上对接插端3a和接插端42进行接插固定，从而使得电路壳体30与后挂40之间的固定更加稳定、牢靠；而且固定件88结构简单，插入和取出方便，从而使得接插端3a与接插端42之间的接插固定为可拆卸，且能够使得骨传导扬声装置的装配更加方便。

[0207] 进一步地，在一实施方式中，接插端42的与第一侧壁422相对的第二侧壁424上进一步设置有与通孔423相对的通孔425，插脚881进一步经开槽3a1插入至通孔425内。

[0208] 在本实施方式中，插脚881经通孔423插入至开槽3a1内，并进一步经开槽3a1插入至通孔425内，也就是说插脚881能够将后挂40的接插端42的相对两侧壁以及接插端3a完全贯穿并连接于一起，从而能够使得电路壳体30与后挂40之间接插更加牢固。

[0209] 具体地，在一实施方式中，接插端3a沿接插端3a相对于接插孔421的插入方向进一步划分为第一接插段3a2和第二接插段3a3。

[0210] 其中，接插端3a可设置在电路壳体30的端部的靠近一辅侧壁34一侧，该辅侧壁34具体可以是与上述实施方式中的定位块38所在的辅侧壁34相对的另一辅侧壁34。

[0211] 进一步地，第一接插段3a2和第二接插段3a3可在靠近定位块38的一侧沿接插端3a相对于接插孔421的插入方向而呈阶梯状设置，从而使得在垂直于插入方向的截面方向上，

IPR2025-00842; Shokz
Ex. 2018 - Page 1542

第一接插段3a2的截面大于第二接插段3a3的截面。

[0212] 相应地，接插孔421沿接插端3a相对于接插孔421的插入方向进一步划分为形状分别与第一接插段3a2和第二接插段3a3相匹配的第一孔段4211和第二孔段4212，从而使得在接插端3a插入至接插孔421内时，第一接插段3a2和第二接插段3a3分别插置于第一孔段4211和第二孔段内4212。

[0213] 进一步地，开槽3a1可设置于第一接插段3a2上，具体地，开槽3a1可沿接插端3a到定位块38的方向，即电路壳体30的两个辅侧壁34相对的方向而延伸设置，从而贯通第一接插段3a2的与电路壳体30的主侧壁33垂直的两侧壁，且进一步沿垂直插入方向贯穿第一接插段3a2的平行于电路壳体30的主侧壁33的两侧壁。

[0214] 其中，接插端42上设置的通孔423可与开槽3a1的朝向定位块38的一侧对应，而通孔425则可与开槽3a1的远离定位块38的一侧对应。

[0215] 进一步地，在一实施方式中，第一接插段3a2和第二接插段3a3的顶侧彼此共面设置。其中，第一接插段3a2和第二接插段3a3的顶侧是指在用户正常佩戴骨传导扬声装置时，第一接插段3a2和第二接插段3a3的朝向头部顶侧的一侧，也即与第一接插段3a2和第二接插段3a3所形成的阶梯状相背的一侧。

[0216] 进一步地，第一接插段3a2和第二接插段3a3的顶侧共面且形成有用于容纳导线的走线槽3a4。该走线槽3a4可沿接插端3a与接插孔421的接插方向延伸，可用于容纳经过后挂40而连通控制电路60和电池70的导线。

[0217] 本实施方式中，可先将接插端3a插置于接插孔421内，然后从第一接插段3a2的朝向定位块38的一侧插入开槽3a1。具体地，本实施方式中，接插端3a设置于电路壳体30的朝向后挂40的端面的远离定位块38的一侧，因此，在接插端3a朝向定位块38的一侧还具有一定的空间，从而在对电路壳体30以及后挂40进行插接安装时，可以将固定件88从接插端3a2的底侧，即第一接插段3a2朝向定位块38的一侧由通孔423插入至开槽3a1并进而插入至通孔425内，以实现电路壳体30与后挂40的插接固定。通过这种方式，能够将固定件88完全隐藏于电路壳体30与后挂40所形成的内部空间当中而不外露，从而无需占用额外的空间。

[0218] 进一步地，在一实施方式中，后挂40还包括注塑于弹性金属丝41以及接插端42外围的第二保护套管43以及与第二保护套管43一体成型的端部保护盖44。

[0219] 其中，第二保护套管43以及端部保护盖44的材质均可以与保护套管16及壳体护套17的材质相同，例如均可以为具有一定弹性的软质材料，例如软质的硅胶、橡胶等。

[0220] 端部保护盖44具体可形成于弹性金属丝41的两端，可以与位于弹性金属丝41的两端的接插端42一体成型于该接插端42的外围。

[0221] 需要指出的是，壳体护套17仅由电路壳体30的朝向耳挂10的一端包裹至电路壳体30的环形台面37处，因此，电路壳体30的环形台面37的朝向后挂40的部分则外露于壳体护套17的外围。进一步地，本实施方式中，端部保护盖44以及接插端42共同形成的内侧壁的形状与该电路壳体30所外露的端部的形状匹配，以进一步覆盖于该外露的电路壳体30的端部的外围，且该端部保护盖44的朝向电路壳体30的端面与壳体护套17的朝向后挂40的端面弹性抵接，以进一步提供密封。

[0222] 进一步地，在一实施方式中，壳体护套17所外露的电路壳体30的端部还设置有按键孔342，对应地，按键孔342内设置有按键83，端部保护盖44覆盖该按键83，并设置有用于

IPR2025-00842; Shokz
Ex. 2018 - Page 1543

容纳按键83的按键容置槽441。

[0223] 具体地，该按键孔342可间隔设置于接插端3a朝向定位块38的一侧，且按键孔342的数量可以为一个或者多个，具体可根据电路壳体30内部的控制电路60的具体结构以及电路壳体30本身的结构来确定，此处不做具体限定。

[0224] 以上所述仅为本申请的实施方式，并非因此限制本申请的专利范围，凡是利用本申请说明书及附图内容所作的等效结构或等效流程变换，或直接或间接运用在其他相关的技术领域，均同理包括在本申请的专利保护范围内。

IPR2025-00842; Shokz
Ex. 2018 - Page 1544

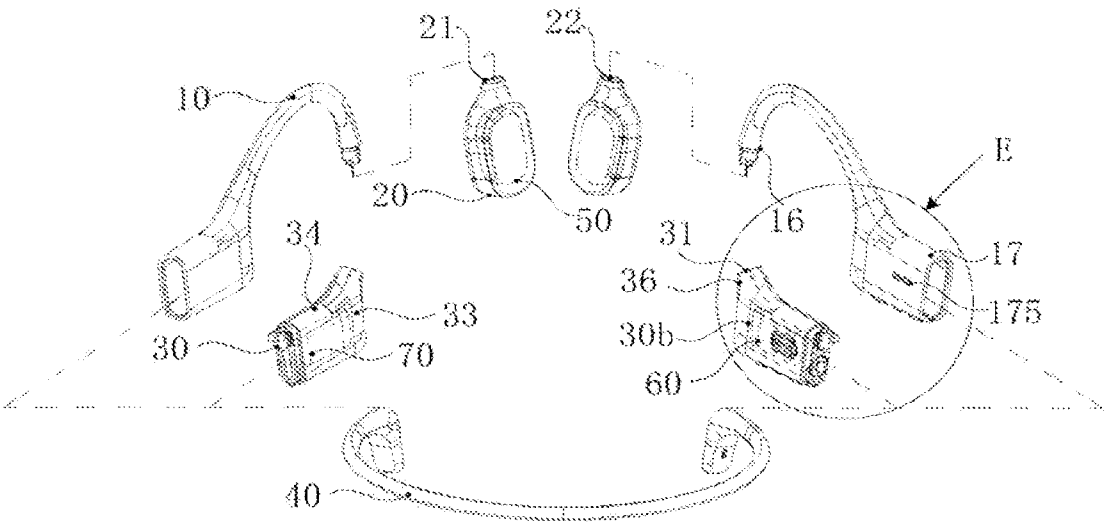


图1

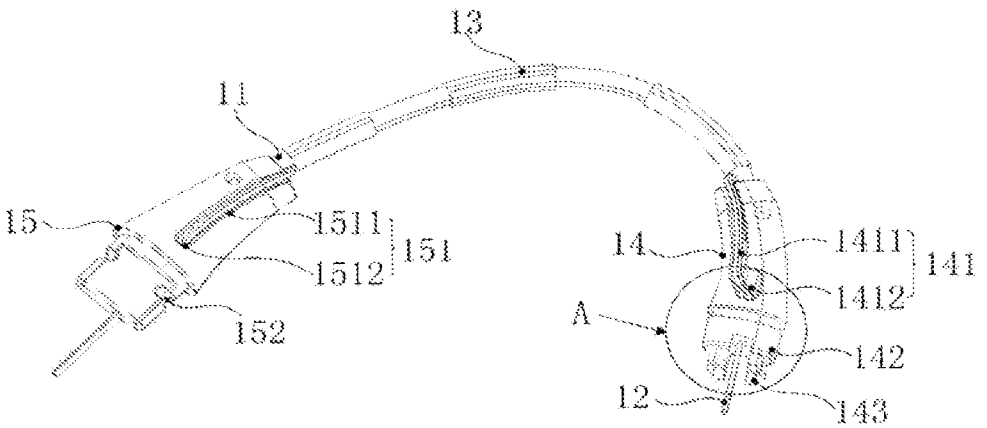


图2

IPR2025-00842; Shokz
Ex. 2018 - Page 1545

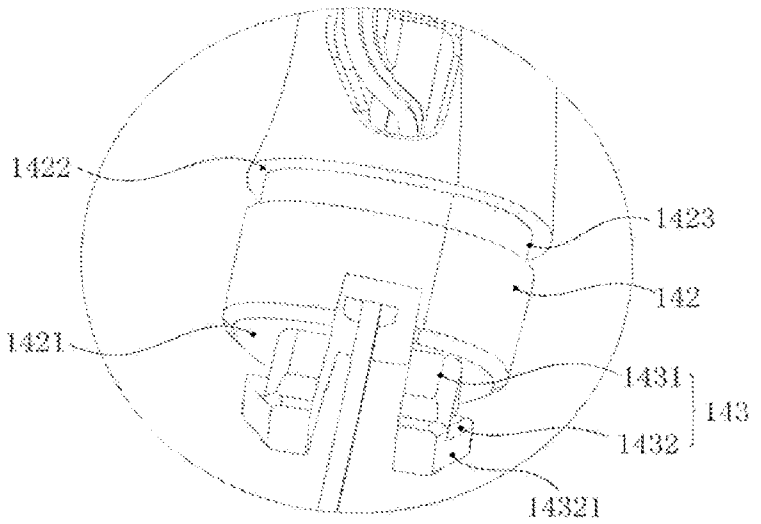


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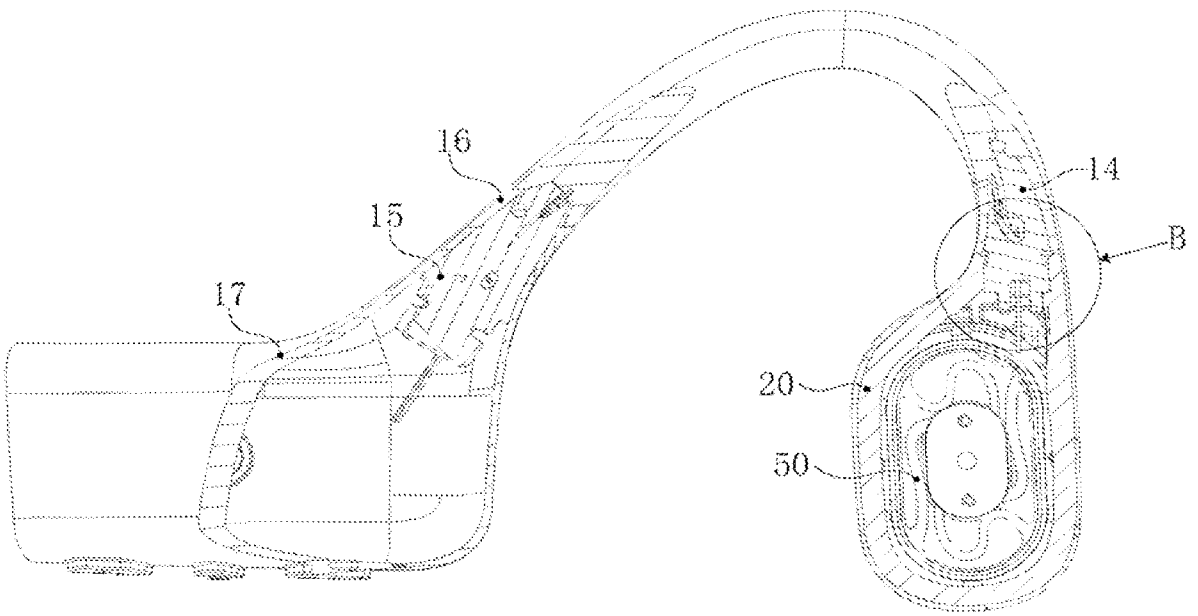


图4

IPR2025-00842; Shokz
Ex. 2018 - Page 1546

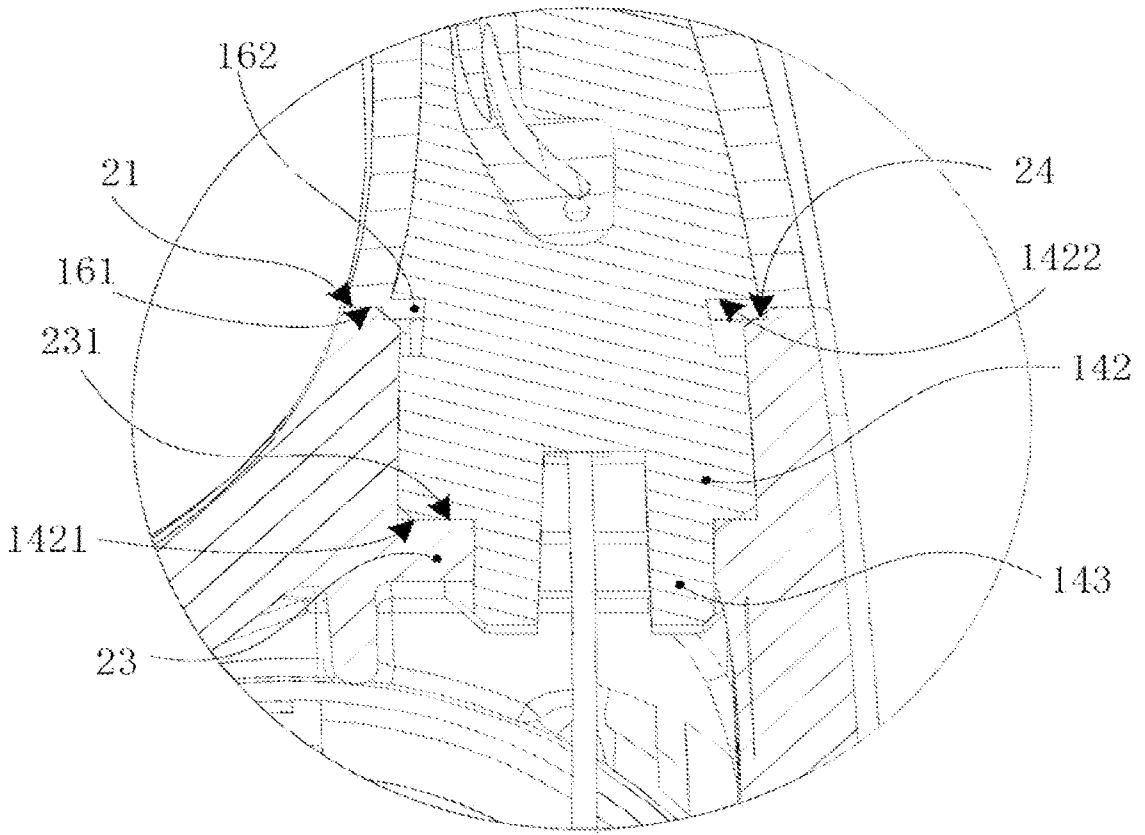


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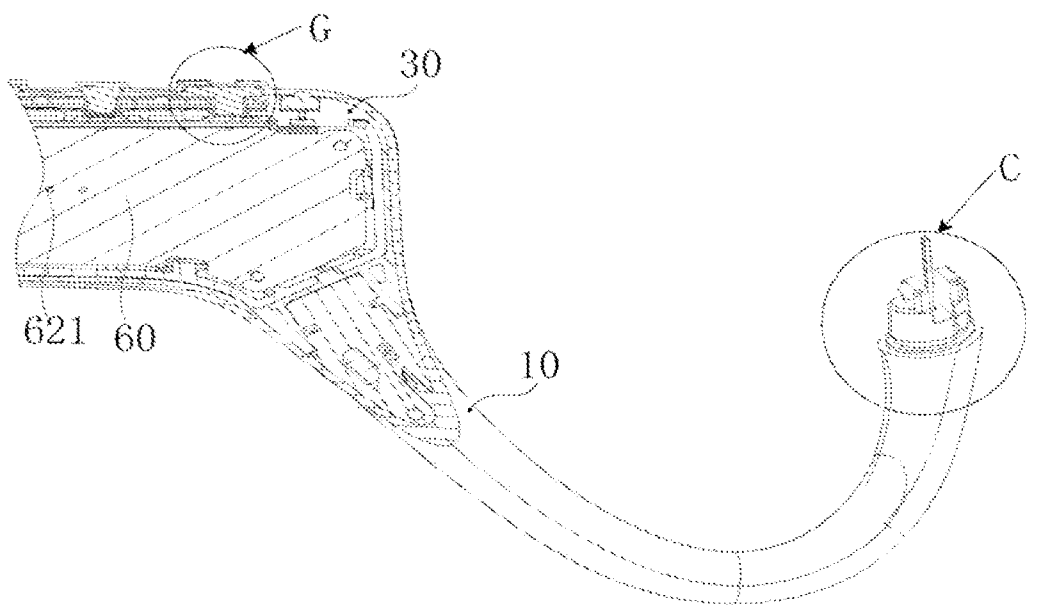


图6

IPR2025-00842; Shokz
Ex. 2018 - Page 1547

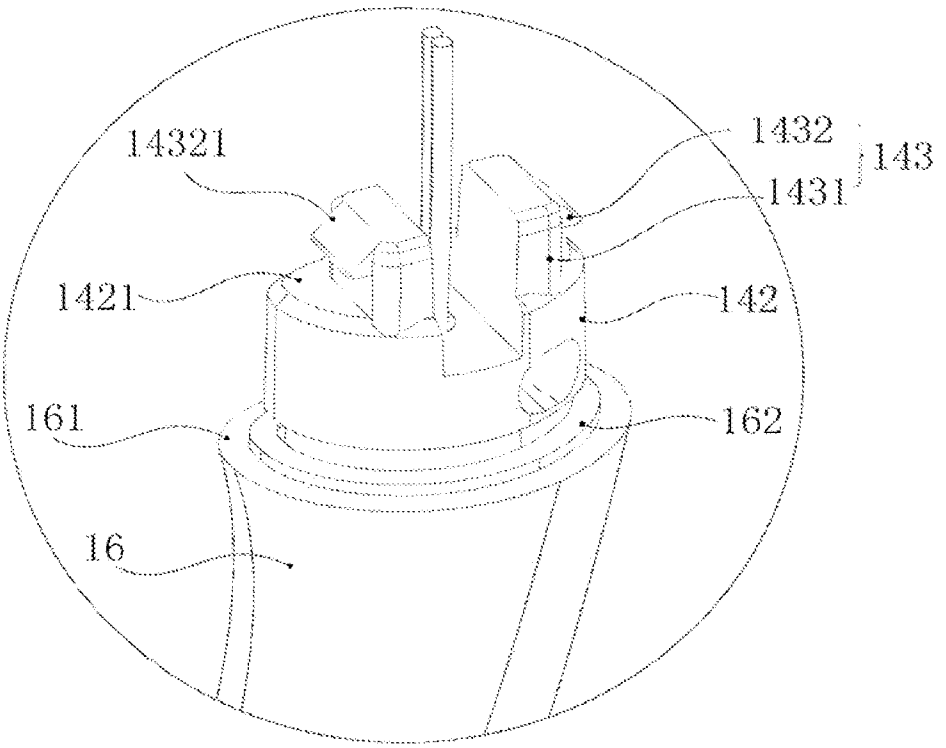


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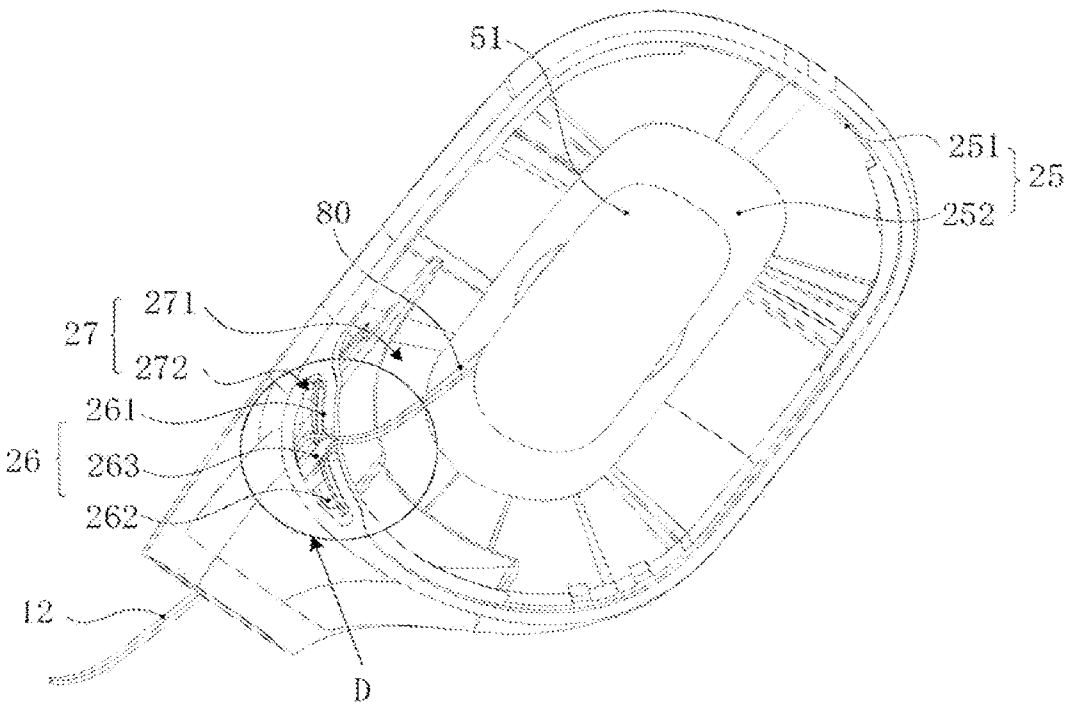


图8

IPR2025-00842; Shokz
Ex. 2018 - Page 1548

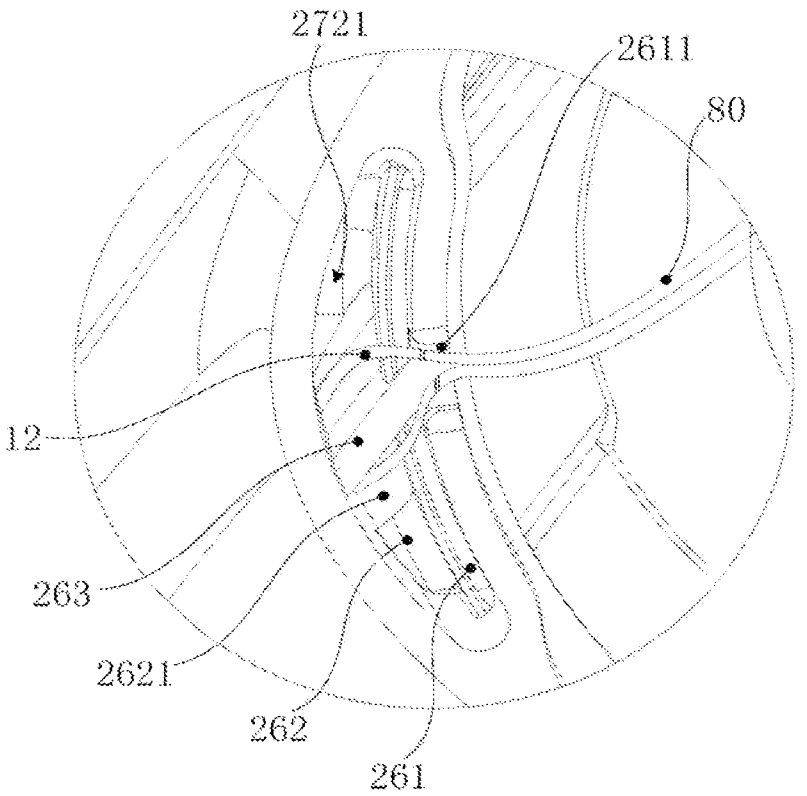


图9

IPR2025-00842; Shokz
Ex. 2018 - Page 1549

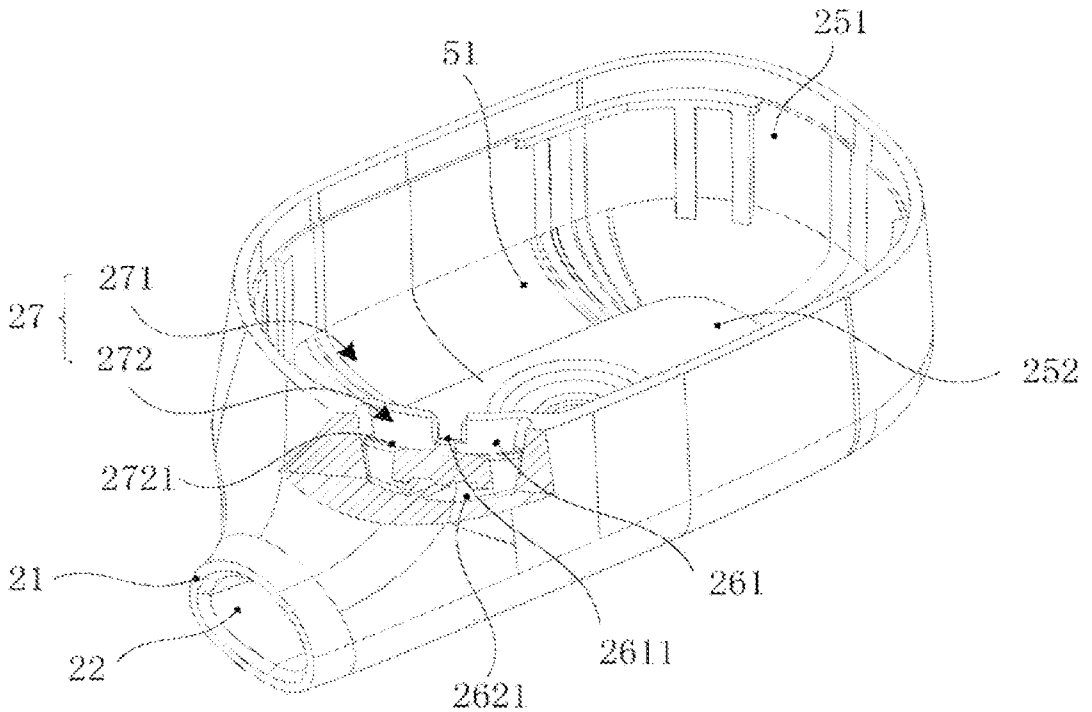


图10

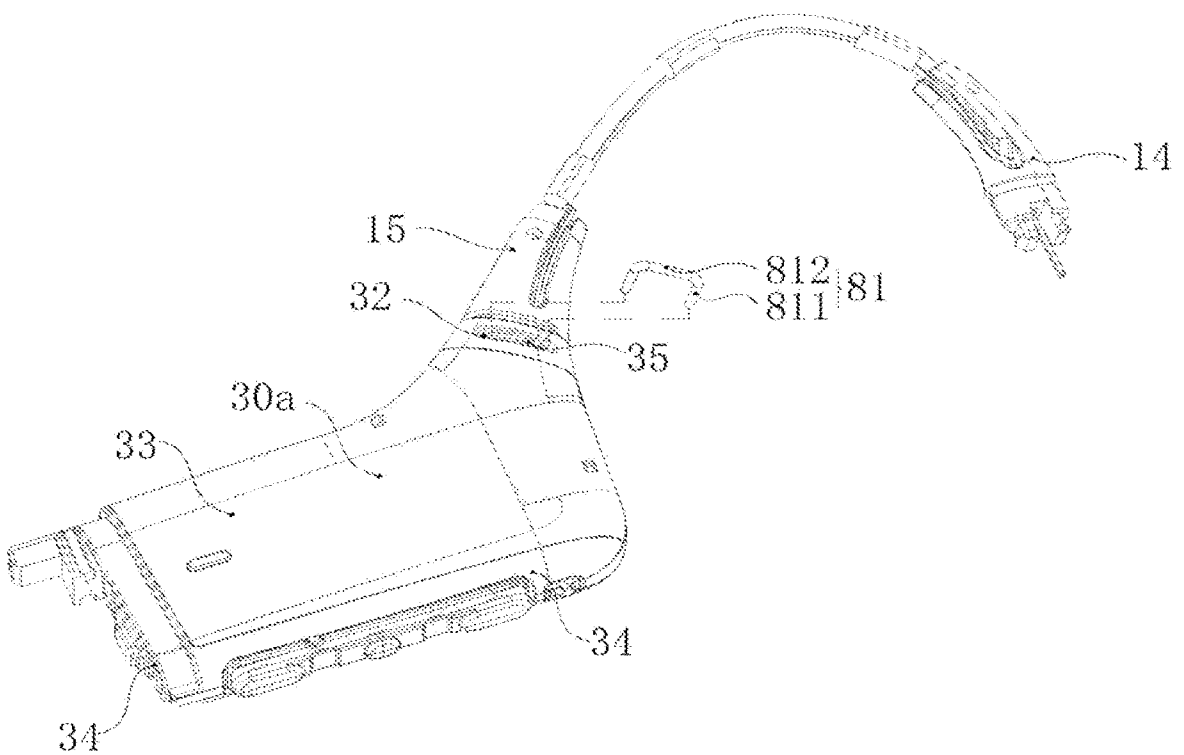


图11

IPR2025-00842; Shokz
Ex. 2018 - Page 1550

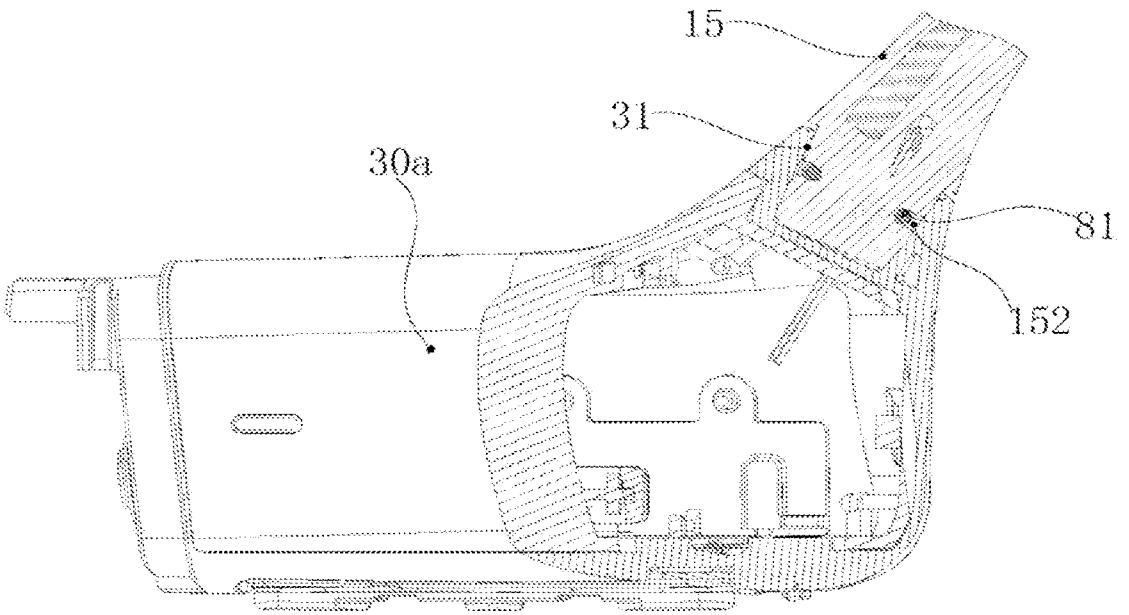


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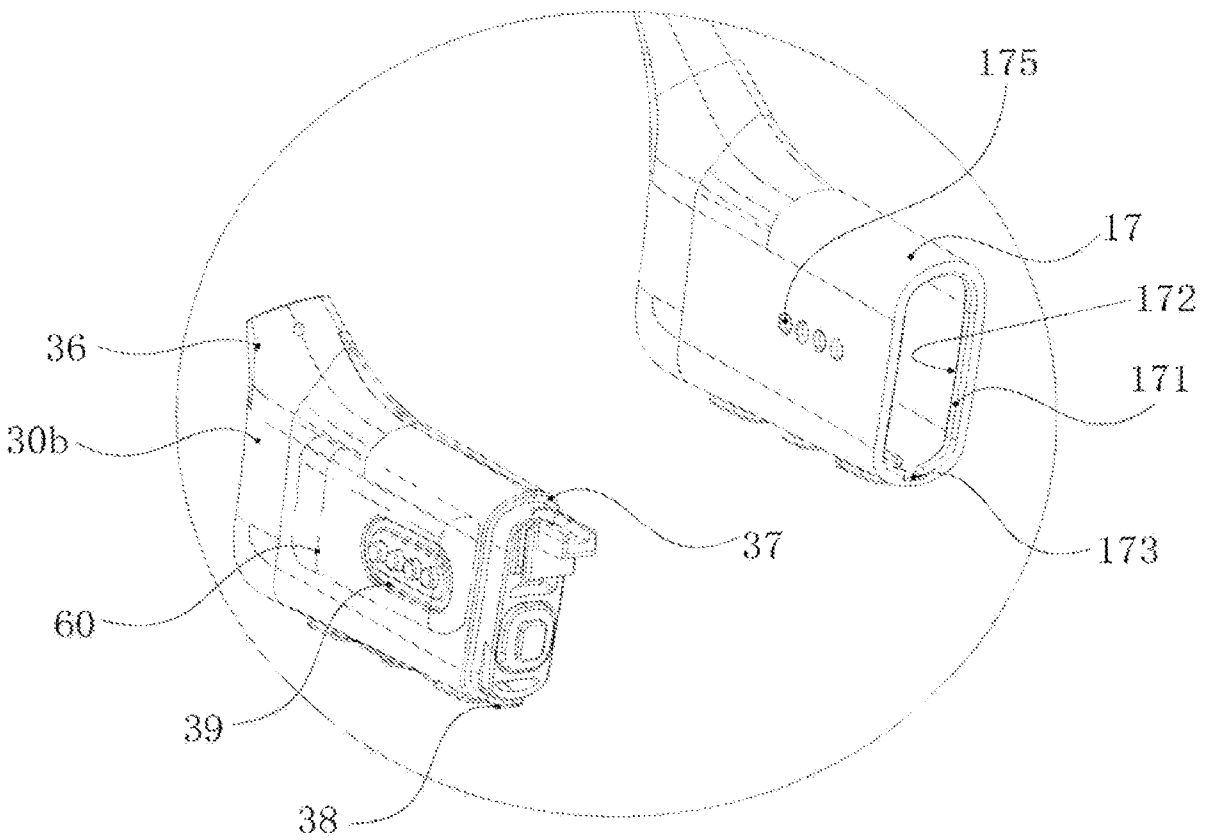


