



(51) International Patent Classification:

B32B 3/04 (2006.01) *B32B 5/18* (2006.01)
B32B 1/08 (2006.01) *B32B 7/12* (2006.01)
B32B 3/06 (2006.01) *B32B 9/02* (2006.01)
B32B 3/10 (2006.01) *B32B 9/04* (2006.01)

(21) International Application Number:

PCT/EP2024/068981

(22) International Filing Date:

05 July 2024 (05.07.2024)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

202310827181.4	06 July 2023 (06.07.2023)	CN
202410882001.7	02 July 2024 (02.07.2024)	CN

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(81) Designated States (*unless otherwise indicated, for every kind of national protection available*): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CV, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IQ, IR, IS, IT, JM, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, MG, MK, MN, MU, MW, MX, MY, MZ, NA,

(54) Title: COVERING AND CARRIER WITH COVERING

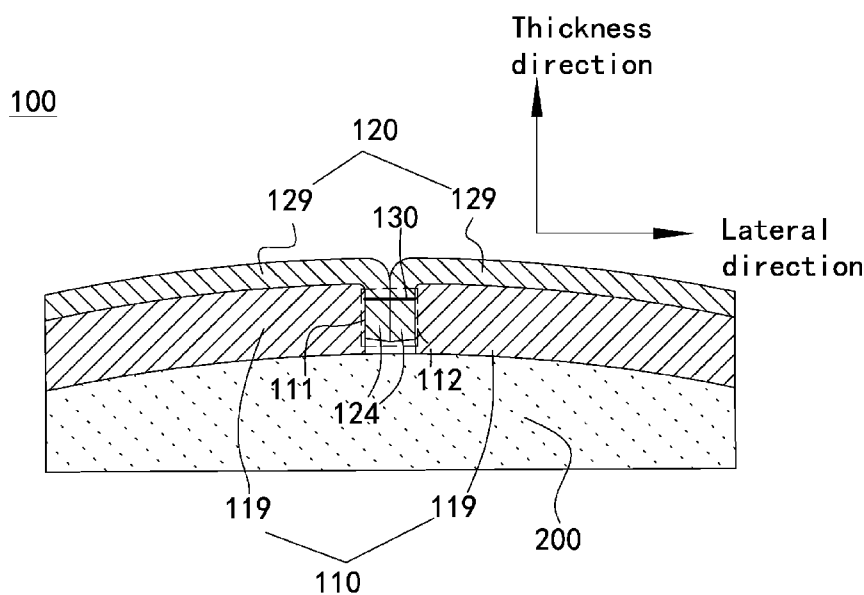


FIG. 8

(57) Abstract: The present application discloses a covering, where the covering includes: a first material layer, covering the exterior of a component; a second material layer, covering the exterior of the first material layer, where the second material layer comprises a plurality of second material portions, each of the second material portions is provided with a connecting portion and a remaining material portion between the connecting portion and a free end of the second material portion; and a connecting member, connecting the plurality of the connecting portions to connect the second material portions; where the first material layer is provided with a gap portion for accommodating the remaining material portion. The present application further discloses a carrier with the covering.

NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO,
RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, ST, SV, SY, TH,
TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS,
ZA, ZM, ZW.

- (84) Designated States** (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, CV, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SC, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, ME, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Published:

- with international search report (Art. 21(3))
- in black and white; the international application as filed contained color or greyscale and is available for download from PATENTSCOPE

Covering and carrier with covering

Technical field

[0001] The present disclosure relates to a covering and a carrier with the covering

Background

5 [0002] In a carrier such as a stroller, a covering is usually provided on the outside of a component such as a handrail. The covering is, for example, a protective sleeve that covers the handrail tube. Such a covering may be of a multi-layer structure, for example, including an inner layer close to the handrail tube and an outer layer away from the handrail tube. In some applications, the inner layer may be a polymeric
10 material such as Ethylene Vinyl Acetate Copolymer (EVA) and the outer layer may be a leather material.

[0003] The raw material of the covering is usually in a sheet form. In the case where the covering is desired to be wrapped around a component, the covering needs to be enclosed into a shape such as a tube and therefore the two edges of
15 the covering need to be connected to each other. Since both the inner and outer layer of the covering have a certain thickness, it is necessary to provide a joining technique to form a smooth connection without protrusions, so as to improve the aesthetics of the covering.

Summary

20 [0004] A covering according to the present application, includes: a first material layer, covering the exterior of a component; a second material layer, covering the exterior of the first material layer, where the second material layer includes a plurality of second material portions, each of the second material portions is provided with a connecting portion and a remaining material portion between the
25 connecting portion and a free end of the second material portion; and a connecting member, connecting the plurality of the connecting portions to connect the second material portions; where the first material layer is provided with a gap portion for accommodating the remaining material portion.

[0005] In an embodiment, the gap portion is located at the interior of the first material layer.

[0006] In an embodiment, a thickness of the first material layer is greater than a thickness of the second material layer.

- 5 [0007] In an embodiment, the component is a tube or a rod, and the first material layer and the second material layer are each formed as a tubular layer.

[0008] In an embodiment, the component is a handrail tube or a handrail rod, and the covering is a handrail sleeve covering the exterior of the component.

- 10 [0009] In an embodiment, the first material layer is a tubular structure formed by an integrated forming manner; or the first material layer is formed by winding a sheet material to form a tubular layer.

[0010] In an embodiment, the gap portion is formed by cutting the first material layer; or the gap portion is a recessed structure formed by molding the first material layer.

- 15 [0011] In an embodiment, the first material layer is a foam layer, and the second material layer is a leather layer.

[0012] In an embodiment, the first material layer and the second material layer are connected to each other by a hot melt adhesive or a binder or a double-sided tape.

- 20 [0013] In an embodiment, the first material layer includes a plurality of first material portions, and each of the first material portions is respectively bonded to one of the second material portions.

[0014] In an embodiment, each of the first material portions forms a cross section at a position adjacent to each other, and the gap portion is formed between a plurality of the cross sections.

- 25 [0015] In an embodiment, the remaining material portion is bent along the connecting member and enters the gap portion.

[0016] In an embodiment, the remaining material portion rests against the cross section on at least one side of the gap portion.

[0017] In an embodiment, a depth of the cross section along a thickness direction of the first material portion is greater than or equal to a width of the remaining
5 material portion between the connecting portion and the free end.

[0018] In an embodiment, each of the second material portions includes a bonding portion and a sheet structure adjacent to each other, the sheet structure comprises the connecting portion and the remaining material portion, and the connecting portion is closer to the bonding portion than the remaining material portion; where
10 the bonding portion is bonded to the first material layer having a first thickness, the sheet structure is not bonded to the first material layer or is bonded to the first material layer having a second thickness, and the second thickness is less than the first thickness.

[0019] In an embodiment, the sheet structure is not bonded to the first material
15 layer, and the remaining material portion is bent into the gap portion, which is against at least one side of the cross section of the gap portion; or the sheet structure is bonded to the first material layer with the second thickness, the remaining material portion is bent into the gap portion, and the first material layer with the second thickness is pressed against at least one side of the cross section of
20 the gap portion.

[0020] A carrier according to the present application, includes at least one component in a form of a long strip, and the component is covered with the covering according to the present application.

Brief description of the drawings

25 [0021] The embodiments of the present disclosure will be described in detail below with reference to the accompanying drawings, in which:

[0022] FIG. 1 is a schematic diagram showing a tubular structure and connecting edges of the covering, where the box shows the joint of the edges of the covering.

[0023] FIGS. 2 to 4 are cross-sectional schematic diagrams showing the conventional connection technology at the box of FIG. 1, where FIG. 2 shows the unconnected edges, FIG. 3 shows the stitched edges, and FIG. 4 shows the covering after being stitched and covering a surface of a component.

5 [0024] FIGS. 5 to 8 shows cross-sectional schematic diagrams at the box of FIG. 1 according to a first embodiment of the present application, where FIG. 5 shows the unconnected edges, FIG. 6A shows a gap portion formed by cutting first, FIG. 6B shows a gap portion formed by bonding first, FIG. 7 shows a second material layer after being stitched, and FIG. 8 shows the covering after being stitched and covering
10 the surface of the component.

[0025] FIG. 9 shows a schematic diagram of a covering according to the first embodiment being applied to a surface of a flat component.

[0026] FIGS. 10 to 12 shows cross-sectional schematic diagrams at the box of FIG. 1 according to a second embodiment of the present application, where FIG. 10
15 shows a first material layer with a notch, FIG. 11 shows the second material layer after being stitched and to be turned over, and FIG. 12 shows the covering after being stitched and covering the surface of the component.

[0027] FIG. 13 shows a schematic diagram showing a covering according to the second embodiment being applied to a surface of a flat component.

20 [0028] FIG. 14 shows a carrier, such as a stroller, according to the present application.

Detailed description

[0029] Although the disclosure is illustrated and described herein with reference to specific embodiments, the disclosure should not be limited to the details shown.

25 Rather, a variety of modifications can be made to these details within the scope of the equivalent solutions of claims and without departing from the present disclosure.

[0030] The descriptions of directions such as "forward", "backward", "up" and "down" involved in the present disclosure are only for ease of understanding. The

present disclosure is not limited to these directions, but may be adjusted according to actual conditions.

