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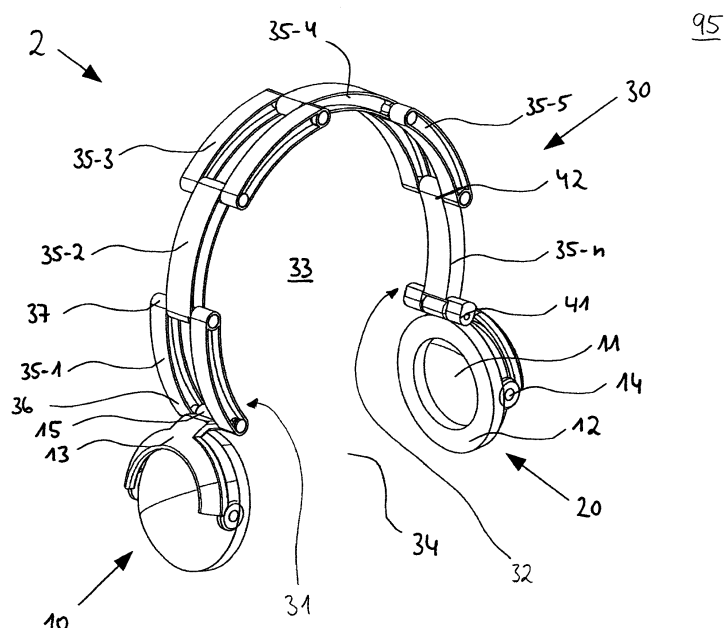
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(54) **FOLDABLE HEADPHONE AND METHOD TO FOLD FOLDABLE HEADPHONE**

(57) The invention relates to a foldable headphone comprising a first housing element and a second housing element that are each configured to accommodate a respective speaker unit and each having a user facing side, a foldable frame configured to extend between the first housing element and the second housing element and that is pivotally attached to the first housing element and the second housing element, wherein the foldable frame comprises at least a first longitudinal lever attached to the first housing element and a second longitudinal lever attached to the second housing element, wherein the first

longitudinal lever and the second longitudinal lever are pivotally coupled with each other, the foldable frame is configured to provide a head-wearing position and a storage position such that, in the head wearing position, the first and second longitudinal levers extend along the user's head in an curvature-like form, and, in the storage position, the user facing side of the first housing element is positioned opposite to the user facing side of the second housing element and both user facing sides span a receiving space between them in which the foldable frame is positioned.

Fig.1:



Description

[0001] The present invention relates to a foldable headphone and a method to fold the foldable headphone.

[0002] Over ear headphones are usually very bulky and are not suited to easily carry them in a coat pocket, since the speaker units and the head band together occupy a lot of space.

[0003] JP 2010-239200 shows a headphone constituted of a pair of speakers, and a head band part which connects the speaker parts with each other, where the head band part is constituted to be foldable around a shaft member along a predetermined direction so as to make the speaker parts approach each other, and a holding means for holding a posture that the head band part is folded around the shaft member so as to make the speaker parts approach each other is provided in the head band part.

[0004] JP 2010-166258 shows a headphone including a pair of left and right housings each for accommodating a speaker unit, a headband having a shape curved in a longitudinal direction to which the pair of left and right housings are connected on both sides in the longitudinal direction, respectively, and first to third hinges provided on the headband so as to be arranged in the longitudinal direction and capable of folding the headband in an inner side direction of curvature, wherein the first hinge positioned between the second and third hinges is capable of folding the headband about a hinge axis tilted relative to a forward and backward direction perpendicular to the longitudinal direction of the headband such that both ends in the longitudinal direction of the headband folded only by the first hinge do not contact each other.

[0005] It would be beneficial to provide an improved headphone that provides a more compact structure when storing the headphone.

[0006] The invention relates to a foldable headphone and a method to fold the foldable headphone according to claims 1 and 15. Further embodiments are disclosed in the dependent claims.

[0007] An embodiment described herein relates to a foldable headphone comprising a first housing element and a second housing element that are each configured to accommodate a respective speaker unit and each having a user facing side, a foldable frame that is configured to extend between the first housing element and the second housing element and that is pivotally attached to the first housing element and the second housing element. The foldable frame comprises at least a first longitudinal lever attached to the first housing element and a second longitudinal lever attached to the second housing element, wherein the first longitudinal lever and the second longitudinal lever are pivotally coupled with each other. The foldable frame is configured to provide a head-wearing position and a storage position such that, in the head wearing position, the first longitudinal lever and the second longitudinal lever extend along the user's head in an curvature-like form, and, in the storage position, the user

facing side of the first housing element is positioned opposite to the user facing side of the second housing element and both user facing sides span a receiving space between them in which the foldable frame is positioned.

[0008] By providing a foldable headphone with a foldable frame that is pivotally coupled to the first housing element and the second housing element, wherein the first housing element and the second housing element span a receiving space between them to receive the folded foldable frame, a smaller structure of the foldable headphone is advantageously achieved. In consequence, the foldable headphone can be folded in a more compact structure when being in a storage position than headphones of the prior art.

[0009] The storage position of the foldable headphone describes the position in which the foldable headphone may be stored in a bag, a coat, a pocket or likewise repository, when the foldable headphone is not worn or used by a user. The head-wearing position on the other hand describes the position when the foldable headphone is in use and the user wears the foldable headphone on or around his head. The foldable headphone is then formed in a curvature-like structure to adjust the foldable headphone firmly on or around the user's head.

[0010] The first housing element and the second housing element are usually made of a material like plastic, aluminum or the like, to provide protection for each speaker unit that is enclosed in the respective housing element. These materials may be lightweight materials to provide a more comfortable foldable headphone for the user to wear. The foldable frame can be made of the same kind of material like the first housing element and the second housing element.

