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(54) **LIFEJACKET**

(57) An inflatable lifejacket 1 having two lobes 3 connected by a neck portion 2. The lobes 3 are arranged, in use, to lie over a wearer's chest with opposed edges of the lobes 3 abutting each other. At least one lobe 3 has a first, inflatable, portion 5 towards a free end of the lobe 3 and a second portion 6. When the lifejacket 1 is inflated, the second portion 6 is less thick than the first portion 5 so as to create a space below the wearer's chin, whilst forming a barrier to water.

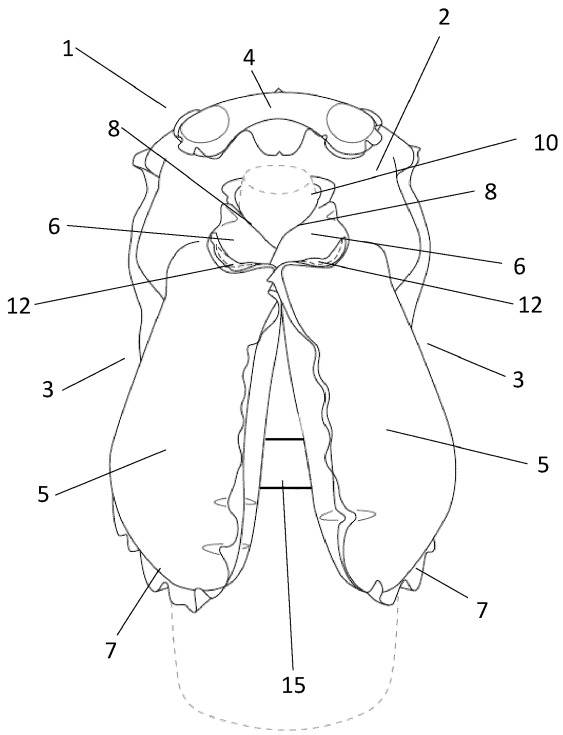

Figure 1

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Description

Technical Field of the Invention

[0001] The present invention relates to lifejackets. Particularly, but not exclusively, it relates to lifejackets having two lobes which extend from a connecting neck portion, the lobes lying upon either side of a wearer's chest in use.

Background to the Invention

[0002] Lifejackets are well known in the art. Many conventional lifejackets are inflatable, being supplied in deflated form and inflatable at point of use, to allow easier stowing and reduced storage requirements.

[0003] Many lifejackets have a 'twin-lobe' design, where the lifejacket comprises two lobes which extend from a connecting neck portion, the lobes being arranged to lie upon either side of the wearer's chest in use. These lifejackets typically have a fastening mechanism to attach the lobes to one another around the back of the wearer, to secure the lifejacket on the wearer.

[0004] Conventional twin-lobe lifejackets have a known issue where water between the lobes of the lifejacket and can enter a wearer's airways. This is particularly a risk if the wearer is unconscious.

[0005] Some lifejackets, such as those disclosed in GB2578110A and GB2480255A, are designed such that, when inflated, the lifejacket has at least one inflated portion arranged to support the wearer's chin. These chin supports act to lift the wearer's airways away from the water level, thereby reducing the chances of water entering the airways, and thus of the wearer drowning.

[0006] An issue with these types of lifejackets is that supporting a wearer's chin necessarily reduces the wearer's freedom of movement, specifically the freedom of movement of the wearer's neck. This is suboptimal for several reasons, including that it is uncomfortable for a wearer and that in emergency situations where these lifejackets are used, the wearer being able to move their neck (for example, to look around) is useful.

[0007] It is an object of the present invention to at least partially overcome and/or alleviate some of the above issues with known lifejackets.

Summary of the Invention

[0008] According to the present invention, there is provide an inflatable lifejacket comprising two lobes connected by a neck portion, the lobes being arranged, in use, to lie over a wearer's chest with opposed edges of the lobes abutting each other, wherein at least one lobe comprises a first, inflatable, portion towards a free end of the lobe and a second portion, wherein, when the lifejacket is inflated, the second portion is less thick than the first portion so that, in use, it creates a space below the wearer's chin, whilst forming a barrier to water.

[0009] The provision of at least one such second portion which creates a space beneath the wearer's chin allows the wearer to move their head whilst wearing the lifejacket, increasing the comfort of the wearer, and enabling the wearer to look around, whilst also acting as a barrier to prevent water flowing between the lobes and towards the wearer's airways. In this manner, an improved lifejacket is provided.

[0010] Both lobes of the lifejacket may comprise first and second portions.

[0011] The or each second portion may be positioned between the first portion of the same lobe and the neck portion.

[0012] The or each second portion may be inflatable. Alternatively, the or each second portion may be non-inflatable.

[0013] When the lifejacket is inflated, the or each second portion may be less than half as thick than the first portion of the same lobe, or less than a third or a quarter as thick as the first portion of the same lobe.

[0014] The or each second portion may be arranged to have a thickness between 40 mm and 45 mm, in the case of an inflatable second portion, when inflated. The or each first portion may have a thickness between 110 mm and 175 mm when inflated.