[0031] A covering 100 discussed in the present application is generally described with reference to FIG. 1. The covering 100 is wrapped around the exterior of the component 200. The component 200 may be a rod or tube in a form of long strip, or a plate. The present application is not limited to the shape of the component 200. The covering 100 includes a first material layer 110 and a second material layer 120. The first material layer 110 covers the exterior of the component 200, and the second material layer 120 covers the exterior of the first material layer 110. That is, the first material layer 110 is an inner layer, and the second material layer 120 is an outer layer. The two material layers may be formed of different materials, for example, the first material layer 110 is a foam layer (e.g., a foam layer of EVA material), and the second material layer 120 is a leather layer, but materials are not limited to the above. The thickness of the first material layer 110 may be greater than the thickness of the second material layer 120. In some embodiments, the thickness of the first material layer 110 may be 5 mm.

[0032] At least one of the first material layer 110 and the second material layer 120 may be formed by connection. For example, at the connection part shown in the box of FIG. 1, two edges of the first material layer 110 are connected to each other, and two edges of the second material layer 120 are connected to each other. The connecting part may be a region extending in the longitudinal direction so that the covering 100 is formed into a tubular shape.

[0033] The connection manner of the existing covering 300 in the prior art is described with reference to FIGS. 2 to 4 in enlarged views, which correspond to the connecting part at the box of FIG. 1.

[0034] FIG. 2 shows an unconnected existing covering 300, where the third material layer 310 includes two third material portions 319 to be connected, and the fourth material layer 320 includes two fourth material portions 329 to be connected. It should be understood that the two third material portions 319 may be two edges of the same material sheet, and the two fourth material portions 329 may also be two edges of the same material sheet. A reliable connection cannot be formed if the

cross sections of the two third material portions 319 and the cross sections of the two fourth material portions 329 are simply connected end-to-end.

[0035] Referring to FIG. 3, in order to form a reliable connection, in the prior art, the two third material portions 319 and the two fourth material portions 329 are
5 commonly rolled inward (the side where the third material layer 310 is located) respectively, and then a connecting member 330 is used to penetrate the two third material portions 319 and the two fourth material portions 329. The connecting member 330 may be a suture, a rivet, etc. With such a connection method, the third material portion 319 and the fourth material portion 329 are each required to leave
10 some remaining material on one side of the connection member 330 to prevent the connecting member 330 from being detached.

[0036] Referring to FIG. 4, when the existing covering 300 connected in the above manner is wrapped around the exterior of the component 200, the remaining material is positioned at the inside of the existing covering 300, and the remaining
15 material presses against the surface of the component 200, which causes the existing covering 300 to bulge outwardly to form a bulging portion R. Such a bulging portion R affects the flatness of the surface of the existing covering 300, and thus affects the aesthetics thereof.

[0037] To solve the above problem, the present application provides a new
20 covering 100. The covering 100 and the steps for forming the covering 100 according to a first embodiment of the present application will be described below with reference to FIGS. 5 to 9.

[0038] Referring to FIG. 5, in the first embodiment of the present application, the first material layer 110 to be connected includes a plurality of first material portions
25 119, and each first material portion 119 is respectively bonded to one second material portion 129. In this embodiment, both the first and second material layers are sheet materials.

[0039] Referring to FIG. 6A, before connection is performed, a gap portion 112 is formed at the interior of the first material layer 110. The gap portion 112 may be
30 formed by first cutting off a portion of the first material layer 110 and then bonding the first material layer 110 and the second material layer 120 together. More

specifically, portions of the two first material portions 119 of the first material layer 110 close to the connection end are cut off to form the gap portion 112. Therefore, each of the first material portions 119 forms a cross section at a position adjacent to each other, and the gap portion 112 is formed between a plurality of the cross

5 sections 111.

[0040] In this way, the two second material portions 129 of the second material layer 120 extend beyond the two first material portions 119 in the lateral direction respectively. Therefore, it can be considered that each second material portion 129 includes a bonding portion 121 and a sheet structure 122 adjacent to each other,

10 where the bonding portion 121 is bonded to the first material layer 110 having a first thickness, and the sheet structure 122 is not bonded to the first material layer 110. The first material layer 110 and the second material layer 120 are connected to each other by a hot melt adhesive, a binder, a double-sided tape, or the like, where the hot melt adhesive may be one of a PU hot melt adhesive, a TPU hot melt adhesive,

15 a PS hot melt adhesive and a PA hot melt adhesive.

[0041] More specifically, each sheet structure 122 includes the connecting portion 123, the remaining material portion 124, and the free end 125, where the connecting portion 123 is closer to the bonding portion 121 than the remaining material portion 124, and the remaining material portion 124 is between the connecting portion 123

20 and the free end 125. The connecting portion 123 is the position to set the connecting member 130. For example, the connecting member 130 is a suture, which is sewn to the position of the connecting portion 123 manually or by a sewing machine, which will be described in detail below.

[0042] A depth H of the cross section 111 along a thickness direction of the first material portion 119 is greater than or equal to a width T of the remaining material portion 124 between the connecting portion 123 and the free end 125, to allow the remaining material portion 124 to be accommodated in the gap portion 112, which will be described in detail below.

25

[0043] Referring to FIG. 6B, an alternative way for forming the gap portion 112 at the interior of the first material layer 110 is shown, where the first material layer 110 and the second material layer 120 are bonded together firstly, and then a portion of

30

the first material layer 110 is cut off. In this way, when the first material layer 110 and the second material layer 120 are difficult to be completely separated at the bonding point due to adhesives or other reasons, part of the first material portion 119 may remain at the gap portion 112, so that the first material portion 119 forms a first thickness portion 119a and a second thickness portion 119b. The first thickness portion 119a corresponds to the uncut portion of the first material portion 119, the second thickness portion 119b corresponds to the cut portion of the first material portion 119 (i.e., the gap portion 112), and a second thickness of the second thickness portion 119b is less than a first thickness of the first thickness portion 119a. The sheet structure 122 of the second material portion 129 is bonded to the second thickness portion 119b. It should be noted that if the first material layer 110 and the second material layer 120 are first bonded and then a portion of the first material layer 110 is cut off, the connecting member 130 may be connected to the first material portion 119 before or after the removal. It should be understood, in the situation the connecting member 130 is connected to the connecting portion 123 as shown in Fig. 6B, and the two second material portions 129 have been connected, the remaining material portion 124 will bend into the gap portion 112. In some embodiments, the second thickness portion 119b (i.e. the first material portion with the second thickness) abuts against the cross section 111 on at least one side of the gap portion 112.

[0044] Referring to FIG.7, the setting manner of the connecting member 130 in the first embodiment of the present application is described. After forming the gap portion 112 in the first material layer 110 (e.g., by way of forming the gap portion 112 in FIG. 6A or FIG. 6B), the two ends of the covering 100 to be connected are brought close to each other, in particular, the sheet structures 122 of the two second material portions 129 are brought close to each other. At this moment, the first material layer 110 is first inverted to be first located on the outside of the second material layer 120. The connecting member 130 then connects the two sheet structures 122 and the second thickness portion 119b that may be bonded to the sheet structures 122 at the connecting portion 123 (see FIG. 6B), for example, the two second material portions 129 are connected through penetrating the two sheet structures 122 by stitches or rivets.

[0045] Referring to FIG. 8, after the two second material portions 129 are connected, the covering 100 is flipped over to wrap around the surface of the component 200, at which moment the first material layer 110 is disposed on the inside of the second material layer 120. At this time, the remaining material portion 124 is accommodated in the gap portion 112 in the first material layer 110. More specifically, the remaining material portion 124 is bent along the connecting member 130 and enters the gap portion 112. The remaining material portion 124 may rest against the cross section 111 on at least one side of the gap portion 112. Since the depth H of the first material portion 119 in the thickness direction is greater than or equal to the width T of the remaining material portion 124 between the connecting portion 123 and the free end 125 (see FIGS. 6A and 6B), the remaining material portion 124 will not extend inwardly beyond the inner side surface of the first material layer 110, and thus will not press against the surface of the component 200. Thus, the covering 100 has a flat surface at the joint without forming a bulging portion R as in the prior art (see FIG. 4).

[0046] It should be understood that FIG. 8 shows a case where the covering 100 is applied to a tube or a rod, where the covering 100 surrounds the outer periphery of the component 200 (see FIG. 1). Wherein the first material layer 110 is formed by winding a sheet-like material to form a cylindrical layer, which covers the outer circumference of component 200. However, the covering 100 of the present application may also be applied to a plate shown in FIG. 9, where the covering 100 covers only one side of the component 200.

[0047] A covering 100 according to a second embodiment of the present application is described with reference to FIGS. 10 to 13.

[0048] Referring to FIG. 10, a three-dimensional view of the first material layer 110 and a partially enlarged sectional view of the three-dimensional view are shown. In the second embodiment, the first material layer 110 is not formed by rolling and connecting sheet materials, but is formed into a tubular structure in an integrated forming manner. FIG. 10 shows a portion of the tubular structure including the gap portion 112. The gap portion 112 is a recessed structure formed by molding the first material layer 110. Of course, in other embodiments, the gap portion 112 may also be formed by cutting on a complete tubular structure, which is not limited herein.

[0049] Referring to FIG. 11, similar to the first embodiment, the second material layer 120 includes two second material portions 129, each of the second material portions 129 includes a sheet structure 122, and the two sheet structures 122 are connected at a connection portion 123 by a connecting member 130, so that the two
5 second material portions 129 are connected. Specifically, when the component 200 is a tube or a rod, the inner side of the second material layer 120 is turned outward, and the sheet structures 122 of the two second material portions 129 are brought close to each other. Then, the connecting member 130 connects the two sheet structures 122 at the connecting portion 123, for example, by penetrating the two
10 sheet structures 122 with stitches or rivets to connect the two second material portions 129, thereby forming the second material layer 120 to be turned over as shown in FIG. 11. Referring to FIG. 12, after the second material layer 120 shown in FIG. 11 is turned back to a situation where the inner side faces inward, it is covered on the outer side of the first material layer 110 such that the remaining material
15 portion 124 of the second material layer 120 corresponds to the clearance portion 112 of the first material layer 110, and the covering 100 is obtained. In this way, when the covering 100 covers the outer side of the component 200, the covering 100 can also have a flat surface at the joint.