[0011] Each housing element can be connected directly to the foldable frame or can be coupled via a respective intermediate housing element that may be positioned between the foldable frame and each of the housing elements in order to provide a comfortable wearing position of each housing element.

[0012] When the foldable frame is folded in the storage position, the foldable frame is securely positioned between the first housing element and the second housing element, thereby providing a more secure position for the foldable frame than known in the prior art.

[0013] According to embodiments, pivotally coupling elements between the first housing element, the foldable frame and the second housing element ensure that the foldable headphone can be put swiftly from the head-wearing position in the storage position or vice versa.

[0014] In one embodiment of the foldable headphone, the first longitudinal lever is configured to pivot from the head-wearing position into the storage position by pivoting to the user facing side of the first housing element, and the second longitudinal lever is configured to pivot from the head-wearing position into the storage position by pivoting to the user facing side of the second housing element. This allows to store the first longitudinal lever and the second longitudinal lever safely in the receiving

space spanned by the first housing element and the second housing element.

[0015] In a further embodiment of the foldable headphone, the first housing element and a first end of the first longitudinal lever are connected by a first coupling element, the second housing element and a first end of the second longitudinal lever are connected by a second coupling element and at least one of the first coupling element and the second coupling element comprises a slip clutch element. This provides an advantageous solution to hold the first housing element and the first longitudinal lever and the second housing element and the second longitudinal lever in either the head-wearing position or the storage position, which is easy to operate by the user. The slip clutch element can be designed to provide two or more extending or folding positions.

[0016] In a further embodiment of the foldable headphone, the first coupling element and the second coupling element comprise a respective hinge stud and a respective spring and the hinge stud is positioned in a direction transverse to a longitudinal extension of the respective longitudinal lever. This is an advantageous structure for pivotal movement of the first coupling element and the second coupling element. Especially the spring may be coaxially positioned on the hinge stud to apply an axial holding force along the hinge stud to the slip clutch element. Such a configuration allows to hold the slip clutch element in position without using further elements.

[0017] In a further embodiment the foldable headphone further comprises a third coupling element that is configured to couple a second end of the first longitudinal lever with a second end of the second longitudinal lever, the third coupling element comprising a slip clutch element. This allows to pivot the first longitudinal lever and the second longitudinal lever relative to each other with little effort to bring both levers from a head-wearing position in a storing position and vice versa consuming low storage space.

[0018] In a further embodiment of the foldable headphone the slip clutch element comprises a first element with at least two coupling reception areas and a second element rotatable with respect to the first element and having at least two corresponding coupling projection areas that are configured to engage with a respective one of the at least two coupling reception areas. Particularly, the reception areas are formed in the first element by two recesses that extend from a front facing surface into the first element. These reception areas may provide two separate positions, namely an extended position and a folded position. The projection areas particularly extend from a front facing surface away from the second element to interact with the reception areas of the first element. Such a construction is an effective solution to realize the head-wearing position and the storage position of the foldable headphone.

[0019] In a further embodiment of the foldable headphone the first longitudinal lever is pivotable to the first

housing element in a range of 0° to 200°, the second longitudinal lever is pivotable to the second housing element in a range of 0° to 200° and the first longitudinal lever is pivotable to the second longitudinal lever in a range of 0° to 220°. This allows for a precise curvature structure of the foldable frame and compact storage position.

[0020] In a further embodiment of the foldable headphone the foldable frame is pivotable in a frame plane spanned by the foldable frame in the head-wearing position. The foldable frame, the first housing element and the second housing element are positioned in the frame plane. Such a configuration allows for a compact storage position.

[0021] The longitudinal levers can be configured to fold into each other in the frame plane. This results in an even more space saving configuration of the foldable headphone. For example, the foldable frame may comprise a zigzag structure in the storage position.

[0022] In a further embodiment of the foldable headphone one of the first longitudinal lever and the second longitudinal lever comprises two longitudinal struts parallel to each other and a space between them forming a first lever-type and another one of the first longitudinal lever and the second longitudinal lever comprises a longitudinal strut forming a second lever-type and configured so as to fit into the space of the one of the first longitudinal lever and the second longitudinal lever in the storage position. Such lever-types are advantageous in respect of durability and foldability. The cross section of the longitudinal struts can comprise an I-profile or double-T-profile. These profiles provide an advantageous stability of the longitudinal levers and the foldable frame. At least one of the first longitudinal lever, the second longitudinal lever and the third longitudinal lever can comprise a curvature form, such as a semicircular, elliptical or concave form, to adapt to the user's head. This results in a practical and comfortable form of the foldable frame in the foldable headphone. Most preferably, all the longitudinal levers comprise a curvature form.

[0023] In a further embodiment of the foldable headphone, the foldable frame comprises at least four longitudinal levers which comprise at least two longitudinal levers of the first lever-type and at least two longitudinal levers of the second lever-type. This results in a foldable headphone having a compact structure in the storage position.

[0024] In a further embodiment of the foldable headphone the foldable frame comprises a respective one of the longitudinal levers of the first lever-type and a respective one of the longitudinal levers of the second lever-type in an alternating arrangement. Such a configuration provides advantages regarding foldability of the foldable frame for the foldable headphone.

[0025] In a further embodiment of the foldable headphone at least the two longitudinal levers of the first lever-type align themselves to co-extend in an identical direction.

[0026] In a further embodiment of the foldable headphone at least the first longitudinal lever and the second longitudinal lever pivot in contrary rotational directions. Such a configuration allows a more compact structure of the foldable headphone in the storage position.

[0027] In a further embodiment of the foldable headphone the longitudinal levers can be positioned in the receiving space except for the pivot attaching points to the first housing element and the second housing element and respective attaching points arranged between those attaching points in the storage position. Such a configuration allows for an even more compact foldable headphone in the storage position. In another embodiment at least 50 % of each longitudinal lever, more specifically at least 65% of each longitudinal lever or even more specifically at least 80 % of each longitudinal lever can be positioned in the receiving space.