图13

IPR2025-00842; Shokz
Ex. 2018 - Page 1551

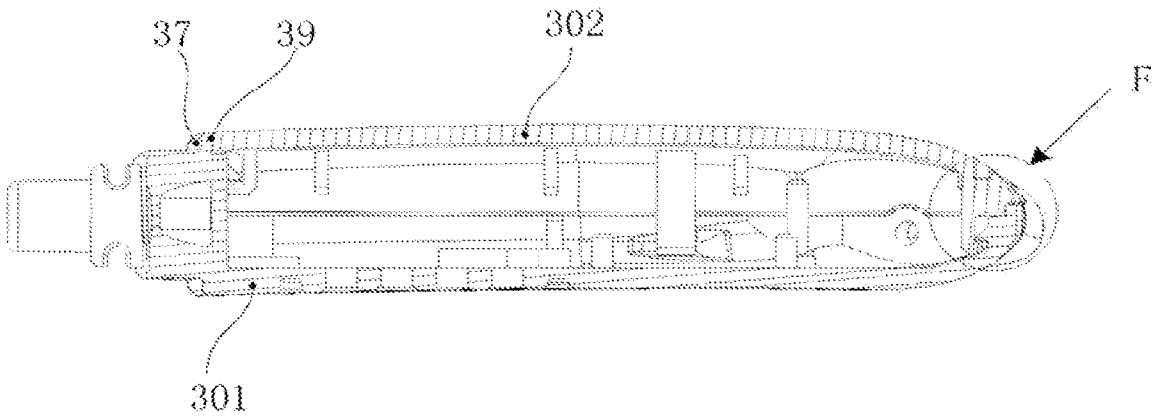


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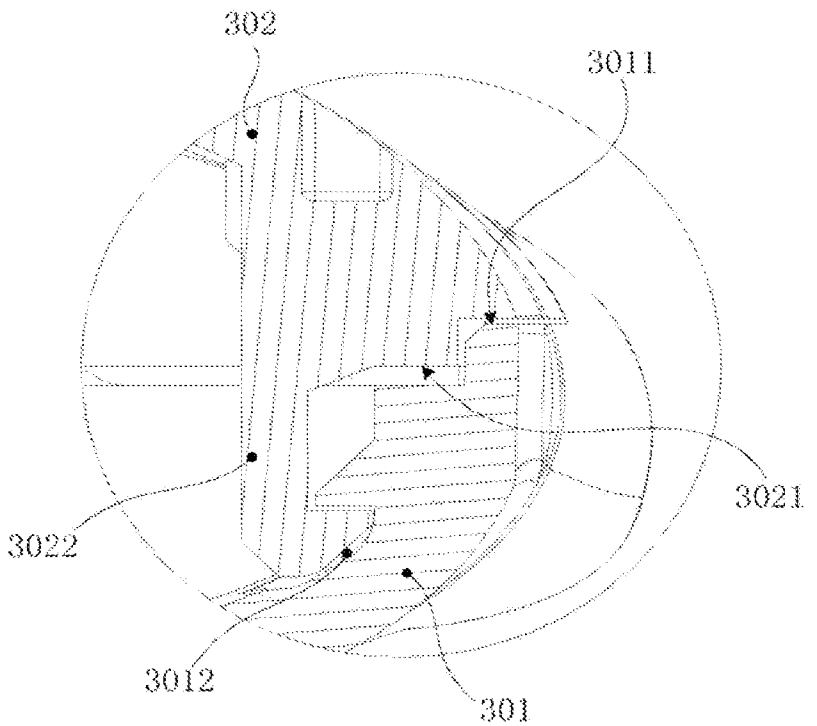


图15

IPR2025-00842; Shokz
Ex. 2018 - Page 1552

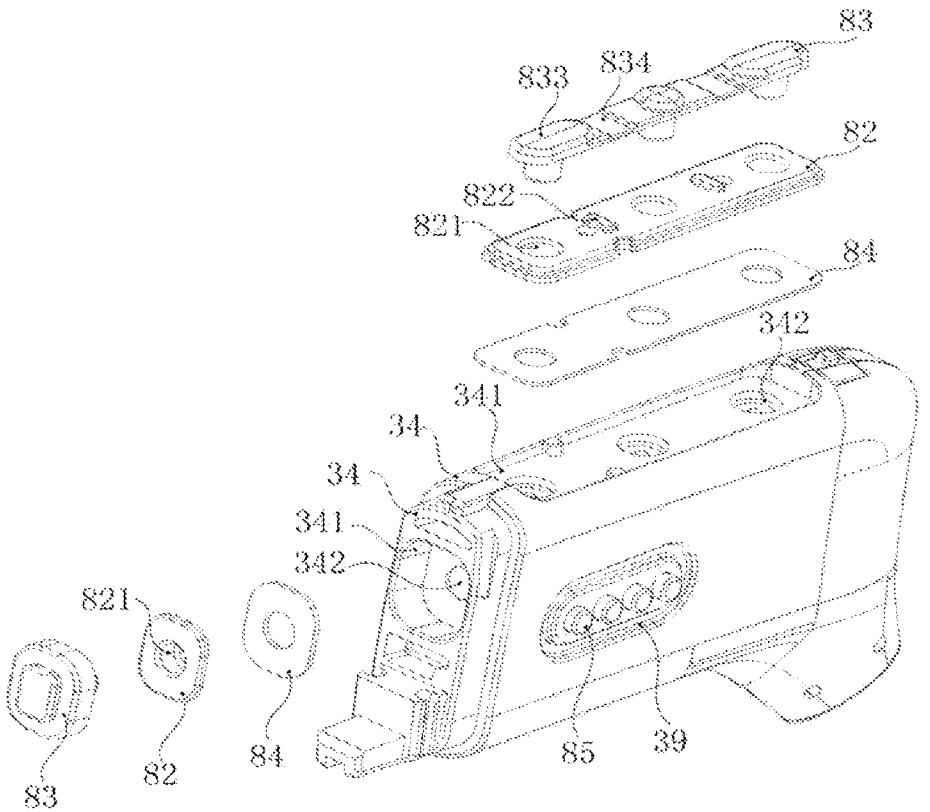


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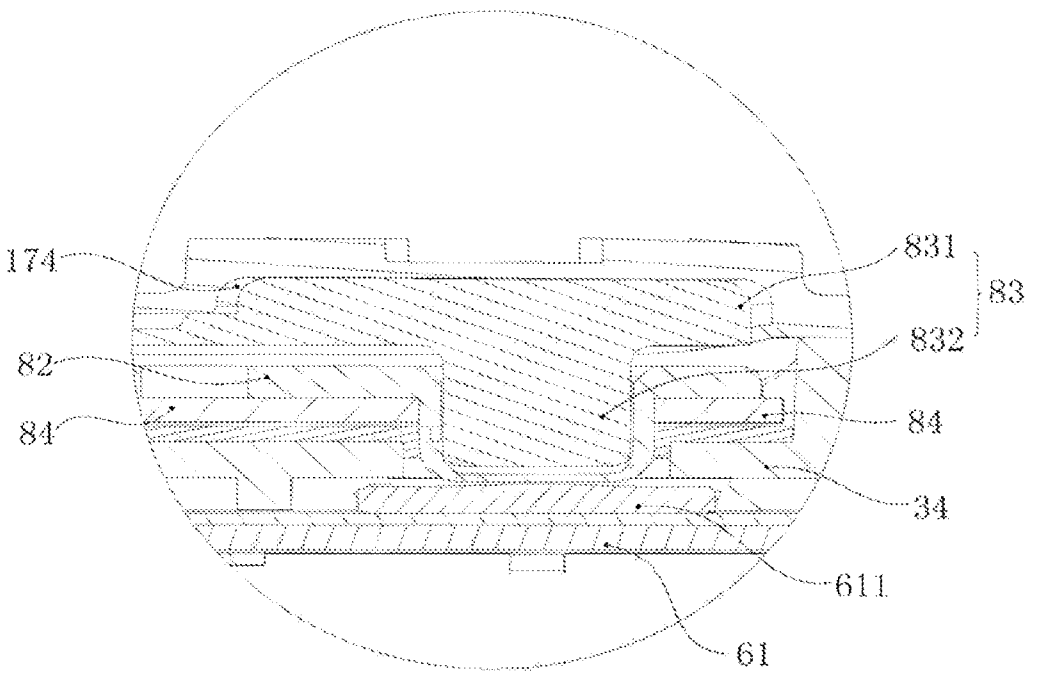


图17

IPR2025-00842; Shokz
Ex. 2018 - Page 1553

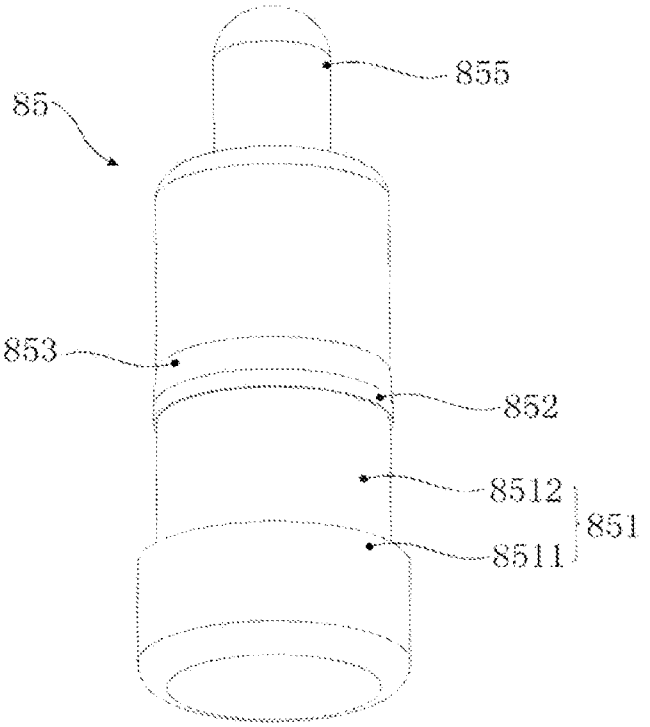


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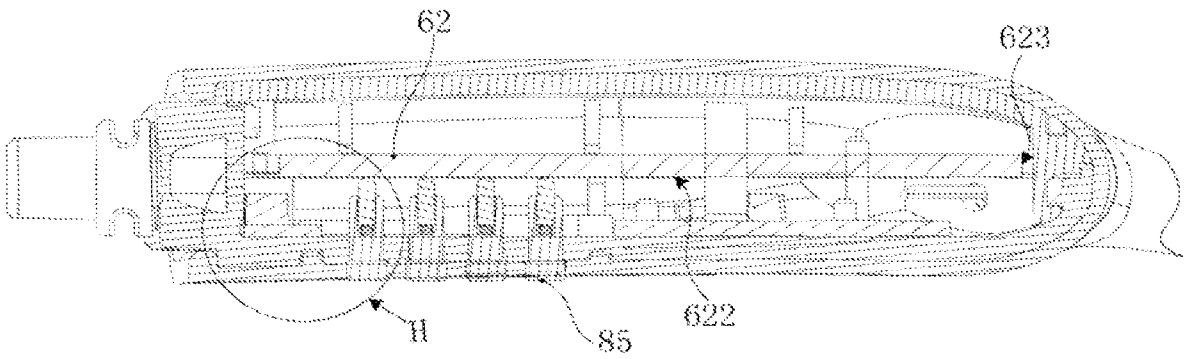


图19

IPR2025-00842; Shokz
Ex. 2018 - Page 1554

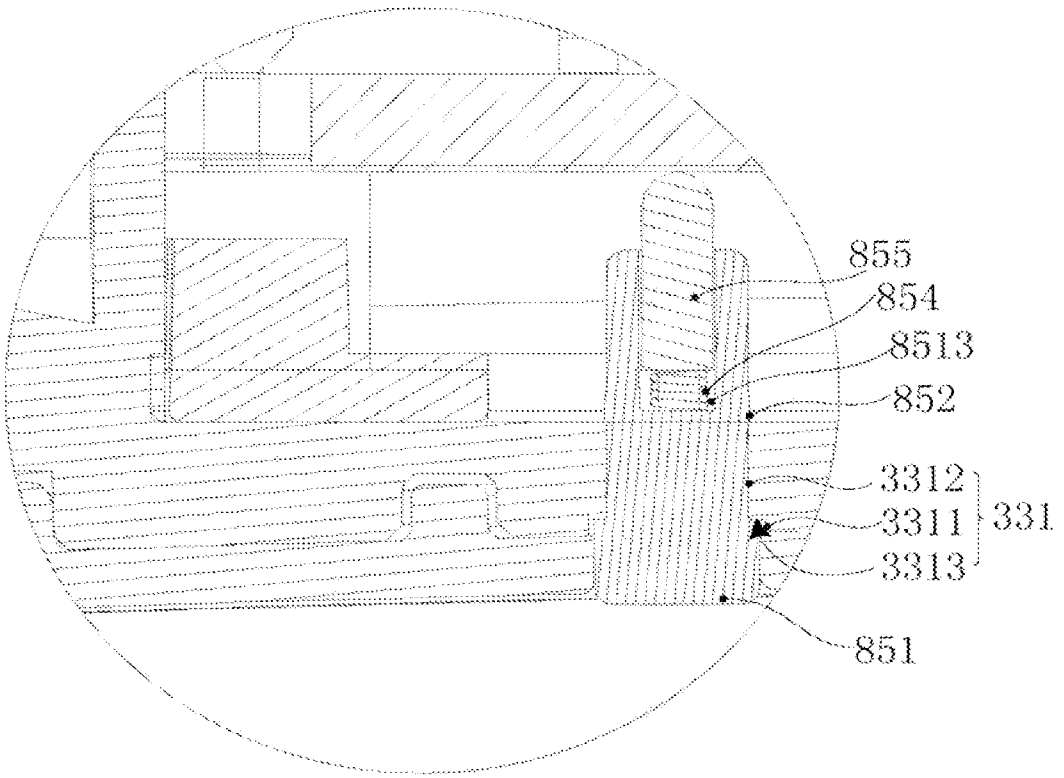


图20

IPR2025-00842; Shokz
Ex. 2018 - Page 1555

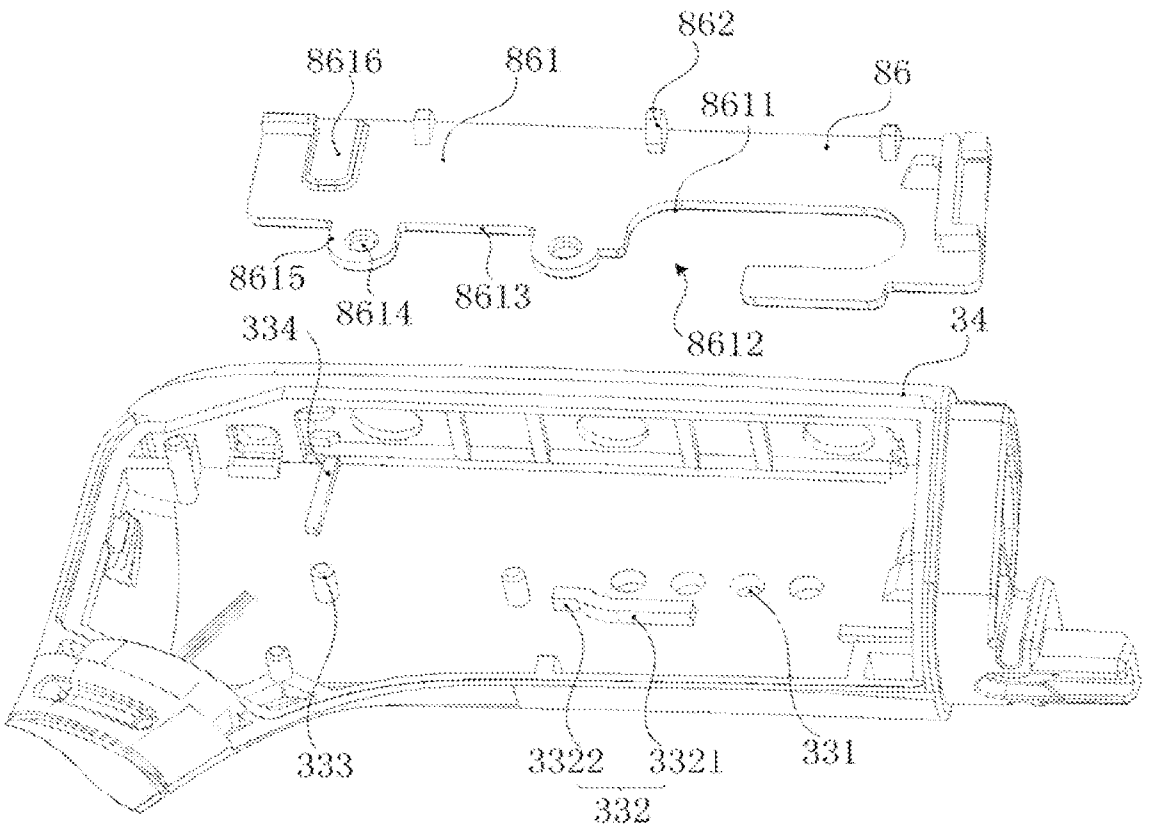


图21

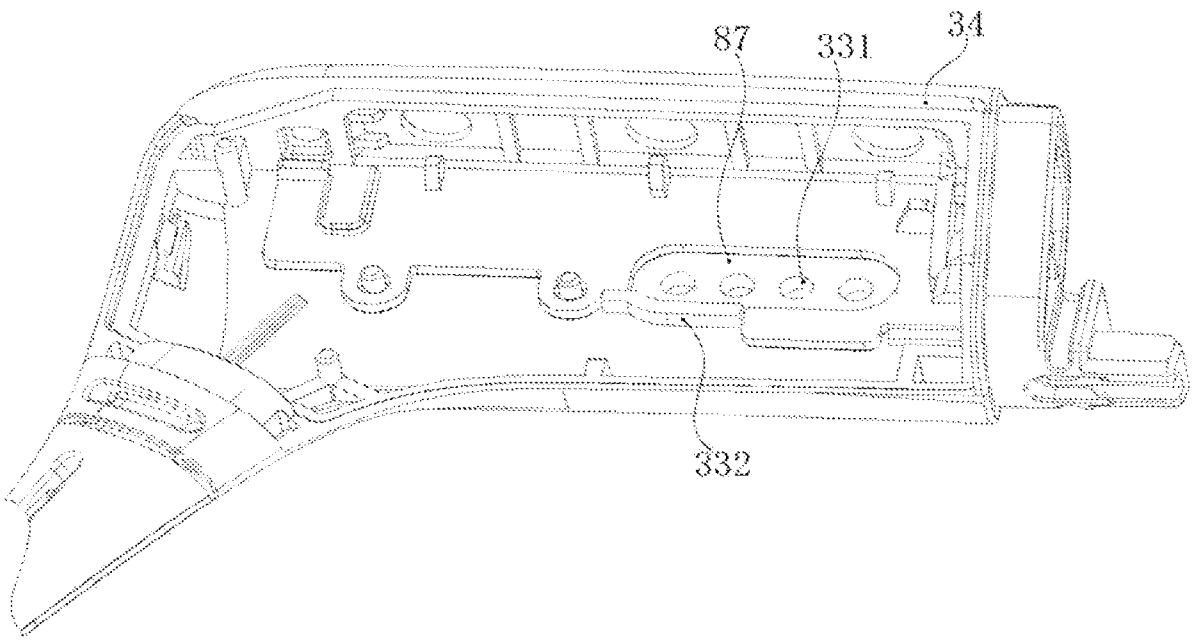


图22

IPR2025-00842; Shokz
Ex. 2018 - Page 1556

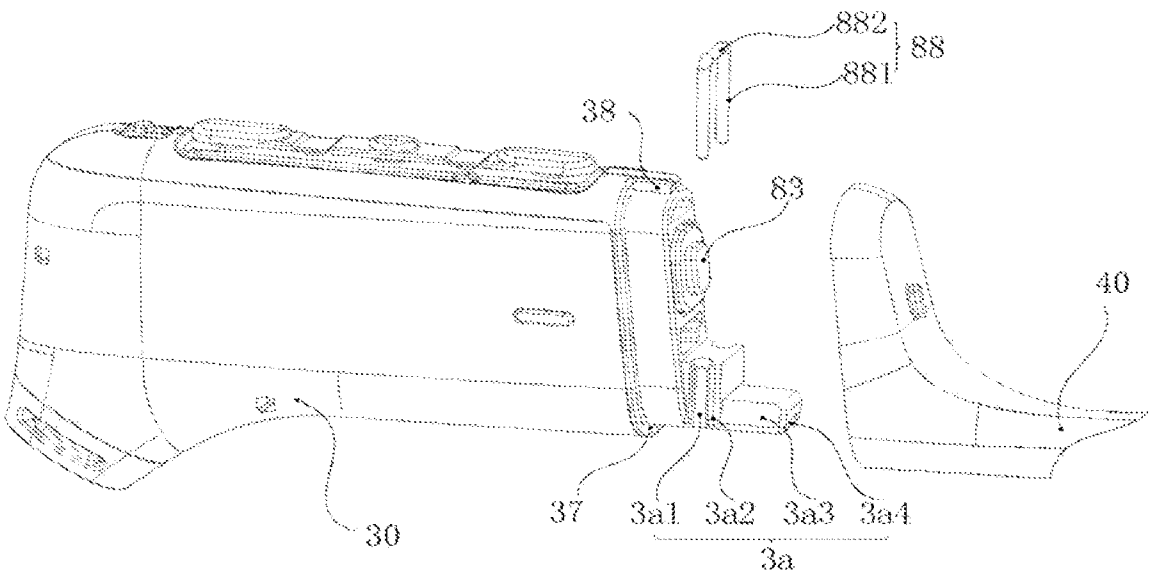


图23

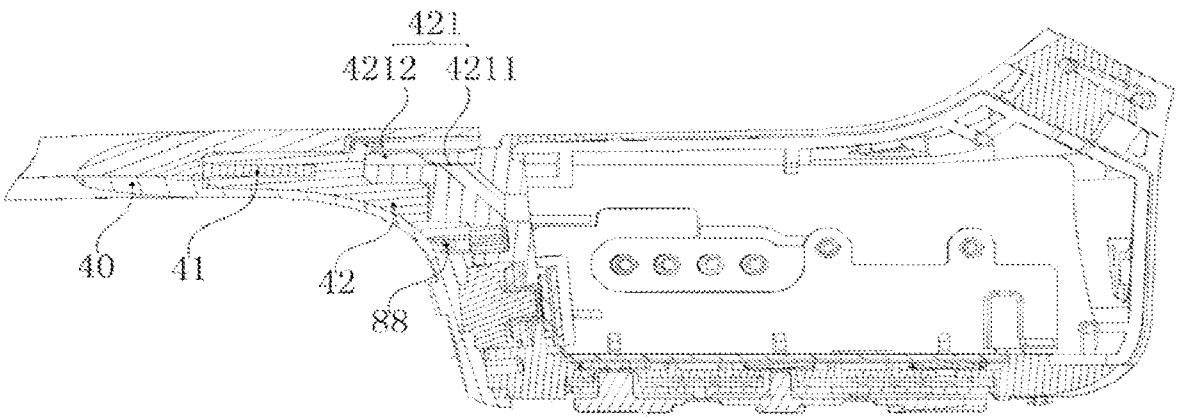


图24

IPR2025-00842; Shokz
Ex. 2018 - Page 1557

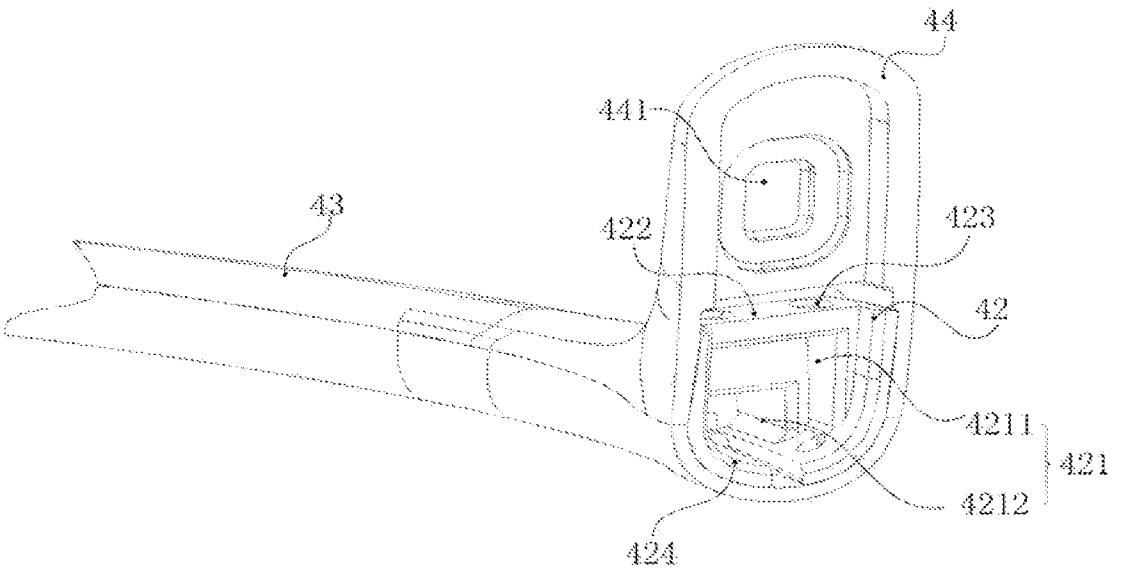


图25

IPR2025-00842; Shokz
Ex. 2018 - Page 1558

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(54) **Title:** EARBUD FRAME FOR ACOUSTIC DRIVER AND COMPLIMENTARY EAR TIP

(57) **Abstract:** An earbud may include an acoustic driver. The acoustic driver may include a diaphragm and a magnetic circuit. A frame of the acoustic driver may be integrated with the earbud.

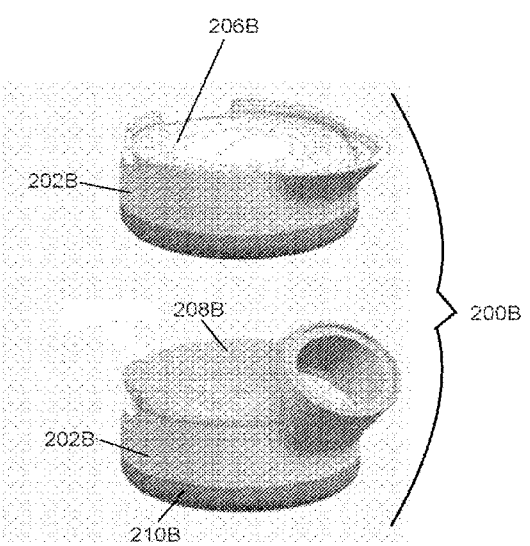


FIG. 2B

[Continued on nextpage]

IPR2025-00842; Shokz
Ex. 2018 - Page 1559

WO 2018/175192 A1

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EARBUD FRAME FOR ACOUSTIC DRIVER AND COMPLIMENTARY EAR TIP

RELATED APPLICATION

This application claims priority to and benefit of U.S. Patent Application Serial No. 15/463,797 filed on March 20, 2017, entitled "Earbud Frame for Acoustic Driver and Complimentary Ear Tip," the entirety of which is incorporated by reference herein.