[0050] It should be noted that, for the first material layer 110 of the tubular
20 structure formed by the integrated forming manner in this embodiment, a hot melt adhesive may be laminated and fixed on the outer side of the first material layer 110 or the inner side of the second material layer 120 (specifically, the hot melt adhesive may be laminated and fixed by hot pressing or vacuum adsorption, or through other adhesive manners such as a double-sided tape). After the second material layer 120
25 is turned over and placed on the exterior of the first material layer 110, the component 200 is inserted into a hollow part of the first material layer 110, and then the whole is heated and baked so that the hot melt adhesive is completely melted to firmly affix the first material layer 110 and the second material layer 120. In addition, the first material layer 110 and the component 200 may also be connected to each
30 other by means of a hot melt adhesive, binder, or double-sided tape, so that the covering 100 will not slide on the component 200 or come off.

[0051] Referring to FIG. 13, the covering 100 according to the second embodiment may also be applied to a plate, where the covering 100 covers only one side of the component 200. It should be noted that, in the above-mentioned embodiments, the plurality of second material portions 129 to be connected may be different edges of the same material sheet, or may be edges of different material sheets. For example, the edges of a plurality of small-area material sheets are connected to each other to form a second material layer 120 with a large area.

[0052] It should be noted, according to the covering 100 provided in this application, the first material layer 110 and the second material layer 120 may be directly adjacent to each other; there may be other material layers between the first material layer 110 and the second material layer 120, therefore the first material layer 110 and the second material layer 120 may be indirectly bonded with each other.

[0053] The coverings of the various embodiments of the present application can be applied to various components, such as a handrail tube or a handrail rod of a carrier, and the covering is a handrail sleeve covering the exterior of the component. The carrier is, for example, a stroller, but is not limited thereto. FIG. 14 illustrates an example of a carrier as a stroller, the component 200 may be a pushing handle tube on the upper portion of the stroller for the caregiver to hold while pushing the stroller. The component 200 may also be a handrail tube at the front of the seat portion of the stroller for the child to hold while riding. The exterior of each component 200 may be covered with a covering 100. The component 200 of the stroller shown in FIG. 14 is in the shape of a long strip and extends in a curved manner, and is generally in a U-shape. The covering 100 covers both the curved portions on both sides of the component 200 and the middle portion between the two curved portions.

[0054] Although preferred embodiments have been shown and described herein, it should be understood that these embodiments are given as examples only. Many modifications, changes and substitutions will occur to those skilled in the art without departing from the spirit of the disclosure. Accordingly, the appended claims are intended to cover all such modifications that fall within the spirit and scope of the present disclosure.

List of reference signs

100	Covering
110	First material layer
111	Cross section
112	Gap portion
119	First material portion
119a	First thickness portion
119b	Second thickness portion
120	Second material layer
121	Bonding portion
122	Sheet structure
123	Connecting portion
124	Remaining material portion
125	Free end
129	Second material portion
130	Connecting member
200	Component
300	Existing covering
310	Third material layer
319	Third material portion
320	Fourth material layer
329	Fourth material portion
330	Connecting member
H	Depth
T	Width
R	Bulging portion

Claims

- 1 A covering, wherein the covering comprises:
a first material layer, covering an exterior of a component;
a second material layer, covering an exterior of the first material layer, wherein
5 the second material layer comprises a plurality of second material portions,
each of the second material portions is provided with a connecting portion and
a remaining material portion between the connecting portion and a free end of
the second material portion; and
a connecting member, connecting the plurality of the connecting portions to
10 connect the second material portions;
wherein the first material layer is provided with a gap portion for
accommodating the remaining material portion.
- 2 The covering according to claim 1, wherein,
the gap portion is located at the interior of the first material layer.
- 15 3 The covering according to claim 1, wherein,
a thickness of the first material layer is greater than a thickness of the second
material layer.
- 4 The covering according to claim 1, wherein,
the component is a tube or a rod, and the first material layer and the second
20 material layer are each formed as a tubular layer.
- 5 The covering according to claim 4, wherein,
the component is a handrail tube or a handrail rod, and the covering is a
handrail sleeve covering the exterior of the component.
- 6 The covering according to claim 4, wherein,
25 the first material layer is a tubular structure formed by an integrated forming
manner; or
the first material layer is formed by winding a sheet material to form a tubular
layer.
- 7 The covering according to claim 1, wherein,
30 the gap portion is formed by cutting the first material layer; or

the gap portion is a recessed structure formed by molding the first material layer.

- 8 The covering according to claim 1, wherein,
the first material layer is a foam layer, and the second material layer is a
5 leather layer.
- 9 The covering according to claim 1, wherein,
the first material layer and the second material layer are connected to each
other by a hot melt adhesive or a binder or a double-sided tape.
- 10 The covering according to any one of claims 1-9, wherein,
10 the first material layer comprises a plurality of first material portions, and each
of the first material portions is respectively bonded to one of the second
material portions.
- 11 The covering according to claim 10, wherein,
each of the first material portions forms a cross section at a position adjacent
15 to each other, and the gap portion is formed between a plurality of the cross
sections.
- 12 The covering according to claim 11, wherein,
the remaining material portion is bent along the connecting member and
enters the gap portion.
- 20 13 The covering according to claim 12, wherein the remaining material portion
rests against the cross section on at least one side of the gap portion.
- 14 The covering according to claim 11, wherein
a depth of the cross section along a thickness direction of the first material
portion is greater than or equal to a width of the remaining material portion
25 between the connecting portion and the free end.
- 15 The covering according to claim 10, wherein each of the second material
portions comprises a bonding portion and a sheet structure adjacent to each
other, the sheet structure comprises the connecting portion and the remaining

- material portion, and the connecting portion is closer to the bonding portion than the remaining material portion;
wherein the bonding portion is bonded to the first material layer having a first thickness, the sheet structure is not bonded to the first material layer or is
5 bonded to the first material layer having a second thickness, and the second thickness is less than the first thickness.
- 16 The covering according to claim 15, wherein the sheet structure is not bonded to the first material layer, and the remaining material portion is bent into the gap portion, which is against at least one side of the cross section of the gap
10 portion; or
the sheet structure is bonded to the first material layer with the second thickness, the remaining material portion is bent into the gap portion, and the first material layer with the second thickness is pressed against at least one side of the cross section of the gap portion.
- 15 17 A carrier, wherein,
the carrier comprises at least one component in a form of a long strip, and the component is covered with the covering according to any one of claims 1 to 16.