[0028] A further exemplary embodiment of the invention comprises a method to fold a foldable headphone from the storage position to the head-wearing position. The method comprises the steps of pulling the first housing element and the second housing element that are coupled by the foldable frame apart to straighten the foldable frame and sequentially locking a respective pivotal coupling between the first housing element and the first longitudinal lever, between the first longitudinal lever and the second longitudinal lever and between the second longitudinal lever and the second housing element so as to bring the foldable frame into the head-wearing position.

[0029] All the technical effects of the features of the foldable headphone apply for the method as well.

[0030] Exemplary embodiments of the invention are described in greater detail below with reference to the enclosed figures.

Fig. 1 is a perspective view of a foldable headphone according to an exemplary embodiment of the invention.

Fig. 2 illustrates a sectional view of the foldable headphone of Fig. 1, with a first housing element and a part of a foldable frame.

Fig. 3 illustrates a perspective cross-sectional view of a longitudinal lever with a first part of a slip clutch element at its ends and a second part of the slip clutch element of the foldable frame of Fig. 1.

Fig. 4 illustrates a cross-sectional view of the longitudinal lever of Fig. 3.

Fig. 5 illustrates a side view of the foldable headphone of Fig. 1 in a storage position.

Figs. 6a to 6d illustrate steps of a method of unfolding the foldable headphone of Fig. 1 from a storage position to a head-wearing position.

[0031] A foldable headphone 2 according to an exemplary embodiment of the invention, as it is shown in Fig. 1, comprises a foldable frame 30 that couples a first housing element 10 to a second housing element 20. Fig. 2 illustrates a partial view of the foldable headphone 2 with a first housing element 10 and partially the foldable frame 30. Fig. 3 illustrates a perspective cross-sectional view of a longitudinal lever of the second type 35-4 with a first element 61 of a slip clutch element 60 and a second element 66 of the slip clutch element 60.

[0032] The foldable frame 30 comprises a first end 31 and a second end 32. The foldable frame 30 comprises multiple, in this embodiment six, longitudinal levers that are pivotally coupled in line to each other to provide the foldable frame 30 with a structure for a head-wearing position 95 in a frame plane 33 spanned by the foldable frame 30. The foldable frame 30 comprises at least two longitudinal levers 35-1 and 35-n, but in principle can comprise any number of n longitudinal levers with $n \geq 2$.

[0033] The first housing element 10 and the second housing element 20 comprise a respective hollow structure with a flat user-facing side 12 and a recess formed from the user-facing side into the hollow structure to accommodate a speaker unit 11. Each housing element 10 and 20 is connected to the foldable frame 30 with a housing frame 13. The housing frame 13 comprises a housing joint 14 at a first end and a frame joint 15 at a second end. The housing joint 14 provides a pivotal connection between the housing frame 13 and the housing elements 10 and 20 to ideally adapt the housing elements 10 and 20 to the user's head when in a head-wearing position. The frame joint 15 provides a pivotal connection between the foldable frame 30 and the housing elements 10 and 20.

[0034] The user-facing sides 12 of the first housing element 10 and the second housing element 20 are positioned opposite to each other thereby forming a space in which the user's head is placed when the foldable headphone 2 is in the head-wearing position or forming a receiving space 34 in which the foldable frame 30 may be positioned when the foldable headphone 2 is in the storage position.

[0035] The longitudinal levers of the foldable frame 30 comprise a first longitudinal lever 35-1 positioned at the first end 31 of the foldable frame 30, a second longitudinal lever 35-n positioned at the second end 32 of the foldable frame 30, a third longitudinal lever 35-2 coupled to the first longitudinal lever 35-1 via third coupling element 55 and further longitudinal levers 35-3, 35-4, and 35-5.

[0036] According to an embodiment, the longitudinal levers 35-1 to 35-n are of two different types. A first lever type comprises two long struts 38-1 and 38-2 parallel to each other and a lever space 39 between them. A second lever-type comprises at least one longitudinal strut 38-1 configured to fit into the lever space 39 of the one of the longitudinal levers 35-1, 35-3, or 35-5, respectively, when the foldable headphone is brought in a storage position. Longitudinal levers 35-1, 35-3 and 35-5 are of the first

lever-type and longitudinal levers 35-2, 35-4 and 35-n are of the second lever-type.

[0037] The two longitudinal struts 38-1 and 38-2 comprise a curvature structure, such as a semicircular, an elliptical or a concave structure, to ideally adapt to a user's head with a concave side facing to the user's head. The ends of each longitudinal strut 38-1 and 38-2 comprise a bore in a direction transverse to a longitudinal extension of the longitudinal struts 38-1 and 38-2 to provide an opening for a hinge stud 46. The hinge stud 46 forms a pivot around which the coupled longitudinal levers and housings can be pivoted. A spring 47 is coaxially positioned on the hinge stud 46. The spring 47 applies a holding force in an axial direction onto the slip clutch element 60 to prevent the slip clutch element 60 from an undesired rotation. A user may apply enough torque onto the slip clutch element 60 through pivoting the longitudinal levers to each other to overcome the holding force of the spring 47. At each end of one of the longitudinal struts 38-1 and 38-2, a second element 66 of the slip clutch element 60 is positioned and directed to the opposite one of the longitudinal struts 38-1 and 38-2.