BACKGROUND

This disclosure relates to an earbud frame for an acoustic driver and more specifically to an acoustic driver with a frame integrated with an earbud.

SUMMARY

All examples and features mentioned below can be combined in any technically possible way.

In an implementation, an in-ear earphone may include an earbud. The earbud may include an acoustic driver. The acoustic driver may include a diaphragm and a magnetic circuit. A frame of the acoustic driver may be integrated with the earbud.

Various implementations of the in-ear earphone may include one of the following features, or any combination thereof.

The acoustic driver may be framed directly by the earbud. The acoustic driver may be embedded in the earbud. The acoustic driver may have no frame separate from the earbud. A front cavity enclosure may form an outlet and a first port from the acoustic driver to an outside of the earbud. An ear tip may surround at least the front cavity enclosure. The ear tip may have a second port mated to the first port to form a pressure equalization port from the acoustic driver to an outside of the ear tip. The ear tip may include a first leg and a second leg.

A resistive mesh may be positioned over the first port. The in-ear earphone may include a microphone. The frame of the acoustic driver integrated with the earbud may maximize a size of the diaphragm of the acoustic driver relative to a size of the earbud. The second port of the ear tip may have a different length for a small tip ear tip than a medium tip ear tip. The earbud may further include a back cavity cap.

In an implementation, an earbud may include an acoustic driver. The acoustic driver may include a diaphragm and a magnetic circuit. A frame of the acoustic driver may be integrated with the earbud.

Various implementations of the earbud may include one of the following features, or any combination thereof.

IPR2025-00842; Shokz
Ex. 2018 - Page 1561

The acoustic driver may be framed directly by the earbud. The acoustic driver may be embedded in the earbud. The acoustic driver may have no frame separate from the earbud. A front cavity enclosure may form an outlet and a port from the acoustic driver to an outside of the earbud. The earbud may include a back cavity cap. The port may be a pressure equalization port from the acoustic driver to the outside of the earbud. A resistive mesh may be positioned over the port. The earbud may include microphone. The frame of the acoustic driver integrated with the earbud may maximize a size of a diaphragm of the acoustic driver relative to a size of the earbud.

In an implementation, an ear tip for an in-ear earphone may be formed from a pliable material to surround at least a front cavity enclosure of an earbud. The earbud may include an acoustic driver having a diaphragm and a magnetic circuit. The frame of the acoustic driver may be integrated with the earbud.

Various implementations of the ear tip may include one of the following features, or any combination thereof.

The ear tip may include a first leg, a second leg, and a first port positioned between the first leg and the second leg to mate with a second port of the front cavity enclosure of the earbud. The first port of the ear tip may have a different length for a small tip ear tip than a medium tip ear tip. The first port and the second port may mate to form a pressure equalization port from the acoustic driver to an outside of the ear tip.

In an implementation, an ear tip may include a positioning and retaining structure. The positioning and retaining structure may include a second port positioned to mate with a first port of a front cavity enclosure of an earbud. The first port may be multiple parallel ports. The second port may be multiple parallel ports.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 shows various views of an in-ear earphone having an acoustic driver with a frame separate from an earbud, and a small ear tip.

FIG. 2A shows various views of an earbud having an acoustic driver with a frame separate from an earbud.

FIG. 2B shows various views of an earbud having an acoustic driver with a frame integrated with an earbud.

FIG. 3A shows various views of an in-ear earphone having an acoustic driver with a frame integrated with an earbud, and a small ear tip.

FIG. 3B shows various views of an in-ear earphone having an acoustic driver with a frame integrated with an earbud, and a medium ear tip.

IPR2025-00842; Shokz
Ex. 2018 - Page 1562

FIG. 4A shows various views of an acoustic driver with an integrated frame.

FIG. 4B shows various views of an acoustic driver with an integrated frame.

FIG. 5A shows various views of an acoustic driver having a frame integrated with an earbud.

FIG. 5B shows a blown up view of an in-ear earphone having an acoustic driver with a frame integrated with an earbud, and a small ear tip.

FIG. 6 shows various views of an in-ear earphone having an acoustic driver with a frame integrated with an earbud, and a small ear tip.

FIG. 7 shows various views of an in-ear earphone having an acoustic driver with a frame integrated with an earbud, and a medium ear tip.

DETAILED DESCRIPTION

A typical micro-speaker or acoustic driver for an earphone may include a basket, also called a frame, a diaphragm mounted to the frame, and a magnetic circuit (coil, magnet, etc.) that forces the diaphragm to move relative to the frame. A typical earphone may include an earbud having a housing, an acoustic driver, and an ear tip. The earbud housing may enclose all or almost the entire acoustic driver frame or basket, and may leave an outlet for coupling an acoustic driver output to an ear canal. Additional ports for shaping an acoustic response may be included.

As earbuds have decreased in size, the frame of the acoustic driver has become the largest single component of the earbud. As a result, the frame of the acoustic driver has limited the minimum size of the earbud. The present disclosure describes techniques and features for using the earbud itself as the frame for the acoustic driver such that a separate frame for the acoustic driver is not needed. In an implementation, the earbud may be designed such that the diaphragm and magnetics of the acoustic driver are built directly into the earbud enclosure. The acoustic driver or micro-speaker is no longer a stand-alone component, but rather part of the earbud itself.

The present teaching will now be described in more detail with reference to various implementations thereof as shown in the accompanying drawings. Reference in the specification to "one implementation" or "an implementation" means that a particular feature, structure or characteristic described in connection with the implementation may be included in at least one implementation of the present disclosure. References to a particular implementation within the specification do not necessarily all refer to the same implementation. While the present disclosure is described in conjunction with various implementations and examples, it is not intended that the present disclosure be limited to

IPR2025-00842; Shokz
Ex. 2018 - Page 1563

such implementations. On the contrary, the present disclosure encompasses various alternatives, modifications and equivalents, as will be appreciated by those of skill in the art. Those of ordinary skill having access to the present disclosure will recognize additional implementations, modifications and embodiments, as well as other fields of use, which are within the scope of the present disclosure as described herein.

In brief overview, the present disclosure relates to an earbud, an ear tip, and an in-ear earphone. The earbud may include an acoustic driver, which may include a diaphragm and a magnetic circuit. A frame of the acoustic driver may be integrated with the earbud. The acoustic driver may be framed directly by the earbud and/or embedded in the earbud. Further, the acoustic driver may have no frame separate from the earbud. In an implementation, a front cavity enclosure may form an outlet and a port from the acoustic driver to an outside of the earbud. The earbud may also include a back cavity cap. The port may be a pressure equalization port from the acoustic driver to the outside of the earbud and a resistive mesh may be positioned over the port. The frame of the acoustic driver integrated with the earbud may maximize a size of the diaphragm of the acoustic driver relative to a size of the earbud.

In some situations, an earbud may have two walls because an acoustic driver of the earbud has its own frame, basket, or housing. Two separate walls of plastic may not be necessary because the acoustic device may not need its own frame, basket, or housing, as it is only holding a magnetic circuit and a diaphragm. In an implementation of the present disclosure, the ear bud itself may be a structure holding the magnetic circuit and diaphragm in place, eliminating the need for the acoustic driver to have a separate frame, basket, or housing. Thus, in an implementation, there is no need for the acoustic driver or transducer to have a separate packaging (frame, basket, and/or housing, etc.) inside the earbud. Eliminating this extra packaging may allow for the earbud package to be smaller such that it can fit smaller ears and/or protrudes less from a wearer's ear. In addition, the smaller earbud may enable use with smaller sized ear tips than could otherwise be used.

Advantageously, the earbud, ear tip, and in-ear earphone described in the present disclosure may allow for each of the earbud, ear tip, and in-ear earphone to be smaller in size than a typical earbud, ear tip, and/or in-ear earphone due to elimination of the need for a separate frame for an acoustic driver of the earbud. Using the techniques and features described in the present disclosure, a minimum earbud size for a given acoustic driver diaphragm size may be achieved. As a result, the entire package of the earbud may better fit

IPR2025-00842; Shokz
Ex. 2018 - Page 1564

into the concha of a smaller ear than previously possible, and will protrude less from the concha of any ear size, thus improving a user's experience in wearing the earphone.

Also advantageously, an orientation of an acoustic driver (having an integrated frame as described in the present disclosure) in the ear tip may be substantially parallel relative to a body of the ear tip and may thus reduce an amount that the earbud protrudes from an ear tip/concha (as shown, e.g., in FIGs. 1, 3A-3B, 5B, 6 and 7). For example, earbuds having acoustic drivers without integrated frames, or having separate frames for the acoustic driver, may stick out more from the ear tip/concha because the frame of the acoustic driver may prevent the acoustic driver from being oriented substantially parallel relative to the body of the ear tip. The extra size of the frame of the acoustic driver may cause the acoustic driver to be oriented at an angle relative to the body of the ear tip rather than substantially parallel to the body of the ear tip, and may thus increase a z-height of the earbud (i.e., a distance from a back cavity cap of the earbud to an outlet of a front cavity enclosure of the earbud). Using the techniques and features described in the present disclosure, the z-height may be minimized and allow for the acoustic driver (with integrated frame) to be oriented substantially parallel to the body of the ear tip such that the earbud protrudes less from the ear tip/concha.

Referring now to FIG. 1, in-ear earphone 100 is shown in Views A-C. Earphone 100 may include acoustic driver 104 inside earbud 102. Acoustic driver 104 may be a 10 mm acoustic driver, though other sized drivers may be used. Portion 106 of earphone 100 shown in View C shows that earbud 102 does not fit into ear tip 108, leading to a larger overall package size of the in-ear earphone 100. As shown in View C, earbud 102 with a 10 mm acoustic driver is too large to fit in ear tip 108, a problem that is exacerbated when using a relatively smaller sized ear tip (e.g., one with a smaller width that is intended to fit in a smaller sized concha).

Referring now to FIG. 2A, there is shown earbud assembly 200A where earbud 202A (which in this example includes a top and bottom portion) encloses acoustic driver frame 204A. Acoustic driver frame 204A frames diaphragm 206A and a magnetic circuit (not shown) and sits in earbud 202A. FIG. 2B shows earbud assembly 200B where earbud 202B houses diaphragm 206B and a magnetic circuit behind the diaphragm, not shown, but built directly into the frame of earbud 202B. Earbud assembly 200B no longer comprises a separate assembly that completely encloses the acoustic driver frame. As shown in FIG. 2B, a top (208B) and bottom (210B) portion of earbud 202B are coupled directly to the acoustic driver frame, thereby reducing the overall diameter of the earbud assembly 200B. Earbud assembly 200B may be significantly smaller than earbud assembly 200A because earbud

IPR2025-00842; Shokz
Ex. 2018 - Page 1565

assembly 200B lacks a separate earbud enclosure that surrounds the acoustic driver frame. Rather, the earbud 202B itself also functions as the frame for the acoustic driver. While FIG. 2B shows the earbud 202B as being made of several separate components or pieces, in some examples, the earbud 202B may be made of a single integral component.

Referring now to FIG. 3A and 3B, earphone 300A and earphone 300B are shown, respectively. In contrast to earphone 100 shown in FIG. 1 where earbud 102 does not fit into small ear tip 108, earbud 302A having acoustic driver 304A without an acoustic driver frame fits into a small-sized ear tip 308A of earphone 300A. Further, earbud 302B having acoustic driver 304B without an acoustic driver frame fits into a medium-sized ear tip 308B of earphone 300B. Acoustic driver 304A may sit directly in earbud 302A without an acoustic driver frame and acoustic driver 304B may sit directly in earbud 304B without an acoustic driver frame, thus allowing earbud 302A to be smaller in size and fit in small ear tip 308A and earbud 302B to be smaller in size and fit in medium ear tip 308B.

In an implementation, using the techniques and features described in the present disclosure to eliminate the need for an acoustic driver frame, a diameter of an earbud may be reduced by 1mm-2mm or more. This reduction in size of the earbud may allow for an in-ear earphone to have a larger diaphragm (of the acoustic driver) while still fitting in a smaller ear. For example, diaphragms of up to 11.8mm or more for a medium ear tip and up to 10.2mm or more for a small ear tip may be realized as a result of eliminating the acoustic driver frame. In addition, using a driver without an acoustic driver frame enables a design that protrudes less from a wearer's concha, thus improving stability of the earphone.

As discussed above, an in-ear earphone may include an earbud with an acoustic driver having a diaphragm and a magnetic circuit, and a frame of the acoustic driver may be integrated with the earbud. Referring now to FIG. 4A, various Views D-H of an acoustic driver 400 with an integrated frame 402 are shown. Integrated frame 402 may hold together a diaphragm and magnetic circuit of acoustic driver 400 and may be part of the earbud itself, rather than being a separate framing structure for acoustic driver 400. Integrated frame 402 may include a starting portion of a front cavity or nozzle (402A) and a hook or alignment portion (402B) to mate with an ear tip or cushion (not shown).

Referring now to FIG. 4B, further Views I and J of acoustic driver 400 with integrated frame 402 are shown. As shown in View J, acoustic driver 400 may include diaphragm 404 and voice coil 406. Voice coil 406 may be part of a magnetic circuit (not shown) of acoustic driver 400 or the magnetic circuit may be a separate component included in acoustic driver 400. As will be discussed below, integrated frame 402 may be part of an earbud assembly

IPR2025-00842; Shokz
Ex. 2018 - Page 1566

and the earbud itself. In an implementation, surround 408 and mounting ring 410 may also be included. Surround 408 may be a portion of the diaphragm that is elastic and may allow a central portion of the diaphragm to move while the outer portion is fixed to the frame, allowing for linear motion of voice coil 406 and the diaphragm, which may produce sound. Further, surround 408 may center voice coil 406 within a magnet. Mounting ring 410 (which may or may not be included), may help to form diaphragm 404 and may provide a reference point or datum for various fixtures of an earbud assembly. For example, mounting ring 410 may facilitate bonding voice coil 406, may help keep various components of the earbud centered, and may anchor surround 408 to integrated frame 402. It should be noted that acoustic driver 400 may include other components such as a magnet or other circuitry which are not shown in FIG. 4B.

Referring now to FIG. 5A, various Views K-M of an earbud assembly 500 are shown. Earbud assembly 500 may include acoustic driver 502 with integrated acoustic driver frame 504. In an implementation, acoustic driver 502 with integrated acoustic driver frame 504 may be joined with front cavity enclosure 506 and back cavity cap 508 to form earbud assembly or earbud 500. Integrated acoustic driver frame 504, front cavity enclosure 506, and back cavity cap 508 may be joined using a number of fabrication techniques, including but not limited to use of adhesives, welding, snaps, and/or molding. Front cavity enclosure 506 may form an outlet 516 and a port 510 from acoustic driver 502 to the outside of earbud 500. The integrated frame and front cavity enclosure components may be made of a number of materials including, but not limited to, elastomers, plastics, acrylonitrile butadiene styrene (ABS), polycarbonate, metals, and wood. The dimensions of these components may be variable but are generally small (e.g., 10 mm) such that the entire device may fit within a concha of the ear, with the front cavity opening directed towards an ear canal. A cushion/ear tip may acoustically and/or mechanically couple the front acoustic cavity to the ear canal.

As shown in Views K-M of FIG. 5A, acoustic driver 502 may be framed directly by earbud 500 and/or its components (e.g., integrated acoustic driver frame 504, front cavity enclosure 506, and/or back cavity cap 508). In this way, acoustic driver 502 may be embedded in earbud 500 and/or have no frame separate from earbud 500. Advantageously, one or more of integrated acoustic driver frame 504, front cavity enclosure 506, and/or back cavity cap 508 or a combination thereof, when joined to form earbud 500, may allow for maximization of the size of a diaphragm (e.g., diaphragm 404 of FIG. 4B) of acoustic driver 502 relative to the size of earbud 500.

IPR2025-00842; Shokz
Ex. 2018 - Page 1567

In an implementation, an ear tip may surround at least the front cavity enclosure. The ear tip may include a body that rests against the concha, a retaining member comprising one or more legs, an outlet that overlies an outlet of the earbud, and a second port mated to a first port of the earbud. U.S. Pat. No. 9,036,853 describes ear tips and positioning and retaining structures and is incorporated here by reference in its entirety. Referring now to FIG. 5B, a blown-up view of an in-ear earphone 512 having acoustic driver 502 with a frame integrated with earbud 500, and an ear tip 514 are shown. As discussed above, earbud 500 may be comprised of integrated acoustic driver frame 504, front cavity enclosure 506, and back cavity cap 508 which, when joined or molded together, frame acoustic driver 502 and form earbud 500. Ear tip 514 may be made from a pliable material such as silicone and may be stretched to fit around earbud 500 and hold earbud 500 in place when seated in a wearer's ear to form in-ear earphone 512.

Referring now to FIG. 6, various Views N-Q of an in-ear earphone having an ear tip and earbud are shown. In-ear earphone 600 may have ear tip 602 and earbud 604. Ear tip 602 may be a small-sized ear tip and may be made of a pliable material such as silicone that may stretch. As such, earbud 604 may be pushed into ear tip 602 such that earbud 604 sits in ear tip 602 as ear tip 602 stretches around earbud 604 such that earbud 604 is held in place by ear tip 602.

A small-sized ear tip may fit comfortably inside a small concha. A small concha may have physical dimensions less than two standard deviations of mean dimensions exhibited by human conchae. For example, the concha may be roughly described as having a radius, and a small concha or ear tip may fits within a concha having a radius less than two standard deviations of the mean radius for humans. A small ear tip may fit inside larger ears but may not achieve good mechanical stability or acoustic coupling to the ear because the fit may be too loose.

Referring now to View Q of FIG. 6, cross-section RR of in-ear earphone 600 of View P is shown. As shown in View Q, earbud 604 may have port 606. Port 606 may be similar to port 510 of FIG. 5 discussed above. Further, ear tip 602 may have port 608. Ports 606 and 608 may mate to form a pressure equalization port from the acoustic driver of earbud 604 to the outside of ear tip 602.

Referring now to FIG. 7, various Views S-V of another in-ear earphone having an ear tip and earbud are shown. In-ear earphone 700 may have ear tip 702 and earbud 704. Ear tip 702 may be a medium-sized ear tip and may also be made of a pliable material such as silicone that may stretch. As such, earbud 704 may be pushed into ear tip 702 such that

IPR2025-00842; Shokz
Ex. 2018 - Page 1568

earbud 704 sits in ear tip 702 as ear tip 702 stretches around earbud 704 such that earbud 704 is held in place by ear tip 702.

A medium ear tip may comfortably fit into most human conchae and may be sized approximately within plus or minus two standard deviations of the mean concha dimensions of humans. A medium ear tip may fit inside a large concha but may not fit inside a small concha.

Referring now to View V of FIG. 7, cross-section WW of in-ear earphone 700 of View U is shown. As shown in View V, earbud 704 may have one or more ports 706. Port 706 may be similar to port 510 of FIG. 5 discussed above. Further, ear tip 702 may have one or more ports 708. Ports 706 and 708 may mate to form a pressure equalization port from the acoustic driver of earbud 704 to the outside of ear tip 702. In an implementation, one or more of the ports described in the present disclosure may form a pressure equalization port from between the front and rear cavities rather than from the acoustic driver to the outside of the ear tip. Additional ports may be included to shape the audio response.

The pressure equalization (PEQ) port may reduce or prevent occlusion created when the ear tip of an in-ear earphone is positioned in an ear. In an implementation, in order for two ports (e.g., ports 606 and 608 or 706 and 708) to form the PEQ port, two notches may need to be created. One notch may be created in the material of the ear tip (e.g., ear tip 602 or 702). Another notch may be created in the earbud (e.g., earbud 604 or 704). For example, a notch may be created in the front cavity enclosure (e.g., front cavity enclosure 506 of FIG. 5) such that the notch creates a hole from the outside of the earbud, reaching the acoustic driver. For example, a hole or notch may be included as part of the molding process for the integrated acoustic driver frame or front cavity enclosure, or may be drilled or ground away from the integrated acoustic driver frame or front cavity enclosure of the earbud.

Ultimately, in an implementation, in order for the hole to reach the outside of the ear tip and reduce the occlusion effect, the hole must extend through the ear tip (e.g., ear tip 602 or 702). This is because, in some situations, the in-ear earphone may seal or partially seal the ear canal even without going into the ear canal beyond the ear canal entrance, when worn by a person. This seal may create the occlusion effect, which may create an uncomfortable sensation of one's own voice. In an implementation, if the ear tip is made from silicone, a hole may be cut-out of the silicone, or the silicone may be formed or molded with the hole. The hole in the integrated acoustic driver frame or front cavity enclosure may be mated with the hole in the silicone when the earbud is positioned in the ear tip, thus preventing the in-ear earphone from sealing the ear canal by allowing pressure to vent through the resulting PEQ

IPR2025-00842; Shokz
Ex. 2018 - Page 1569

port and removing or partially removing the occlusion effect. The PEQ port may also release pressure resulting from movement of the in-ear ear phone while it is positioned in the ear.

Additionally, it may be desirable to allow some of the acoustic energy generated by the acoustic driver to be released and to allow some of acoustic energy from outside the earphone to enter through the PEQ port. This may prevent, for example, in microphone-enabled in-ear earphones, a person from hearing excessive bass or low frequencies from their own voice while talking on the telephone through the microphone and wearing the in-ear earphones, due to the occlusion effect.

In an implementation, a front volume may be created between the acoustic driver and the front cavity enclosure, and a back volume may be created between the acoustic driver and the back cavity cap. The front and back volumes may contain all or most of the acoustic energy created by the acoustic driver. Ports 606, 608, 706, and 708 may be positioned to lower a volume stiffness which may occur at low frequencies. In such a situation, it may be desirable for a diaphragm to move as far as possible. Thus, ports 606, 608, 706, and 708 may be positioned such that at low frequencies, there is an opening to the outside of the in-ear earphone. As frequency increases, the diameter and length is such that it becomes small with respect to wavelength, and it closes, acoustically. At high frequencies, it is a stiff back volume.

Referring back to FIG. 6, in an implementation, ear tip 602 of in-ear earphone 600 may include leg 610, leg 612, and port 608 positioned between legs 610 and 612. Port 608 may mate with port 606 of a front cavity enclosure of earbud 604. As discussed above, ear tip 602 may be a small ear tip and may be formed from a pliable material to surround at least the front cavity enclosure of earbud 604. Referring back to FIG. 7, in an implementation, ear tip 702 of in-ear earphone 700 may include leg 710, leg 712, and port 708 positioned between legs 710 and 712. Port 708 may mate with port 706 of a front cavity enclosure of earbud 704. As discussed above, ear tip 702 may be a medium ear tip and may be formed from a pliable material to surround at least the front cavity enclosure of earbud 704.

Ports 606, 608, 706, and 708 are positioned as described above so that they are not covered when in-ear earphones 600 and 700, respectively, are placed in an ear. In an implementation, port 608 of small ear tip 602 may have a different size than port 708 of medium tip ear tip 702. Ports 608 and 708 may be different lengths in order to allow each port to properly mate to their respective front cavity enclosure ports (e.g., ports 606 and 706) to properly form PEQ ports from the acoustic driver to the outside of the ear tip.

IPR2025-00842; Shokz
Ex. 2018 - Page 1570

In an implementation, legs 610 and 612 of ear tip 602 and legs 710 and 712 of ear tip 702 may each be part a positioning and retaining structure of ear tips 602 and 702, respectively. The positioning and retaining structure may include the port (e.g., port 608 or 708) positioned to mate with the port a front cavity enclosure (e.g., ports 606 and 706) of an earbud (e.g., earbud 604 or 704). It should be noted that legs 610 and 612 of ear tip 602 and legs 710 and 712 of ear tip 702 are shown for illustrative purposes only and that other positioning and retaining structures for ear tips compatible with earbuds having acoustic drivers with integrated frames and PEQ ports are within the scope of the present disclosure.

The occlusion effect and amount of bass audio received by the wearer of an in-ear ear phone may be related. For example, as occlusion effect is relieved as described above, the wearer may receive less bass audio. In order to achieve an acceptable audio response and acceptable occlusion effect, one or more of resistance, silicone area, and mesh may be adjusted with respect to the PEQ ports described above. As the acoustic driver gets smaller and smaller, the PEQ port may approach 180 degrees of the acoustic driver. This may result in undesirable balance and/or rocking with respect to the acoustic driver. In an implementation, an acoustic mesh or a resistive mesh may be positioned over one or more of ports 606, 608, 706, and 708 in order to tune the desired balance in audio response and occlusion effect.

In an implementation, an in-ear earphone (e.g., in-ear earphone 600 or 700) may include one or more microphones. For example, a microphone may be positioned inside the earbud, outside the earbud, or outside the ear tip and may measure noise in order to cancel it. For example, it may be desirable for noise measured at an inside microphone go to be cancelled to zero. In an implementation, a 4mm microphone may be positioned on a flexible printed circuit board which may be foldable and in communication with electronic circuitry. The microphone may be positioned to prevent it from contacting earwax, sweat, or other substances which may damage the microphone.

Advantageously, the techniques and features described in the present disclosure may be implemented to save space in an earbud assembly without requiring any changes or significant changes to the design or interior components of the acoustic driver and/or diaphragm itself.

A number of implementations have been described. Nevertheless, it will be understood that additional modifications may be made without departing from the scope of the inventive concepts described herein, and, accordingly, other embodiments are within the scope of the following claims.

IPR2025-00842; Shokz
Ex. 2018 - Page 1571

CLAIMS

What is claimed is:

1. An in-ear earphone comprising:

an earbud comprising an acoustic driver having a diaphragm and a magnetic circuit, wherein a frame of the acoustic driver is integrated with the earbud.

2. The in-ear earphone of claim 1, wherein the acoustic driver is framed directly by the earbud.

3. The in-ear earphone of claim 1, wherein the acoustic driver is embedded in the earbud.

4. The in-ear earphone of claim 1, wherein the acoustic driver has no frame separate from the earbud.

5. The in-ear earphone of claim 1, further comprising:

a front cavity enclosure forming an outlet and a first port from the acoustic driver to an outside of the earbud.

6. The in-ear earphone of claim 5, further comprising:

an ear tip surrounding at least the front cavity enclosure,

7. The in-ear earphone of claim 6, wherein the ear tip has a second port mated to the first port to form a pressure equalization port from the acoustic driver to an outside of the ear tip.

8. The in-ear earphone of claim 5, further comprising:

a resistive mesh positioned over the first port.

9. The in-ear earphone of claim 1, further comprising:

a microphone.

10. The in-ear earphone of claim 1, wherein the frame of the acoustic driver integrated with the earbud maximizes a size of the diaphragm of the acoustic driver relative to a size of the earbud.

11. The in-ear earphone of claim 7, wherein the second port of the ear tip has a different length for a small tip ear tip than a medium tip ear tip.

12. The in-ear earphone of claim 1, further comprising:

a back cavity cap.

13. An earbud comprising:

an acoustic driver having a diaphragm and a magnetic circuit wherein a frame of the acoustic driver is integrated with the earbud.

14. The earbud of claim 13, wherein the acoustic driver is framed directly by the earbud.

15. The earbud of claim 13, wherein the acoustic driver is embedded in the earbud.

IPR2025-00842; Shokz
Ex. 2018 - Page 1572

16. The earbud of claim 13, wherein the acoustic driver has no frame separate from the earbud.

17. The earbud of claim 13, further comprising:

a front cavity enclosure forming an outlet and a port from the acoustic driver to an outside of the earbud.

18. The earbud of claim 13, further comprising:

a back cavity cap.

19. The earbud of claim 17, wherein the port is a pressure equalization port from the acoustic driver to the outside of the earbud.

20. The earbud of claim 17, further comprising:

a resistive mesh positioned over the port.

21. The earbud of claim 17, further comprising:

a microphone.

22. The earbud of claim 13, wherein the frame of the acoustic driver integrated with the earbud maximizes a size of the diaphragm of the acoustic driver relative to a size of the earbud.

23. An ear tip for an in-ear earphone formed from a pliable material to surround at least a front cavity enclosure of an earbud wherein the earbud comprises an acoustic driver having a diaphragm and a magnetic circuit, and wherein a frame of the acoustic driver is integrated with the earbud.

24. The ear tip of claim 23, further comprising:

a first leg, a second leg, and a first port positioned between the first leg and the second leg to mate with a second port of the front cavity enclosure of the earbud.

25. The ear tip of claim 24, wherein the first port of the ear tip has a different length for a small tip ear tip than a medium tip ear tip.

26. The ear tip of claim 24, wherein the first port and the second port mate to form a pressure equalization port from the acoustic driver to an outside of the ear tip.