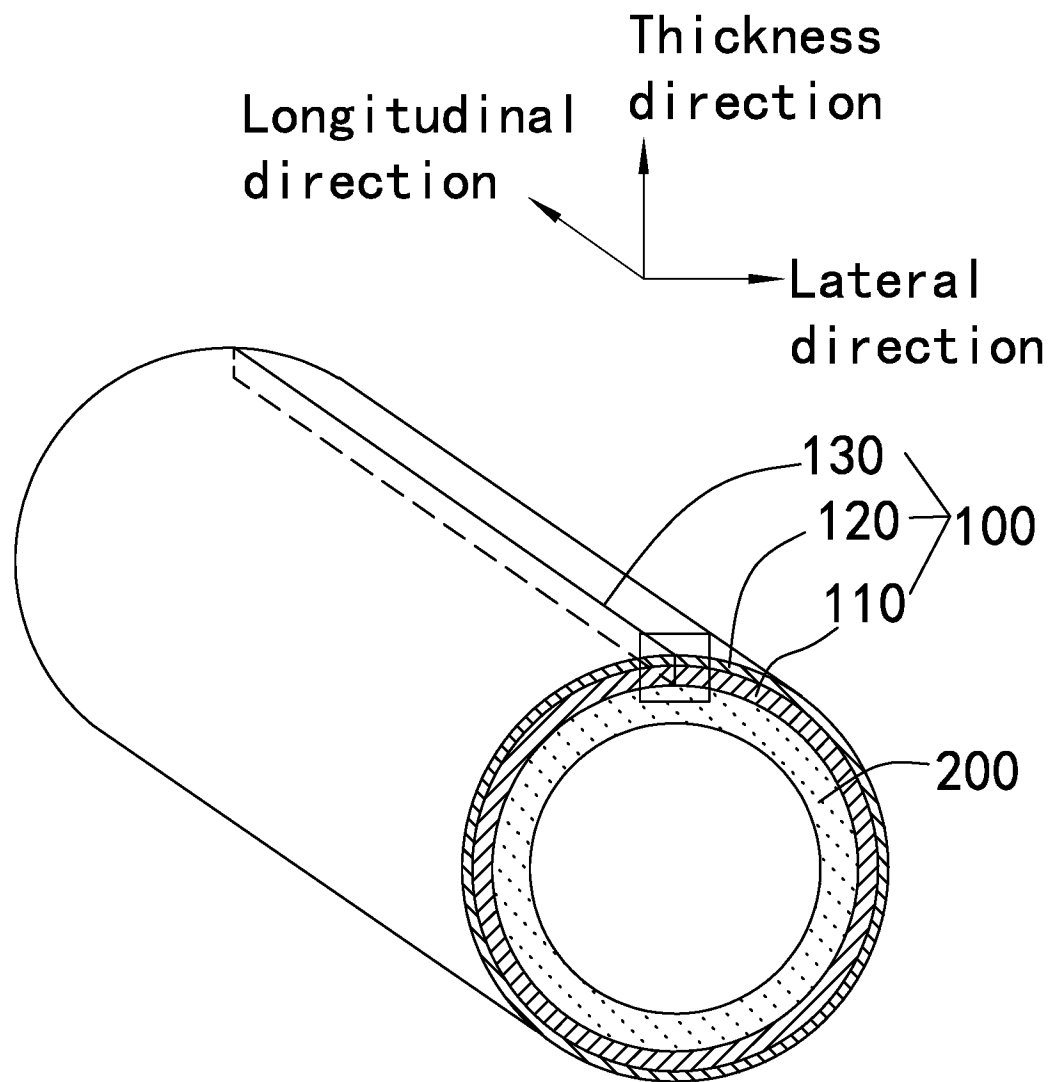


FIG. 1

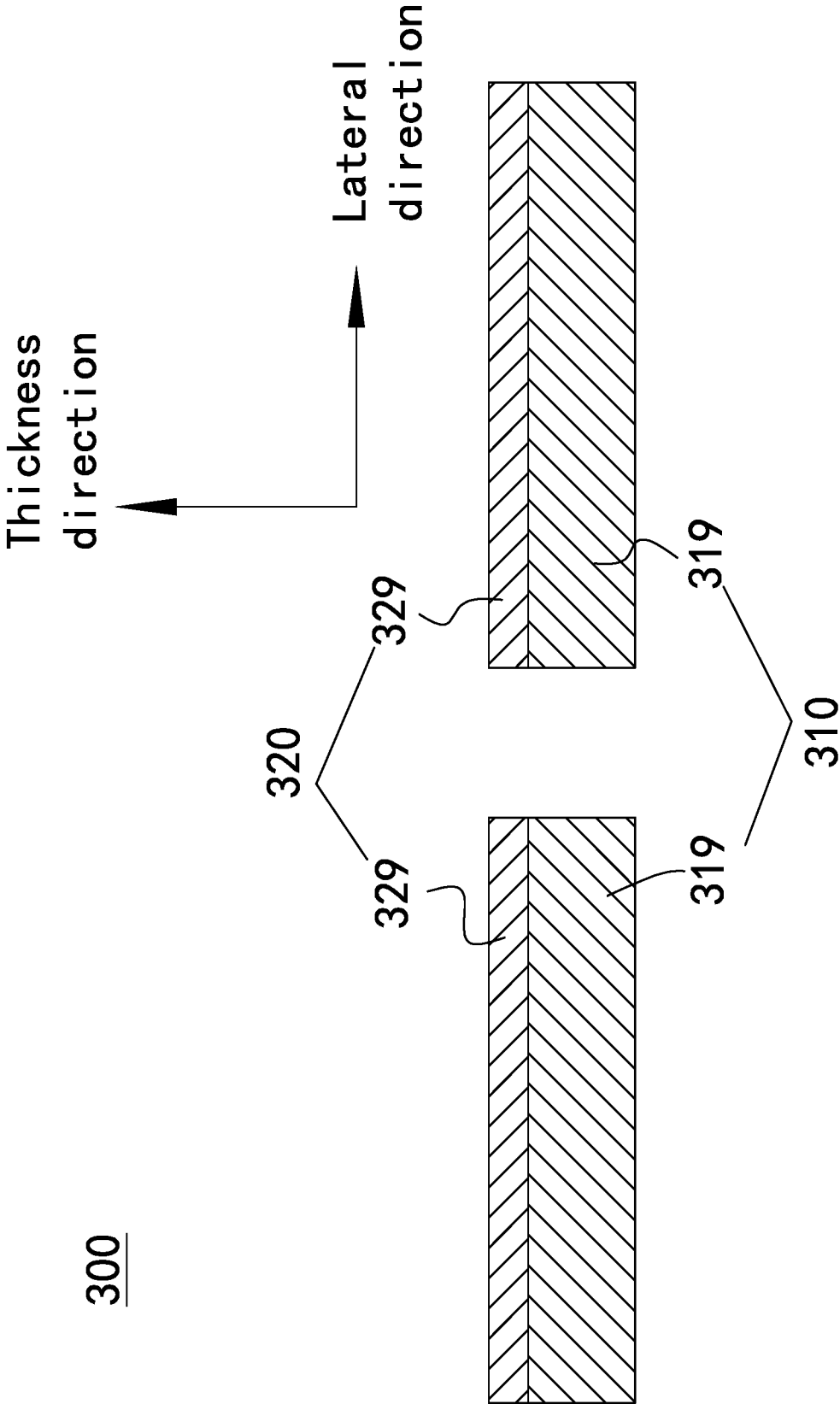