[0038] The longitudinal lever 35-n, the longitudinal lever 35-2 and the longitudinal lever 35-4 each comprise at least one longitudinal strut with a first end and a second end, each end having a bore in a transverse direction to the longitudinal extension of the longitudinal levers 35-2, 35-4 and 35-n to provide an opening for the hinge stud 46. The one longitudinal strut comprises a curvature structure. The curvature structure can be identical to the curvature structure of the longitudinal levers 35-1, 35-3 and 35-5. In each end of the one longitudinal strut a first element 61 of the slip clutch element 60 is positioned and directed to the second element 62 of the slip clutch element 60 positioned in one of the longitudinal struts 38-1 and 38-2 of the longitudinal levers 35-1, 35-3 and 35-5. The first element 61 provides at least two reception areas 61-1 and 61-2 and the second element 66 provides at least two projecting areas 66-1 and 66-2 that correspond to the reception areas 61-1 and 61-2.

[0039] The slip clutch element 60 is configured to provide at least two separate holding positions. One position being the folded position in which for example the user facing side 12 of the first housing element 10 and the first longitudinal lever 35-1 are pivoted to be adjacent to each other. The other position being the extended position in which for example the user facing side 12 of the first housing element 10 and the first longitudinal lever 35-1 are arranged within an angle range of 180° to 200° in a rotational direction to each other. The folded position and the extended position of the slip clutch element 60 also apply to the other coupling elements that comprise the slip clutch element 50.

[0040] Preferably, each or at least a member of the coupling elements 45, 50, 55, 56, 57, 58 and 59 comprise a slip clutch 60, a hinge stud 46 and a spring 47. The functions of the slip clutch 60 have been explained previously. The first and second coupling elements 45 and

50 can be configured to provide the same range of rotation, especially a range between 0° and 200°. The third to seventh coupling elements 55 to 59 can be configured to provide the same range of rotation, especially a range between 0° and 220°.

[0041] The housing frame 13 of the first housing element 10 is pivotally coupled to a first end 36 of the first longitudinal lever 35-1 with the coupling element 45. The coupling element 45 comprises a slip clutch element 60, a hinge stud 46 and a spring 47 to hold the longitudinal lever 35-1 rotationally fixed to the first housing element 10 in the head-wearing position or to rotate the longitudinal lever 35-1 around the hinge stud 46 towards the user-facing side 12 of the first housing element 10 in the storage position. The first element 61 of the slip clutch element 60 is positioned in the frame joint 15 of the housing frame 13 and interacts with the second element 62 of the slip clutch element 60 positioned in the longitudinal lever 35-1. A configuration in which the first element 61 of the slip clutch element 60 is positioned in the longitudinal lever 35-1 and the second element 62 of the slip clutch element 60 is positioned in the frame joint 15 is also possible.

[0042] A first end 41 of the longitudinal lever 35-n is coupled to the second housing element 20. A second end 42 of the longitudinal lever 35-n is coupled to a second end of the longitudinal lever 35-5. Alternatively, the second end 42 of the second longitudinal lever 35-n is coupled to a second end 37 of the longitudinal lever 35-1 or to a second end of longitudinal lever 35-3. The foldable frame 30 then comprises different numbers of longitudinal levers 35-1 to 35-n according to different embodiments.

[0043] Fig. 4 shows a cross-sectional view of one of the longitudinal levers 35-1, 35-2, 35-3, 35-4, 35-5 and 35-n. The cross-sectional view is directed along the longitudinal extension of the longitudinal lever 35-1, 35-2, 35-3, 35-4, 35-5 and 35-n and/or the longitudinal struts 38-1 and 38-2 and shows an I-profile or Double-T-profile. At least one of the longitudinal levers 35-1, 35-2, 35-3, 35-4, 35-5 and 35-n and/or the longitudinal struts 38-1 and 38-2 comprises such profile. The I-profile or Double-T-profile is the preferred structure for the longitudinal levers 35-1, 35-2, 35-3, 35-4, 35-5 and 35-n and/or longitudinal struts 38-1 and 38-2, since the resulting foldable frame 30 can withstand higher bending and rotational loads. The I-profile 70 comprises a first wall 71 and a second wall 72 that are parallel to each other and are coupled by a third wall 73 that extends orthogonally from a center position of the first wall to the center position of the second wall.

[0044] Fig. 5 illustrates the foldable headphone 2 in the storage position. In this position the foldable frame 30 is folded to a zig zag structure 81 and positioned in the receiving space 34. The zig zag structure 81 extends from the first housing element 10 to the second housing element 20 in the frame plane 33 (not shown). The longitudinal lever 35-1 is pivoted around the coupling ele-

ment 45 in a position adjacent to the user-facing side 12 of the first housing element 10. The longitudinal lever 35-2 is pivoted around the coupling element 55 into the lever space 39 of the longitudinal lever 35-1 by pivoting the longitudinal lever 35-2 in the opposite direction to the longitudinal lever 35-1. The longitudinal lever 35-3 is pivoted around the coupling element 56 in the same direction as the longitudinal lever 35-1 and aligns itself with the longitudinal lever 35-1 in that they co-extend in an identical direction. The longitudinal lever 35-4 is pivoted around the coupling element 57 in the same direction as the longitudinal lever 35-2 and aligns itself to the longitudinal lever 35-2. The longitudinal lever 35-5 is pivoted around the coupling element 58 in the same direction as the longitudinal lever 35-1 and aligns itself with the longitudinal levers 35-1 and 35-3. The longitudinal lever 35-n is pivoted around the coupling element 39 in the same direction as the longitudinal lever 35-2 and aligns itself on one side with the longitudinal lever 35-4. The longitudinal lever 35-n is pivoted around the coupling element 50 so that the other side of the longitudinal lever 35-n is in a position adjacent to the user facing side 12 of the second housing element 20.