IPR2025-00842; Shokz
Ex. 2018 - Page 1573

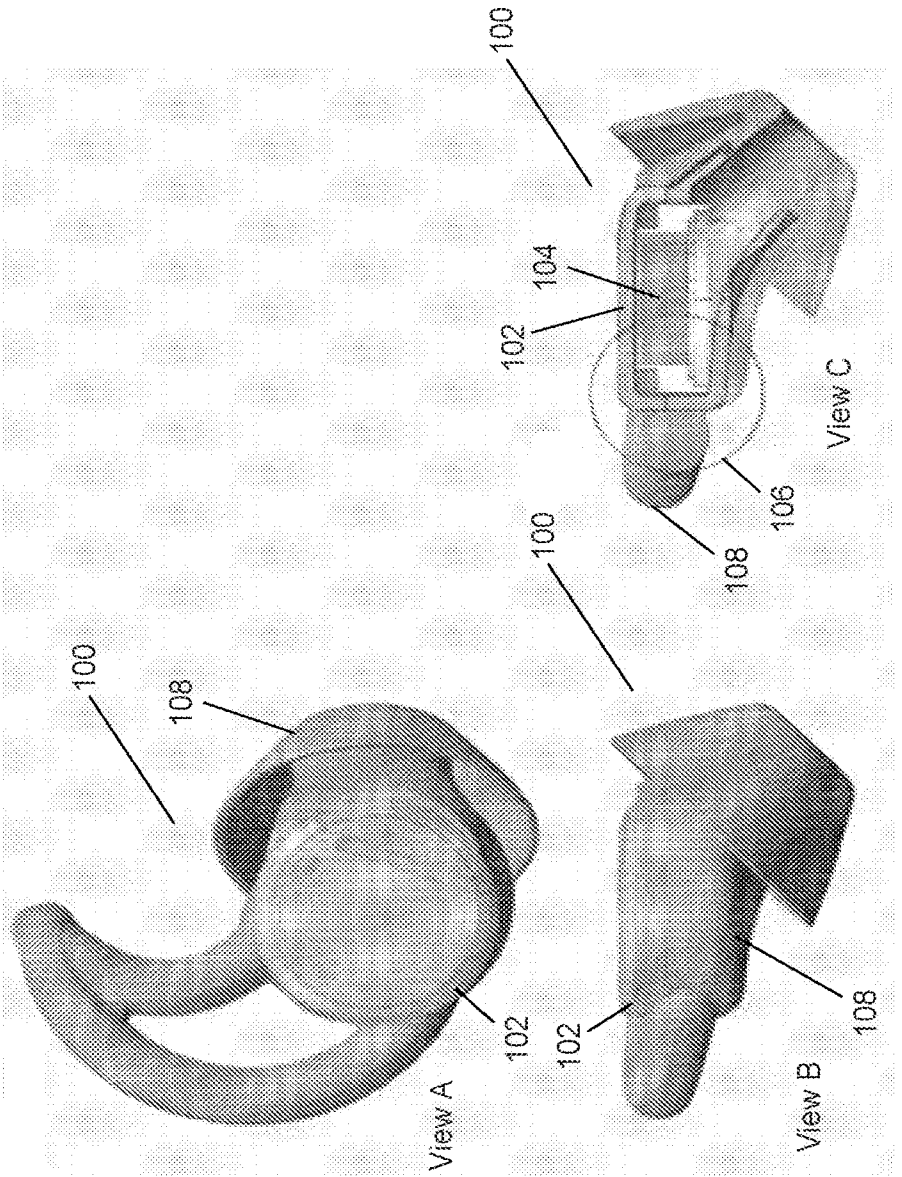


FIG. 1

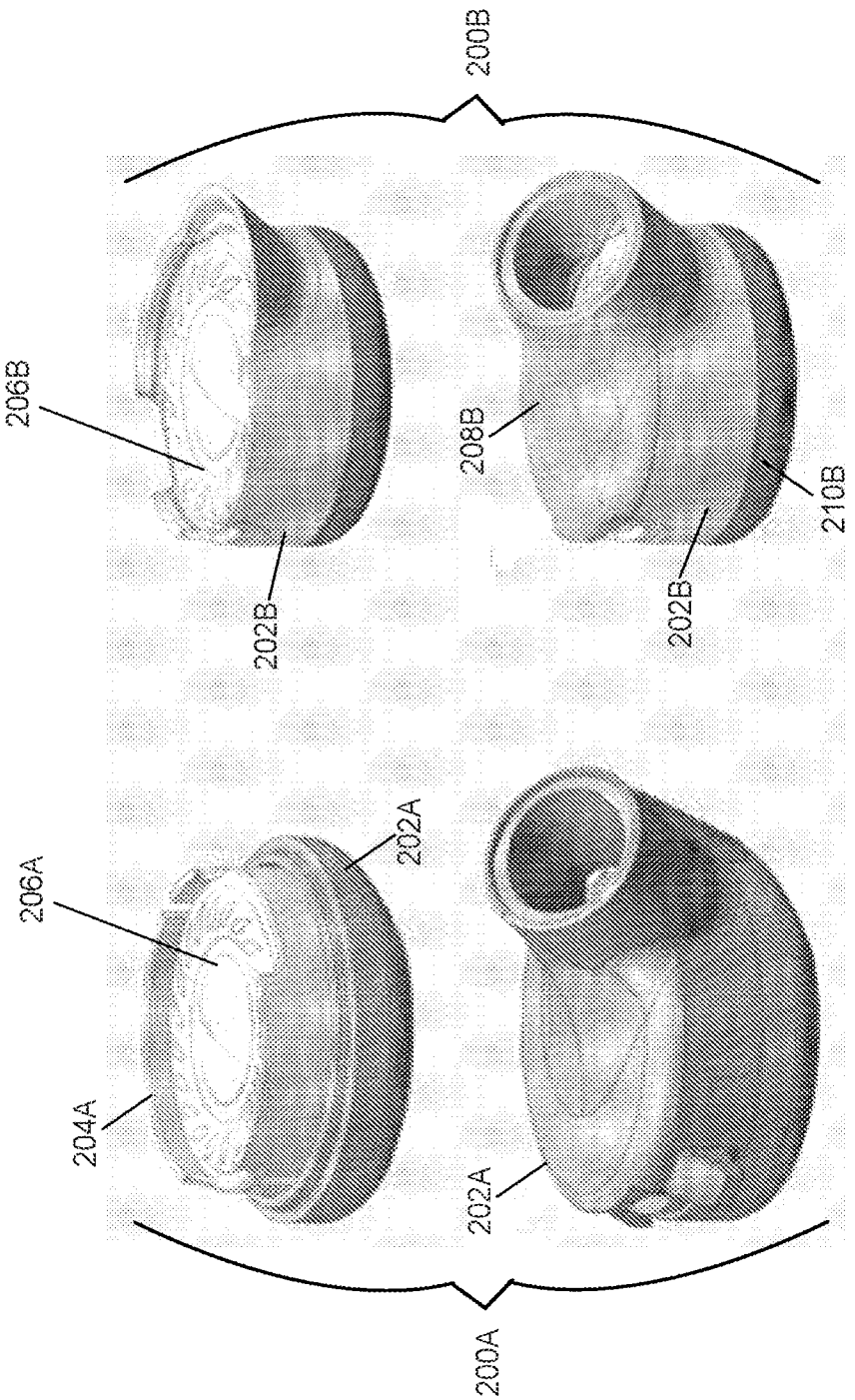


FIG. 2B

FIG. 2A

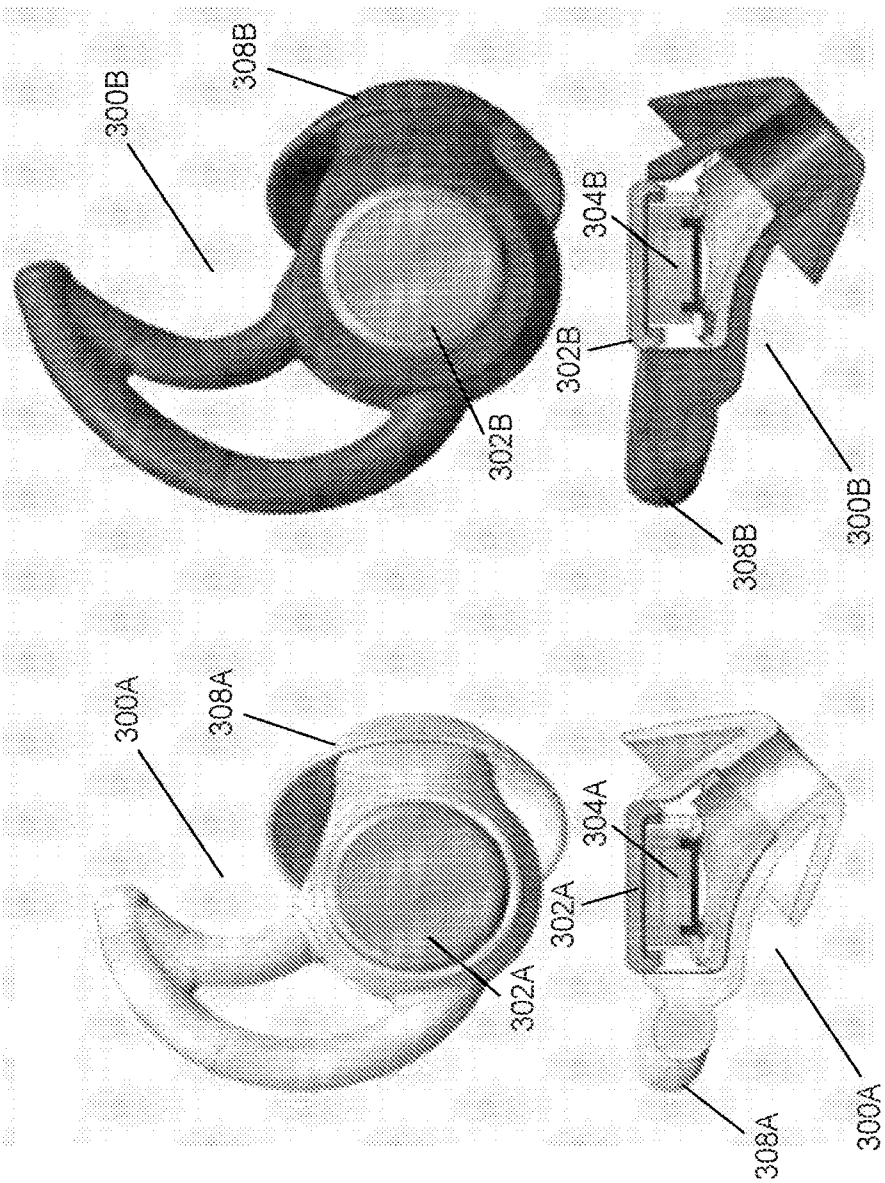

300B
308B
302B
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FIG. 3B

FIG. 3A

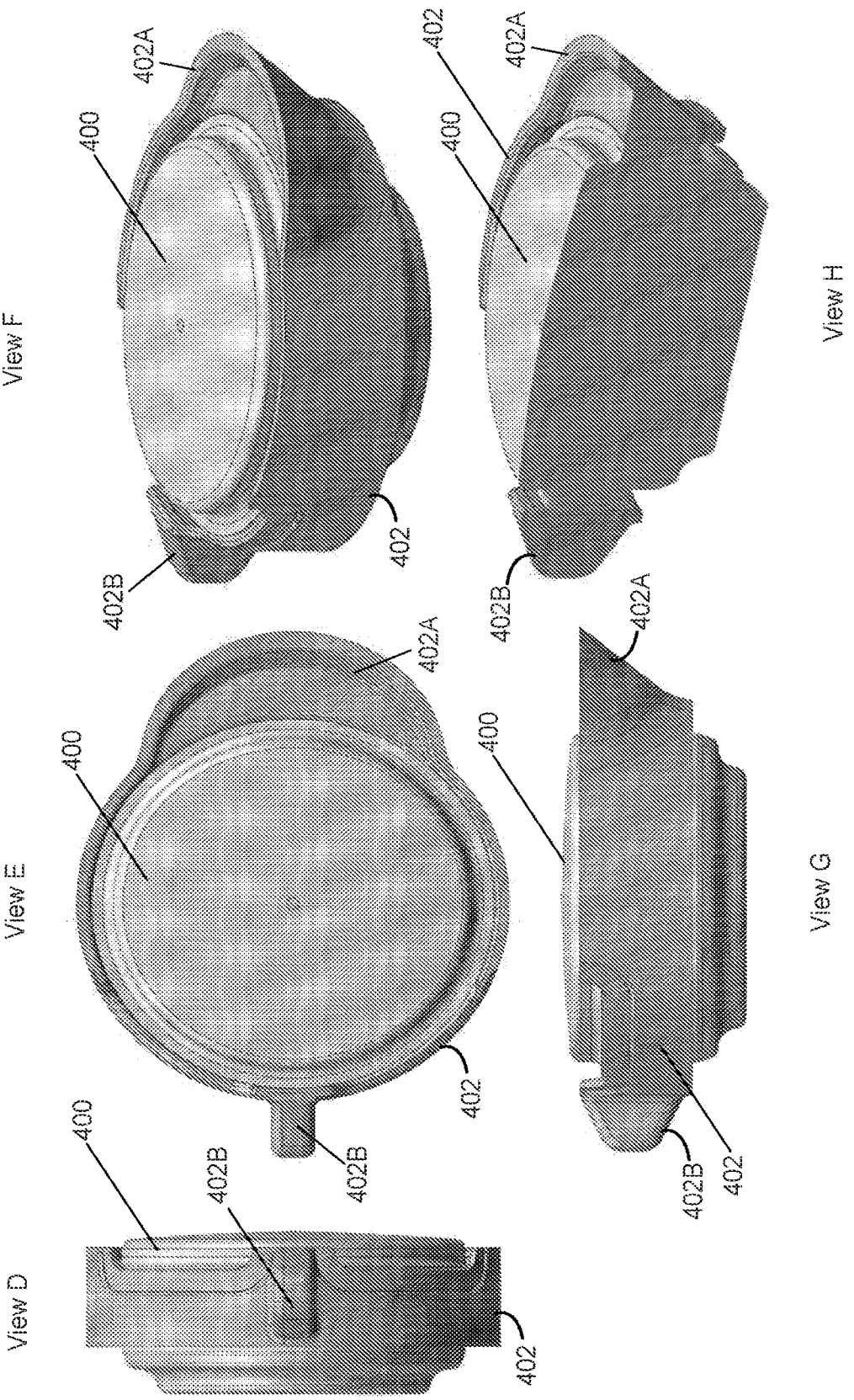

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FIG. 4A

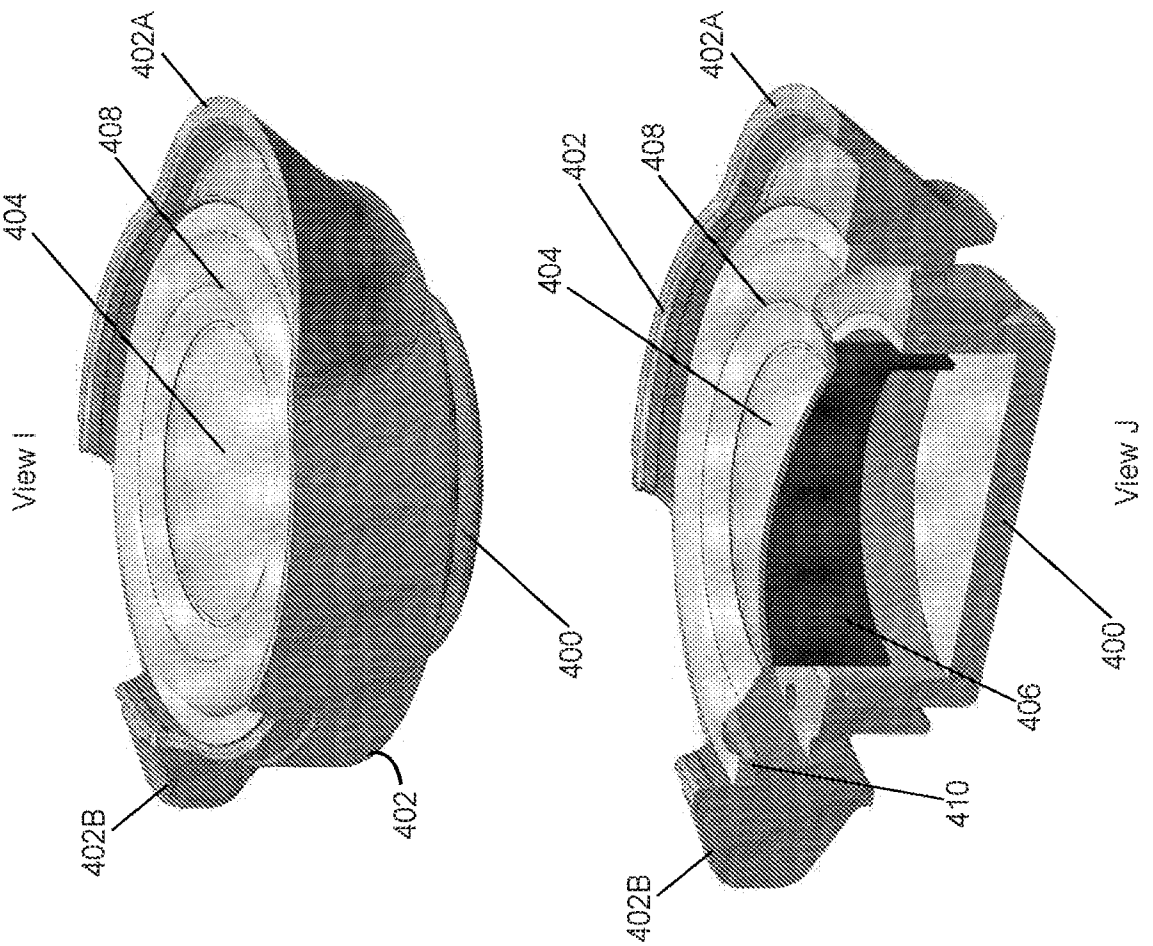

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FIG. 4B

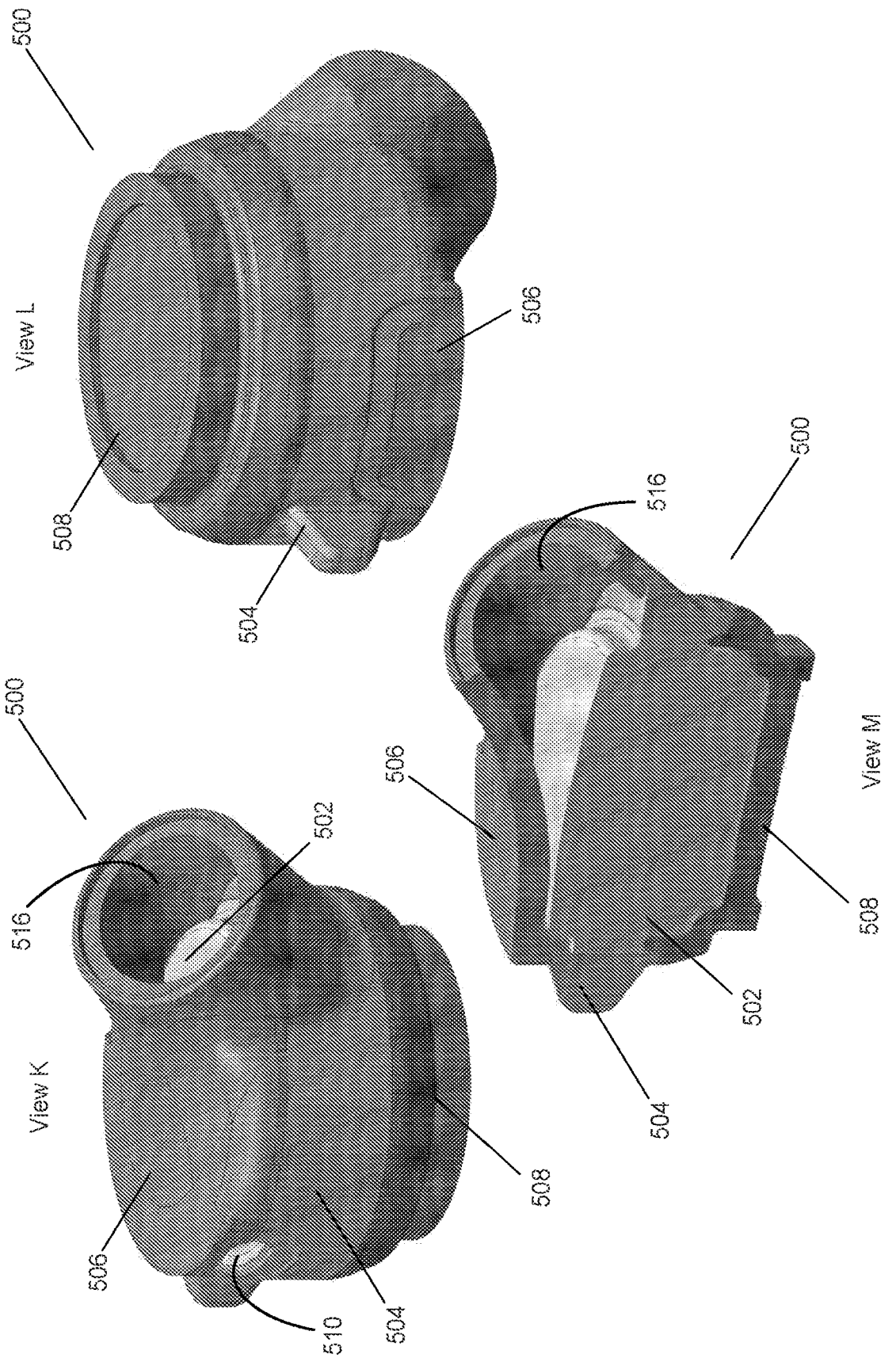

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FIG. 5A

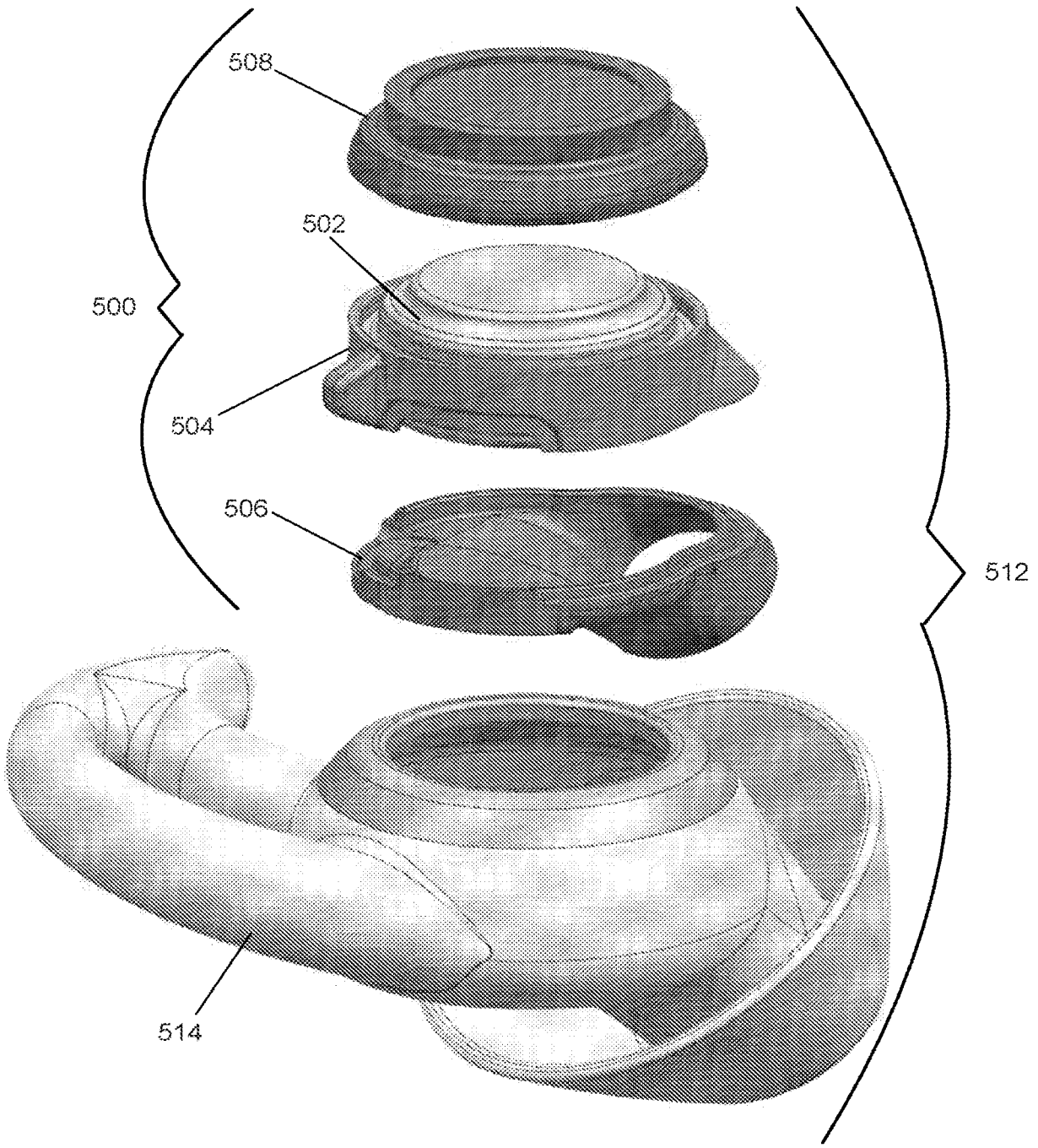


FIG. 5B

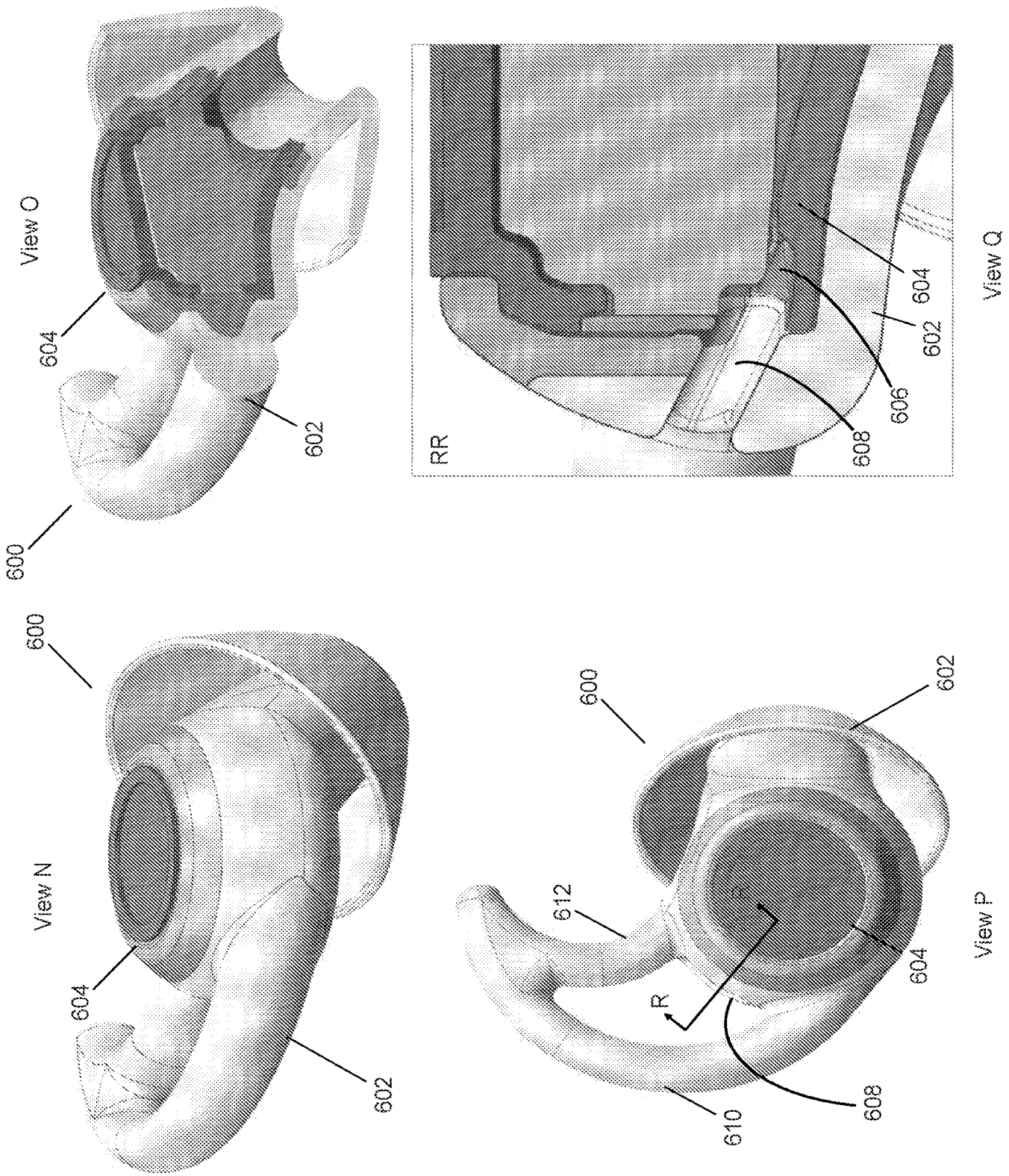


FIG. 6

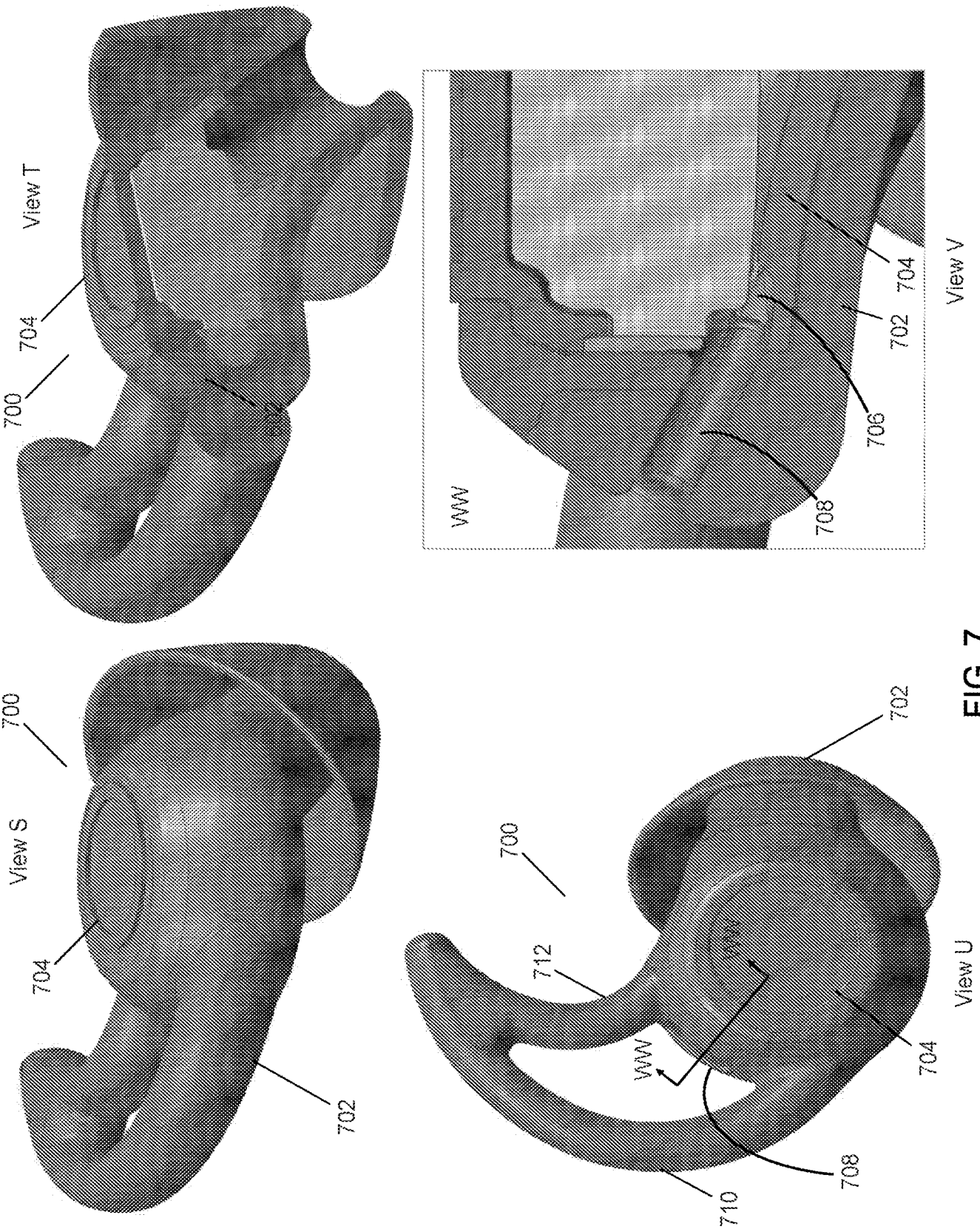

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FIG. 7

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2018/022601

A. CLASSIFICATION OF SUBJECT MATTER
INV. H04R1/02 H04R1/10
ADD.

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)
H04R

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)
EPO-Internal , WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2015/181341 A1 (AZMI YACINE [US]) 25 June 2015 (2015-06-25)	1-22
A	abstract; figures 1-5 paragraph [0031] - paragraph [0037] paragraph [0023] - paragraph [0047]	23-26
X	US 2012/237074 A1 (AASE JONATHAN [US]) 20 September 2012 (2012-09-20)	1-3, 5-15, 17-22
A	abstract; figures 1, 5A-5D paragraphs [0002], [0003], [0020]	4, 16, 23-26
X	WO 2007/005221 A1 (PLANTRONICS [US]; BRADFORD ERIC [US]; WILSON JAY [US]; ZELLWEGER CLAUD) 11 January 2007 (2007-01-11)	1-3,5-9, 11-13, 15, 17-21
A	abstract; figures 1-10	4, 10, 16, 22-26

-/- .