[0015] The or each second portion may extend from the or each first portion and or from the neck portion. The or each second portion may be arranged such that, in use, the or each second portion and the neck portion of the lifejacket together encircle the wearer's neck with a close fit. The or each second portion may be arranged so that, in use, it extends across the wearer's chest towards the opposing lobe such that the or each second portion abuts the opposing lobe. Where each lobe has a second portion these may be arranged to abut each other in use. In such embodiments, the second portions may be arranged so that, in use, they abut each other along a centre line of the lifejacket.

[0016] The or each second portion may, together with the neck portion, form a neck opening between said second portion/s and the neck portion.

[0017] Preferably, both lobes of the lifejacket are substantially symmetrical.

[0018] Each lobe may comprise one or more connecting strips arranged to control the shape of the lobe when inflated. The or each strip may be formed of a sheet material, and conveniently from the same type of sheet material as the remainder of the lifejacket.

[0019] A connecting strip may be attached to the first and second portions of a lobe, so as to limit the distance between an edge of the second portion and an adjacent, inner, edge of the first portion. The connecting strip may also serve as a splash barrier by inhibiting the passage of water between adjacent edges of the first and second portions.

[0020] A connecting strip may be attached to the first and second portions, so as to limit the distance between an edge of the second portion and an outer edge of the first portion. This ensures that the first portion of the lobe

sits over the wearer's chest in use and also serves to arrange the second portion such that it is forced into contact with the wearer's clavicle and lies flat over the wearer's chest. This maximises the space beneath the wearer's chin, providing maximal comfort and range of motion to the wearer.

[0021] In embodiments where the or each lobe has both connecting strips, both connecting strips may be connected to the same edge of the second portion.

[0022] In embodiments where both lobes have first and second portions, the second portions of each lobe may overlap with one another.

[0023] The neck portion may comprise a head support. The head support may be inflatable. The head support may be positioned such that, in use, it supports the back of the wearer's head. This provides increased comfort to the wearer and reduces the likelihood of neck injury. The head support may be centrally located on the neck portion. The head support may be symmetrically located on the neck portion.

[0024] Preferably, the neck portion and both lobes, including any inflatable second portion and head support, comprise a single, fluidly connected chamber such that all inflatable portions of the lifejacket inflate together. In such embodiments, the lifejacket may be provided with an inflation device to enable inflation of the lifejacket.

[0025] The inflation device may comprise an inflation tube, a manually operable or powered pump, and/or a compressed gas canister.

[0026] In some embodiments, the lifejacket may be provided with both a manually operated inflation device and an automatic inflation device.

[0027] The lifejacket may comprise a harness. This may be arranged to secure the first portions of the lobes relative to one another and to the wearer. The harness may be a three point harness, being connected to the inside surface of each first portion and the inside surface of the neck portion. The harness may comprise a waist strap arranged to pass around the wearer's waist to ensure the wearer is retained between the lobes and waist strap. The harness may comprise a back strap connected to the waist strap and the neck portion to ensure the relative position of the neck portion and lobes is correct.

[0028] The strap may have a conventional releasable fastener to allow easy connection in use. The strap and/or fastener may have a length adjustment mechanism to enable the wearer (or another person) to adjust the length of the strap to provide an optimal tightness of the strap.

[0029] The lifejacket may be formed from two layers of sheet material, typically a plastics sheet material. Suitable materials include 210 Denier Polyurethane Coated Nylon or the like. Preferably, the lifejacket is formed from two layers of material which are sealed together, such as by welding, along an airtight seam, thereby defining an inflation chamber.

Detailed Description of the Invention

[0030] In order that the invention may be more clearly understood an embodiment thereof will now be described, by way of example only, with reference to the accompanying drawings, of which:

Figure 1 shows a front view of an inflated lifejacket;

Figure 2 shows a side view of the inflated lifejacket of figure 1;

Figure 3 shows a rear view of the inflated lifejacket of figure 1;

Figure 4 shows a top view of an inflated lifejacket of figure 1; and

Figure 5 shows the outline shapes of sheets of material used to construct the lifejacket of figure 1, with dashed lines showing where the various sheets are sealed to each and dotted lines showing where the sheets are stitched together to form the complete lifejacket.

[0031] Referring to figures 1-4, there is shown a lifejacket 1 placed over a partial mannequin (shown in broken lines), to illustrate how the lifejacket 1 would lie over a wearer in use. The lifejacket 1 is formed from sheets 101,102 of 210 Denier Polyurethane Coated Nylon, which are sealed, e.g. by heat welding, together to form a single inflatable chamber. In the below description, any relative terms (upper, lower, top, bottom etc.) refer to the lifejacket 1 shown as oriented in figure 1. The terms inside surface and outside surface refer to the surface facing/contacting the wearer in use and the surface facing away from the wearer in use respectively.

[0032] The lifejacket 1 has a neck portion 2 and a pair of lobes 3 which each extend from each end of the neck portion 2 respectively. These are formed from two sheets of material 101,102 (shown in figure 5) welded together around their peripheries, with the welds being parallel to but spaced in from the edge of the sheets 101,102 to form a border of unwelded material with free edges. One sheet of material 101 forms the outside surface of the lifejacket 1 and the other sheet of material 102 forms the inside surface of the lifejacket 1.