FIG. 2

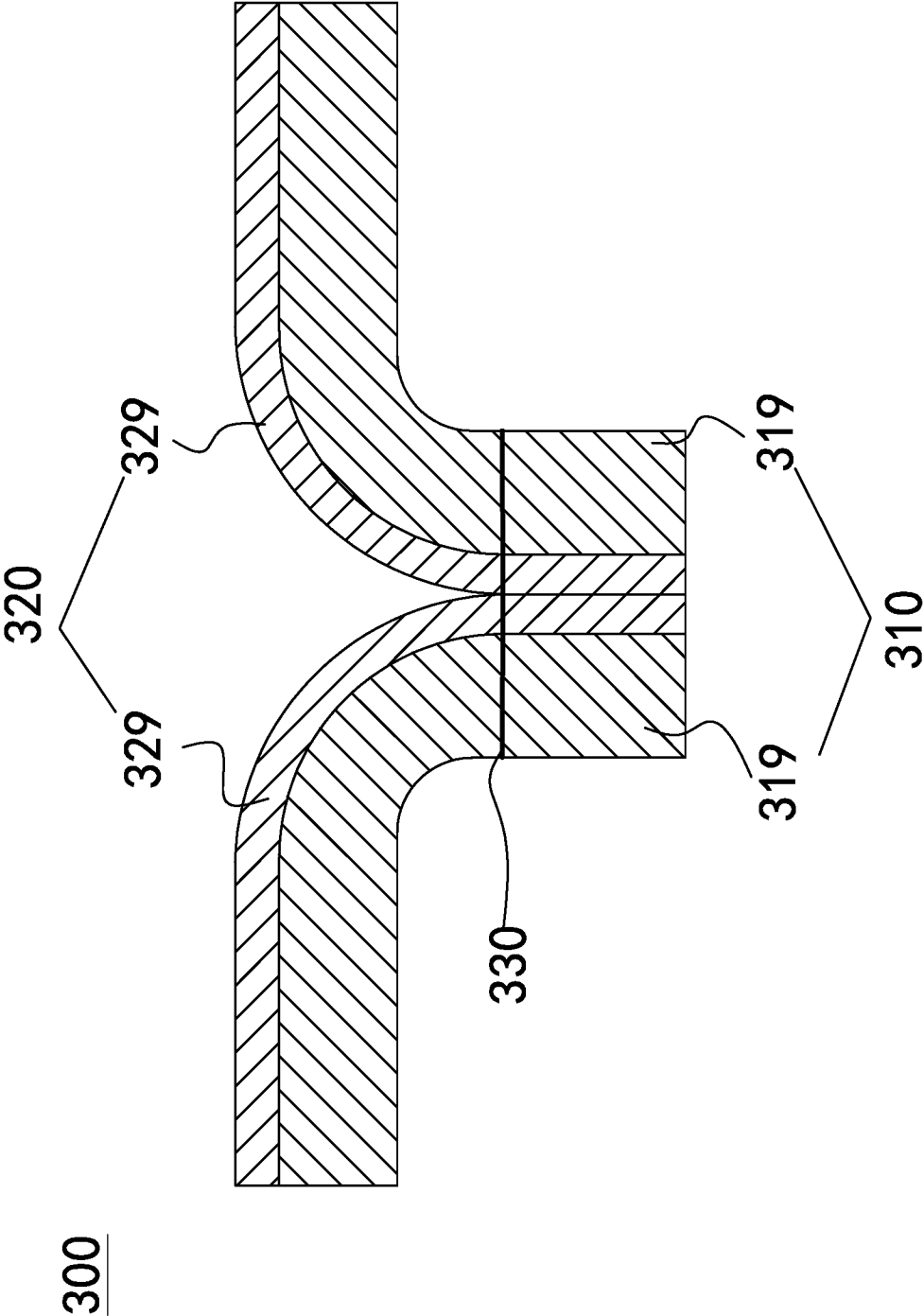
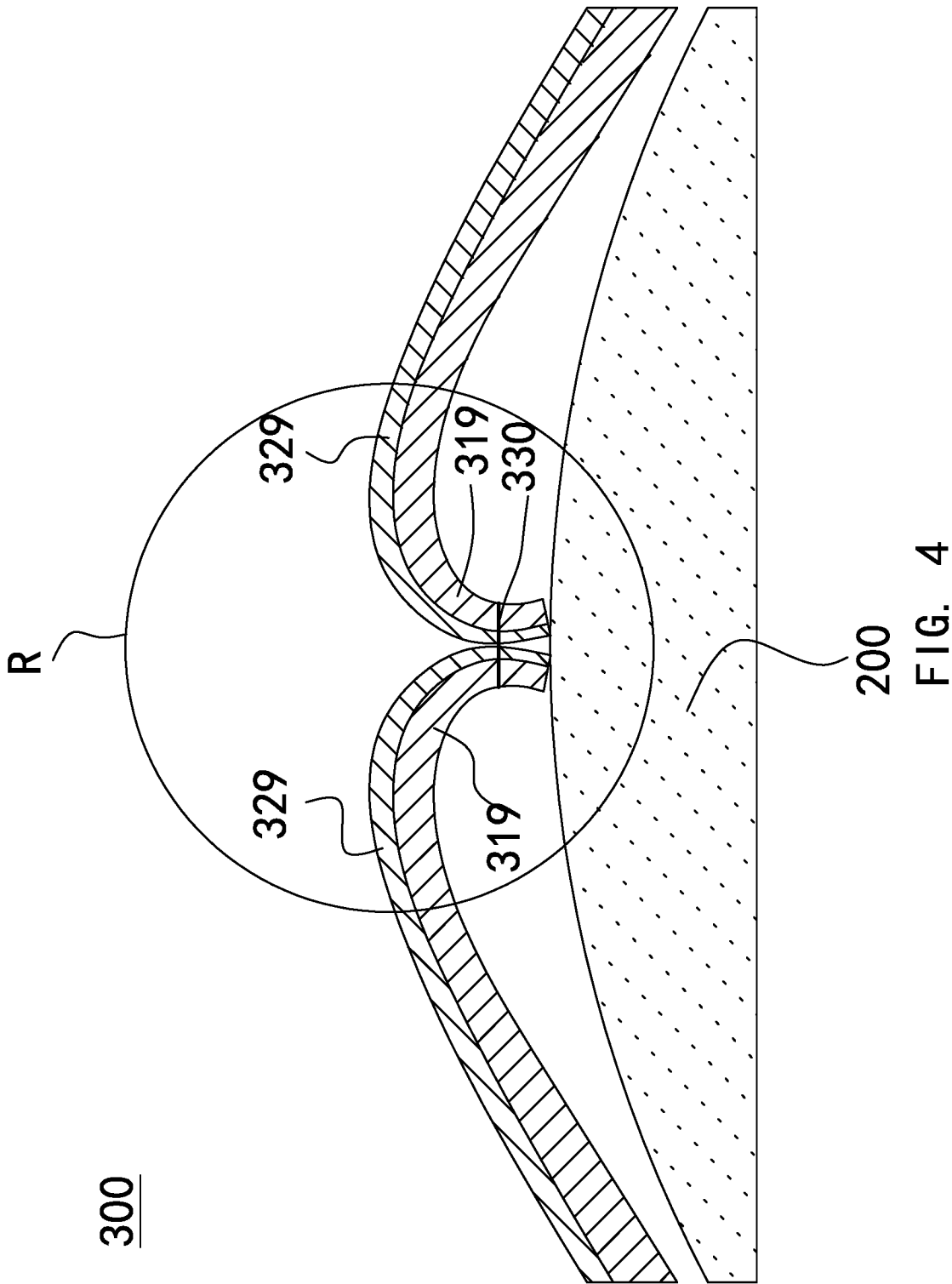