[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" documentwhich may throw doubts on priority claim(s) orwhich is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
6 July 2018	13/07/2018

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Kepesi , Marián

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IPR2025-00842; Shokz
Ex. 2018 - Page 1583

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2018/022601

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	US 2014/140565 A1 (LIU KENG-YUAN [TW]) 22 May 2014 (2014-05-22) abstract; figure 2	1,13, 23-26 2-12, 14-22

X A	US 2011/051981 A1 (LEHDORFER HANNES [AT] ET AL) 3 March 2011 (2011-03-03) abstract; figures 1-3 paragraph [0020] - paragraph [0031]	1,13, 23-26 2-12, 14-22

2

Form PCT/ISA/210 (continuation of second sheet) (April 2005)

IPR2025-00842; Shokz
Ex. 2018 - Page 1584

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/US2018/022601

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		CN 204634039 U	09-09-2015
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		EP 2306755 A1	06-04-2011
		US 2011051981 A1	03-03-2011

Electronic Acknowledgement Receipt

EFS ID:	42326592
Application Number:	17139076
International Application Number:	
Confirmation Number:	4158
Title of Invention:	LOUDSPEAKER APPARATUS
First Named Inventor/Applicant Name:	Chaowu LI
Customer Number:	131839
Filer:	Yangzhou Harry Du/Nie Rui
Filer Authorized By:	Yangzhou Harry Du
Attorney Docket Number:	20608-0080US00
Receipt Date:	30-MAR-2021
Filing Date:	31-DEC-2020
Time Stamp:	22:39:48
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Non Patent Literature	2019-10-29-PCT-ISA-210-20608-0081WO00.pdf	1313983 a939dea173500689987532d77746ea5205e193b3	no	6

Warnings:

Information:					
2	Non Patent Literature	2019-10-30-PCT-ISA-210-20608-0082WO00.pdf	1365694 b8941ecddac551c43b2f0e95520c576fa0231bf7	no	7
Warnings:					
Information:					
3	Non Patent Literature	2019-11-21-PCT-ISA-210-20608-0079WO00.pdf	1706200 a428a4a2908500e0fc12cdddd5f287624dd9c5e4	no	7
Warnings:					
Information:					
4	Non Patent Literature	2019-11-22-PCT-ISA-210-20608-0083WO00.pdf	2014049 93ad12b362c6b316f7f83183871994f235aab5d4	no	8
Warnings:					
Information:					
5	Non Patent Literature	2019-11-25-PCT-ISA-210-20608-0080WO00.pdf	1760700 f68725054d7e6453562ad59c5114f4470c90d924	no	7
Warnings:					
Information:					
6	Information Disclosure Statement (IDS) Form (SB08)	2021-03-30-IDS_Disclosure_List-20608-0080US00.pdf	1301685 f8eb388a2af37e41c4bc4297cf550ac5903c3d24	no	6
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
7	Foreign Reference	CN107484054A.pdf	1706002 73eda59f405821b657eddb7b3332f2707b9812e1	no	47
Warnings:					
Information:					
8	Foreign Reference	CN109547905A.pdf	3091683 62f76a9dc5eac9ec0936483b232feaccc839893e	no	82
Warnings:					
Information:					

9	Foreign Reference	CN109660901A.pdf	3132929 1b2fd97014438eb8dc20184d1d242046340e3c8b	no	82
Warnings:					
Information:					
10	Foreign Reference	CN109714687A.pdf	2969434 2997806acbd6024e54750a255db66ab3d3464fa3	no	82
Warnings:					
Information:					
11	Foreign Reference	CN109769167A.pdf	3047887 ebbb4b7b568e03ef85daabcc8c9434ac3f6f70b5	no	82
Warnings:					
Information:					
12	Foreign Reference	CN109788386A.pdf	3054466 48d7749a3b3966a64e3f4b1140bbfd0f76775c5e	no	83
Warnings:					
Information:					
13	Foreign Reference	CN203827497U.pdf	498840 5b6a2b09aa12b22cbcc249e8e3e9d2a1ab8faa4d	no	18
Warnings:					
Information:					
14	Foreign Reference	CN204465795U.pdf	584158 696a9dd21bef8718d0ce2695f2b653b025ae99dd	no	14
Warnings:					
Information:					
15	Foreign Reference	CN207010974U.pdf	785007 e11f29cca37a8291b2951294bf6dc02ca1108408	no	27
Warnings:					
Information:					

16	Foreign Reference	CN207039848U.pdf	1789880 2f9778f2e3f4a9046903c44b6046acfa28b5ec1a	no	49
Warnings:					
Information:					
17	Foreign Reference	CN207039849U.pdf	1790148 0c60e934c82cf7223eff7ad6c556766ff08187b5	no	48
Warnings:					
Information:					
18	Foreign Reference	CN207039851U.pdf	1824281 cebf5fdc2303e7be02f927ae80d932d2080eb37f	no	49
Warnings:					
Information:					
19	Foreign Reference	CN207070282U.pdf	1731200 0a2e45fb19822373d6087e6cb4a3b2d578212c3e	no	47
Warnings:					
Information:					
20	Foreign Reference	CN207783068U.pdf	745703 6898fc9342cf7a1be2e989c6b547446f4be86597	no	22
Warnings:					
Information:					
21	Foreign Reference	CN209089198U.pdf	2920403 63dc0cc35bad0e1f884e316b14622b489617fade	no	82
Warnings:					
Information:					
22	Foreign Reference	CN209184800U.pdf	3090730 c796fde8b3af814767a19e53882e78beb0b8ff69	no	82
Warnings:					
Information:					

23	Foreign Reference	CN209184801U.pdf	2950010 e456682e3979e89a506a4461bee9e629071305f2	no	81
Warnings:					
Information:					
24	Foreign Reference	CN209267804U.pdf	2933151 52b8c8d3ac637cff7c46cc1820235b97cf24e4f7	no	81
Warnings:					
Information:					
25	Foreign Reference	CN209358729U.pdf	2978623 b4f36320b0a2233d3c9421e1f76effd1c5e68b74	no	82
Warnings:					
Information:					
26	Foreign Reference	WO2018175192A1.pdf	1781134 4b776f96d5407e01a331c2c382722ce4549a8491	no	27
Warnings:					
Information:					
		Total Files Size (in bytes):	52867980		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

TRANSLATION

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2019/102397

A. CLASSIFICATION OF SUBJECT MATTER

H04R 1/10(2006.01)i

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)

H04R

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)

CNABS; CNTXT; CNKI; VEN: 耳机, 耳挂, 壳体, 振动, 驱动, 法线, 不平行, 相交, 平行, earphone, ear w hang+, shell, librat +, driv+, normal line, parallel, corss+

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
PX	CN 109788386 A (SHENZHEN VOXTECH CO., LTD.) 21 May 2019 (2019-05-21) description, paragraphs 0035-0050 and 0066-099, and figure 1	1-25
X	CN 207039851 U (SHENZHEN VOXTECH CO., LTD.) 23 February 2018 (2018-02-23) description, paragraphs 0023-0053, and figure 2	1-25
A	CN 207070282 U (SHENZHEN VOXTECH CO., LTD.) 02 March 2018 (2018-03-02) entire document	1-25
A	CN 204465795 U (SHENZHEN RUIDIEN SCIENCE & TECHNOLOGY CO., LTD.) 08 July 2015 (2015-07-08) entire document	1-25
A	CN 107484054 A (SHENZHEN VOXTECH CO., LTD.) 15 December 2017 (2017-12-15) entire document	1-25

☐ Further documents are listed in the continuation of Box C. ☑ See patent family annex.

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
22 October 2019	**29 October 2019**
Name and mailing address of the ISA/CN **China National Intellectual Property Administration (ISA/CN)** **No. 6, Xitucheng Road, Jimenqiao Haidian District, Beijing 100088** **China**	Authorized officer
Facsimile No. **(86-10)62019451**	Telephone No.

Form PCT/ISA/210 (second sheet) (January 2015)

TRANSLATION

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN2019/102397

Patent document cited in search report			Publication date (day/month/year)	Patent family member(s)	Publication date (day/month/year)
CN	109788386	A	21 May 2019	None	
CN	207039851	U	23 February 2018	None	
CN	207070282	U	02 March 2018	None	
CN	204465795	U	08 July 2015	None	
CN	107484054	A	15 December 2017	None	

IPR2025-00842; Shokz
Ex. 2018 - Page 1592

专 利 合 作 条 约

PCT

国际检索报告

(PCT 第 18 条和细则 43 和 44)

申请人或代理人的档案号 206080081WO0	关于后续行为	见 PCT/ISA/220 表和 适用时，见下面第 5 项
国际申请号 PCT/CN2019/102397	国际申请日 *(日/月/年)* 24.8 月 2019(24.08.2019)	(最早的)优先权日 *(日/月/年)* 05.1 月 2019(05.01.2019)

申请人

深圳市韶音科技有限公司

按照条约第 18 条，本国际检索报告由本国际检索单位做出并送交申请人。报告副本送交国际局。

本国际检索报告总计 4 页。

☐ 它还附有本报告所引用的各现有技术文件的副本。

1. 报告的基础

a.关于语言，进行国际检索基于：

☒ 国际申请提交时使用的语言。

☐ 该国际申请的_____语言译文，为了国际检索的目的提供该种语言的译文(细则 12.3(a)和 23.1(b))。

b.☐ 本国际检索报告考虑了本单位许可或被通知的根据细则91所做出的明显错误更正。(细则43.6之二(a))。

c.☐ 关于国际申请中公开的任何核苷酸和/或氨基酸序列(见第 I 栏)。

2. ☐ 某些权利要求被认为是不能检索的(见第 II 栏)。

3. ☐ 缺乏发明的单一性(见第 III 栏)。

4. 关于**发明名称**，

☒ 同意申请人提出的发明名称。

☐ 发明名称由本单位确定如下：

5. 关于**摘要**，

☒ 同意申请人提出的摘要。

☐ 根据细则 38.2(b)，摘要由本单位制定，如第 IV 栏中所示。自本国际检索报告发文日起一个月内，申请人可以向本单位提出意见。

6. 关于**附图**，

a.随摘要一起公布的**附图**是：图 2

☒ 按照申请人建议的。

☐ 由本单位选择的，因为申请人没有建议一幅图。

☐ 由本单位选择的，因为该图能更好地表示发明的特征。

b. ☐ 没有与摘要一起公布的附图。

IPR2025-00842; Shokz
Ex. 2018 - Page 1593

国际申请号
PCT/CN2019/102397

国际检索报告

A. 主题的分类

H04R 1/10(2006.01)i

按照国际专利分类（IPC）或者同时按照国家分类和 IPC 两种分类

B. 检索领域

检索的最低限度文献(标明分类系统和分类号)

IPC：H04R

包含在检索领域中的除最低限度文献以外的检索文献

在国际检索时查阅的电子数据库(数据库的名称，和使用的检索词（如使用）)

CNABS;CNTXT;CNKI;VEN：耳机，耳挂，壳体，振动，驱动，法线，不平行，相交，平行，earphone, ear w hang+, shell, librat+, driv+, normal line, parallel, corss+

C. 相关文件

类　型*	引用文件，必要时，指明相关段落	相关的权利要求
PX	CN 109788386A (深圳市韶音科技有限公司) 21.5 月 2019(21.05.2019) 说明书第 0035-0050，0066-0099 段，图 1	1-25
X	CN 207039851U (深圳市韶音科技有限公司) 23.2 月 2018(23.02.2018) 说明书第 0023-0053 段，图 2	1-25
A	CN 207070282U (深圳市韶音科技有限公司) 02.3 月 2018(02.03.2018) 全文	1-25
A	CN 204465795U (深圳瑞迪恩科技有限公司) 08.7 月 2015(08.07.2015) 全文	1-25
A	CN 107484054A (深圳市韶音科技有限公司) 15.12 月 2017(15.12.2017) 全文	1-25

☐其余文件在 C 栏的续页中列出。　　☒见同族专利附件。

IPR2025-00842; Shokz
Ex. 2018 - Page 1594

国际申请号 PCT/CN2019/102397

国际检索报告

* 引用文件的具体类型： "A" 认为不特别相关的表示了现有技术一般状态的文件 "E" 在国际申请日的当天或之后公布的在先申请或专利 "L" 可能对优先权要求构成怀疑的文件，或为确定另一篇 引用文件的公布日而引用的或者因其他特殊理由而引 用的文件（如具体说明的） "O" 涉及口头公开、使用、展览或其他方式公开的文件 "P" 公布日先于国际申请日但迟于所要求的优先权日的文件	"T" 在申请日或优先权日之后公布，与申请不相抵触，但为了 理解发明之理论或原理的在后文件 "X" 特别相关的文件，单独考虑该文件，认定要求保护的 发明不是新颖的或不具有创造性 "Y" 特别相关的文件，当该文件与另一篇或者多篇该类文件 结合并且这种结合对于本领域技术人员为显而易见时， 要求保护的发明不具有创造性 "&" 同族专利的文件
国际检索实际完成的日期 22. 10 月 2019(22. 10. 2019)	国际检索报告邮寄日期 29. 10 月 2019(29. 10. 2019)
ISA/CN 的名称和邮寄地址： 中国国家知识产权局(ISA/CN) 北京市海淀区蓟门桥西土城路 6 号 100088 传真号：(86-10)62019451	受权官员： 吴江霞 电话号码： 86-(010)-62412034

IPR2025-00842; Shokz
Ex. 2018 - Page 1595

国际申请号
PCT/CN2019/102397

国际检索报告

检索报告中引用的专利文件	公布日期	同族专利	公布日期
CN109788386A	21.05.2019	无	
CN207039851U	23.02.2018	无	
CN207070282U	02.03.2018	无	
CN204465795U	08.07.2015	无	
CN107484054A	15.12.2017	无	

IPR2025-00842; Shokz
Ex. 2018 - Page 1596

TRANSLATION

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2019/102399

A. CLASSIFICATION OF SUBJECT MATTER

H04R 1/10(2006.01)i

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)

H04R

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)

CNABS; CNTXT; CNKI; VEN: 耳机, 骨传导, 耳挂, 壳体, 弹性, 贴合, 靠近, 入耳, 耳朵, 耳, 防水, earphone, bone conduct +, ear w hang+, shell, elastic, near, match, ear, water w proof

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
PX	CN 109788386 A (SHENZHEN VOXTECH LIMITED CORPORATION) 21 May 2019 (2019-05-21) description, paragraphs [0035]-[0050] and [0066]-[0099], and figure 1	1-22
X	CN 207039851 U (SHENZHEN VOXTECH LIMITED CORPORATION) 23 February 2018 (2018-02-23) description, paragraphs [0023]-[0053], and figure 2	1-22
A	CN 204465795 U (SHENZHEN RUIDIEN SCIENCE & TECHNOLOGY CO., LTD.) 08 July 2015 (2015-07-08) entire document	1-22
A	CN 207039849 U (SHENZHEN VOXTECH LIMITED CORPORATION) 23 February 2018 (2018-02-23) entire document	1-22
A	CN 207070282 U (SHENZHEN VOXTECH LIMITED CORPORATION) 02 March 2018 (2018-03-02) entire document	1-22

☑ Further documents are listed in the continuation of Box C. ☑ See patent family annex.

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
22 October 2019	**30 October 2019**
Name and mailing address of the ISA/CN **China National Intellectual Property Administration (ISA/CN)** **No. 6, Xitucheng Road, Jimenqiao Haidian District, Beijing 100088** **China**	Authorized officer
Facsimile No. **(86-10)62019451**	Telephone No.

Form PCT/ISA/210 (second sheet) (January 2015)

TRANSLATION

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2019/102399

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	CN 107484054 A (SHENZHEN VOXTECH LIMITED CORPORATION) 15 December 2017 (2017-12-15) entire document	1-22

IPR2025-00842; Shokz
Ex. 2018 - Page 1598

TRANSLATION

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN2019/102399

Patent document cited in search report	Publication date (day/month/year)	Patent family member(s)	Publication date (day/month/year)
CN 109788386 A	21 May 2019	None	
CN 207039851 U	23 February 2018	None	
CN 204465795 U	08 July 2015	None	
CN 207039849 U	23 February 2018	None	
CN 207070282 U	02 March 2018	None	
CN 107484054 A	15 December 2017	None	

专 利 合 作 条 约

PCT

国际检索报告

(PCT 第 18 条和细则 43 和 44)

申请人或代理人的档案号 206080082WO0	关于后续行为	见 PCT/ISA/220 表和 适用时，见下面第 5 项
国际申请号 PCT/CN2019/102399	国际申请日 *(日/月/年)* 24.8 月 2019(24.08.2019)	(最早的)优先权日 *(日/月/年)* 05.1 月 2019(05.01.2019)

申请人

深圳市韶音科技有限公司

按照条约第 18 条，本国际检索报告由本国际检索单位做出并送交申请人。报告副本送交国际局。

本国际检索报告总计 4 页。

☐ 它还附有本报告所引用的各现有技术文件的副本。

1. 报告的基础

a.关于语言，进行国际检索基于：

☒ 国际申请提交时使用的语言。

☐ 该国际申请的_____语言译文，为了国际检索的目的提供该种语言的译文(细则 12.3(a)和 23.1(b))。

b.☐ 本国际检索报告考虑了本单位许可或被通知的根据细则91所做出的明显错误更正。(细则43.6之二(a))。

c.☐ 关于国际申请中公开的任何核苷酸和/或氨基酸序列(见第 I 栏)。

2. ☐ 某些权利要求被认为是不能检索的(见第 II 栏)。

3. ☐ 缺乏发明的单一性(见第 III 栏)。

4. 关于**发明名称**，

☒ 同意申请人提出的发明名称。

☐ 发明名称由本单位确定如下：

5. 关于**摘要**，

☒ 同意申请人提出的摘要。

☐ 根据细则 38.2(b)，摘要由本单位制定，如第 IV 栏中所示。自本国际检索报告发文日起一个月内，申请人可以向本单位提出意见。

6. 关于**附图**，

a.随摘要一起公布的**附图**是：图 1

☒ 按照申请人建议的。

☐ 由本单位选择的，因为申请人没有建议一幅图。

☐ 由本单位选择的，因为该图能更好地表示发明的特征。

b. ☐ 没有与摘要一起公布的附图。

IPR2025-00842; Shokz
Ex. 2018 - Page 1600

国际申请号
PCT/CN2019/102399

国际检索报告

A. 主题的分类

H04R 1/10(2006.01)i

按照国际专利分类（IPC）或者同时按照国家分类和 IPC 两种分类

B. 检索领域

检索的最低限度文献(标明分类系统和分类号)

IPC：H04R

包含在检索领域中的除最低限度文献以外的检索文献

在国际检索时查阅的电子数据库(数据库的名称，和使用的检索词（如使用）)

CNABS;CNTXT;CNKI;VEN:耳机，骨传导，耳挂，壳体，弹性，贴合，靠近，人耳，耳朵，耳，防水，earphone, bone conduct+, ear w hang+, shell, elastic, near, match, ear, water w proof

C. 相关文件

类　型*	引用文件，必要时，指明相关段落	相关的权利要求
PX	CN 109788386A (深圳市韶音科技有限公司) 21.5 月 2019(21.05.2019) 说明书第 0035-0050，0066-0099 段，图 1	1-22
X	CN 207039851U (深圳市韶音科技有限公司) 23.2 月 2018(23.02.2018) 说明书第 0023-0053 段，图 2	1-22
A	CN 204465795U (深圳瑞迪恩科技有限公司) 08.7 月 2015(08.07.2015) 全文	1-22
A	CN 207039849U (深圳市韶音科技有限公司) 23.2 月 2018(23.02.2018) 全文	1-22
A	CN 207070282U (深圳市韶音科技有限公司) 02.3 月 2018(02.03.2018) 全文	1-22
A	CN 107484054A (深圳市韶音科技有限公司) 15.12 月 2017(15.12.2017) 全文	1-22

☐其余文件在 C 栏的续页中列出。　　☒见同族专利附件。

IPR2025-00842; Shokz
Ex. 2018 - Page 1601

国际申请号
PCT/CN2019/102399

国际检索报告

* 引用文件的具体类型： "A" 认为不特别相关的表示了现有技术一般状态的文件 "E" 在国际申请日的当天或之后公布的在先申请或专利 "L" 可能对优先权要求构成怀疑的文件，或为确定另一篇 引用文件的公布日而引用的或者因其他特殊理由而引 用的文件（如具体说明的） "O" 涉及口头公开、使用、展览或其他方式公开的文件 "P" 公布日先于国际申请日但迟于所要求的优先权日的文件	"T" 在申请日或优先权日之后公布，与申请不相抵触，但为了 理解发明之理论或原理的在后文件 "X" 特别相关的文件，单独考虑该文件，认定要求保护的 发明不是新颖的或不具有创造性 "Y" 特别相关的文件，当该文件与另一篇或者多篇该类文件 结合并且这种结合对于本领域技术人员为显而易见时， 要求保护的发明不具有创造性 "&" 同族专利的文件
国际检索实际完成的日期 22. 10 月 2019(22. 10. 2019)	国际检索报告邮寄日期 30. 10 月 2019(30. 10. 2019)
ISA/CN 的名称和邮寄地址： 中国国家知识产权局(ISA/CN) 北京市海淀区蓟门桥西土城路 6 号 100088 传真号：(86-10)62019451	受权官员： 吴江霞 电话号码： 86-(010)-62412034

IPR2025-00842; Shokz
Ex. 2018 - Page 1602

国际申请号
PCT/CN2019/102399

国际检索报告

检索报告中引用的专利文件	公布日期	同族专利	公布日期
CN109788386A	21.05.2019	无	
CN207039851U	23.02.2018	无	
CN204465795U	08.07.2015	无	
CN207039849U	23.02.2018	无	
CN207070282U	02.03.2018	无	
CN107484054A	15.12.2017	无	

IPR2025-00842; Shokz
Ex. 2018 - Page 1603

TRANSLATION

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2019/102392

A. CLASSIFICATION OF SUBJECT MATTER

H04R 1/10(2006.01)i; H04R 31/00(2006.01)i

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)

H04R

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, CNPAT, CNKI: 扬声器, 扬声装置, 助听器, 播放器, 播放装置, 机芯壳体, 机芯, 电路壳体, 控制电路, 电池, 振动, 产生, 声音, 两个, 多个, 谐振峰, 耳挂, 壳体护套, 防水, 接插端, 接插孔, 振动板, 传振片, 音圈, 磁路, 接触面, 按键, 指示灯, speaker, loudspeak+, audiphone, ear-hook, ear hook, shell, sheath, control, circuit, battery, sound

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
PY	CN 109788386 A (SHENZHEN VOXTECH CO., LTD.) 21 May 2019 (2019-05-21) description, paragraphs [0035]-[0159], and figures 1-17	1-26
Y	CN 102497612 A (SHENZHEN VOXTECH CO., LTD.) 13 June 2012 (2012-06-13) description, paragraphs [0024]-[0034]	1-26
PY	CN 109547905 A (SHENZHEN VOXTECH CO., LTD.) 29 March 2019 (2019-03-29) description, paragraphs [0034]-[0158]	1-26
PY	CN 109714687 A (SHENZHEN VOXTECH CO., LTD.) 03 May 2019 (2019-05-03) description, paragraphs [0035]-[0159]	1-26
PY	CN 109769167 A (SHENZHEN VOXTECH CO., LTD.) 17 May 2019 (2019-05-17) description, paragraphs [0034]-[0223]	1-26
PY	CN 109660901 A (SHENZHEN VOXTECH CO., LTD.) 19 April 2019 (2019-04-19) description, paragraphs [0034]-[0223]	1-26
PY	CN 209184801 U (SHENZHEN VOXTECH CO., LTD.) 30 July 2019 (2019-07-30) description, paragraphs [0034]-[0164]	1-26

☑ Further documents are listed in the continuation of Box C. ☑ See patent family annex.

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
24 October 2019	**21 November 2019**
Name and mailing address of the ISA/CN **China National Intellectual Property Administration (ISA/CN)** **No. 6, Xitucheng Road, Jimenqiao Haidian District, Beijing 100088** **China**	Authorized officer
Facsimile No. **(86-10)62019451**	Telephone No.

IPR2025-00842; Shokz
Ex. 2018 - Page 1604

TRANSLATION

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2019/102392

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
PY	CN 209267804 U (SHENZHEN VOXTECH CO., LTD.) 16 August 2019 (2019-08-16) description, paragraphs [0034]-[0221]	1-26
A	US 2017318369 A1 (NEATRON CORPORATION) 02 November 2017 (2017-11-02) entire document	1-26

IPR2025-00842; Shokz
Ex. 2018 - Page 1605

TRANSLATION

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN2019/102392

Patent document cited in search report			Publication date (day/month/year)	Patent family member(s)			Publication date (day/month/year)
CN	109788386	A	21 May 2019	CN	209358729	U	06 September 2019
CN	102497612	A	13 June 2012	EP	2773133	A1	03 September 2014
				US	2015030186	A1	29 January 2015
				US	2013163791	A1	27 June 2013
				WO	2013091504	A1	27 June 2013
				US	2019082266	A1	14 March 2019
				US	2016316300	A1	27 October 2016
				KR	20140091602	A	21 July 2014
				EP	3163909	A1	03 May 2017
				JP	2015505204	A	16 February 2015
				ES	2621198	T3	03 July 2017
CN	109547905	A	29 March 2019	CN	209089198	U	09 July 2019
CN	109714687	A	03 May 2019	CN	209184798	U	30 July 2019
CN	109769167	A	17 May 2019	CN	209184800	U	30 July 2019
CN	109660901	A	19 April 2019	CN	209358760	U	06 September 2019
CN	209184801	U	30 July 2019		None		
CN	209267804	U	16 August 2019		None		
US	2017318369	A1	02 November 2017	GB	2550132	A	15 November 2017

IPR2025-00842; Shokz
Ex. 2018 - Page 1606

专 利 合 作 条 约

PCT

国际检索报告

(PCT 第 18 条和细则 43 和 44)

申请人或代理人的档案号 206080079W00	关于后续行为	见 PCT/ISA/220 表和 适用时，见下面第 5 项
国际申请号 PCT/CN2019/102392	国际申请日 *(日/月/年)* 24.8 月 2019(24.08.2019)	(最早的)优先权日 *(日/月/年)* 05.1 月 2019(05.01.2019)

申请人

深圳市韶音科技有限公司

按照条约第 18 条，本国际检索报告由本国际检索单位做出并送交申请人。报告副本送交国际局。

本国际检索报告总计 4 页。

☐ 它还附有本报告所引用的各现有技术文件的副本。

1. 报告的基础

a.关于语言，进行国际检索基于：

☒ 国际申请提交时使用的语言。

☐ 该国际申请的_____语言译文，为了国际检索的目的提供该种语言的译文(细则 12.3(a)和 23.1(b))。

b.☐ 本国际检索报告考虑了本单位许可或被通知的根据细则91所做出的明显错误更正。(细则43.6之二(a))。

c.☐ 关于国际申请中公开的任何核苷酸和/或氨基酸序列(见第 I 栏)。

2. ☐ 某些权利要求被认为是不能检索的(见第 II 栏)。

3. ☐ 缺乏发明的单一性(见第 III 栏)。

4. 关于**发明名称**，

☒ 同意申请人提出的发明名称。

☐ 发明名称由本单位确定如下：

5. 关于**摘要**，

☒ 同意申请人提出的摘要。

☐ 根据细则 38.2(b)，摘要由本单位制定，如第 IV 栏中所示。自本国际检索报告发文日起一个月内，申请人可以向本单位提出意见。

6. 关于**附图**，

a.随摘要一起公布的**附图**是：图 2

☒ 按照申请人建议的。

☐ 由本单位选择的，因为申请人没有建议一幅图。

☐ 由本单位选择的，因为该图能更好地表示发明的特征。

b. ☐ 没有与摘要一起公布的附图。

IPR2025-00842; Shokz
Ex. 2018 - Page 1607

国际申请号
PCT/CN2019/102392

国际检索报告

A. 主题的分类

H04R 1/10(2006.01)i; H04R 31/00(2006.01)i

按照国际专利分类（IPC）或者同时按照国家分类和 IPC 两种分类

B. 检索领域

检索的最低限度文献(标明分类系统和分类号)

IPC: H04R

包含在检索领域中的除最低限度文献以外的检索文献

在国际检索时查阅的电子数据库(数据库的名称，和使用的检索词（如使用）)

WPI, EPODOC, CNPAT, CNKI:扬声器，扬声装置，助听器，播放器，播放装置，机芯壳体，机芯，电路壳体，控制电路，电池，振动，产生，声音，两个，多个，谐振峰，耳挂，壳体护套，防水，接插端，接插孔，振动板，传振片，音圈，磁路，接触面，按键，指示灯，speaker, loudspeak+, audiphone, ear-hook, ear hook, shell, sheath, control, circuit, battery, sound

C. 相关文件

类 型*	引用文件，必要时，指明相关段落	相关的权利要求
PY	CN 109788386A (深圳市韶音科技有限公司) 21.5 月 2019(21.05.2019) 说明书第[0035]- [0159]段，图 1-17	1-26
Y	CN 102497612A (深圳市韶音科技有限公司) 13.6 月 2012(13.06.2012) 说明书第[0024]-[0034]段	1-26
PY	CN 109547905A (深圳市韶音科技有限公司) 29.3 月 2019(29.03.2019) 说明书第[0034]-[0158]段	1-26
PY	CN 109714687A (深圳市韶音科技有限公司) 03.5 月 2019(03.05.2019) 说明书第[0035]-[0159]段	1-26
PY	CN 109769167A (深圳市韶音科技有限公司) 17.5 月 2019(17.05.2019) 说明书第[0034]-[0223]段	1-26
PY	CN 109660901A (深圳市韶音科技有限公司) 19.4 月 2019(19.04.2019) 说明书第[0034]- [0223]段	1-26
PY	CN 209184801U (深圳市韶音科技有限公司) 30.7 月 2019(30.07.2019) 说明书第[0034]-[0164]段	1-26
PY	CN 209267804U (深圳市韶音科技有限公司) 16.8 月 2019(16.08.2019) 说明书第[0034]- [0221]段	1-26
A	US 2017318369A1 (NEATRON CORPORATION) 02.11 月 2017(02.11.2017) 全文	1-26

IPR2025-00842; Shokz
Ex. 2018 - Page 1608

国际申请号
PCT/CN2019/102392

国际检索报告

☐其余文件在C栏的续页中列出。　　☒见同族专利附件。

* 引用文件的具体类型：

"A" 认为不特别相关的表示了现有技术一般状态的文件

"D" 在国际申请日的当天或之后公布的在先申请或专利

"L" 可能对优先权要求构成怀疑的文件，或为确定另一篇引用文件的公布日而引用的或者因其他特殊理由而引用的文件（如具体说明的）

"O" 涉及口头公开、使用、展览或其他方式公开的文件

"P" 公布日先于国际申请日但迟于所要求的优先权日的文件

"T" 在申请日或优先权日之后公布，与申请不相抵触，但为了理解发明之理论或原理的在后文件

"X" 特别相关的文件，单独考虑该文件，认定要求保护的发明不是新颖的或不具有创造性

"Y" 特别相关的文件，当该文件与另一篇或者多篇该类文件结合并且这种结合对于本领域技术人员为显而易见时，要求保护的发明不具有创造性

"&" 同族专利的文件

国际检索实际完成的日期	国际检索报告邮寄日期
24. 10 月 2019(24. 10. 2019)	21. 11 月 2019(21. 11. 2019)
ISA/CN 的名称和邮寄地址： 中国国家知识产权局(ISA/CN) 北京市海淀区蓟门桥西土城路 6 号 100088 传真号：(86-10)62019451	受权官员：　杜少凤 电话号码：　86-(10)-53961593

IPR2025-00842; Shokz
Ex. 2018 - Page 1609

国际申请号
PCT/CN2019/102392

国际检索报告

检索报告中引用的专利文件	公布日期	同族专利	公布日期
CN109788386A	21.05.2019	CN209358729U	06.09.2019
CN102497612A	13.06.2012	EP2773133A1	03.09.2014
		US2015030186A1	29.01.2015
		US2013163791A1	27.06.2013
		WO2013091504A1	27.06.2013
		US2019082266A1	14.03.2019
		US2016316300A1	27.10.2016
		KR20140091602A	21.07.2014
		EP3163909A1	03.05.2017
		JP2015505204A	16.02.2015
		ES2621198T3	03.07.2017
CN109547905A	29.03.2019	CN209089198U	09.07.2019
CN109714687A	03.05.2019	CN209184798U	30.07.2019
CN109769167A	17.05.2019	CN209184800U	30.07.2019
CN109660901A	19.04.2019	CN209358760U	06.09.2019
CN209184801U	30.07.2019	无	
CN209267804U	16.08.2019	无	
US2017318369A1	02.11.2017	GB2550132A	15.11.2017

IPR2025-00842; Shokz
Ex. 2018 - Page 1610

TRANSLATION

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2019/102400

A. CLASSIFICATION OF SUBJECT MATTER

H04R 1/10(2006.01)i; H04R 25/00(2006.01)i; H04R 9/06(2006.01)i; H04R 9/02(2006.01)i

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)

H04R

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)

CNPAT, CNKI, WPI, EPODOC: 深圳市韶音, 防水, 接插, 抵接, 插接, 辅助片, 耳挂, 后挂, 耳机, 扬声器, 传声器, 麦克风, 耳麦, 喇叭, 电路, 电池, 管套, 套管, 护套, 包裹层, 硅胶套, 覆盖层, 橡胶套, 凸缘, 突块, 凸台, 限位, 卡接, 凸部, 突部, 退模, 模具, 凸块, 卡止, earphone, piece, circuit, mould, current, pattern, electrocircuit, electric, plate?, board?, waterproof

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
PX	CN 109547905 A (SHENZHEN VOXTECH CO., LTD.) 29 March 2019 (2019-03-29) claims 1-12, description, paragraphs [0034]-[0065], [0081]-[0090] and [0122]-[0197], and figures 1-25	1-31
PX	CN 209089198 U (SHENZHEN VOXTECH CO., LTD.) 09 July 2019 (2019-07-09) claims 1-12, description, paragraphs [0034]-[0065], [0081]-[0090] and [0122]-[0197], and figures 1-25	1-31
PX	CN 109769167 A (SHENZHEN VOXTECH CO., LTD.) 17 May 2019 (2019-05-17) claims 1-11, description, paragraphs [0034]-[0086], [0111]-[0251], and figures 1-25	1-31
PX	CN 209184800 U (SHENZHEN VOXTECH CO., LTD.) 30 July 2019 (2019-07-30) claims 1-11, description, paragraphs [0034]-[0086], [0111]-[0251], and figures 1-25	1-31
PX	CN 109788386 A (SHENZHEN VOXTECH CO., LTD.) 21 May 2019 (2019-05-21) claims 1-14, description, paragraphs [0005], [0035]-[0085] and [0112]-[0195], and figures 1-25	1-31
E	CN 209358729 U (SHENZHEN VOXTECH CO., LTD.) 06 September 2019 (2019-09-06) claims 1-10, description, paragraphs [0005], [0035]-[0085] and [0112]-[0195], and figures 1-25	1-31

☑ Further documents are listed in the continuation of Box C. ☑ See patent family annex.