[0033] The neck portion 2 has an inflatable head support 4 positioned substantially centrally thereon. This is formed from two arcuate sheets of material 103,104 welded over each other to form an inflatable portion with the weld running close to the edge of each sheet 103,104 material leaving virtually no border. The inside sheet of material 104 adjacent the neck portion 2, comprises two generally circular apertures 105, one towards each edge of the sheet 104. These overlie corresponding apertures 105b in the neck portion 2 and the inside sheet 104 of the head support 4 is welded to the neck portion 2 around

each aperture 105a forming a fluid connection between the neck portion 2 and head support 4. The head support 4 provides an inflatable pillow on the neck portion 2 which, in use, raises a wearer's head.

[0034] Together, the neck portion 2 and lobes 3 from a generally horseshoe shape lifejacket 1, with the lobes 3 extending downward from the neck portion 2, the lobes 3 each being arranged such that they tend towards and abut one another substantially at the line of symmetry of the lifejacket 1.

[0035] Each lobe 3 has separate first 5 and second portions 6, each forming a distinct inflatable chamber.

[0036] The first portion 5 of each lobe 3 extends from the neck portion 2 to a free end 7. The weld lines forming the inflatable chamber of the first portion 5 form a concave curve extending inwardly from the outer edges of the first portion 5 in the region where the first portion 5 extends from the neck portion 2 of the lifejacket 1. The opposite edge of the first portion 5 to this concave curve in the weld line forms a top edge to that portion.

[0037] The second portion 6 of each lobe 3 also extends from the neck portion 2. It lies between the first portion 5 and the neck portion 2.

[0038] The second portion 6 of each lobe 3 has an uppermost concave edge 8 which partially defines a neck opening 10 of the lifejacket 1 ('the top edge' 8) as a continuation of the concave inside edge of the neck portion 2. The adjacent free edge ('the abutting free edge' 9) is substantially straight, extends away from the neck opening 10 as is arranged to abut the abutting free edge 9 of the second portion 6 of the other lobe 3, generally along the line of symmetry of the lifejacket 1. The top 8 and abutting edges 9 are both free.

[0039] Together, the neck portion 2 and the top edges 8 of each lobe 3 form the neck opening 10 which, in use, encircles the wearer's neck in a close fit.

[0040] A third, convex, bottom, edge 11 extends from the abutting free edge 9 of each second portion 6, runs to the point where the second portion 6 extends from the neck portion 2 and faces towards an upper free edge of the first portion 5. The edges of the main sheets of material 101,102 forming the bottom edge 11 of the second portion 6 are themselves free.

[0041] However, the bottom edge 11 of each second portion 6 is connected to the first portion 5 of the same lobe by two connecting strips 12, 13 of sheet material.

[0042] A first connecting strip 12 comprises a tapered strip of sheet material having a concave edge that matches the shape of the bottom edge 11 of the second portion 6, and an opposite generally straight edge that matches the shape of the top edge of the first portion 5, to which it is fastened by a line of stitching 106. The opposite edges of the connecting strip 12 are fastened to the matching edges of the borders of the first and second potions 5,6 by lines of stitching 107 connecting the edges of the first and second portions 5,6 together in way that allows relative movement whilst limiting their separation. In use the first connecting strips 12 form a splash barrier, as discussed further below.

[0043] A second connecting strip 13 of material comprises a tapered strip of sheet material that has a concave edge which matches the shape of bottom edge 11 of the second portion 6, to which it is fastened by the same line of stitching 107 which fastens the first connecting strip 12 to that edge 11. The second connecting strip 13 also has an opposite edge which is generally convex and corresponds in shape to the concave curve in the weld line along the outer edge of the first portion 5 and is fastened to the border of material adjacent that edge with a line of stitching 108, with the second connecting strip 13 extending behind the first portion 5. This limits the separation between the bottom edge 11 of the second portion 6 and the outer edge of the first portion 5 and, by virtue of the first connecting strip 12, also the upper edge of the first portion 5.

[0044] The neck portion 2 of the lifejacket 1 is arranged so that it inflates to a maximum thickness of about 90 mm. The first portions 5 of the lobes 3 of the lifejacket 2 are arranged to inflate to a maximum thickness of about 175 mm, in general to around double the thickness of the neck portion 2 as the first portions 5 of the lifejacket 1 contribute significantly to the buoyancy of the lifejacket 1. The second portions 6 of the lifejacket 1 are arranged to inflate to a maximum thickness of about 45 mm, in general about half the thickness of the neck portion 2. The second portions 6 inflate sufficiently to lend them some rigidity in use, and to create some buoyancy, but without impeding the space under a wearer's chin.

[0045] A harness 14 is provided to secure the lifejacket 1 on a wearer in use. The harness 14 has a waist strap 15 secured to the inside surface of the first portions 5 of each lobe 3 and has a free end which, in use, is passed around the back of the wearer and fastened to the opposite end of the strap 15 with a conventional releasable fastener (not shown), which also allows for adjustment of the length of the strap 15.

[0046] The harness 14 also has a back strap 16, one end is attached to the inside surface of the neck portion 2. The opposite end comprises a loop through which the waist strap 15 passes. Together the waist and back straps 15,16 of the harness 14 ensure the lifejacket 1 is positioned correctly and securely attached to the wearer in use.