FIG. 3



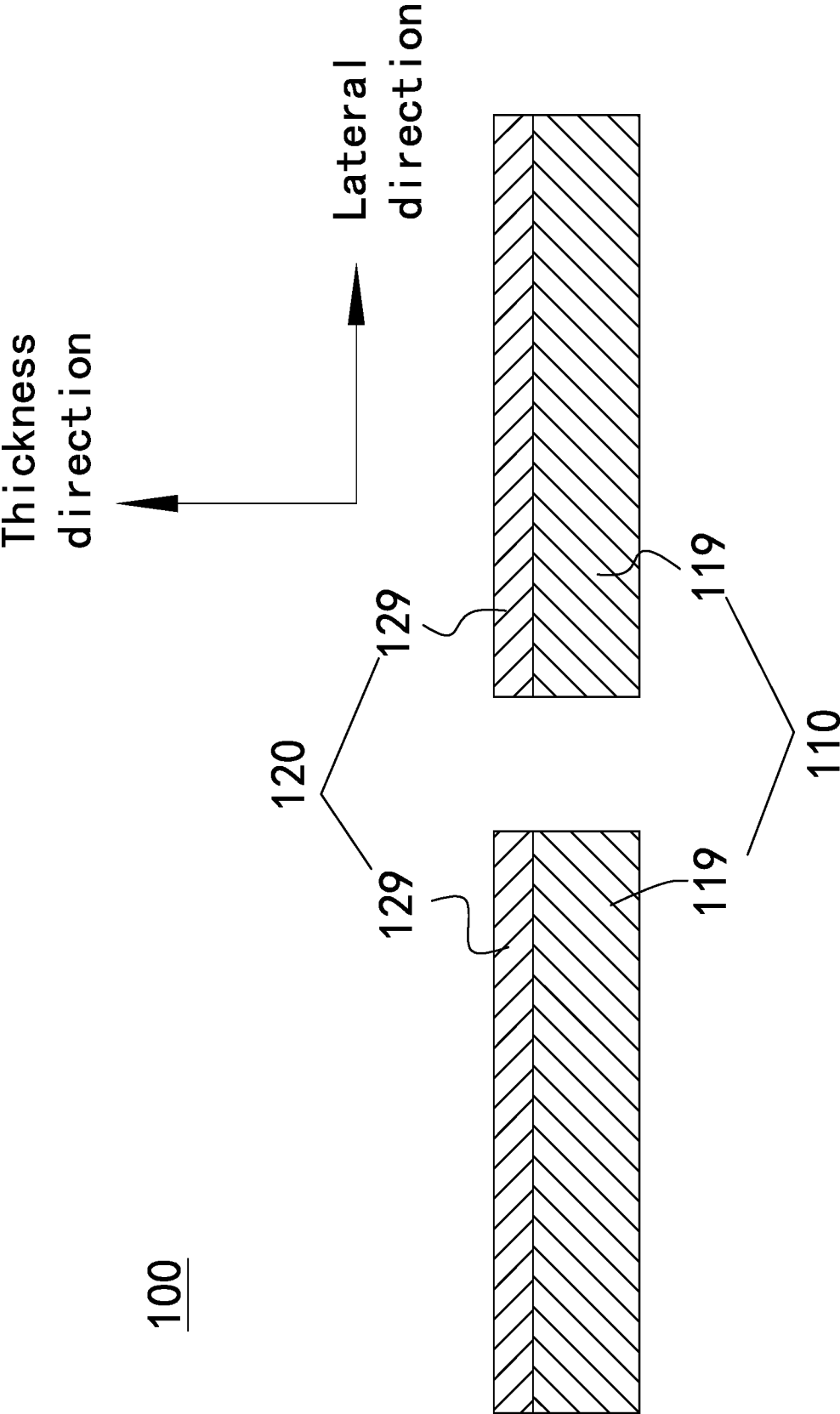


FIG. 5

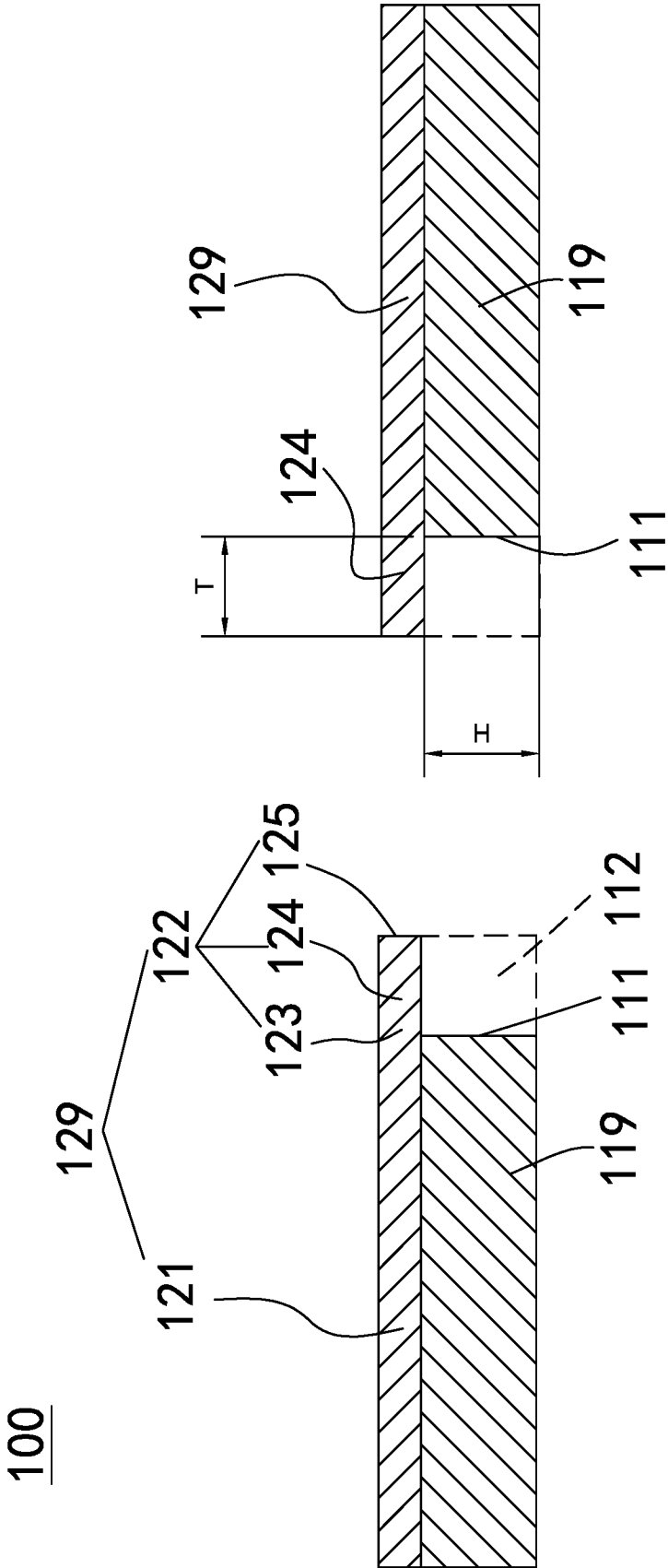


FIG. 6A

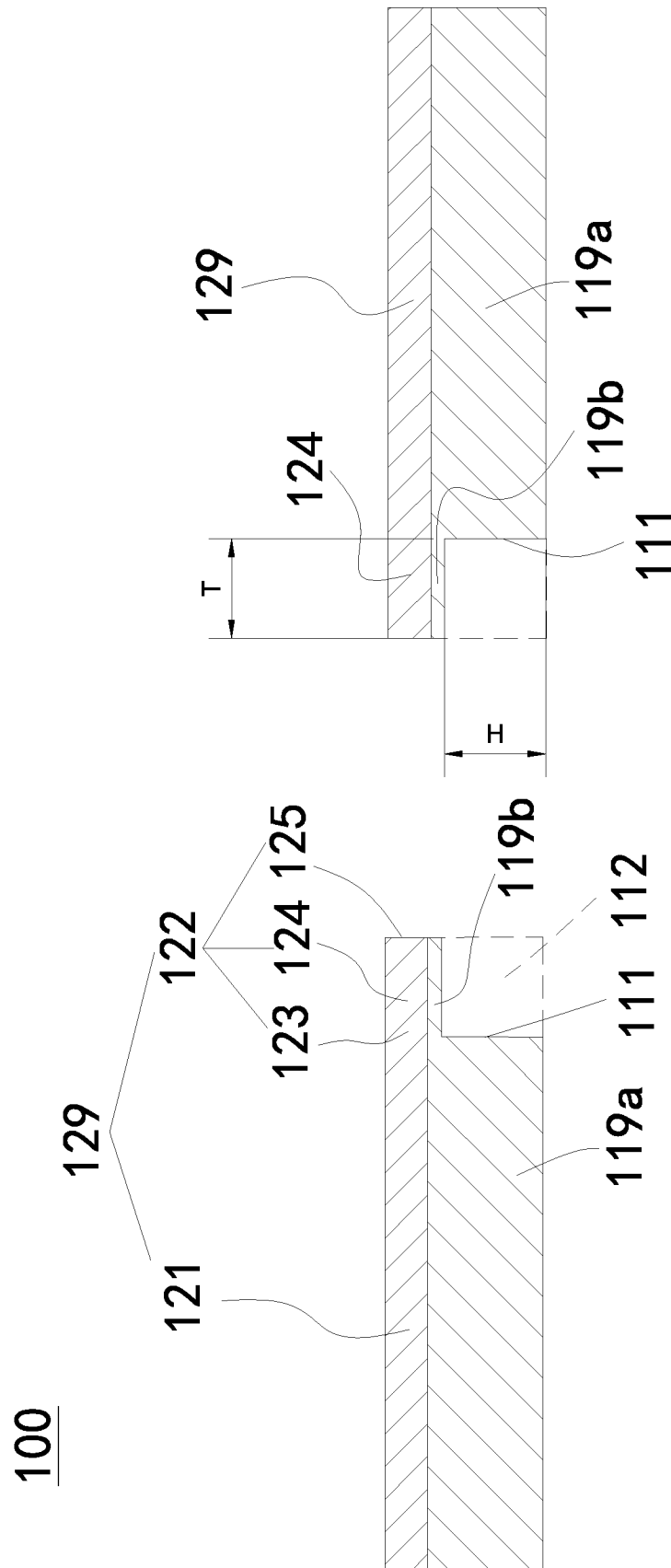


FIG. 6B