[0045] Figs. 6a to 6d illustrate a method of unfolding the foldable headphone of Fig. 1 from a storage position to a head-wearing position. In Fig. 6a, the foldable headphone 2 is in its storage position 80. In order to unfold the foldable headphone, the first housing element 10 and the second housing element 20 are pulled in opposite directions to straighten the foldable frame 30 from its storage position 80 to a straightened position 85. In this straightened position 85, the foldable frame 30 extends between the first housing element 10 and the second housing element 20 in a generally straight line. In the next step of unfolding the foldable headphone 2 an intermediate position 90 is illustrated. In this intermediate position 90, the longitudinal lever 35-1 is pivoted away from the user facing side 12 of the first housing element 10, particularly in an angle range of 180° to 200°, until the coupling element 45 arrives in the extended position of the slip clutch element 60.

[0046] The longitudinal lever 35-2 is pivoted relatively to the longitudinal lever 35-1, particularly in a rotational angle of 180° to each other, to arrive in the extended position of the slip clutch element 60 of the coupling element 55. The intermediate position 90 discloses all the positions between the straightened position 85 and the head-wearing position 95. It is not particularly necessary that first longitudinal lever 35-1 and the longitudinal lever 35-2 are fixed in their final position, and longitudinal levers 35-3 to 35-n still have to be positioned in their final position. When the slip clutch elements 60 of the coupling elements 45, 50, 55, 56, 57, 58 and 59 are arranged in their extended positions, the foldable headphone 2 attains its head-wearing position 95. In order to fold the foldable headphone 2 in the storage position 80, the previously described steps may be performed in reverse order.

[0047] While the invention has been described with reference to exemplary embodiments, it will be understood by those skilled in the art that various changes may be made and equivalents may be substituted for elements thereof without departing from the scope of the invention. In addition many modifications may be made to adopt a particular situation or material to the teachings of the invention without departing from the essential scope thereof. Therefore, it is intended that the invention not be limited to the particular embodiment disclosed, but that the invention include all embodiments falling within the scope of the following claims.

Claims

1. Foldable headphone (2) comprising:

a first housing element (10) and a second housing element (20) that are each configured to accommodate a respective speaker unit (11) and each having a user facing side (12);
a foldable frame (30) configured to extend between the first housing element (10) and the second housing element (20) and that is pivotally attached to the first housing element (10) and the second housing element (20);
wherein the foldable frame (30) comprises at least a first longitudinal lever (35-1) attached to the first housing element (10) and a second longitudinal lever (35-n) attached to the second housing element (20), wherein the first longitudinal lever (35-1) and the second longitudinal lever (35-n) are pivotally coupled with each other;
the foldable frame (30) is configured to provide a head-wearing position (95) and a storage position (80) such that, in the head wearing position (95), the first and second longitudinal levers (35-1, 35-n) extend along the user's head in an curvature-like form, and, in the storage position (80), the user facing side (12) of the first housing element (10) is positioned opposite to the user facing side (12) of the second housing element (20) and both user facing sides (12) span a receiving space (34) between them in which the foldable frame (30) is positioned.

2. Foldable headphone (2) according to claim 1, wherein

the first longitudinal lever (35-1) is configured to pivot from the head-wearing position (95) into the storage position (80) by pivoting to the user facing side (12) of the first housing element (10); and
the second longitudinal lever (35-n) is configured to pivot from the head-wearing position (95) into the storage position (80) by pivoting to the user facing side (12) of the second housing element (20).

3. Foldable headphone (2) according to any of the preceding claims, wherein the first housing element (10) and a first end (36) of the first longitudinal lever (35-1) are connected by a first coupling element (45);
the second housing element (20) and a first end (41) of the second longitudinal lever (35-n) are connected by a second coupling element (50);
wherein at least one of the first coupling element (45) and the second coupling element (50) comprises a slip clutch element (60). 5 10
4. Foldable headphone (2) according to claim 3, wherein the first coupling element (45) and the second coupling element (50) comprise a respective hinge stud (46) and a respective spring (47); and the hinge stud (46) is positioned in a direction transverse to a longitudinal extension of the respective longitudinal lever (35-1, 35-n). 15 20
5. Foldable headphone (2) according to claim 4, wherein the spring (47) is coaxially positioned on the hinge stud (46) and is configured to apply an axial holding force along the hinge stud (46) to the slip clutch element (60). 25
6. Foldable headphone (2) according to any of claims 3 to 5, further comprising a third coupling element (55) that is configured to couple a second end (37) of the first longitudinal lever (35-1) with a second end (42) of the second longitudinal lever (35-n); wherein the third coupling element (55) comprises a slip clutch element (60). 30
7. Foldable headphone (2) according to any of claims 3 to 6, wherein the slip clutch element (60) comprises a first element (61) with at least two coupling reception areas (61-1, 61-2) and a second element (66) rotatable with respect to the first element (61) and having at least two corresponding coupling projection areas (66-1, 66-2) configured to engage with a respective one of the at least two coupling reception areas (61-1, 61-2). 35 40
8. Foldable headphone (2) according to any of the preceding claims, wherein the foldable frame (30) is pivotable in a frame plane (33) spanned by the foldable frame (30) in the head-wearing position (95). 45
9. Foldable headphone (2) according to claim 8, wherein the longitudinal levers (35-1, 35-n) are configured to fold into each other along the frame plane (33). 50
10. Foldable headphone (2) according to any of the preceding claims, wherein the foldable frame (30) comprises a zigzag structure (81) in the storage position (80). 55
11. Foldable headphone (2) according to any of the preceding claims, wherein one of the first longitudinal lever (35-1) and the second longitudinal lever (35-n) comprises two longitudinal struts (38-1, 38-2) parallel to each other and a space (39) between them forming a first lever-type (35-0); and another one of the first longitudinal lever (35-1) and the second longitudinal lever (35-n) comprises a longitudinal strut (38-1) forming a second lever-type (35-4) and configured so as to fit into the space (39) of the one of the first longitudinal lever (35-1) and the second longitudinal lever (35-n) in the storage position (80).
12. Foldable headphone (2) according to claim 11, wherein the foldable frame (30) comprises at least four longitudinal levers (35-1, 35-2, 35-3, 35-n) which comprise at least two longitudinal levers of the first lever-type (35-3) and two longitudinal levers of the second lever-type (35-4).
13. Foldable headphone (2) according to claim 12, wherein the foldable frame (30) comprises a respective one of the longitudinal levers of the first lever-type (35-3) and a respective one of the longitudinal levers of the second lever-type (35-4) in an alternating arrangement; and/or wherein at least two longitudinal levers of the first lever-type (35-3) align themselves to co-extend in an identical direction.
14. Foldable headphone (2) according to any of the previous claims, wherein at least the first longitudinal lever (35-1) and at least the second longitudinal lever (35-n) pivot in contrary rotational directions.
15. Method to fold a foldable headphone (2) according to any of the preceding claims from the storage position (80) to the head-wearing position (95) comprising:

pulling the first housing element (10) and the second housing element (20) that are connected by the foldable frame (30) apart to straighten the foldable frame (30);
sequentially locking a respective pivotal coupling between the first housing element (10) and the first longitudinal lever (35-1), between the first longitudinal lever (35-1) and the second longitudinal lever (35-n) and between the second longitudinal lever (35-n) and the second housing element (20) so as to bring the foldable frame (30) into the head-wearing position (95).

Fig.1:

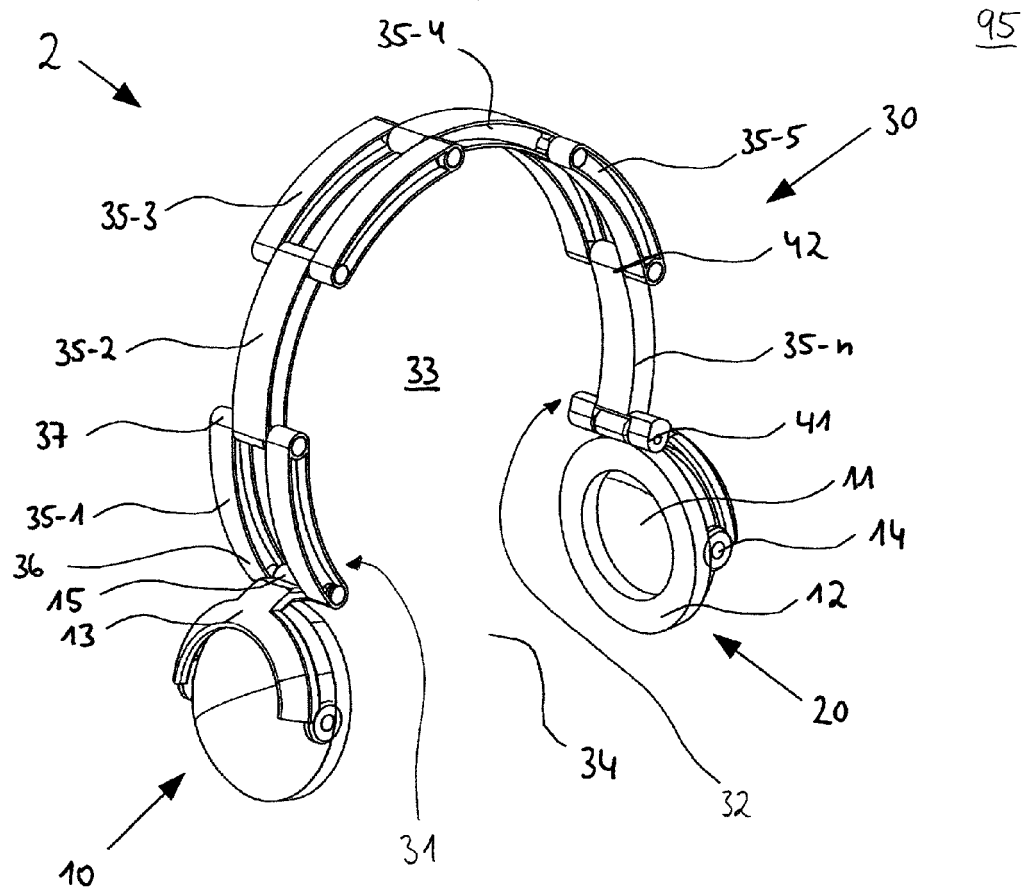


Fig.2:

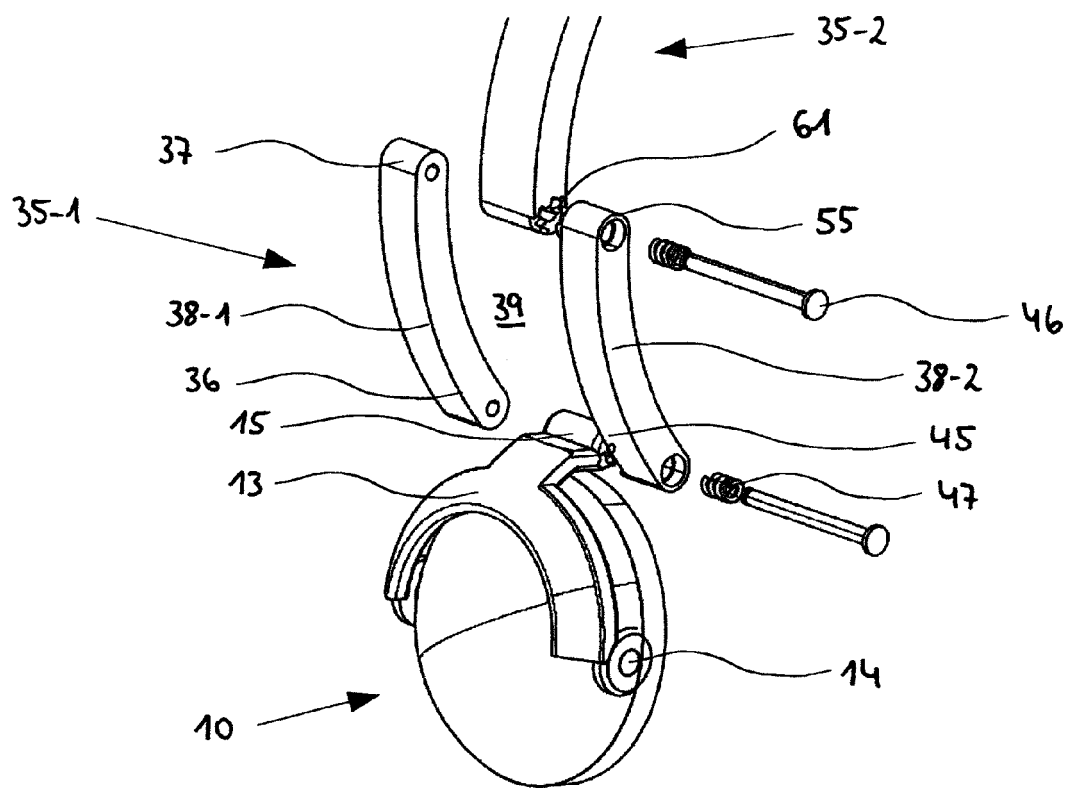


Fig.3:

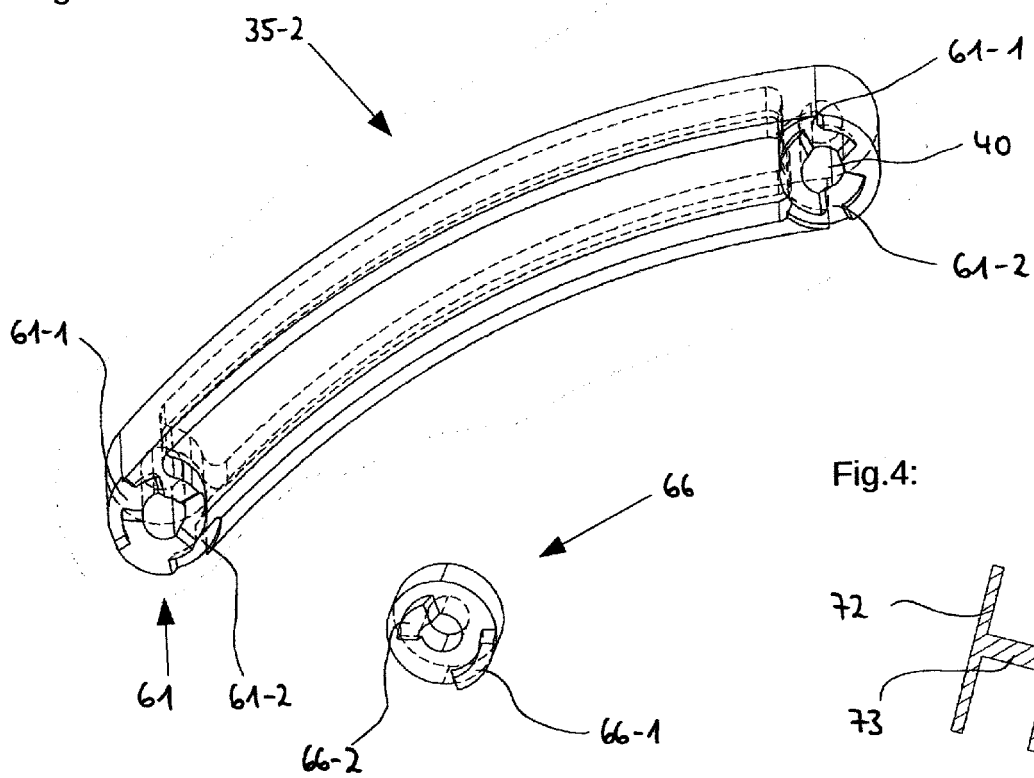


Fig.4:

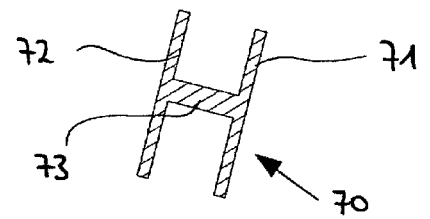
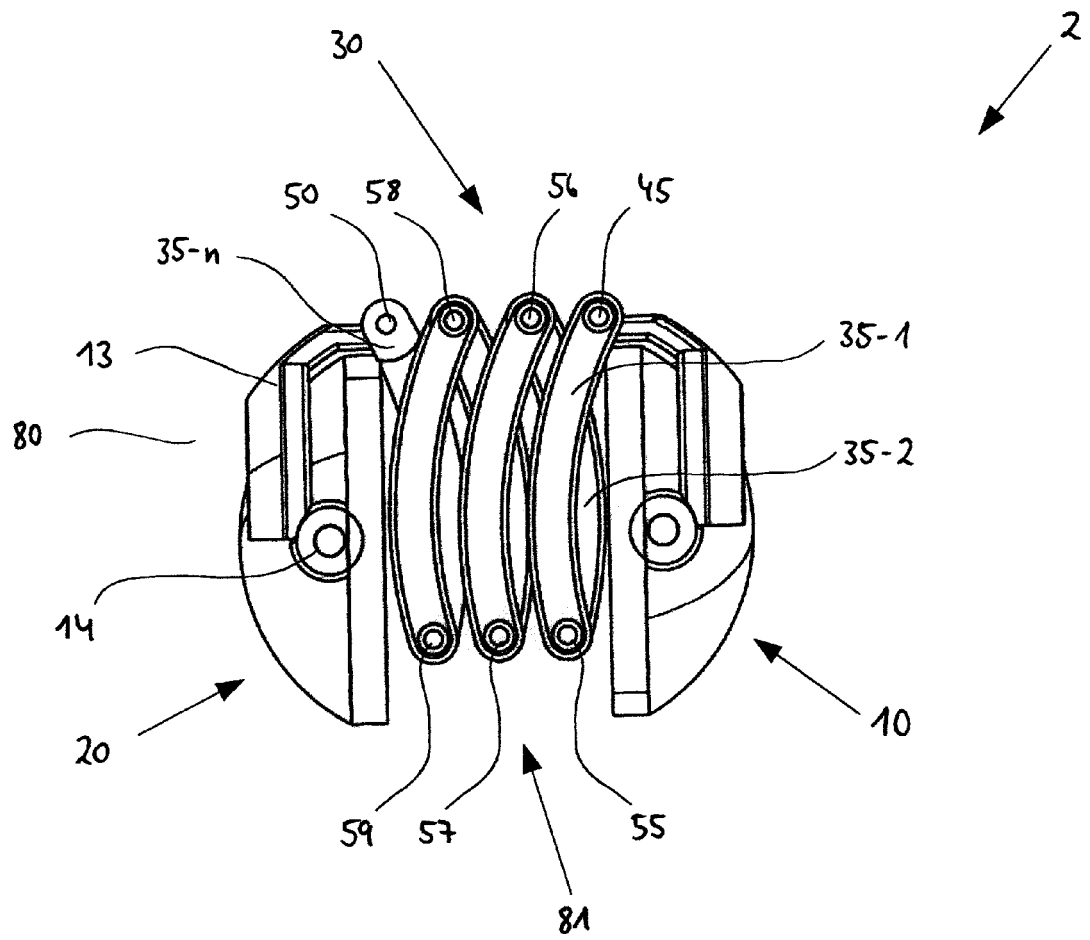
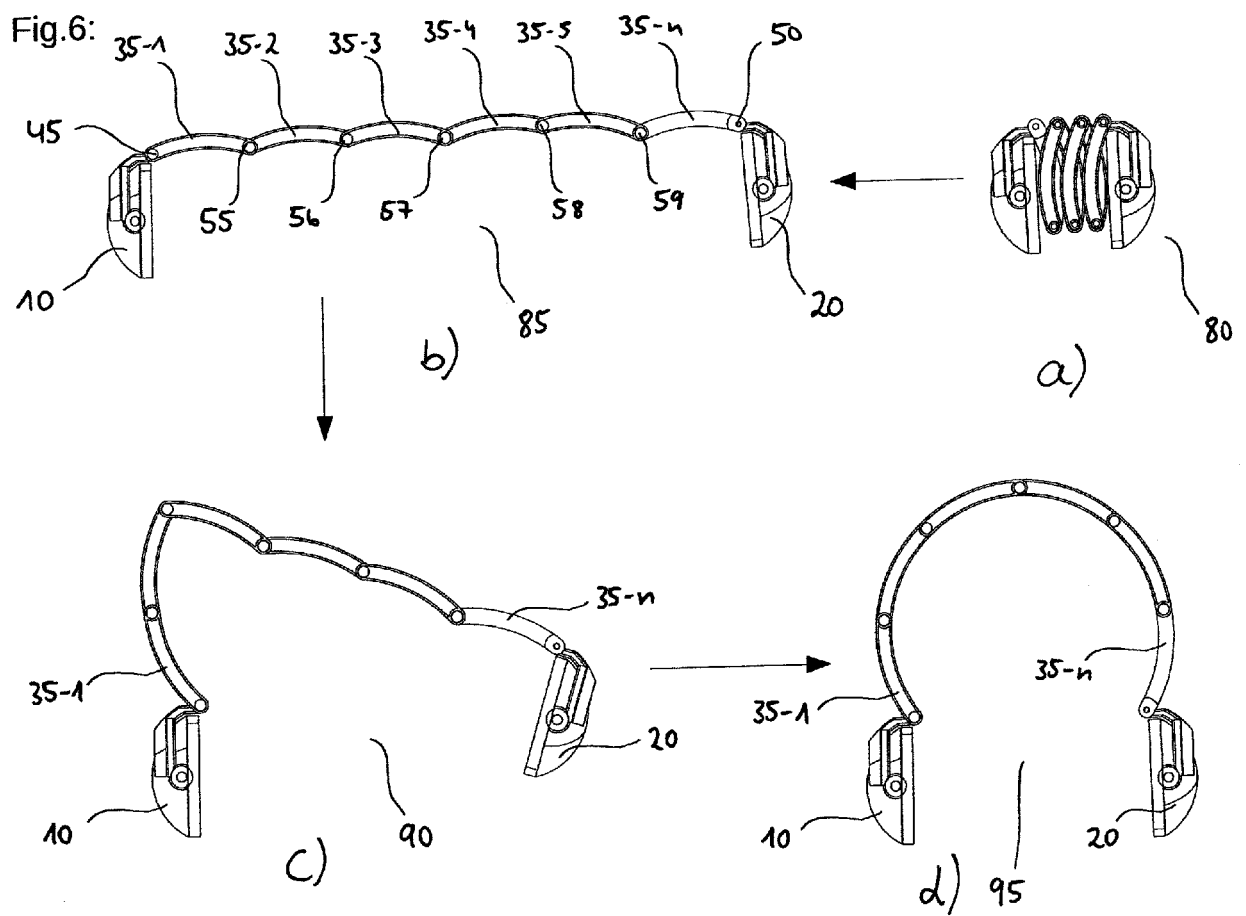


Fig.5:







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