[0047] The lifejacket 1 has an inflation tube (not shown), including a one-way valve, through which the wearer can blow to inflate the lifejacket 1. The lifejacket 1 could also comprise a compressed gas cylinder and valve arrangement to allow for rapid inflation.

[0048] In use, a wearer would insert their head through the neck opening 10 of a deflated lifejacket 1 and then inflate the lifejacket 1. All of the inflatable parts of the lifejacket 1 are connected to form a single inflation chamber, and so both portions of each lobe 3, neck portion 2 and head support 4 all inflate together.

[0049] Once inflated, the wearer would pass the free end of the waist strap 15 around their back (ensuring it

passes through the loop on the free end of the back strap 16), connect it to the opposite end of the waist strap 15 with the fastener and adjust the waist strap 15 for a snug fit.

[0050] Once fully inflated and harness 14 is secured the lifejacket 1 a takes the form illustrated in figures 1-4. The outside and inside sheets of material 101,102 forming the neck portion 2 and second portion 6 of each lobe 3 lie in generally parallel planes with the second portions 6 of each lobe 3 abutting each other. The additional thickness of the first portions 5 of each lobe 3, combined with the effects of the waist strap 15 and two connecting strips 12,13 causes the first portions 5 to twist slightly causing the lifejacket 1 to crease where the first portions 5 connect to the neck portion 2, and causing the first portions 5 to ride up against each other with their inside surfaces abutting. This way the first portions 5 effectively extend out of the plane in which the remainder of the lifejacket 1 lies (as best seen in figure 4). This, in turn, causes the first connecting strips 12 to extend out from the bottom edges 11 of the second portions 6 at an approximate right angle, with their free edges abutting or overlapping.

[0051] Thus both the second portions 6 of each lobe 3 and the first strips 12 of each lobe 3 form splash barriers serving to prevent water from passing up from beneath the lifejacket 1 towards a wearer's airways, or between the lobes 3 or between the first and second portions 5,6 of each lobe 3 towards a wearer's airways. At the same time, the significantly reduced thickness of the second portions 6 of the lobes 3, as compared to the first portions 5, creates a space beneath the wearer's chin allowing freedom of movement. The first connecting strips 12 also serve to urge the second portions 6 of the lobes 3 into contact with the wearer's clavicle so that they lie flat over the wearer's chest, also ensuring that space is created under the wearer's chin.

[0052] Referring to figure 5, the neck opening 10 is formed by the concave interior surface of neck portion 2, together with top edges 8 of the second portion 6 of each lobe 3.

[0053] The first connecting strips 12 are each stitched to the first and second portions 5,6 along the above mentioned stitch lines 106, 107. The second connecting strips 13 are each stitched to the first and second portions 5,6 along the above mentioned stitch lines 107, 108.

[0054] Owing to the relative size of the connecting strips 12,13 (in relation to distance between the respective stitch lines 106,107,108 of the sheets 101,102), the connecting strips 12,13, in use, have the effect of contorting their respective lobes 3 such that the first portions 5 of each lobes 3 to achieve the shape of lifejacket 1 shown in figures 1-4.

[0055] The double dashed lines extending around the peripheries of each sheet 101,102 and the sheets 103,104 that form the head support 4 are the weld lines, about which the sheets 101,102,103,104 are welded together, to form the life1jacket 1. This includes the weld lines around the apertures 105a,105b on which the outside sheet 101 of the lifejacket 1 is welded to the inside sheet 103 of the head support 4.

[0056] The outside sheet of material 101 has an aperture 109 through which an inflation tube (including a one-way valve) is inserted, to allow the lifejacket 1 to be inflated. The inside sheet of material 102 has a pair of patches 110, which allow the fasteners of the harness 14 to be attached to the sheet 102. The patches 110 are each placed toward the free end of the first portion 5 of each lobe 3 such that, when inflated, the patches 110 and fasteners are positioned on either side of the waist of the wearer.

[0057] For the sake of legibility of figure 5, not all features of both sheets of materials 101,102 have been labelled. Any features common to both sheets of material 101,102 are the same, even if said features are not labelled on one of the sheets of material for legibility purposes.

[0058] The above embodiment is described above by way of example only. Many variations are possible without departing from the scope of protection afforded by the appended claims.

Claims

1. An inflatable lifejacket comprising two lobes connected by a neck portion, the lobes being arranged, in use, to lie over a wearer's chest with opposed edges of the lobes abutting each other, wherein at least one lobe comprises a first, inflatable, portion towards a free end of the lobe and a second portion, wherein, when the lifejacket is inflated, the second portion is less thick than the first portion so that, in use, it creates a space below the wearer's chin, whilst forming a barrier to water.

2. An inflatable lifejacket according to claim 1 wherein both lobes of the lifejacket comprise first and second portions.

3. An inflatable lifejacket according to any preceding claim wherein the or each second portion is positioned between the first portion of the same lobe and the neck portion.

4. An inflatable lifejacket according to any preceding claim wherein the or each second portion is inflatable.

5. An inflatable lifejacket according to any preceding claim wherein the or each second portion extends from the or each first portion.

6. An inflatable lifejacket according to any preceding claim wherein the or each second portion is arranged such that, in use, the or each second portion and the neck portion of the lifejacket together encircle the

wearer's neck with a close fit.