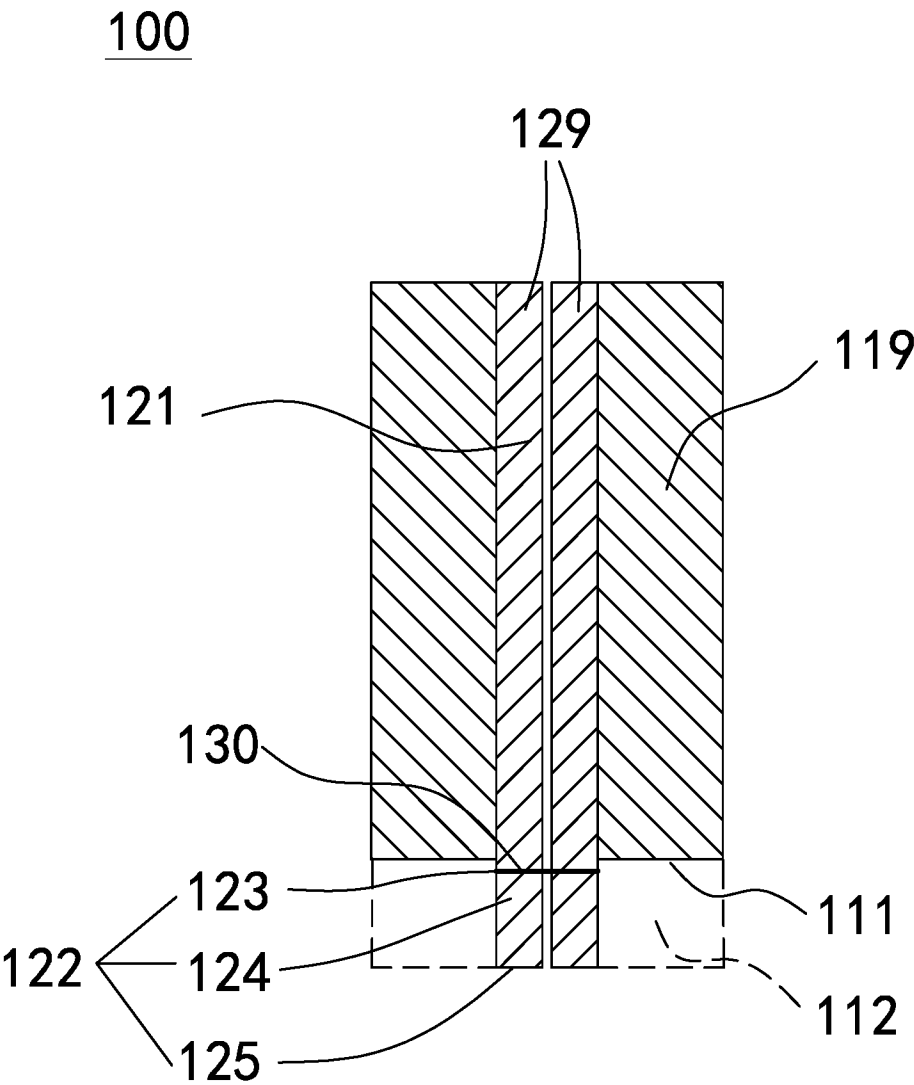


FIG. 7

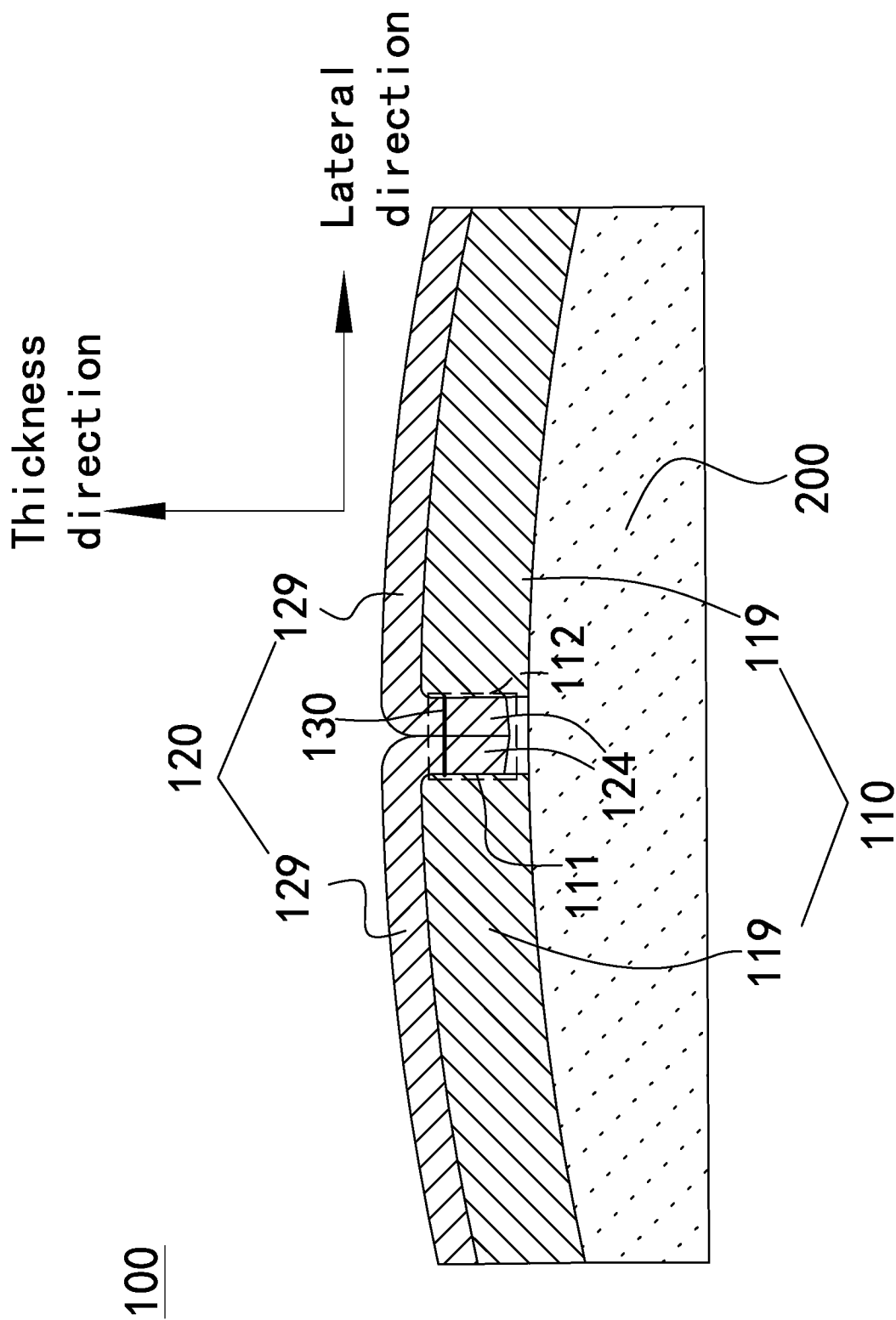


FIG. 8

100

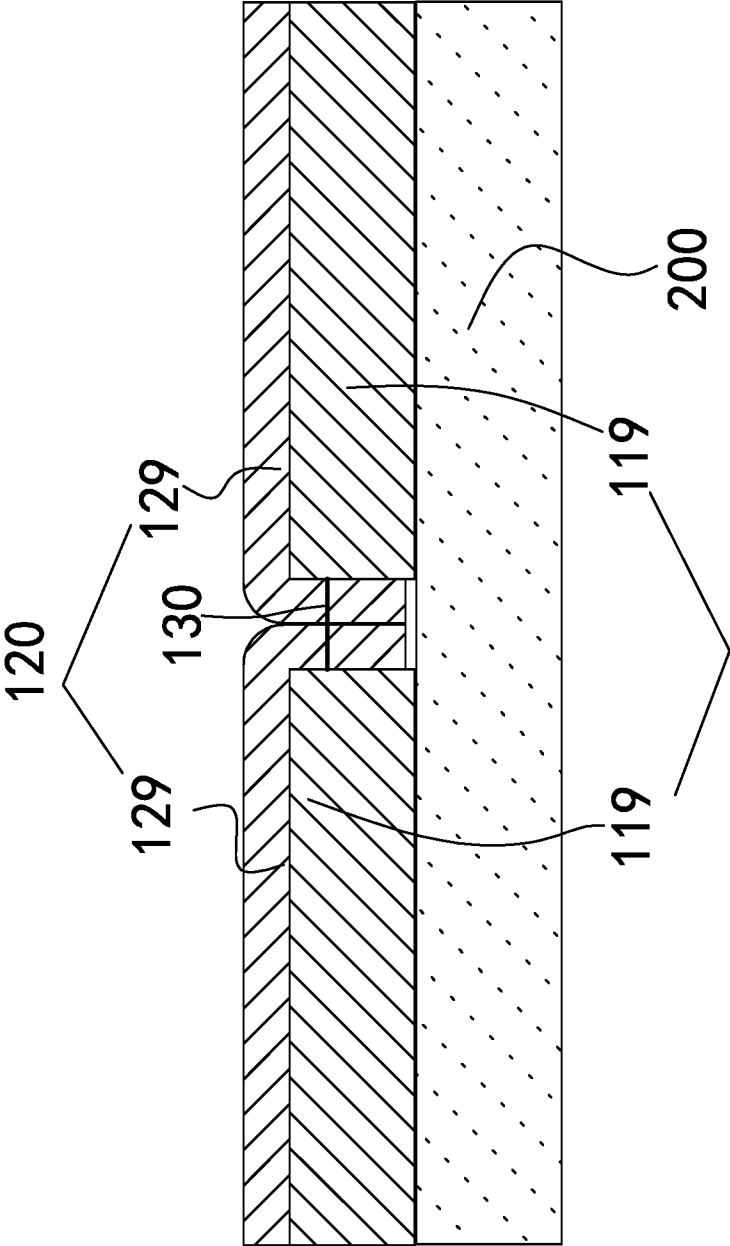
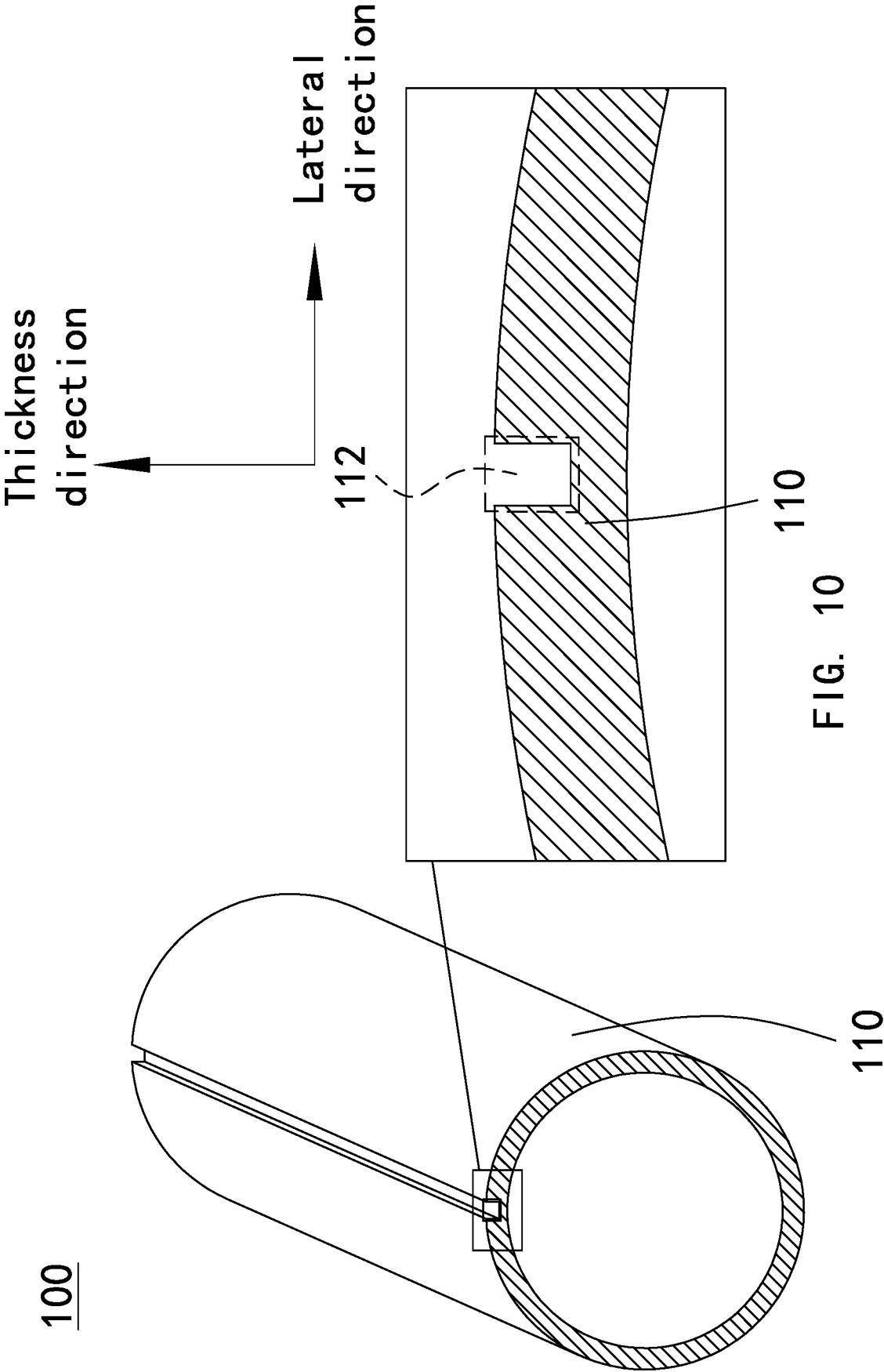