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
14 November 2019	**22 November 2019**
Name and mailing address of the ISA/CN **China National Intellectual Property Administration** **No. 6, Xitucheng Road, Jimenqiao Haidian District, Beijing 100088** **China** Facsimile No. **(86-10)62019451**	Authorized officer Telephone No.

Form PCT/ISA/210 (second sheet) (January 2015)

TRANSLATION

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2019/102400

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	CN 207039848 U (SHENZHEN VOXTECH CO., LTD.) 23 February 2018 (2018-02-23) description, paragraphs [0023]-[0048] and [0058]-[0063], figures 1-12	1, 11-14, 24-31
Y	CN 207039848 U (SHENZHEN VOXTECH CO., LTD.) 23 February 2018 (2018-02-23) description, paragraphs [0023]-[0048] and [0058]-[0063], figures 1-12	2-9
Y	CN 207010974 U (USNEWSOUND LLC) 13 February 2018 (2018-02-13) description, paragraphs [0029]-[0031] and [0035]-[0036], and figures 1-5	2-9
A	CN 203827497 U (MA, Qiang) 10 September 2014 (2014-09-10) entire document	1-31
A	CN 207783068 U (SHENZHEN GRANDSUN ELECTRONIC CO., LTD.) 28 August 2018 (2018-08-28) entire document	1-31
A	WO 2018175192 A1 (BOSE CORP.) 27 September 2018 (2018-09-27) entire document	1-31

TRANSLATION

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN2019/102400

Patent document cited in search report	Publication date (day/month/year)	Patent family member(s)	Publication date (day/month/year)
CN 109547905 A	29 March 2019	None	
CN 209089198 U	23 February 2018	None	
CN 109769167 A	17 May 2019	None	
CN 209184800 U	21 May 2019	None	
CN 109788386 A	21 May 2019	None	
CN 209358729 U	21 May 2019	None	
CN 207039848 U	23 February 2018	None	
CN 207010974 U	13 February 2018	None	
CN 203827497 U	10 September 2014	None	
CN 207783068 U	28 August 2018	None	
WO 2018175192 A1	27 September 2018	US 2018270558 A1	20 September 2018

Form PCT/ISA/210 (patent family annex) (January 2015)

专 利 合 作 条 约

PCT

国际检索报告

(PCT 第 18 条和细则 43 和 44)

申请人或代理人的档案号 206080083W00	关于后续行为	见 PCT/ISA/220 表和 适用时，见下面第 5 项
国际申请号 PCT/CN2019/102400	国际申请日 *(日/月/年)* 24. 8 月 2019(24. 08. 2019)	(最早的)优先权日 *(日/月/年)* 05. 1 月 2019(05. 01. 2019)
申请人 深圳市韶音科技有限公司		

按照条约第 18 条，本国际检索报告由本国际检索单位做出并送交申请人。报告副本送交国际局。

本国际检索报告总计 5 页。

☐ 它还附有本报告所引用的各现有技术文件的副本。

1. 报告的基础

a.关于语言，进行国际检索基于：

☒ 国际申请提交时使用的语言。

☐ 该国际申请的_____语言译文，为了国际检索的目的提供该种语言的译文(细则 12. 3(a)和 23. 1(b))。

b.☐ 本国际检索报告考虑了本单位许可或被通知的根据细则91所做出的明显错误更正。(细则43. 6之二(a))。

c.☐ 关于国际申请中公开的任何核苷酸和/或氨基酸序列(见第 I 栏)。

2. ☐ 某些权利要求被认为是不能检索的(见第 II 栏)。

3. ☐ 缺乏发明的单一性(见第 III 栏)。

4. 关于**发明名称**，

☒ 同意申请人提出的发明名称。

☐ 发明名称由本单位确定如下：

5. 关于**摘要**，

☐ 同意申请人提出的摘要。

☒ 根据细则 38.2(b)，摘要由本单位制定，如第 IV 栏中所示。自本国际检索报告发文日起一个月内，申请人可以向本单位提出意见。

6. 关于**附图**，

a.随摘要一起公布的**附图**是：图 1

☒ 按照申请人建议的。

☐ 由本单位选择的，因为申请人没有建议一幅图。

☐ 由本单位选择的，因为该图能更好地表示发明的特征。

b. ☐ 没有与摘要一起公布的附图。

IPR2025-00842; Shokz
Ex. 2018 - Page 1614

国际检索报告

第 IV 栏 摘要正文(续第 1 页第 5 项)

一种扬声器装置（7400），该装置（7400）包括，用于容纳耳机芯（50，1104，7402）的机芯壳体（20，41，751）；用于容纳控制电路（60）或电池（70）的电路壳体（30），控制电路（60）或电池（70）驱动耳机芯（50，1104，7402）振动以产生声音；用于连接机芯壳体（20，41，751）和电路壳体（30）的耳挂（10）；以及壳体护套（17），至少部分包覆于电路壳体（30）和耳挂（10）的外围，壳体护套（17）由防水材料制成。该扬声器装置（7400）通过各个部件间的密封连接，提高了扬声器装置（7400）整体的防水效果。

IPR2025-00842; Shokz
Ex. 2018 - Page 1615

国际申请号
PCT/CN2019/102400

国际检索报告

A. 主题的分类

H04R 1/10(2006.01)i；H04R 25/00(2006.01)i；H04R 9/06(2006.01)i；H04R 9/02(2006.01)i

按照国际专利分类（IPC）或者同时按照国家分类和IPC两种分类

B. 检索领域

检索的最低限度文献(标明分类系统和分类号)

IPC：H04R

包含在检索领域中的除最低限度文献以外的检索文献

在国际检索时查阅的电子数据库(数据库的名称，和使用的检索词（如使用）)

CNPAT, CNKI, WPI, EPODOC：深圳市韶音，防水，接插，抵接，插接，辅助片，耳挂，后挂，耳机，扬声器，传声器，麦克风，耳麦，喇叭，电路，电池，管套，套管，护套，包裹层，硅胶套，覆盖层，橡胶套，凸缘，突块，凸台，限位，卡接，凸部，突部，退模，模具，凸块，卡止，earphone，piece，circuit，mould，current，pattern，electrocircuit，electric，plate?，board?，waterproof

C. 相关文件

类　型*	引用文件，必要时，指明相关段落	相关的权利要求
PX	CN 109547905A (深圳市韶音科技有限公司) 29.3 月 2019(29.03.2019) 权利要求 1-12、说明书第[0034]-[0065]，[0081]-[0090]，[0122]-[0197]段、图 1-25	1-31
PX	CN 209089198U (深圳市韶音科技有限公司) 09.7 月 2019(09.07.2019) 权利要求 1-12、说明书第[0034]-[0065]，[0081]-[0090]，[0122]-[0197]段、图 1-25	1-31
PX	CN 109769167A (深圳市韶音科技有限公司) 17.5 月 2019(17.05.2019) 权利要求 1-11、说明书第[0034]-[0086]，[0111]-[0215]段、图 1-25	1-31
PX	CN 209184800U (深圳市韶音科技有限公司) 30.7 月 2019(30.07.2019) 权利要求 1-11、说明书第[0034]-[0086]，[0111]-[0215]段、图 1-25	1-31
PX	CN 109788386A (深圳市韶音科技有限公司) 21.5 月 2019(21.05.2019) 权利要求 1-14，说明书第[0005]，[0035]-[0085]、[0112]-[0195]段、图 1-25	1-31
E	CN 209358729U (深圳市韶音科技有限公司) 06.9 月 2019(06.09.2019) 权利要求 1-10，说明书第[0005]，[0035]-[0085]、[0112]-[0195]段、图 1-25	1-31

IPR2025-00842; Shokz
Ex. 2018 - Page 1616

国际检索报告

X	CN 207039848U (深圳市韶音科技有限公司) 23.2 月 2018(23.02.2018) 说明书第[0023]-[0048]，[0058]-[0063]段、图 1-12	1，11-14，24-31
Y	CN 207039848U (深圳市韶音科技有限公司) 23.2 月 2018(23.02.2018) 说明书第[0023]-[0048]，[0058]-[0063]段、图 1-12	2-9
Y	CN 207010974U (厦门新声科技有限公司) 13.2 月 2018(13.02.2018) 说明书第[0029]-[0031]，[0035]-[0036]段，图 1-5	2-9
A	CN 203827497U (马强) 10.9 月 2014(10.09.2014) 全文	1-31
A	CN 207783068U (深圳市冠旭电子股份有限公司) 28.8 月 2018(28.08.2018) 全文	1-31
A	WO 2018175192A1 (BOSE CORP.) 27.9 月 2018(27.09.2018) 全文	1-31

☐其余文件在 C 栏的续页中列出。　　☒见同族专利附件。

* 引用文件的具体类型：

"A" 认为不特别相关的表示了现有技术一般状态的文件

"E" 在国际申请日的当天或之后公布的在先申请或专利

"L" 可能对优先权要求构成怀疑的文件，或为确定另一篇引用文件的公布日而引用的或者因其他特殊理由而引用的文件（如具体说明的）

"O" 涉及口头公开、使用、展览或其他方式公开的文件

"P" 公布日先于国际申请日但迟于所要求的优先权日的文件

"T" 在申请日或优先权日之后公布，与申请不相抵触，但为了理解发明之理论或原理的在后文件

"X" 特别相关的文件，单独考虑该文件，认定要求保护的发明不是新颖的或不具有创造性

"Y" 特别相关的文件，当该文件与另一篇或者多篇该类文件结合并且这种结合对于本领域技术人员为显而易见时，要求保护的发明不具有创造性

"&" 同族专利的文件

国际检索实际完成的日期	国际检索报告邮寄日期
14. 11 月 2019(14. 11. 2019)	22. 11 月 2019(22. 11. 2019)
ISA/CN 的名称和邮寄地址： 中国国家知识产权局(ISA/CN) 北京市海淀区蓟门桥西土城路 6 号 100088 传真号：(86-10)62019451	受权官员：　向薇 电话号码：　86-(10)-53962455

IPR2025-00842; Shokz
Ex. 2018 - Page 1617

国际申请号
PCT/CN2019/102400

国际检索报告

检索报告中引用的专利文件	公布日期	同族专利	公布日期
CN109547905A	29.03.2019	无	
CN209089198U	23.02.2018	无	
CN109769167A	17.05.2019	无	
CN209184800U	21.05.2019	无	
CN109788386A	21.05.2019	无	
CN209358729U	21.05.2019	无	
CN207039848U	23.02.2018	无	
CN207010974U	13.02.2018	无	
CN203827497U	10.09.2014	无	
CN207783068U	28.08.2018	无	
WO2018175192A1	27.09.2018	US2018270558A1	20.09.2018

TRANSLATION

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2019/102393

A. CLASSIFICATION OF SUBJECT MATTER

H04R 1/10(2006.01)i; H04R 31/00(2006.01)i

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)

H04R

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, CNPAT, CNKI: 扬声器, 扬声装置, 助听器, 播放器, 播放装置, 机芯壳体, 机芯, 电路壳体, 控制电路, 电池, 振动, 耳挂, 接插端, 振动, 频率, 相位, 外壳, 面板, 背面, speaker, loudspeak+, audiphone, ear-hook, ear hook, shell, sheath, control, circuit, battery, sound

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
PY	CN 109788386 A (SHENZHEN VOXTECH LIMITED CORPORATION) 21 May 2019 (2019-05-21) description, paragraphs [0035]-[0159], and figures 1-17	1-24
PY	CN 209120433 U (SHENZHEN VOXTECH LIMITED CORPORATION) 16 July 2019 (2019-07-16) description, paragraphs [0006]-[0045] and [0090]-[0192]	1-24
PY	CN 109547905 A (SHENZHEN VOXTECH LIMITED CORPORATION) 29 March 2019 (2019-03-29) description, paragraphs [0034]-[0158]	1-24
PY	CN 109769167 A (SHENZHEN VOXTECH LIMITED CORPORATION) 17 May 2019 (2019-05-17) description, paragraphs [0034]-[0223]	1-24
PY	CN 109714687 A (SHENZHEN VOXTECH LIMITED CORPORATION) 03 May 2019 (2019-05-03) description, paragraphs [0035]-[0159]	1-24

☑ Further documents are listed in the continuation of Box C. ☑ See patent family annex.

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
25 October 2019	**25 November 2019**
Name and mailing address of the ISA/CN **China National Intellectual Property Administration (ISA/CN)** **No. 6, Xitucheng Road, Jimenqiao Haidian District, Beijing 100088** **China** Facsimile No. **(86-10)62019451**	Authorized officer Telephone No.

Form PCT/ISA/210 (second sheet) (January 2015)

TRANSLATION

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2019/102393

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
PY	CN 109660901 A (SHENZHEN VOXTECH LIMITED CORPORATION) 19 April 2019 (2019-04-19) description, paragraphs [0034]-[0223]	1-24
PY	CN 209267804 U (SHENZHEN VOXTECH LIMITED CORPORATION) 16 August 2019 (2019-08-16) description, paragraphs [0034]-[0221]	1-24
PY	CN 209184801 U (SHENZHEN VOXTECH LIMITED CORPORATION) 30 July 2019 (2019-07-30) description, paragraphs [0034]-[0164]	1-24
A	CN 103716739 A (SHENZHEN VOXTECH LIMITED CORPORATION) 09 April 2014 (2014-04-09) entire document	1-24
A	US 2017318369 A1 (NEATRON CORPORATION) 02 November 2017 (2017-11-02) entire document	1-24

TRANSLATION

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN2019/102393

Patent document cited in search report			Publication date (day/month/year)	Patent family member(s)			Publication date (day/month/year)
CN	109788386	A	21 May 2019	CN	209358729	U	06 September 2019
CN	209120433	U	16 July 2019		None		
CN	109547905	A	29 March 2019	CN	209089198	U	09 July 2019
CN	109769167	A	17 May 2019	CN	209184800	U	30 July 2019
CN	109714687	A	03 May 2019	CN	209184798	U	30 July 2019
CN	109660901	A	19 April 2019	CN	209358760	U	06 September 2019
CN	209267804	U	16 August 2019		None		
CN	209184801	U	30 July 2019		None		
CN	103716739	A	09 April 2014	WO	2015101181	A1	09 July 2015
				CN	106470371	A	01 March 2017
				JP	2017502615	A	19 January 2017
				CN	106303861	A	04 January 2017
				KR	20170061184	A	02 June 2017
				EP	3094103	A1	16 November 2016
				US	2017374479	A1	28 December 2017
				US	2016329041	A1	10 November 2016
				KR	20170061188	A	02 June 2017
				US	2019132689	A1	02 May 2019
				KR	20160110365	A	21 September 2016
				IN	201617026062	A	31 August 2016
				BR	112016015742	A2	08 August 2017
US	2017318369	A1	02 November 2017	GB	2550132	A	15 November 2017

专 利 合 作 条 约

PCT

国际检索报告

(PCT 第 18 条和细则 43 和 44)

申请人或代理人的档案号 206080080WO0	关于后续行为	见 PCT/ISA/220 表和 适用时，见下面第 5 项
国际申请号 PCT/CN2019/102393	国际申请日 *(日/月/年)* 24.8 月 2019(24.08.2019)	(最早的)优先权日 *(日/月/年)* 05.1 月 2019(05.01.2019)

申请人

深圳市韶音科技有限公司

按照条约第 18 条，本国际检索报告由本国际检索单位做出并送交申请人。报告副本送交国际局。

本国际检索报告总计 4 页。

☐ 它还附有本报告所引用的各现有技术文件的副本。

1. 报告的基础

a.关于语言，进行国际检索基于：

☒ 国际申请提交时使用的语言。

☐ 该国际申请的_____语言译文，为了国际检索的目的提供该种语言的译文(细则 12.3(a)和 23.1(b))。

b.☐ 本国际检索报告考虑了本单位许可或被通知的根据细则91所做出的明显错误更正。(细则43.6之二(a))。

c.☐ 关于国际申请中公开的任何核苷酸和/或氨基酸序列(见第 I 栏)。

2. ☐ 某些权利要求被认为是不能检索的(见第 II 栏)。

3. ☐ 缺乏发明的单一性(见第 III 栏)。

4. 关于**发明名称**，

☒ 同意申请人提出的发明名称。

☐ 发明名称由本单位确定如下：

5. 关于**摘要**，

☒ 同意申请人提出的摘要。

☐ 根据细则 38.2(b)，摘要由本单位制定，如第 IV 栏中所示。自本国际检索报告发文日起一个月内，申请人可以向本单位提出意见。

6. 关于**附图**，

a.随摘要一起公布的**附图**是：图 2

☒ 按照申请人建议的。

☐ 由本单位选择的，因为申请人没有建议一幅图。

☐ 由本单位选择的，因为该图能更好地表示发明的特征。

b. ☐ 没有与摘要一起公布的附图。

IPR2025-00842; Shokz
Ex. 2018 - Page 1622

国际申请号
PCT/CN2019/102393

国际检索报告

A. 主题的分类

H04R 1/10(2006.01)i；H04R 31/00(2006.01)i

按照国际专利分类（IPC）或者同时按照国家分类和 IPC 两种分类

B. 检索领域

检索的最低限度文献(标明分类系统和分类号)

IPC：H04R

包含在检索领域中的除最低限度文献以外的检索文献

在国际检索时查阅的电子数据库(数据库的名称，和使用的检索词（如使用））

WPI，EPODOC，CNPAT，CNKI：扬声器，扬声装置，助听器，播放器，播放装置，机芯壳体，机芯，电路壳体，控制电路，电池，振动，耳挂，接插端，振动，频率，相位，外壳，面板，背面，speaker，loudspeaker，audiphone，ear-hook，ear book，shell，sheath，control，circuit，battery，sound

C. 相关文件

类　型*	引用文件，必要时，指明相关段落	相关的权利要求
PY	CN 109788386A (深圳市韶音科技有限公司) 21.5 月 2019(21.05.2019) 说明书第[0035]-[0159]段，图 1-17	1-24
PY	CN 209120433U (深圳市韶音科技有限公司) 16.7 月 2019(16.07.2019) 说明书第[0006]-[0045]、[0090]-[0192]段	1-24
PY	CN 109547905A (深圳市韶音科技有限公司) 29.3 月 2019(29.03.2019) 说明书第[0034]-[0158]段	1-24
PY	CN 109769167A (深圳市韶音科技有限公司) 17.5 月 2019(17.05.2019) 说明书第[0034]-[0223]段	1-24
PY	CN 109714687A (深圳市韶音科技有限公司) 03.5 月 2019(03.05.2019) 说明书第[0035]-[0159]段	1-24
PY	CN 109660901A (深圳市韶音科技有限公司) 19.4 月 2019(19.04.2019) 说明书第[0034]-[0223]段	1-24
PY	CN 209267804U (深圳市韶音科技有限公司) 16.8 月 2019(16.08.2019) 说明书第[0034]-[0221]段	1-24
PY	CN 209184801U (深圳市韶音科技有限公司) 30.7 月 2019(30.07.2019) 说明书第[0034]-[0164]段	1-24
A	CN 103716739A (深圳市韶音科技有限公司) 09.4 月 2014(09.04.2014) 全文	1-24
A	US 2017318369A1 (NEATRON CORPORATION) 02.11 月 2017(02.11.2017) 全文	1-24

IPR2025-00842; Shokz
Ex. 2018 - Page 1623

国际申请号
PCT/CN2019/102393

国际检索报告

☐其余文件在C栏的续页中列出。　　☒见同族专利附件。

* 引用文件的具体类型：

"A" 认为不特别相关的表示了现有技术一般状态的文件

"E" 在国际申请日的当天或之后公布的在先申请或专利

"L" 可能对优先权要求构成怀疑的文件，或为确定另一篇引用文件的公布日而引用的或者因其他特殊理由而引用的文件（如具体说明的）

"O" 涉及口头公开、使用、展览或其他方式公开的文件

"P" 公布日先于国际申请日但迟于所要求的优先权日的文件

"T" 在申请日或优先权日之后公布，与申请不相抵触，但为了理解发明之理论或原理的在后文件

"X" 特别相关的文件，单独考虑该文件，认定要求保护的发明不是新颖的或不具有创造性

"Y" 特别相关的文件，当该文件与另一篇或者多篇该类文件结合并且这种结合对于本领域技术人员为显而易见时，要求保护的发明不具有创造性

"&" 同族专利的文件

国际检索实际完成的日期	国际检索报告邮寄日期
25. 10 月 2019(25. 10. 2019)	25. 11 月 2019(25. 11. 2019)
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IPR2025-00842; Shokz
Ex. 2018 - Page 1624

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证　　明

本证明之附件是向本局提交的下列专利申请文件副本。

申　　请　　号：201910009927.4

申　请　类　型：发明专利

发明 创造 名称：骨传导扬声装置及其耳挂的制造方法

申　　请　　日：2019 年 01 月 05 日

申　　请　　人：深圳市韶音科技有限公司

发明人或设计人：李朝武、王旭东、李永坚

局长

申长雨

2020 年 08 月 07 日

权 利 要 求 书

1. 一种骨传导扬声装置，其特征在于，所述骨传导扬声装置包括耳挂，所述耳挂包括：

弹性金属丝；

导线及固定套管、所述固定套管将所述导线固定于所述弹性金属丝上；

第一接插端和第二接插端，分别设置于所述弹性金属丝的两端；

保护套管，以注塑形成于所述弹性金属丝、所述导线、所述固定套管、所述第一接插端和第二接插端的外围。

2. 根据权利要求 1 所述的骨传导扬声装置，其特征在于，所述第一接插端和第二接插端分别以注塑方式形成于所述弹性金属丝的两端，所述第一接插端和第二接插端上分别设置有第一走线通道和第二走线通道，所述导线沿所述第一走线通道和第二走线通道延伸。

3. 根据权利要求 1 所述的骨传导扬声装置，其特征在于，所述导线以穿线方式穿入所述第一走线通道和所述第二走线通道。

4. 根据权利要求 2 所述的骨传导扬声装置，其特征在于，所述第一走线通道包括第一走线槽和连通所述第一走线槽和所述第一接插端的外端面的第一走线孔，所述导线沿所述第一走线槽和所述第一走线孔延伸并外露于所述第一接插端的外端面；所述第二走线通道包括第二走线槽和连通所述第二走线槽和所述第一接插端的外端面的第二走线孔，所述导线沿所述第二走线槽和所述第二走线孔延伸并外露于所述第二接插端的外端面。

5. 根据权利要求 1 所述的骨传导扬声装置，其特征在于，所述固定套管为至少两个，并沿所述弹性金属丝间隔设置。

6. 根据权利要求 1 所述的骨传导扬声装置，其特征在于，所述骨传导扬声装置进一步包括：

机芯壳体，用于容纳耳机芯，并与所述第一接插端接插固定；

电路壳体，用于容纳控制电路或电池，并与所述第二接插端接插固定。

7. 根据权利要求 6 所述的骨传导扬声装置，其特征在于，所述机芯壳体设置有与所述机芯壳体的外端面连通的第一接插孔，所述第一接插孔的内侧壁上设置有止挡块，所述第一接插端包括：

插入部，至少部分插入于所述第一接插孔内并抵接于所述止挡块的外侧面上；

两个弹性卡勾，设置于所述插入部朝向所述机芯壳体内部的一侧，两个弹性卡勾能够在外部推力和所述止挡块的作用下彼此并拢，并在经过所述止挡块后弹性回复成卡置于所述止挡块的内侧面上，进而实现所述机芯壳体与所述第一接插端的接插固定。

8. 根据权利要求 7 所述的骨传导扬声装置，其特征在于，所述插入部部分插入于所述第一接插孔内，且在所述插入部的外露部分呈阶梯状设置，进而形成与所述机芯壳体的外端面间隔设置的环形台面，所述保护套管进一步延伸至所述环形台面朝向所述机芯壳体的外端面的一侧，并在所述机芯壳体与所述第一接插端接插固定

IPR2025-00842; Shokz
Ex. 2018 - Page 1628

时与所述机芯壳体弹性抵接，进而实现密封。

9. 根据权利要求 6 所述的骨传导扬声装置，其特征在于，所述电路壳体设置有第二接插孔，所述第二接插端至少部分插入至所述第二接插孔内，其中在所述第二接插端的相对两侧分别设置有与所述第二接插端相对于所述第二接插孔的插入方向垂直设置的开槽，所述电路壳体的第一侧壁上设置有与两个所述开槽位置对应的两个通孔，所述骨传导扬声装置进一步包括固定件，所述固定件包括两条平行设置的插脚和用于连接所述插脚的连接部，其中所述插脚从所述电路壳体的外侧经所述通孔插入至所述开槽，进而实现所述电路壳体与所述第二接插端的接插固定。

10. 根据权利要求 6 所述的骨传导扬声装置，其特征在于，所述耳挂进一步包括与所述第二接插端外围的所述保护套管一体成型的壳体护套，所述壳体护套以套装方式包覆于所述电路壳体的外围。

11. 一种骨传导扬声装置的耳挂的制造方法，其特征在于，所述制造方法包括：

将固定套管套设于弹性金属丝上，其中在所述弹性金属丝的两端预留出注塑位；

在所述弹性金属丝的两端的注塑位上分别注塑第一接插端和第二接插端，其中所述第一接插端和第二接插端分别设置有第一走线通道和第二走线通道；

将导线设置成沿所述第一走线通道和第二走线通道延伸，其中，所述导线位于所述第一走线通道和所述第二走线通道之间的部分固定于所述弹性金属丝上；

在所述弹性金属丝、所述导线、所述固定套管、所述第一接插端和第二接插端的外围注塑形成保护套管。

12. 根据权利要求 11 所述的制造方法，其特征在于，将固定套管套设于弹性金属丝上的步骤，进一步包括：

利用所述固定套管将所述导线固定于所述弹性金属丝上。

13. 根据权利要求 11 所述的制造方法，其特征在于，将导线设置成沿所述第一走线通道和第二走线通道延伸，其中，所述导线位于所述第一走线通道和所述第二走线通道之间的部分由所述固定套管固定在所述弹性金属丝上的步骤进一步包括：

将导线穿设于所述固定套管的内部，以利用所述固定套管将所述导线固定于所述弹性金属丝上，并进一步将所述导线设置成沿所述第一走线通道和第二走线通道延伸。

14. 根据权利要求 11 所述的制造方法，其特征在于，所述在所述弹性金属丝、所述导线、所述保护套管、所述第一接插端和第二接插端的外围注塑形成保护套管的步骤进一步包括：

以注塑方式形成与所述第二接插端外围的所述保护套管一体成型的壳体护套，其中所述壳体护套以套装方式包覆于与所述第二接插端接插固定的电路壳体的外围。

IPR2025-00842; Shokz
Ex. 2018 - Page 1629

说　明　书

骨传导扬声装置及其耳挂的制造方法

技术领域

本申请涉及骨传导技术领域，特别是涉及一种骨传导扬声装置及其耳挂的制造方法。

背景技术

骨传导是一种声音传导方式，骨传导扬声装置利用骨传导技术接收声音，由于其能够开放双耳、不伤害鼓膜等优点而受到广大消费者的青睐。

骨传导扬声装置包括耳挂，在耳挂的生产过程中，可以将设置在外围保护套管可与内部结构分别成型，并进而将成型后的保护套管套设在内部结构的外围。然而这种方式往往使得耳挂的生产及装配的工序繁琐，且耳挂与内部结构之间可能会出现固定不牢靠的情况，从而降低骨传导扬声装置的质量。