7. An inflatable lifejacket according to any preceding claim wherein the or each second portion is arranged so that, in use, it extends across the wearer's chest towards the opposing lobe such that the or each second portion abuts the opposing lobe.

8. An inflatable lifejacket according to any preceding claim wherein each lobe comprises one or more connecting strips arranged to control the shape of the lobe when inflated.

9. An inflatable lifejacket according to claim 8 wherein a connecting strip is attached to the first and second portions of a lobe, so as to limit the distance between an edge of the second portion and an adjacent, inner edge of the first portion.

10. An inflatable lifejacket according to any preceding claim wherein the neck portion comprises a head support.

11. An inflatable lifejacket according to any preceding claim, wherein the neck portion and both lobes including any inflatable second portion and head support comprise a single, fluidly connected chamber such that all inflatable portions of the lifejacket inflate together.

12. An inflatable lifejacket according to any preceding claim wherein the lifejacket comprises a harness arranged to secure the first portions of the lobes relative to one another and to the wearer.

13. An inflatable lifejacket according to any preceding claim wherein the harness is a three point harness, being connected to the inside surface of each first portion and the inside surface of the neck portion.

14. An inflatable lifejacket according to any preceding claim wherein the lifejacket is formed from two layers of sheet material, optionally a plastics sheet material.

15. An inflatable lifejacket according to any preceding claim wherein the lifejacket is formed from two layers of material which are sealed together along an airtight seam, thereby defining an inflation chamber.

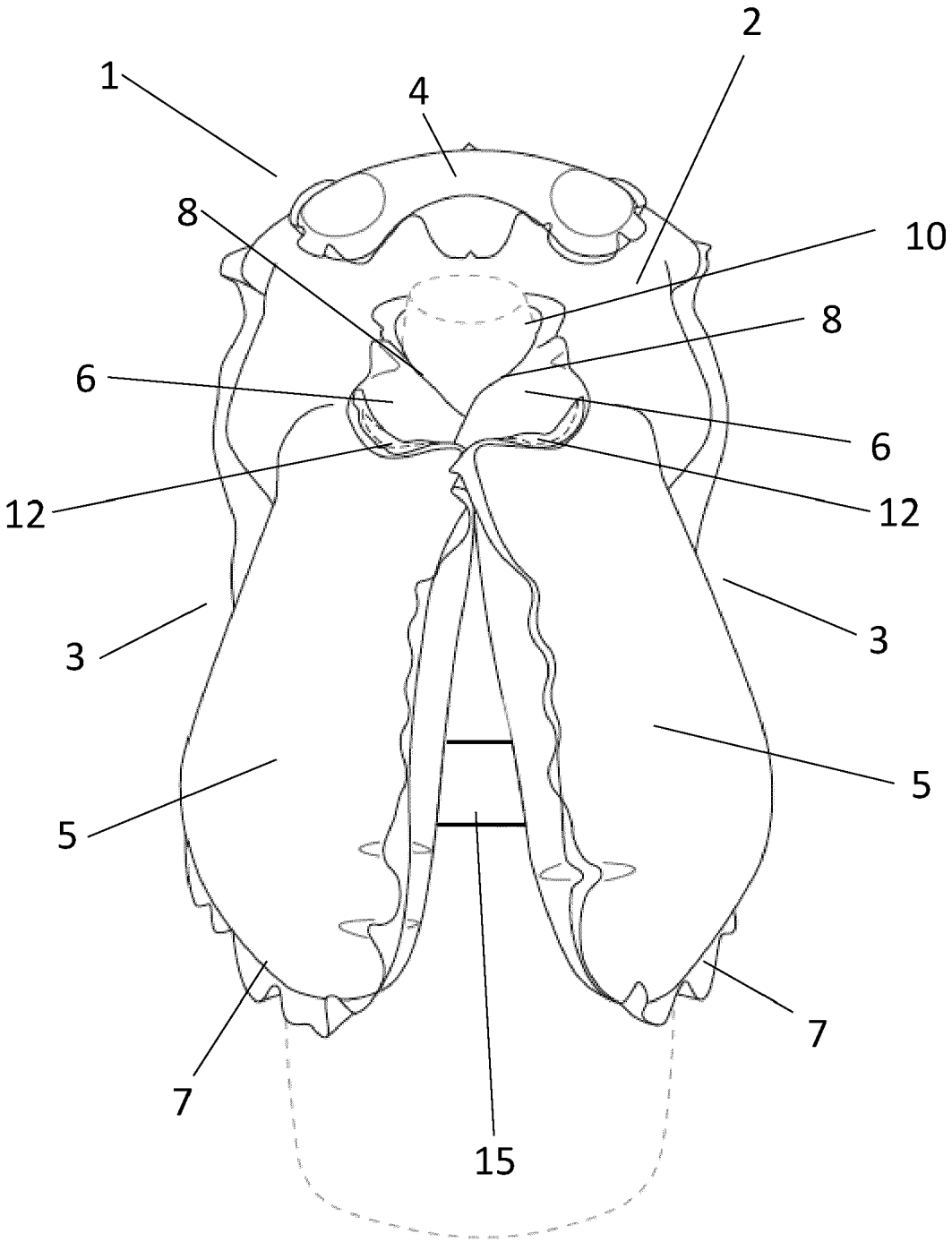


Figure 1

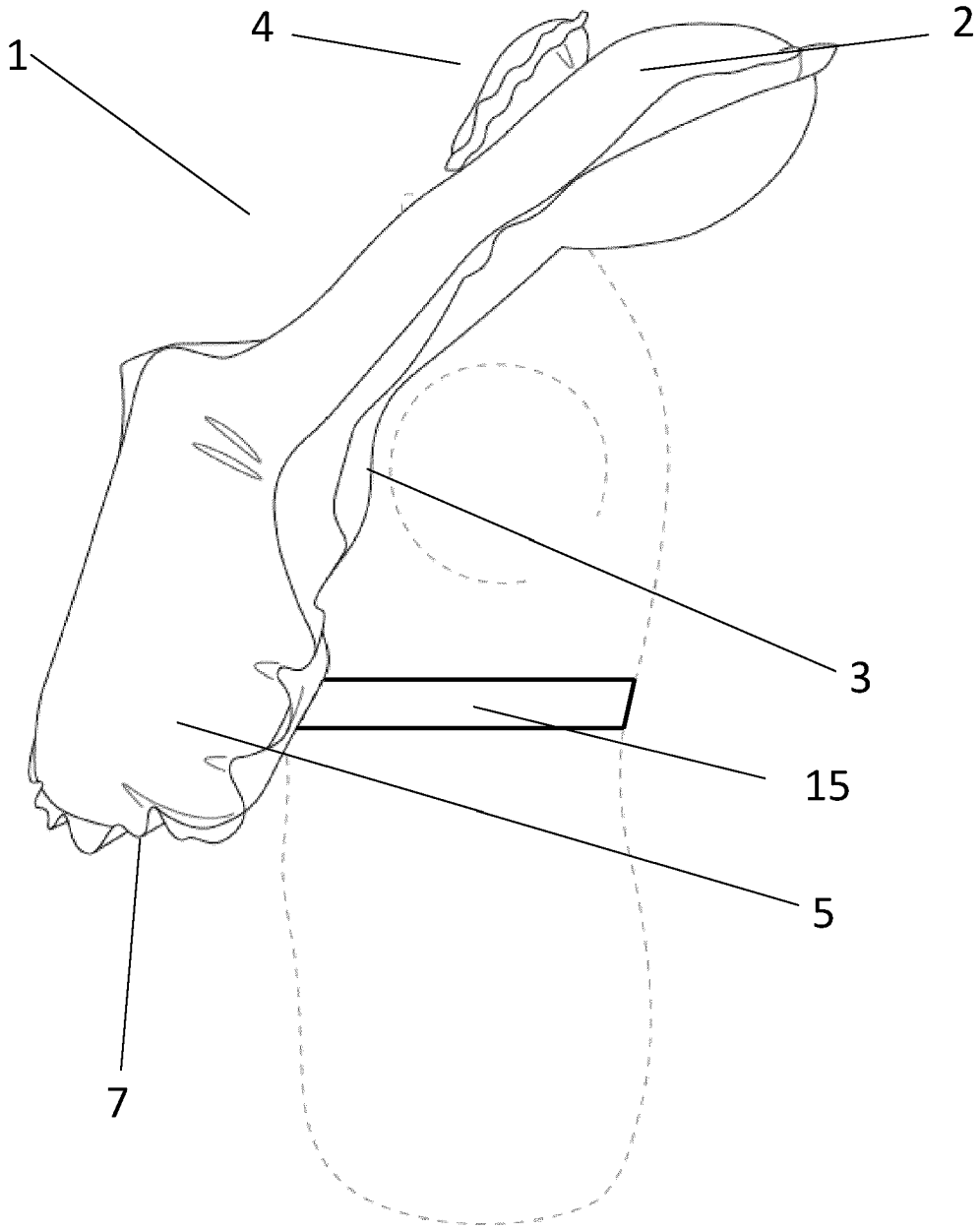


Figure 2

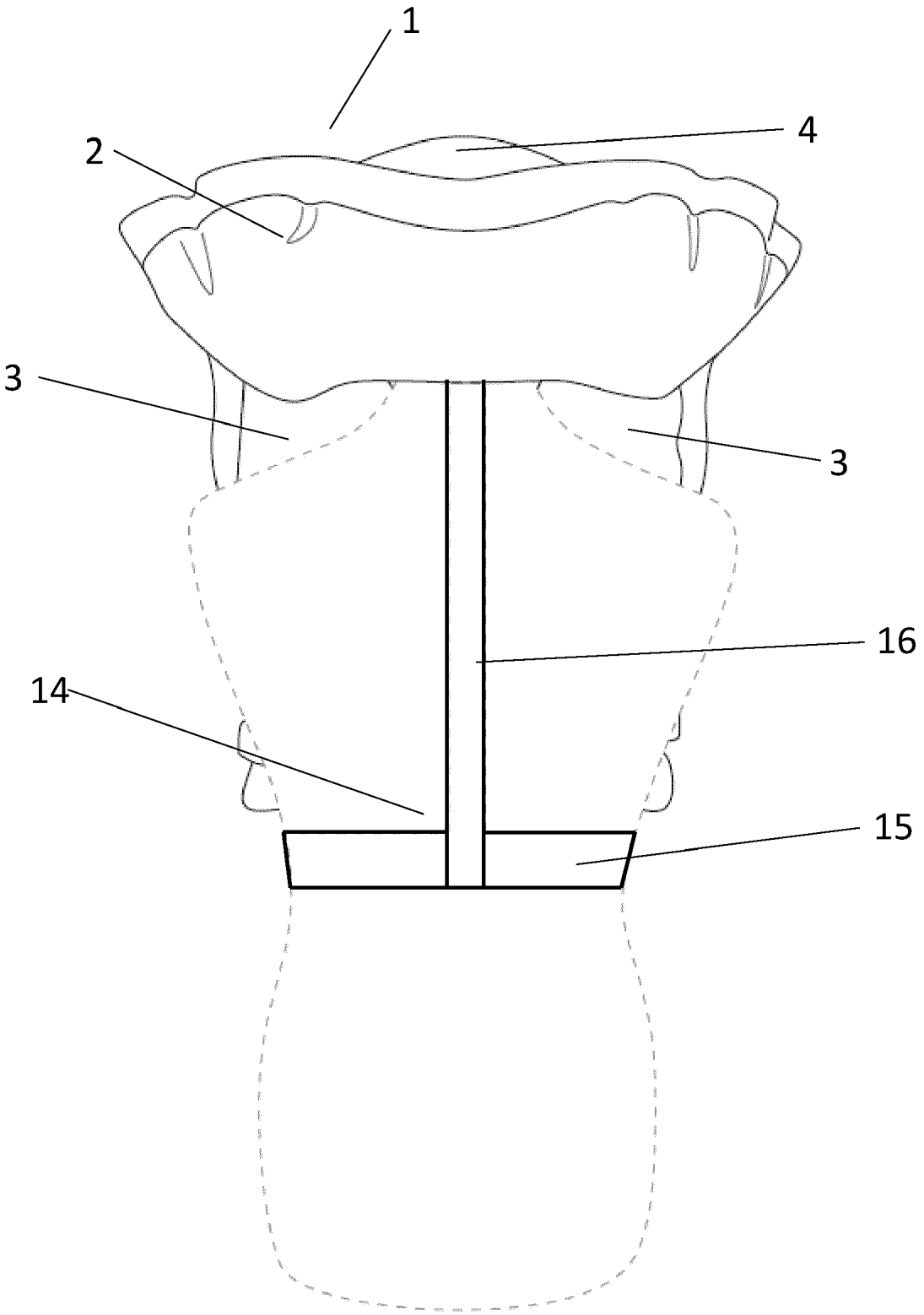


Figure 3