发明内容

本申请主要解决的技术问题是提供一种骨传导扬声装置及其耳挂的制造方法，能够简化骨传导扬声装置的制作及装配工序，并使得骨传导扬声装置的耳挂中的保护套管固定得更加牢靠、稳定。

为解决上述技术问题，本申请采用的一个技术方案是：提供一种骨传导扬声装置，所述骨传导扬声装置包括耳挂，所述耳挂包括：弹性金属丝；导线及固定套管，所述固定套管将所述导线固定于所述弹性金属丝上；第一接插端和第二接插端，分别设置于所述弹性金属丝的两端；保护套管，以注塑形成于所述弹性金属丝、所述导线、所述固定套管、所述第一接插端和第二接插端的外围。

为解决上述技术问题，本申请采用的另一个技术方案是：提供一种骨传导扬声装置的耳挂的制造方法，所述制造方法包括：将固定套管套设于弹性金属丝上，其中在所述弹性金属丝的两端预留出注塑位；在所述弹性金属丝的两端的注塑位上分别注塑第一接插端和第二接插端，其中所述第一接插端和第二接插端分别设置有第一走线通道和第二走线通道；将导线设置成沿所述第一走线通道和第二走线通道延伸，其中，所述导线位于所述第一走线通道和所述第二走线通道之间的部分固定于所述弹性金属丝上；在所述弹性金属丝、所述导线、所述固定套管、所述第一接插端和第二接插端的外围注塑形成保护套管。

本申请的有益效果是：区别于现有技术的情况，本申请骨传导扬声装置中，保护套管可注塑形成于弹性金属丝、导线、固定套管、第一接插端和第二接插端的外围，从而将保护套管分别与弹性金属丝、导线、固定套管、第一接插端和第二接插端固定连接，而无需将保护套管单独注塑形成后再进一步套装在弹性金属丝以及第一接插端、第二接插端的外围，从而能够简化制作及装配工序，且通过这种方式，能够使保护套管的固定更加牢靠、稳定。

IPR2025-00842; Shokz
Ex. 2018 - Page 1630

附图说明

为了更清楚地说明本申请实施例中的技术方案，下面将对实施例描述中所需要使用的附图作简单地介绍，显而易见地，下面描述中的附图仅仅是本申请的一些实施例，对于本领域普通技术人员来讲，在不付出创造性劳动的前提下，还可以根据这些附图获得其他的附图。其中：

图1是本申请骨传导扬声装置一实施方式的爆炸结构示意图；

图2是本申请骨传导扬声装置一实施方式中耳挂的部分结构示意图；

图3是图 2 中 A 部分的局部放大图；

图4是本申请骨传导扬声装置一实施方式的局部截面图；

图5是图 4 中 B 部分的局部放大图；

图6是本申请骨传导扬声装置一实施方式的局部结构截面图；

图7是图 6 中 C 部分的局部放大图；

图8是本申请骨传导扬声装置一实施方式的机芯壳体的部分结构示意图；

图9是图 8 中 D 部分的局部放大图；

图10是本申请骨传导扬声装置一实施方式的机芯壳体的局部截面图；

图11是本申请骨传导扬声装置一实施方式中电路壳体与耳挂的部分爆炸图；

图12是本申请骨传导扬声装置一实施方式的部分结构的局部截面图；

图13是图 1 中 E 部分的局部放大图；

图14是本申请骨传导扬声装置一实施方式中电路壳体的截面图；

图15是图 14 中 F 部分的局部放大图；

图16是本申请骨传导扬声装置一实施方式中电路壳体与按键结构的爆炸图；

图17是图 6 中 G 部分的局部放大图；

图18是本申请骨传导扬声装置一实施方式中导电柱的结构示意图；

图19是本申请骨传导扬声装置一实施方式中电路壳体、导电柱及主控电路板的截面图；

图20是图 19 中 H 部分的局部放大图；

图21是本申请骨传导扬声装置一实施方式中电路壳体与辅助片的局部结构爆炸图；

图22是本申请骨传导扬声装置一实施方式中电路壳体与辅助片的局部结构示意图；

图23是本申请骨传导扬声装置一实施方式中电路壳体与后挂的局部结构爆炸图；

图24是本申请骨传导扬声装置一实施方式中电路壳体与后挂的局部结构截面图；

图25是本申请骨传导扬声装置一实施方式中后挂的局部结构示意图。

具体实施方式

下面将结合本申请实施例中的附图，对本申请实施例中的技术方案进行清楚、

IPR2025-00842; Shokz
Ex. 2018 - Page 1631

完整地描述，显然，所描述的实施例仅仅是本申请一部分实施例，而不是全部实施例。基于本申请中的实施例，本领域普通技术人员在没有做出创造性的劳动前提下所获得的所有其他实施例，都属于本申请保护的范围。

请一并参阅图 1 至图 25，图 1 至图 25 绘示了本申请骨传导扬声装置。本申请中的骨传导扬声装置可以为基于骨传导的耳机、MP3 或者其它具有扬声功能的装置。具体地，骨传导扬声装置可包括：耳挂 10、机芯壳体 20、电路壳体 30、后挂 40，以及耳机芯 50、控制电路 60、电池 70。其中，机芯壳体 20 与电路壳体 30 分别设置于耳挂 10 的两端，后挂 40 则进一步设置于电路壳体 30 远离耳挂 10 的一端。其中，机芯壳体 20 的数量为两个，分别用于容纳耳机芯 50，电路壳体 30 的数量也为两个，分别用来容纳控制电路 60 和电池 70，后挂 40 的两端分别连接对应的电路壳体 30。

其中，耳挂 10 是指在用户佩戴骨传导扬声装置时，用于环绕并支撑于用户的耳根部位，进而将机芯壳体 20 及耳机芯 50 悬挂并固定于用户耳朵预定位置的结构。

具体地，耳挂 10 包括弹性金属丝 11、导线 12、固定套管 13 以及设置于弹性金属丝 11 两端的接插端 14 和接插端 15，还进一步包括保护套管 16 以及与保护套管 16 一体成型的壳体护套 17。

其中，弹性金属丝 11 主要用于使耳挂 10 保持为与用户耳朵匹配的形状，并具有一定的弹性，从而能够在用户佩戴时根据用户的耳型以及头型产生一定的弹性形变以适配不同耳型以及头型的用户。本实施方式中，弹性金属丝 11 可以由记忆合金制成，具有良好的变形恢复能力，从而即便是耳挂 10 受到外力作用产生形变，在外力去除时，仍然能够恢复至原来的形状以能够继续为用户所使用，从而延长骨传导扬声装置的使用寿命。当然，在其它实施方式当中，弹性金属丝 11 也可以由非记忆合金制成。

导线 12 可用于与耳机芯 50 以及控制电路 60、电池 70 等进行电连接，以为耳机芯 50 的工作进行电量供应以及数据传输。

固定套管 13 用于将导线 12 固定于弹性金属丝 11 上。具体地，固定套管 13 的数量可以为一个或者多个，具体可根据实际需求而定。本实施方式中，固定套管 13 为至少两个，至少两个固定套管 13 可沿弹性金属丝 11 以及导线 12 的走向而间隔设置，并通过包裹设置在导线 12 以及弹性金属丝 11 的外围而将导线 12 固定于弹性金属丝 11 上。

接插端 14 和接插端 15 可由硬质材料，如塑胶等制成。本实施方式中，在制作该接插端 14 和接插端 15 时，可以分别以注塑的方式将二者形成于弹性金属丝 11 的两端。在其它实施方式中，也可以先对接插端 14 和接插端 15 分别进行注塑，并在注塑时分别预留与弹性金属丝 11 端部的连接孔，从而在注塑完成后，通过连接孔而将该接插端 14 和接插端 15 分别插接在弹性金属丝 11 的对应的端部，或者并通过粘接的方式进行固定均可。

需要指出的是，本实施方式中，接插端 14 和接插端 15 可以不直接注塑形成在导线 12 的外围，而是在注塑时避开导线 12。具体地，可以在注塑接插端 14 和接插端 15 时，对位于弹性金属丝 11 两端的导线 12 进行固定，以远离接插端 14 和接插

IPR2025-00842; Shokz
Ex. 2018 - Page 1632

端 15 的位置，并进一步在接插端 14 和接插端 15 上分别设置第一走线通道 141 和第二走线通道 151，以在注塑完成后，将导线 12 沿第一走线通道 141 和第二走线通道 151 延伸设置。具体地，在形成第一走线通道 141 和第二走线通道 151 后，可将导线 12 以穿线的方式穿入该第一走线通道 141 和第二走线通道 151。

当然，在其它实施方式中，也可以根据实际情况，将接插端 14 和接插端 15 直接注塑在导线 12 的外围，此处不做具体限定。

具体地，在一实施方式中，第一走线通道 141 可包括第一走线槽 1411 和连通第一走线槽 1411 的第一走线孔 1412。其中，第一走线槽 1411 连通接插端 14 的侧壁面设置，第一走线孔 1412 的一端与第一走线槽 1411 的一端连通，另一端与接插端 14 的外端面连通。接插端 14 处的导线 12 沿第一走线槽 1411 和第一走线孔 1412 延伸并外露于接插端 14 的外端面，以进一步与其它结构连接。

相应地，第二走线通道 151 可包括第二走线槽 1511 和连通第二走线槽 1511 的第二走线孔 1512。其中，第二走线槽 1511 连通接插端 15 的侧壁面设置，第二走线孔 1512 的一端与第二走线槽 1511 的一端连通，另一端与接插端 15 的外端面连通。接插端 15 处的导线 12 沿第二走线槽 1511 和第二走线孔 1512 延伸并外露于接插端 15 的外端面，以进一步与其它结构连接。

其中，接插端 14 的外端面是指接插端 14 远离接插端 15 的一端的端面；相应地，接插端 15 的外端面是指接插端 15 远离接插端 14 的一端的端面。

进一步地，保护套管 16 可注塑形成于弹性金属丝 11、导线 12、固定套管 13、接插端 14 和接插端 15 的外围，从而将保护套管 16 分别与弹性金属丝 11、导线 12、固定套管 13、接插端 14 和接插端 15 固定连接，而无需将保护套管 16 单独注塑形成后再进一步套装在弹性金属丝 11 以及接插端 14、接插端 15 的外围，从而能够简化制作及装配工序，且通过这种方式，能够使得保护套管 16 的固定更加牢靠、稳定。

进一步地，在成型保护套管 16 时，同时与该保护套管 16 一体成型有设置于靠近接插端 15 一侧的壳体护套 17。

其中，壳体护套 17 可与保护套管 16 一体成型而成为一整体，电路壳体 30 可通过与接插端 15 的接插固定而连接设置在耳挂 10 的一端，壳体护套 17 则可进一步以套装的方式包覆于在电路壳体 30 的外围。

其中，保护套管 16 和壳体护套 17 可以由具有一定弹性的软质材料制成，例如软质的硅胶、橡胶等。

具体地，在制造骨传导扬声装置的耳挂 10 时，可通过如下步骤实现：

步骤 S101：利用固定套管 13 将导线 12 固定于弹性金属丝 11 上，其中在弹性金属丝 11 的两端预留出注塑位；

具体地，可以先将弹性金属丝 11 与导线 12 按照预设的方式，如并排放置在一起，然后，将固定套管 13 进一步套设在导线 12 与弹性金属丝 11 的外围，从而将导线 12 固定在弹性金属丝 11 上。

其中，由于弹性金属丝 11 的两端还需要注塑接插端 14 和接插端 15，因此，在固定时，弹性金属丝 11 的两端不能被固定套管 13 完全包裹，而需预留出对应的注塑位，以供接插端 14 和接插端 15 注塑占用。

IPR2025-00842; Shokz
Ex. 2018 - Page 1633

步骤 S102: 在弹性金属丝 11 的两端的注塑位上分别注塑接插端 14 和接插端 15，其中接插端 14 和接插端 15 分别设置有第一走线通道 141 和第二走线通道 151；

步骤 S103：将导线 12 设置成沿第一走线通道 141 和第二走线通道 151 延伸；

具体地，此处可在接插端 14 和接插端 15 成型完成后，进一步通过手动或者通过机器将导线 12 的两端分别穿入第一走线通道 141 和第二走线通道 151。其中，导线 12 位于第一走线通道 141 和第二走线通道 151 之间的部分由固定套管 13 固定于弹性金属丝 11 上。

步骤 S104：在弹性金属丝 11、导线 12、固定套管 13、接插端 14 和接插端 15 的外围注塑形成保护套管 16。

在一实施方式中，在执行步骤 S104 时，进一步以注塑的方式形成与接插端 15 外围的保护套管 16 一体成型的壳体护套 17。

需要指出的是，在其它实施方式中，也可以在安装固定套管 13 时先不设置导线 12，而在接插端 14 和接插端 15 注塑之后，再进一步设置导线 12，具体步骤如下：

步骤 S201：将固定套管 13 套设于弹性金属丝 11 上，其中在弹性金属丝 11 的两端预留出注塑位；

步骤 S202: 在弹性金属丝 11 的两端的注塑位上分别注塑接插端 14 和接插端 15，其中接插端 14 和接插端 15 分别设置有第一走线通道 141 和第二走线通道 151；

步骤 S203：将导线 12 穿设于固定套管 13 的内部，以利用固定套管 13 将导线 12 固定于弹性金属丝 11 上，并进一步将导线 12 设置成沿第一走线通道 141 和第二走线通道 151 延伸。

需要指出的是，通过这种方式，能够避免在对接插端 14 和接插端 15 注塑时受到导线 12 的干扰，从而有利于成型的顺利进行。

其中，本实施方式，以及上述实施方式中方法所涉及到的弹性金属丝 11、导线 12、固定套管 13、接插端 14、接插端 15 与保护套管 16 的结构、作用以及形成方式等均与上述实施方式中的相同，相关详细内容请参见上述实施方式，此处不再赘述。

在一实施方式中，机芯壳体 20 可用于容纳耳机芯 50，并与接插端 14 接插固定。其中，耳机芯 50 和机芯壳体 20 的数量均为两个，分别对应用户的左耳和右耳。

具体地，机芯壳体 20 可以与接插端 14 通过插接、卡接等方式连接，以将机芯壳体 20 与耳挂 10 固定在一起。也就是说，本实施方式中，耳挂 10 与机芯壳体 20 可先分别成型，然后再进一步装配在一起，而不是将二者一体直接成型。

通过这种方式，可以采用各自对应的模具对耳挂 10 和机芯壳体 20 分别成型，而无需采用同一个较大尺寸的模具将二者一体成型，从而可减小模具的尺寸，以降低模具的加工难度，以及成型难度；另外，由于耳挂 10 和机芯壳体 20 分别采用不同的模具加工，在生产制造过程中，在需要对耳挂 10 或机芯壳体 20 中的某一个的形状或者构造进行调整时，仅调整该结构对应的模具即可，而无需对另外一个结构的模具进行调整，从而能够降低生产成本。

当然，在其它实施方式当中，也可以根据情况而使耳挂 10 与机芯壳体 20 通过一体成型得到。

在一实施方式中，机芯壳体 20 设置有与机芯壳体 20 的外端面 21 连通的接插孔

IPR2025-00842; Shokz
Ex. 2018 - Page 1634

22，接插孔 22 的内侧壁上设置有止挡块 23。

其中，机芯壳体 20 的外端面 21 是指机芯壳体 20 朝向耳挂 10 的端面。接插孔 22 用于为耳挂 10 的接插端 14 插入机芯壳体 20 提供容置空间，以便进一步实现接插端 14 与机芯壳体 20 的接插固定。

止挡块 23 可以由接插孔 22 的内侧壁沿垂直于该内侧壁的方向凸出形成。具体地，止挡块 23 可以为多个间隔设置的块状凸起，或者也可以为沿接插孔 22 内侧壁的环状凸起，此处不做具体限定。

其中，接插端 14 包括插入部 142 和两个弹性卡勾 143。

具体地，插入部 142 至少部分插入于接插孔 22 内并抵接于止挡块 23 的外侧面 231 上。其中，插入部 142 的外侧壁的形状与接插孔 22 的内侧壁的形状匹配，以使得插入部 142 至少部分插入于接插孔 22 内时，使得插入部 142 的外侧壁与接插孔 22 的内侧壁抵接。

止挡块 23 的外侧面 231 是指止挡块 23 朝向耳挂 10 设置的一侧面。插入部 142 可进一步包括一朝向机芯壳体 20 的端面 1421，该端面 1421 可与止挡块 23 的外侧面 231 匹配，从而在插入部 142 至少部分插入于接插孔 22 内时，插入部 142 的端面 1421 与止挡块 23 的外侧面 231 抵接。

具体地，机芯壳体 20 的接插孔 22 的沿垂直于接插端 14 相对于机芯壳体 20 的插入方向上的截面形状可为椭圆环形或近椭圆环形，对应地，插入部 142 的横截面可以为与接插孔 22 匹配的近椭圆形，当然，二者的形状还可以为其它，具体可根据实际需求进行设置。

进一步地，两个弹性卡勾 143 可沿垂直于插入方向并排并间隔且对称设置于插入部 142 朝向机芯壳体 20 内部的一侧。其中，每个弹性卡勾 143 可分别包括梁部 1431 和勾部 1432，梁部 1431 与插入部 142 朝向机芯壳体 20 的一侧连接，勾部 1432 设置在梁部 1431 远离插入部 142 的一端，并沿垂直于插入方向延伸。进一步地，每个勾部 1432 设置有连接平行于插入方向的侧面与远离插入部 142 的端面的过渡斜面 14321。

在耳挂 10 与机芯壳体 20 的安装过程当中，接插端 14 由接插孔 22 逐渐进入机芯壳体 20 内部，在到达止挡块 23 的位置时，两个弹性卡勾 143 的勾部 1432 会受到止挡块 23 的阻挡，在外部推力的作用下，止挡块 23 逐渐挤压勾部 1432 的过渡斜面 14321 而使得两个弹性卡勾 143 发生弹性形变而彼此并拢，在过渡斜面 14321 通过止挡块 23 而到达止挡块 23 靠近机芯壳体 20 内部的一侧时，弹性卡勾 143 因失去止挡块 23 的阻挡而弹性回复，并卡置于止挡块 23 朝向机芯壳体 20 内部的内侧面上，从而将止挡块 23 卡置于接插端 14 的插入部 142 和勾部 1432 之间，进而实现机芯壳体 20 与接插端 14 的接插固定。

其中，在一实施方式中，在机芯壳体 20 与接插端 14 接插固定后，插入部 142 部分插入于接插孔 22 内，且在插入部 142 的外露部分呈阶梯状设置，进而形成与机芯壳体 20 的外端面 21 间隔设置的环形台面 1422。

需要指出的是，插入部 142 的外露部分是指插入部 142 外露于机芯壳体 20 的部分，具体地，可以是指外露于机芯壳体 20 且靠近机芯壳体 20 外端面的部分。

IPR2025-00842; Shokz
Ex. 2018 - Page 1635

其中，环形台面 1422 可以与机芯壳体 20 的外端面 21 相对设置，且二者之间的间隔可以是指沿接插方向间隔以及沿垂直于接插方向的间隔。

进一步地，保护套管 16 延伸至环形台面 1422 朝向机芯壳体 20 的外端面 21 的一侧，并在机芯壳体 20 的接插孔 22 与接插端 14 接插固定时，填充于环形台面 1422 与机芯壳体 20 的外端面 21 之间的间隔内，并与机芯壳体 20 弹性抵接，从而使得外部液体难以从接插端 14 与机芯壳体 20 之间的接合处进入机芯壳体 20 内部，进而实现接插端 14 与接插孔 22 之间的密封，以保护机芯壳体 20 内部的耳机芯 50 等，从而能够提高对骨传导扬声装置的防水效果。

具体地，在一实施方式当中，保护套管 16 在环形台面 1422 朝向机芯壳体 20 的外端面的 21 一侧形成一环形抵接面 161。其中，该环形抵接面 161 为保护套管 16 朝向机芯壳体 20 一侧的端面。

进一步地，保护套管 16 还包括位于该环形抵接面 161 内部且相对于环形抵接面 161 凸出设置的环形凸台 162。具体地，该环形凸台 162 具体形成于环形抵接面 161 朝向接插端 14 的一侧，并相对于该环形抵接面 161 沿朝向机芯壳体 20 的方向凸出设置，进一步地，该环形凸台 162 还可直接形成于环形台面 1422 的外围，并覆盖该环形台面 1422。

进一步地，机芯壳体 20 包括用于连接机芯壳体 20 的外端面 21 和接插孔 22 的内侧壁的连接斜面 24。其中，该连接斜面 24 具体为机芯壳体 20 的外端面 21 与接插孔 22 的内侧壁之间的过渡面，该连接斜面 24 与机芯壳体 20 的外端面 21 和接插孔 22 的内侧壁均不在同一平面上。其中，该连接斜面 24 可以为平面，或者也可以根据实际需求而设置成曲面，或者其它形状，此处不做具体限定。

具体地，在机芯壳体 20 与接插端 14 接插固定时，环形抵接面 161 和环形凸台 162 分别与机芯壳体 20 的外端面和连接斜面 24 弹性抵接。

需要指出的是，由于机芯壳体 20 的外端面 21 和连接斜面 24 不在同一平面上，从而使得保护套管 16 与机芯壳体 20 之间的弹性抵接处不位于同一平面上，从而使得外部液体难以由保护套管 16 与机芯壳体 20 之间进入机芯壳体 20 以进一步进入耳机芯 50，从而能够提高骨传导扬声装置的防水效果，以对内部功能结构起到保护作用，进而延长骨传导扬声装置的使用寿命。

其中，在一实施方式中，插入部 142 在环形台面 1422 朝向机芯壳体 20 的外端面 21 的一侧进一步形成有与环形台面 1422 邻接的环形凹槽 1423，其中，环形凸台 162 可形成于环形凹槽 1423 内。

本实施方式中，环形凹槽 1423 可形成于环形台面 1422 朝向机芯壳体 20 的一侧。在一个应用场景中，环形台面 1422 为环形凹槽 1423 的朝向机芯壳体 20 一侧的侧壁面，此时，环形凸台 162 沿该侧壁面形成于环形凹槽 1423 内。

在一实施方式中，耳挂 10 的导线 12 的位于机芯壳体 20 的外部的一端可穿过第二走线通道 151 而进一步连接电路壳体 30 所容纳的控制电路 60、电池 70 等机芯壳体 20 外部的外部电路，另一端则沿第一走线通道 141 而露出于接插端 14 的外端面，并进一步随插入部 142 而通过接插孔 22 而进入机芯壳体 20 内部。

在一实施方式中，机芯壳体 20 可包括主壳体 25 以及隔板组件 26，其中，隔板

IPR2025-00842; Shokz
Ex. 2018 - Page 1636

组件 26 位于主壳体 25 内部，并与主壳体 25 连接，进而将主壳体 25 的内部空间 27 分隔成第一容置空间 271 和靠近接插孔 22 一侧的第二容置空间 272。

具体地，主壳体 25 包括周侧壁 251 以及与周侧壁 251 的一端面连接的底端壁 252，周侧壁 251 与底端壁 252 共同围绕形成一主壳体 25 的内部空间 27。

隔板组件 26 位于主壳体 25 的靠近接插孔 22 的一侧，并包括侧隔板 261 以及底隔板 262。其中，侧隔板 261 可沿垂直于底端壁 252 的方向设置，且侧隔板 261 的两端均与周侧壁 251 连接，从而对主壳体 25 的内部空间 27 进行分隔。底隔板 262 可与底端壁 252 平行或者接近平行且间隔设置，并进一步分别与周侧壁 251 和侧隔板 261 连接，从而将主壳体 25 所形成的内部空间 27 一分为二而形成由侧隔板 261、底隔板 262 和远离接插孔 22 的周侧壁 251、底端壁 252 共同围成的第一容置空间 271，以及由底隔板 262 与侧隔板 261 和靠近接插孔 22 的周侧壁 251 共同围成的第二容置空间 272。其中，第二容置空间 272 可小于第一容置空间 271。

当然，隔板组件 26 也可以通过其它的设置方式对主壳体 25 的内部空间 27 进行划分，此处不做具体限定。

进一步地，耳机芯 50 包括功能组件 51，该功能组件 51 设置于第一容置空间 271 内，可用于振动发声。骨传导扬声装置可进一步包括一端与功能组件 51 连接的导线 80，该导线 80 的另一端可由第一容置空间 271 而延伸至第二容置空间 272 内。

具体地，侧隔板 261 可在远离底端壁 252 的顶部边缘设置走线槽 2611，该走线槽 2611 可连通第一容置空间 271 和第二容置空间 272。进一步地，导线 12 的远离功能组件的一端经由该走线槽延伸至第二容置空间 272 内。

另外，耳挂 10 的导线 12 的远离电路壳体 30 的一端随插入部 142 进入机芯壳体 20 内部后，可进一步延伸入第二容置空间 272 内，并在第二容置空间 272 内与导线 80 电连接，以形成从第一容置空间 271 经由第二容置空间 272 而连接至外部电路的导线通路，从而通过该导线通路将功能组件 51 与位于机芯壳体 20 外部的外部电路电连接。

具体地，底隔板 262 上可设置有走线孔 2621，该走线孔 2621 将接插孔 22 与第二容置空间 272 连通，从而使得由接插孔 22 进入机芯壳体 20 的导线 12 能够经由该走线孔 2621 而延伸至第二容置空间 272。

其中，导线 12 与导线 80 在第二容置空间 272 内连接后，盘绕设置于第二容置空间 272 内。具体可通过焊接的方式将导线 12 与导线 80 连接于一起，进而将功能组件 51 与外部电路电连接，以通过外部电路为功能组件 51 的正常工作提供电量或者为耳机芯 50 传输数据。

需要指出的是，在对骨传导扬声装置装配时，导线往往会长于实际需求，以便于装配。然而耳机芯 50 处多余的导线若不能够进行合理的放置，则容易在功能组件 51 工作时产生振动而发出异响，从而降低骨传导扬声装置的声音质量，从而影响用户的听音感受。本实施方式中，在机芯壳体 20 的主壳体 25 所形成的内部空间 27 当中分离出第二容置空间 272 以用于容置多余的导线 12 和导线 80，从而避免或者减少多余的导线对因振动而对骨传导扬声装置所发出的声音的影响，以提高声音质量。

在一实施方式中，隔板组件 26 进一步包括内隔板 263，内隔板 263 进一步将第

IPR2025-00842; Shokz
Ex. 2018 - Page 1637

二容置空间 272 分隔成两个子容置空间 2721。具体地，该内隔板 263 垂直于主壳体 25 的底端壁 252 设置，分别与侧隔板 261 和周侧壁 251 连接，并进一步延伸至走线孔 2621 处，从而在将第二容置空间 272 分隔为两个子容置空间 2721 的同时，还进一步将走线孔 2621 划分为两个，两个走线孔 2621 可分别与对应的子容置空间 2721 连通。

本实施方式中，导线 12 和导线 80 可分别为两根，其中两根导线 12 分别沿对应的走线孔 2621 而分开延伸至各自的子容置空间 2721 内，而两根导线 80 则仍一起通过走线槽 2611 而进入第二容置空间 272，并在进入第二容置空间 272 后分开，并分别在对应的子容置空间 2721 内与对应的导线 12 焊接于一起，并进一步盘绕设置于对应的子容置空间 2721 内。

进一步地，在一实施方式中，第二容置空间 272 可进一步由密封胶进行填充。通过这种方式，能够将第二容置空间 272 内所容置的导线 12 和导线 80 进一步固定，以进一步降低由于导线振动而对声音质量造成的不良影响，从而提高骨传导扬声装置的声音质量，同时能够对导线 12 与导线 80 之间的焊接点起到保护作用，另外，将第二容置空间 272 密封设置还能够达到防水防尘的目的。

在一实施方式中，电路壳体 30 与接插端 15 接插固定，从而将电路壳体 30 固定在耳挂 10 远离机芯壳体 20 的一端。其中，在用户佩戴使用时，容纳电池 70 的电路壳体 30 和容纳控制电路 60 的电路壳体 30 可分别对应用户的左侧和右侧，二者在与对应的接插端 15 的接插方式上可以不同。

具体地，电路壳体 30 可以与接插端 15 通过插接、卡接等方式连接。也就是说，本实施方式中，耳挂 10 与电路壳体 30 可先分别独立成型，然后并在成型完成后再进一步装配在一起，而不是直接将二者一体成型。

通过这种方式，可以采用各自对应的模具对耳挂 10 和电路壳体 30 分别成型，而无需采用同一个较大尺寸的模具将二者一体成型，从而可减小成型模具的尺寸，以降低模具的加工难度，以及成型难度；另外，由于耳挂 10 和电路壳体 30 分别采用不同的模具加工，在生产制造过程中，在需要对耳挂 10 或电路壳体 30 中的某一个的形状或者构造进行调整时，仅调整该结构对应的模具即可，而无需对另外一个结构的模具进行调整，从而能够降低生产成本。

进一步地，在一实施方式中，电路壳体 30 设置有接插孔 31，该接插孔 31 的内表面的形状可与接插端 15 的至少部分外表面的形状匹配，从而使得接插端 15 能够至少部分插入至接插孔 31 内。

进一步地，在接插端 15 的相对两侧分别设置有与接插端 15 相对于接插孔 31 的插入方向垂直设置的开槽 152。具体地，两个开槽 152 对称且间隔设置于接插端 15 的相对两侧，且均在沿插入方向的垂直方向上连通接插端 15 的侧壁。

相应地，电路壳体 30 的第一侧壁 30a 上设置有与两个开槽 152 位置对应的贯穿该第一侧壁 30a 的两个通孔 32。

其中，电路壳体 30 可以呈扁平状设置，例如，电路壳体 30 于第二接插孔 31 处的横截面可以为椭圆形，或者能够形成扁平状设置的其它形状。本实施方式中，电路壳体 30 的面积较大的两个相对设置的侧壁为主侧壁 33，连接两个主侧壁 33 的面

IPR2025-00842; Shokz
Ex. 2018 - Page 1638

积较小的且相对设置的两对侧壁为辅侧壁 34。本实施方式中，电路壳体 30 的第一侧壁 30a 既可以为该电路壳体 30 的主侧壁 33 也可以为电路壳体 30 的辅侧壁 34，具体可以根据实际需求进行设定。

当然，在其它实施方式中，电路壳体 30 于接插孔 31 处的横截面还可以为圆形等其它形状，具体可根据实际需求进行设置。

进一步地，骨传导扬声装置还可以包括固定件 81，固定件 81 包括两条平行设置的插脚 811 和用于连接插脚 811 的连接部 812。具体地，连接部 812 可垂直连接设置于两条插脚 811 的朝向同一方向的一端，从而形成 U 型的固定件 81。

其中，两个插脚 811 远离连接部 812 的一端从电路壳体 30 的外侧经通孔 32 插入至开槽 152，而将连接部 812 阻挡于电路壳体 30 的外侧，进而实现电路壳体 30 与接插端 15 的接插固定。

进一步地，在一实施方式中，电路壳体 30 的第一侧壁 30a 上进一步形成有用于连接两个通孔 32 的条状凹槽 35，在利用固定件 81 接插固定时，连接部 812 能够进一步部分或者全部沉设于条状凹槽 35 内。从而一方面能够使得骨传导扬声装置整体更加统一，进而使得套装在电路壳体 30 外围的壳体护套 17 上无需专门成型设置与连接部 812 对应的凹槽，简化壳体护套 17 的模具；另一方面，还能够在一定程度上减小骨传导扬声装置整体所占用的空间。

其中，在一个应用场景中，可以在将连接部 812 部分或者全部沉设于条状凹槽 35 内后，进一步在条状凹槽 35 内施胶，通过这种方式，一方面能够将固定件 81 固定在电路壳体 30 上，从而使得接插端 15 与接插孔 31 之间的接插更加稳固；另一方面，在连接部 812 沉设于条状凹槽 35 后，进一步通过施胶将凹槽 35 填平，以与电路壳体 30 的第一侧壁 30a 保持一致，从而在套设壳体护套 17 后，使得该凹槽 35 与周边结构之间更加平整连贯。

其中，在一实施方式中，与电路壳体 30 的第一侧壁 30a 相对的电路壳体 30 的第二侧壁 30b 上进一步设置有与通孔 32 相对的通孔 36，插脚 811 进一步经开槽 152 插入至通孔 36 内。

具体地，电路壳体 30 的第一侧壁 30a 和电路壳体 30 的第二侧壁 30b 均可为电路壳体 30 的主侧壁 33 或者辅侧壁 34。在本实施方式中，电路壳体 30 的第一侧壁 30a 和第二侧壁 30b 分别为电路壳体 30 的两个相对设置的主侧壁 33。也就是说，两个通孔 32 以及两个通孔 36 分别设置于电路壳体 30 的面积较大的侧壁上，进而固定件 81 的两个插脚 811 之间可以设置较大的间隔，以增大固定件 81 的跨度，从而能够提高接插端 15 与接插孔 31 之间接插的稳定性。

本实施方式中，插脚 811 经通孔 32 插入至开槽 152 内，并进一步经开槽 152 插入至通孔 36 内，也就是说插脚 811 能够将电路壳体 30 的两相对主侧壁 33 以及接插端 15 完全贯穿并固定于一起，从而能够使得接插端 15 与电路壳体 30 之间接插更加牢固。

进一步地，如上述实施方式中所述，在保护套管 16 成型时，同时与该保护套管 16 一体成型有设置于靠近接插端 15 一侧的壳体护套 17。

其中，该壳体护套 17 与电路壳体 30 分别成型，并使得该壳体护套 17 的内侧壁

IPR2025-00842; Shokz
Ex. 2018 - Page 1639

的形状与电路壳体 30 的外侧壁匹配，进而在二者分别成型完成之后，将壳体护套 17 以套装的方式包覆于电路壳体 30 的外围。

需要指出的是，由于在壳体护套 17 成型时的环境温度较高，而高温环境可能会对电路壳体 30 所容纳的控制电路 60 或电池 70 造成一定的损伤，因此，在成型阶段，将电路壳体 30 和壳体护套 17 分别成型，然后再套装在一起，从而能够避免壳体护套 17 在成型时，高温对控制电路 60 或电池 70 所带来的损伤，从而降低成型对控制电路 60 或电池 70 所带来的不利影响。

进一步地，壳体护套 17 可以为一端开口的袋状结构，以使得电路壳体 30 经由壳体护套 17 的开口端进入壳体护套 17 的内部。

本实施方式中，壳体护套 17 在与保护套管 16 一体成型而形成之后，可以通过从开口端对壳体护套 17 进行翻卷而将其从模具上取下；在对壳体护套 17 进行外观检查以及丝印等表面处理时，可进一步将壳体护套 17 通过开口而套设在预设结构上进行操作，并在操作完成后，进一步通过从开口处对壳体护套 17 进行翻卷而将其从该预设结构上取下；在检查及处理等操作完成后，可进一步通过开口而将壳体护套 17 套装在电路壳体 30 的外围。上述操作中，在将壳体护套 17 取下并不限定于上述翻卷的方式，还可通过充气等方式，此处不做具体限定。

具体地，壳体护套 17 的开口端为壳体护套 17 背离保护套管 16 的一端，从而该电路壳体 30 从壳体护套 17 远离保护套管 16 的一端进入壳体护套 17 的内部，以为该壳体护套 17 所包覆。

在一实施方式中，壳体护套 17 的开口端设置有向内凸出的环状凸缘 171。进一步地，电路壳体 30 远离耳挂 10 的端部呈阶梯状设置，进而形成环形台面 37。当壳体护套 17 包覆于电路壳体 30 的外围时，环状凸缘 171 抵接于环形台面 37 上。

具体地，环状凸缘 171 由壳体护套 17 的开口端的内壁面朝向壳体护套 17 内部凸出一定的厚度形成，并包括一朝向耳挂 10 的凸缘面 172。

其中，环形台面 37 与凸缘面 172 相对，并朝向电路壳体 30 背离耳挂 10 的方向。

该环状凸缘 171 的凸缘面 172 的高度不大于环形台面 37 的高度，从而使得在环状凸缘 171 的凸缘面 172 与环形台面 37 相抵接时，壳体护套 17 的内壁面能够与电路壳体 30 的侧壁面充分抵接，从而使得壳体护套 17 能够紧密包覆于电路壳体 30 的外围。

进一步地，在一实施方式中，在环状凸缘 171 与环形台面 37 上的接合区域内可进一步施加有密封胶。具体地，在对壳体护套 17 进行套装时，可以在环形台面 37 上涂覆密封胶，从而将壳体护套 17 与电路壳体 30 进行密封连接。

其中，在一实施方式中，电路壳体 30 上还设置有定位块 38，该定位块 38 设置于环形台面 37 上，并沿电路壳体 30 背离耳挂 10 的方向延伸。具体地，该定位块 38 可设置于电路壳体 30 的辅侧壁 34 上，且该定位块 38 在辅侧壁 34 上凸出的厚度与环形台面 37 的高度一致。其中，定位块 38 的数量可以根据需求设置一个或者多个。

相应地，壳体护套 17 的环状凸缘 171 处设置有与定位块 38 对应的定位槽 173，从而在壳体护套 17 包覆于电路壳体 30 的外围时，该定位槽 173 覆盖在至少部分定

IPR2025-00842; Shokz
Ex. 2018 - Page 1640

位块 38 上。

通过这种方式，在对壳体护套 17 进行套装时，可以根据定位块 38 和定位槽 173 的位置对壳体护套 17 进行定位，以方便操作人员快速、准确得安装。当然，在其它实施方式中，也可以根据实际需求不设置定位块。

在一实施方式中，电路壳体 30 包括彼此扣合的两个子壳体，分别为第一子壳体 301 和第二子壳体 302。具体地，两个子壳体可以沿电路壳体 30 的中线而对称扣合，或者也可以根据实际需求通过其他方式进行扣合。另外，用于容纳控制电路 60 的电路壳体 30 的两个子壳体的扣合方式可以与用于容纳电池 70 的电路壳体 30 的两个子壳体的扣合方式可以相同，也可以不同。

在一个应用场景中，电路壳体 30 的环形台面 37 可形成于第一子壳体 301 上，两个子壳体在环形台面 37 朝向耳挂 10 的一侧接合，从而使得壳体护套 17 能够对两个子壳体的接合缝进行全覆盖，从而能够在一定程度上对电路壳体 30 的内部空间进行密封，以提高骨传导扬声装置的防水效果。

在另一应用场景中，电路壳体 30 的环形台面 37 还可以由两个子壳体共同形成，从而使得二者至少部分部位在环形台面 37 背离耳挂 10 的一侧结合。此时，壳体护套 17 不能够覆盖两个子壳体的位于环形台面 37 背离耳挂 10 一侧的接合缝。本应用场景中，可以进一步通过其它方式对该部分的接合缝进行覆盖。

进一步地，在一实施方式中，两个子壳体彼此对接的接合面为互相契合的阶梯形状。

具体地，第一子壳体 301 的朝向第二子壳体 302 的端面为阶梯状的第一阶梯面 3011，第二子壳体 302 的朝向第一子壳体 301 的端面为阶梯状的第二阶梯面 3021。第一阶梯面 3011 和第二阶梯面 3021 的形状及尺寸均一致，从而能够互相配合抵接在一起。

通过这种方式，电路壳体 30 的两个子壳体互相抵接的结合面成阶梯状而不在同一平面上，从而能够阻挡电路壳体 30 外部的液体由电路壳体 30 的外围进入电路壳体 30 的内部，进而进一步提高骨传导扬声装置的防水效果，以对电路壳体 30 内部的控制电路 60 或者电池 70 等进行保护。

进一步地，在第二子壳体 302 的第二阶梯面 3021 上设置有朝向第一子壳体 30a 的安装卡勾 3022，对应地，第一子壳体 301 的内部设置有与该安装卡勾 3022 匹配的安装勾槽 3012。在对第一子壳体 301 和第二子壳体 302 进行安装时，安装卡勾 3022 能够在外部推力越过安装勾槽 3012 的外侧壁而进入该安装勾槽 3012，并使得安装卡勾 3022 的勾部勾接安装勾槽 3012 的内侧壁，从而实现第一子壳体 301 与第二子壳体 302 的扣合。

在一实施方式中，骨传导扬声装置进一步设置有按键机构。

具体地，电路壳体 30 的辅侧壁 34 的外表面上设置有第一凹陷区 341，该第一凹陷区 341 内进一步设置有按键孔 342，该按键孔 342 连通辅侧壁 34 的外表面和内表面。

其中，电路壳体 30 的辅侧壁 34 可以包括，在用户佩戴该骨传导扬声装置时，朝向用户头部后侧的辅侧壁 34，也可以包括在用户佩戴时，朝向用户头部下侧的辅

IPR2025-00842; Shokz
Ex. 2018 - Page 1641

侧壁 34。

第一凹陷区 341 的数量可以为一个或者多个，且每个第一凹陷区 341 内可以设置一个或者多个按键孔 342，具体可以根据实际需求设置，此处不做具体限定。

本实施方式中，骨传导扬声装置还进一步包括弹性衬垫 82、按键 83，控制电路 60 包括按键电路板 61。

其中，弹性衬垫 82 设置于第一凹陷区 341，具体固定于第一凹陷区 341 对应的辅侧壁 34 的外表面上，以覆盖于按键孔 342 的外部从而避免外部液体通过按键孔 342 进入到电路壳体 30 的内部，以起到密封防水的作用。

进一步地，该弹性衬垫 82 上设置有与按键孔 342 对应的第二凹陷区 821，该第二凹陷区 821 延伸至按键孔 342 的内部。

具体地，该弹性衬垫 82 可以由软性材质制成，例如软性的硅胶、橡胶等。且该弹性衬垫 82 较薄，直接与辅侧壁 34 的外表面粘接时，难以粘接牢靠。

因此，在一实施方式中，可进一步在弹性衬垫 82 与电路壳体 30 之间设置刚性衬垫 84，该钢性衬垫 84 与弹性衬垫 82 彼此贴靠固定，具体可以通过贴合、粘接、注塑等的方式实现，并进一步将钢性衬垫 84 与辅侧壁 34 进行粘接，具体可以通过采用双面胶进行粘接，以在钢性衬垫 84 与辅侧壁 34 之间形成一粘胶层，从而使得弹性衬垫 82 能够牢靠地固定在辅侧壁 34 的外表面。而且，由于弹性衬垫 82 质软且薄，因此在用户按压按键的过程当中难以保持平整状态，而通过与钢性衬垫 84 的贴靠固定，能够使弹性衬垫 82 保持平整。

进一步地，钢性衬垫 84 上设置有允许第二凹陷区 821 通过的通孔 841，从而使得弹性衬垫 82 的第二凹陷区 821 能够进一步通过通孔 841 而延伸至按键孔 342 的内部。

具体地，钢性衬垫 84 可以由不锈钢制成，或者其它钢性材料，如塑胶等硬质材料。并可通过一体成型而与弹性衬垫 82 贴靠在一起。

另外，按键 83 包括按键本体 831，以及设置在按键本体 831 一侧凸出设置的按键触头 832。其中，按键本体 831 设置于弹性衬垫 82 远离电路壳体 30 的一侧，且按键触头 832 延伸至第二凹陷区 821 内，以随第二凹陷区 821 而延伸至按键孔 342 内部。

进一步地，由于本实施方式中骨传导扬声装置较为轻薄，按键 83 的按压行程较短，若采用软质的按键则会降低用户按压手感而带来不好的体验。本实施方式中，按键 83 可由硬质的塑胶材料制成，以使得用户按压时能够具有良好的手感。

进一步地，按键电路板 61 设置于电路壳体 30 的内部，其上设置有与按键孔 342 对应的按键开关 611。从而在用户按压按键时，按键触头 832 接触并触发按键开关 611，以进一步实现相应的功能。

本实施方式中，通过在弹性衬垫 82 上设置第二凹陷区 821，一方面，第二凹陷区 821 的设置能够覆盖整个按键孔 342，从而能够同时提高防水效果；另一方面，在自然状态下，按键触头 832 便能够通过第二凹陷区 821 而延伸入按键孔 342 内部，从而能够缩短按键按压的行程，以减小按键结构所占用的空间，进而使骨传导扬声装置既能够有好的防水性能，又占用较少的空间。

IPR2025-00842; Shokz
Ex. 2018 - Page 1642

在一实施方式中，按键 83 可包括按键单体 833，按键单体 833 的数量可以为一个或者多个。

在一个应用场景中，按键 83 可包括至少两个彼此间隔设置的按键单体 833 以及用于连接按键单体 833 的连接部 834。其中，多个按键单体 833 以及连接部 834 可一体成型。对应地，每个按键单体 833 对应设置有一个按键触头 832，并进而对应一个按键孔 342 以及一个按键开关 611。

也就是说，本实施方式中，对应于一个第一凹陷区 341 可以设置多个按键单体 833，用户可通过按压不同的按键单体 833 而触发不同的按键开关 611，并进而实现多种功能。

进一步地，弹性衬垫 82 上可设置用于支撑连接部 834 的弹性凸块 822。由于按键 83 包括连接设置的多个按键单体 833，弹性凸块 822 的设置使得用户在按压其中一个按键单体 833 时，能够使得该按键单体 833 受到单独的按压，而避免通过联动而将其它的按键单体 833 一并按压的情况发生，从而能够准确得触发对应的按键开关 611。需要指出的，该弹性凸块 822 并非是必要的，例如也可以是不具有弹性的凸出结构，或者也可以不设置凸出结构，具体可根据实际情况进行设置。

在一实施方式中，壳体护套 17 的内壁上设置有与按键对应的凹槽 174，从而能够以套装方式包覆于电路壳体 30 和按键的外围。

在一实施方式中，骨传导扬声装置还进一步包括有至少一个导电柱 85，容纳于电路壳体 30 内部的控制电路 60 还包括主控电路板 62，该导电柱 85 可用于连接电路壳体 30 内部的主控电路板 62 以及电路壳体 30 外部的充电电路和/或数据传输线路等，以对骨传导扬声装置进行充电和/或数据传输等。

相应地，电路壳体 30 的主侧壁 33 上设置至少一个安装孔 331，导电柱 85 可插置于对应的安装孔 331 内。其中，导电柱 85 和安装孔 331 可一一对应，本实施方式中，导电柱 85 和安装孔 331 的数量均为四个，四个导电柱 85 分别插置于对应的安装孔 331 内，并排呈一条直线而均匀间隔设置。其中，位于外侧的两个导电柱 85 可作为充电接口，而位于中间的两个导电柱 85 可作为数据传输接口。当然，导电柱 85 以及安装孔 331 也可以按照其它的排布方式进行设置，此处不做具体限定。

其中，导电柱 85 可包括插置于安装孔 331 内的柱状本体 851。其中柱状本体 851 的外周面上设置有定位凸台 852，该定位凸台 852 可用于与主侧壁 33 的内表面卡接，进而将导电柱 85 固定于安装孔 331。

具体地，定位凸台 852 可以绕柱状本体 851 的周向呈环形设置，进一步地，在环形的定位凸台 852 朝向电路壳体 30 内部的一侧设置有连接柱状本体 851 外周面以及定位凸台 852 的延伸斜面 853。在安装导电柱 85 时，将该导电柱 85 由电路壳体 30 的外部，沿延伸斜面 853 而逐渐插入安装孔 331 而进入电路壳体 30 的内部，并进而通过定位凸台 852，在定位凸台 852 完全通过安装孔 331 之后，该定位凸台 852 朝向电路壳体 30 外部的台面与主侧壁 33 的内表面卡接，进而将导电柱 85 固定于安装孔 331 内。

上述方式中，定位凸台 852 的设置使得在装配过程中，导电柱 85 能够从电路壳体 30 的主侧壁 33 的外表面插入安装孔 331 后，并可通过按压的方式即可将定位凸

IPR2025-00842; Shokz
Ex. 2018 - Page 1643

台 852 按压入安装孔 331 内，从而与电路壳体 30 的主侧壁 33 的内表面卡接固定，而无需从电路壳体 30 的内部进行安装，从而使得骨传导扬声装置的装配更加便捷，提高生产装配效率.进一步地，延伸斜面 853 的设置使得在装配过程中，定位凸台 852 能够更加顺利地通过安装孔 331。定位凸台 852 的设置则能够使得导电柱 85 进入安装孔 331 内时与主侧壁 33 的内表面卡接而不易从导电孔内划出，从而能够将导电柱 85 牢靠地固定于安装孔 331 内。

具体地，在一实施方式中，柱状本体 851 沿柱状本体 851 相对于安装孔 331 的插入方向划分为第一柱状本体 8511 和第二柱状本体 8512，二者可由导电的金属材质，如铜、银或者合金等一体成型而为一整体结构。其中，在垂直于导电柱 85 插入安装孔 331 的插入方向上，第一柱状本体 8511 的横截面可大于第二柱状本体 8512 的横截面。其中，定位凸台 852 可设置于第二柱状本体 8512 上。

相应地，安装孔 331 沿插入方向划分为横截面与第一柱状本体 851 和第二柱状本体 851 对应的第一孔段 3311 和第二孔段 3312，进而在第一孔段 3311 和第二孔段 3312 的连接处形成一环形台面 3313，其中，该环形台面 3313 与主侧壁 33 的外表面连通。

进一步地，当柱状本体 851 插置于安装孔 331 内时，第一柱状本体 8511 朝向第二柱状本体 8512 的一侧支撑于环形台面 3313 上，同时，位于第二柱状本体 8512 外周面上的定位凸台 852 朝向第一柱状本体 8511 的一侧卡接于主侧壁 33 的内表面上，进而将导电柱 85 从安装孔 331 周围的主侧壁 33 的内外两侧面同时卡接，从而将导电柱 85 固定于安装孔 331 内。

在一实施方式中，柱状本体 851 沿轴向设置有容置腔 8513，容置腔 8513 的开口端于第二柱状本体 8512 朝向电路壳体 30 内部的端面上。具体地，该容置腔 8513 可沿平行于插入方向而贯通至第二柱状本体 8512 的位于电路壳体 30 内部一侧的部分，并在到达定位凸台 852 之前终止。当然，在其它实施方式当中，可以根据需求设置容置腔 8513 的具体位置，此处不做限定。

进一步地，导电柱 85 包括设置于容置腔 8513 内的弹簧 854 以及导电触头 855，导电触头 855 的一端可于容置腔 8513 内部与弹簧 854 抵接，另一端从容置腔 8513 的开口端外露于电路壳体 30 的内部。其中，导电触头 855 的材质可与柱状本体 851 的材质相同，弹簧 854 可以通过一定的手段如粘接、焊接等方式与第二柱状本体 851 以及导电触头 855 连接，或者还可以直接放置于容置腔 8513 内，并通过柱状本体 851 与电路壳体 30 的主侧壁 33 的卡接以及导电触头 855 与主控电路板 62 的抵接而弹性夹持于容置腔 8513 内部。

进一步地，电路壳体 30 内部的主控电路板 62 上设置有与导电柱 85 位置对应的触点 621，具体如图 7 所示。具体地，主控电路板 62 包括面积较大的主表面 622 以及连接主表面 622 的面积较小的侧表面 623，其中，主控电路板 62 的主表面 622 可平行或者近似平行于电路壳体 30 的主侧壁 33，其中，触点 621 对应设置于主控电路板 62 的主表面 622 上。

其中，导电柱 85 插入安装孔 331 的插入方向与导电柱 85 的轴向平行，并垂直于主侧壁 33，进而垂直于主控电路板 62 的主表面 622。在将导电柱 85 安装于安装

IPR2025-00842; Shokz
Ex. 2018 - Page 1644

孔 331 内后，弹簧 854 受到导电触头 855 以及柱状本体 851 的夹持而产生弹性形变，以将导电触头 855 弹性压持于对应的触点 621 上，从而实现导电柱 85 与主控电路板 62 的电连接。

在一实施方式中，骨传导扬声装置还进一步包括一位于电路壳体 30 内部的辅助片 86。

该辅助片 86 包括一板体 861，该板体 861 上设置有镂空区 8611，该板体 861 可通过热熔或者热压、粘接等方式设置于主侧壁 33 的内表面上，并使得设置于主侧壁 33 上的安装孔 331 位于镂空区 8611 内部。具体地，板体 861 的板面可平行贴靠于主侧壁 33 的内表面上。

其中，该辅助片 86 具有一定的厚度，在其设置于主侧壁 33 的内表面上后，与该辅助片 86 的镂空区 8611 的内侧壁与主侧壁 33 共同构成一位于插置于安装孔 331 内的导电柱 85 外围的胶槽 87。

进一步地，可在胶槽 87 内施加密封胶，从而从电路壳体 30 的内部对安装孔 331 进行密封，以提高电路壳体 30 的密闭性，进而提高骨传导扬声装置的防水性能。

其中，该辅助片 86 的材质可与电路壳体 30 的材质相同，并与电路壳体 30 分别成型。需要指出的是，在电路壳体 30 成型阶段，安装孔 331 附近往往还具有其它结构，例如需要成型按键孔 342 等，这些结构在成型时所对应的模具可能需要从电路壳体 30 的内部退出，而此时若直接在电路壳体 30 内部一体成型对应于安装孔 331 的胶槽 87，则胶槽 87 的凸起可能会干涉这些结构的模具的顺利退出，从而为生产带来不便。本实施方式中，辅助片 86 与电路壳体 30 分别为独立的结构，在二者分别成型后，可通过将辅助片 86 安装于电路壳体 30 的内部而与电路壳体 30 的主侧壁 33 共同构成胶槽 87，从而在电路壳体 30 的成型阶段不会阻挡部分结构的模具从电路壳体 30 的内部退出，从而有利于生产的顺利进行。

在一实施方式中，在对电路壳体 30 进行成型时，模具的退出仅占用胶槽 87 所占据的空间的部分空间，从而，可以在不影响退模的情况下，在主侧壁 33 的内表面上一体成型胶槽 87 的一部分，而胶槽 87 的另一部分仍可由辅助片 86 辅助构成。

具体地，主侧壁 33 的内表面上一体成型有第一条状凸肋 332，该第一条状凸肋 332 所在的位置不影响电路壳体 30 的模具退模。辅助片 86 的镂空区 8611 设置有一缺口 8612。其中，第一条状凸肋 332 与该缺口 8612 对应。在电路壳体 30 和辅助片 86 分别成型之后，可将该辅助片 86 于主侧壁 33 的内表面，以使得第一条状凸肋 332 至少部分嵌合于缺口 8612 处，进而利用第一条状凸肋 332 和辅助片 86 配合使得胶槽 87 呈闭合设置。

本实施方式中，由于第一条状凸肋 332 不会对模具的退出产生阻挡，因此，胶槽 87 的侧壁可由一体成型于主侧壁 33 内表面的第一条状凸肋 332 与辅助片 86 共同构成。

进一步地，在一实施方式中，第一条状凸肋 332 还进一步延伸成与板体 861 的侧边缘 8613 抵接，进而对板体 861 进行定位。

具体地，该第一条状凸肋 332 包括凸肋主体 3321 和定位臂 3322，其中，凸肋主体 3321 用于与镂空区 8611 的缺口 8612 匹配并与其嵌合，从而共同形成胶槽 87

IPR2025-00842; Shokz
Ex. 2018 - Page 1645

的侧壁；而定位臂 3322 则由凸肋主体 3321 的一端进一步延伸而成，并延伸至板体 861 的一侧边缘 8613 处与该侧边缘 8613 抵接，从而对该板体 861 于该侧边缘 8613 处进行定位。

其中，第一条状凸肋 332 在主侧壁 33 的内表面上凸出的高度可大于辅助片 86 的厚度，当然，也可以小于或者等于，只要能够与辅助片 86 共同构成胶槽 87，以及能够对辅助片 86 的板体 861 起到定位作用即可，此处不做具体限定。

在一实施方式中，板体 861 上进一步设置有定位孔 8614，其中，定位孔 8614 贯通板体 861 的主板面设置。进一步地，主侧壁 33 的内表面上一体成型有与定位孔 8614 对应的定位柱 333，在将辅助片 86 设置在主侧壁 33 的内表面后，该定位柱 333 插置于定位孔 8614 内，从而进一步对辅助片进行定位。

其中，定位孔 8614 和定位柱 333 的数量一致，本实施方式中，二者的数量均为两个。

在一个应用场景中，板体 861 的侧边缘 8613 形成有至少两个凸耳 8615，两个定位孔 8614 可分别设置于对应的凸耳 8615 上。

进一步地，主侧壁 33 的内表面上一体成型有一第二条状凸肋 334，该第二条状凸肋 334 可沿朝向辅侧壁 34 的方向延伸设置，并可与第一条状凸肋 332 的定位臂 3322 的延伸方向互相垂直。

对应地，板体 861 上还设置有与第二条状凸肋 334 对应的条状定位槽 8616，该定位槽 8616 沿远离该主侧壁 33 的方向凹陷设置，且其一端与板体 861 的侧边缘 8613 连接并可与该侧边缘 8613 垂直设置。

在一个应用场景中，定位槽 8616 可以仅由板体 861 的贴合主侧壁 33 的表面凹陷形成，定位槽 8616 的深度小于板体 861 的厚度，此时，板体 861 的与凹陷的表面相背设置的面不受定位槽 8616 的影响；在另一个应用场景中，定位槽 8616 的深度大于板体 861 的深度，从而使得在板体 861 的靠近主侧壁 33 的表面凹陷时，另一相对表面朝向凹陷的方向凸出，从而配合形成定位槽 8616。

具体地，在将辅助片 86 设置在主侧壁 33 的内表面后，第二条状凸肋 334 嵌入于条状定位槽 8616 内，以进一步对板体 861 进行定位。

在一实施方式中，按键电路板 61 垂直于主控电路板 62 而与电路壳体 30 的辅侧壁 34 平行间隔设置。具体地，如上所述，按键机构所对应的辅侧壁 34 可包括两种，一种是在用户佩戴该骨传导扬声装置时，朝向用户头部后侧的辅侧壁 34，另一种是在用户佩戴时朝向用户头部下侧的辅侧壁 34。本实施方式中，按键电路板 61 可以为两个，并分别与对应的两种辅侧壁 34 平行间隔设置。

其中，按键电路板 61 可设置于辅助片 86 的板体 861 的朝向辅侧壁 34 的一侧。进一步地，辅助片 86 包括相对于板体 861 凸出设置的压持脚 862。具体地，压持脚 862 沿垂直于板体 861 的主表面的方向凸出设置于板体 861 的朝向辅侧壁 34 的侧边缘处，且压持脚 862 的数量可以为一个或者多个。本实施方式中，压持脚 862 可通过其朝向辅侧壁 34 的侧面而将按键电路板 61 压持于辅侧壁 34 的内表面上，从而对按键电路板 61 起到固定的作用。

在一实施方式中，主控电路板 62 与主侧壁 33 间隔设置，而辅助片 86 的板体

IPR2025-00842; Shokz
Ex. 2018 - Page 1646

861 的主表面与主侧壁 33 平行而进一步与主控电路板 62 间隔设置。

其中，压持脚 862 具体由板体 861 沿背离辅助片 86 所靠近的电路壳体 30 的主侧壁 33 且朝向主控电路板 62 的方向凸出，并延伸至主控电路板 62 的板面处以对主控电路板 62 起到压持作用，从而使得主控电路板 62 支撑于至少部分压持脚 862 上。

在一实施方式中，壳体护套 17 上设置有与所述导电柱 85 对应的外露孔 175，在将壳体护套 17 套装在电路壳体 30 外围后，导电柱 85 位于电路壳体 30 外部的一端进一步通过该外露孔 175 外露，进而与骨传导扬声装置外部的电路连接，以使得该骨传导扬声装置通过导电柱进行电量供应或者数据传输。

进一步地，电路壳体 30 的外表面凹陷设置有环绕多个安装孔 331 的胶槽 39。具体地，胶槽 39 可为椭圆环形，多个安装孔 331 分别设置于椭圆环形的胶槽 39 所环绕的电路壳体 30 上。

本实施方式中，该胶槽 39 内施加有密封胶，进而壳体护套 17 与电路壳体 30 装配完成后，壳体护套 17 能够通过该密封胶在安装孔 331 的外围与电路壳体 30 密封连接，从而避免外部液体通过外露孔 175 而进入壳体护套 17 内部时，壳体护套 17 在电路壳体 30 外围产生滑动，且能够进一步从电路壳体 30 的外部对安装孔 331 进行密封，以进一步提高电路壳体 30 的密闭性，进而进一步提高骨传导扬声装置的防水性能。

在一实施方式中，电路壳体 30 在远离耳挂 10 的一端进一步设置有接插端 3a，后挂 40 包括弹性金属丝 41 以及设置于弹性金属丝 41 的两端的接插端 42，其中接插端 3a 与接插端 42 彼此接插固定。

其中，由于骨传导扬声装置的耳机芯 50 分别为左右两个，对应的机芯壳体 20、耳挂 10 以及电路壳体 30 也设置为左右两个，后挂 40 通过分别与两个电路壳体 30 接插固定的方式将位于两侧的机芯壳体 20、耳挂 10 以及电路壳体 30 连接在一起，并在用户佩戴时悬挂设置于用户头部后侧。

具体地，弹性金属丝 41 的材质与性能等可以与弹性金属丝 11 相同，相关详细内容请参见前述对弹性金属丝 11 的相关描述，此处不再赘述。

接插端 42 可以通过注塑的方式形成在弹性金属丝 41 的两端。具体地，接插端 42 可以由塑胶等材料制成。

在一实施方式中，接插端 42 设置有接插孔 421，该接插端 3a 至少部分插入至接插孔 421 内，本实施方式中，接插端 3a 可具体设置在环形台面 37 背离耳挂 10 的一侧。接插端 3a 与接插孔 421 之间的接插方式和接插端 15 与接插孔 31 之间的接插方式可以相同，也可以不同。

其中，在接插端 3a 的相对两侧分别设置有与接插端 3a 相对于接插孔 421 的插入方向垂直设置的开槽 3a1。两个开槽 3a1 可间隔且对称设置于接插端 3a 的两侧。进一步地，该两个开槽 3a1 可均在垂直于插入方向上与接插端 3a 的对应的侧壁连通。

相应地，接插端 42 的第一侧壁 422 上设置有与两个开槽 3a1 位置对应的通孔 423。其中，接插端 42 包括用于定义接插孔 421 的环绕设置的侧壁，接插端 42 的第一侧壁 422 可以是在接插端 3a 与接插端 42 接插固定时，接插端 42 的能够与开槽 3a1 的延伸方向相交的侧壁。

IPR2025-00842; Shokz
Ex. 2018 - Page 1647