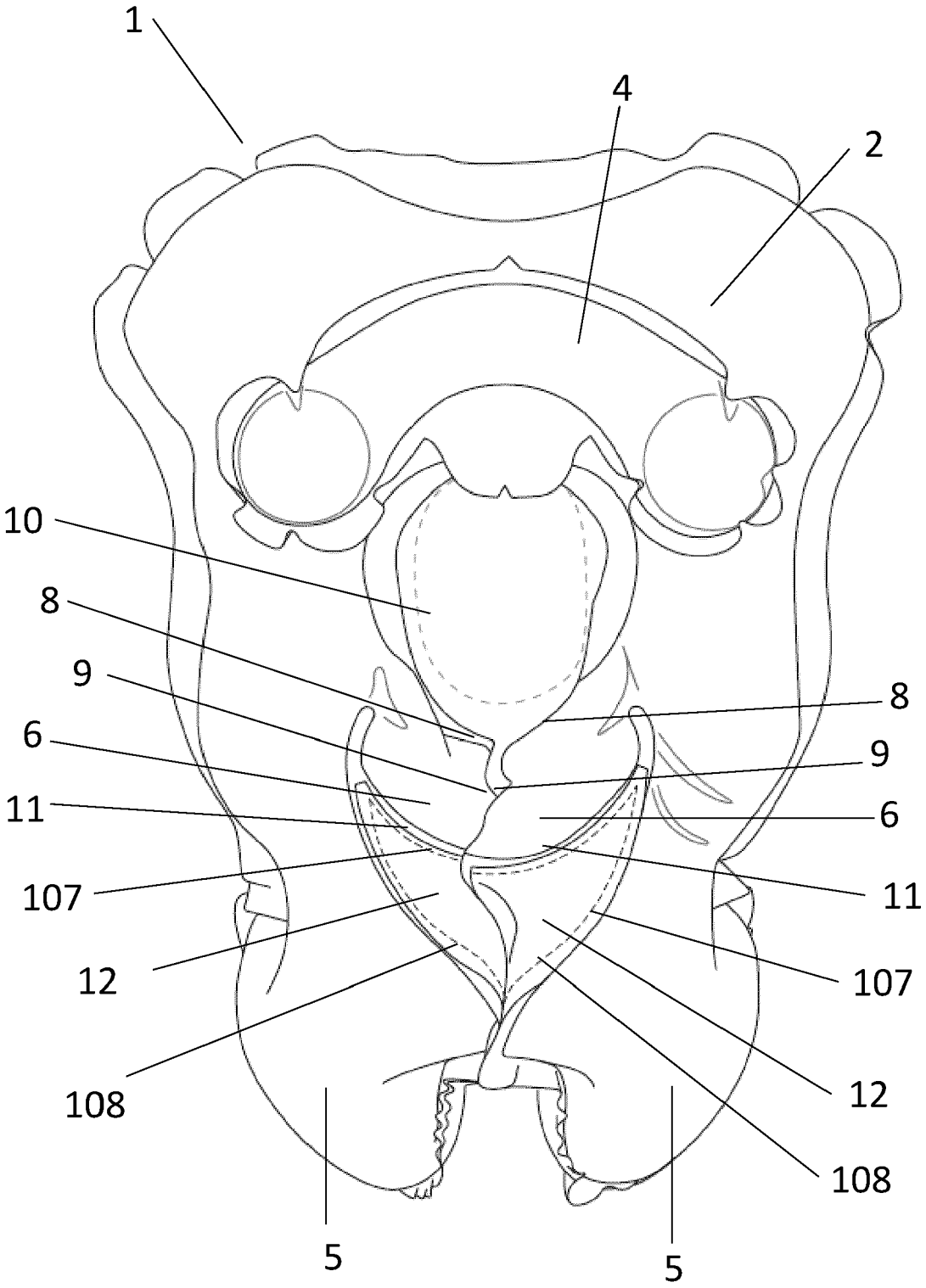
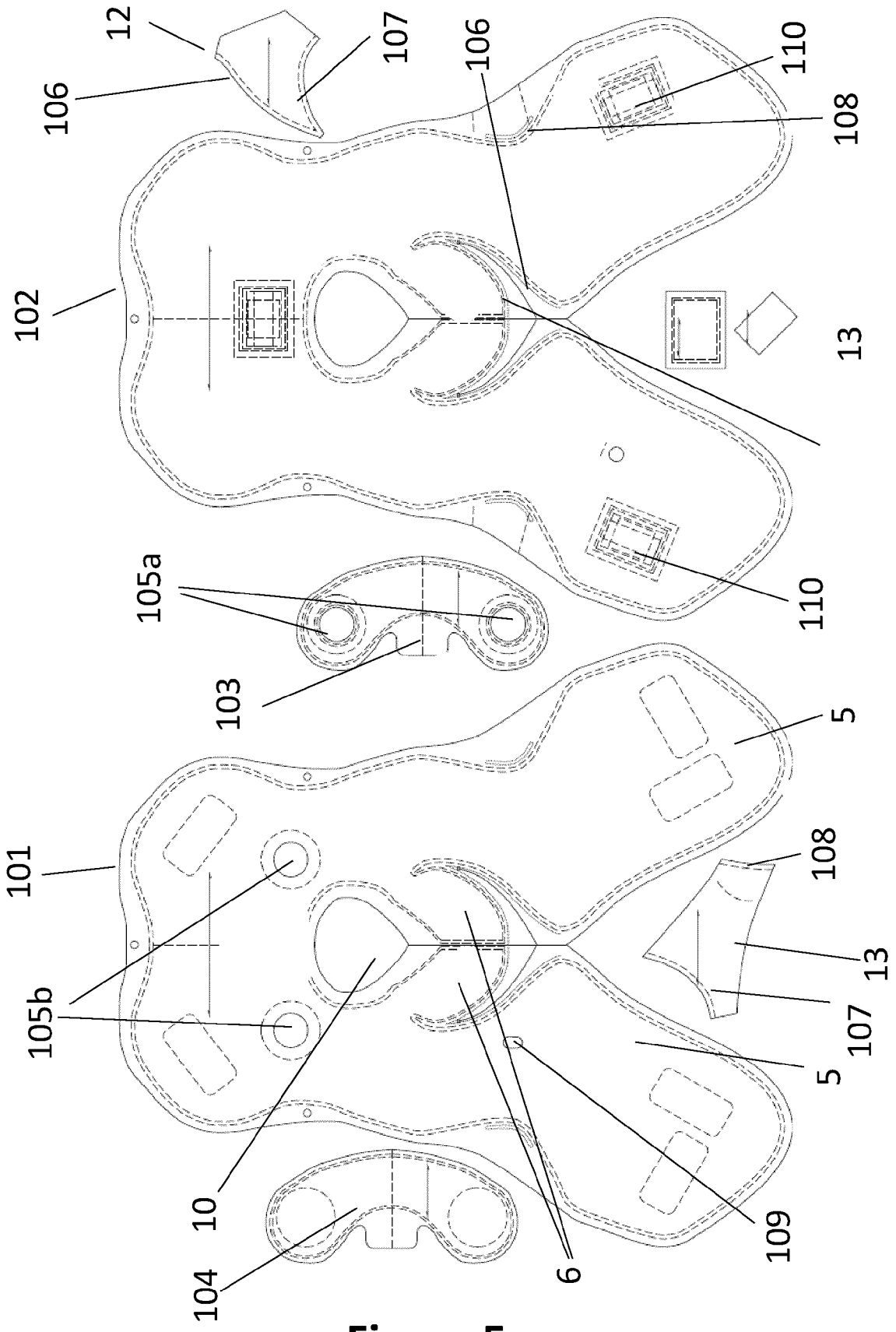


Figure 4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105a
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105b
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109
6
104

Figure 5

REFERENCES CITED IN THE DESCRIPTION

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