FIG. 9



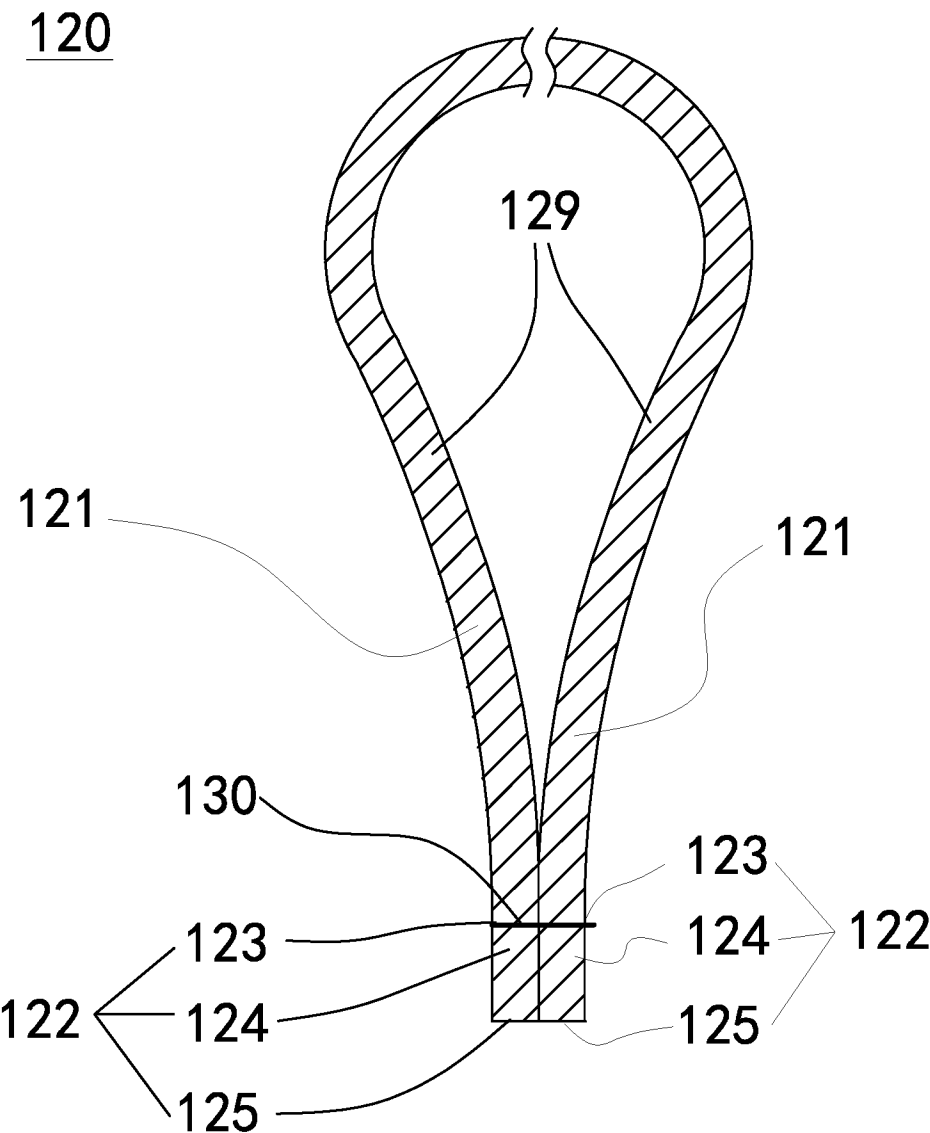


FIG. 11

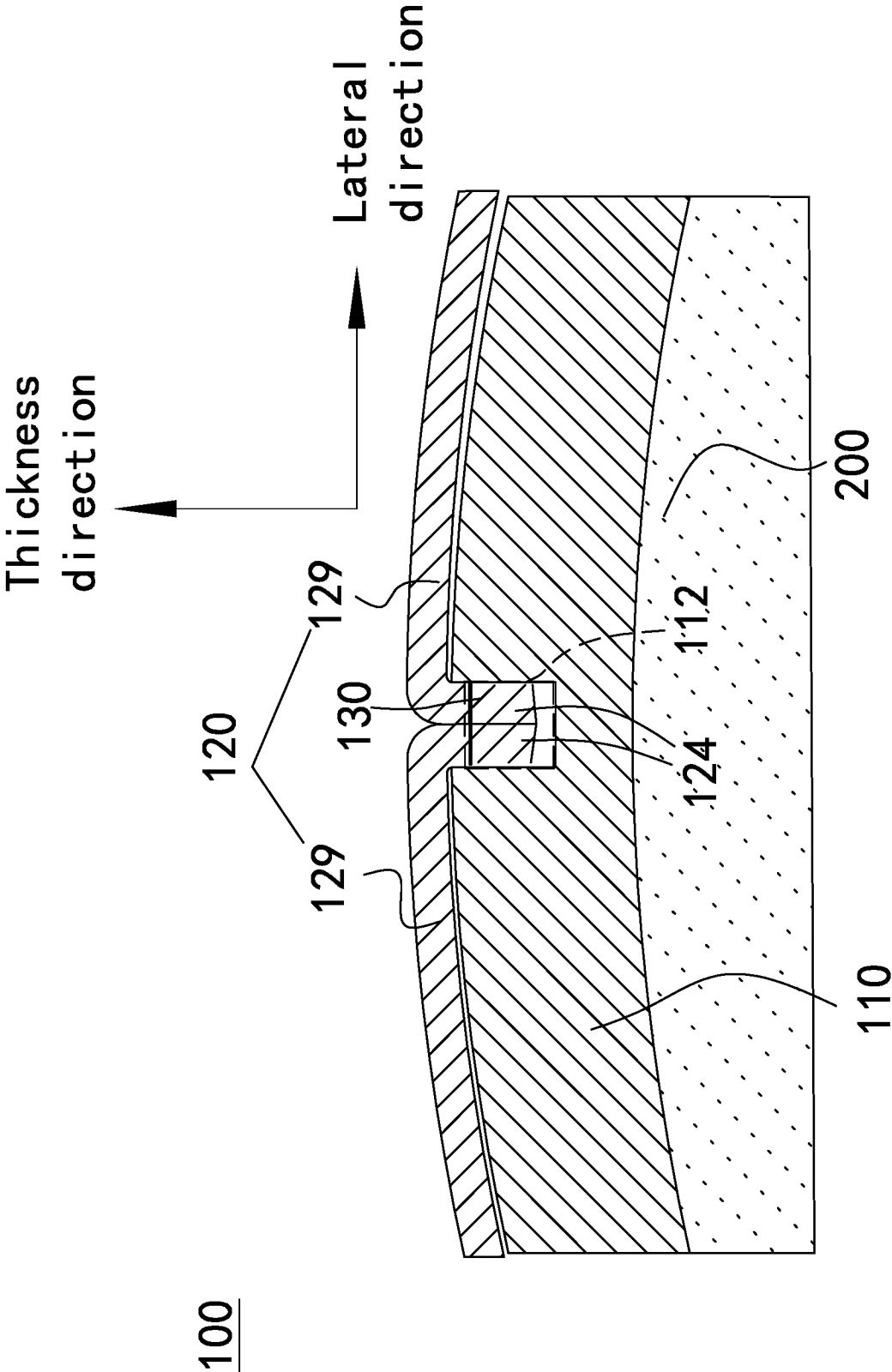


FIG. 12

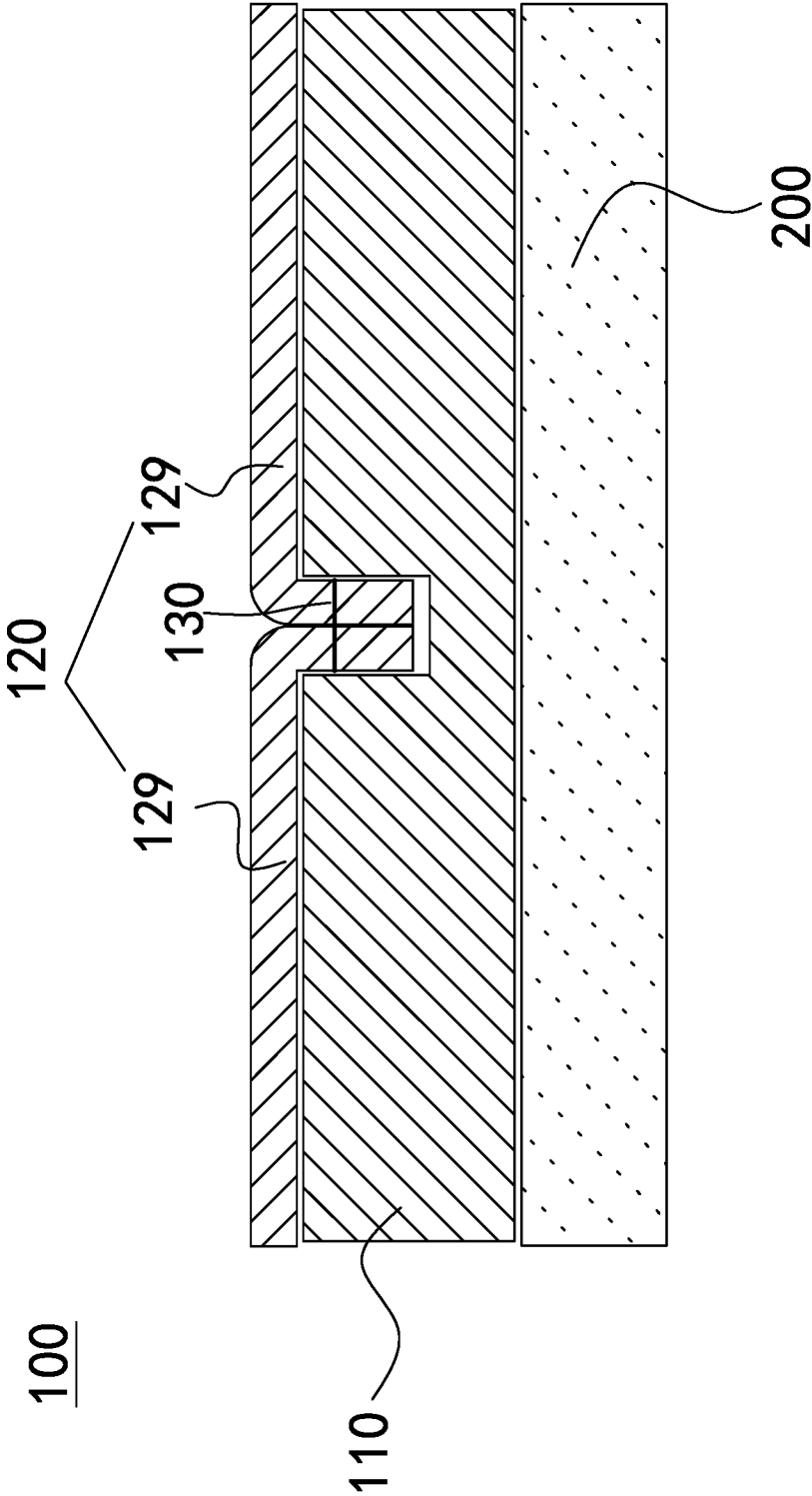


FIG. 13

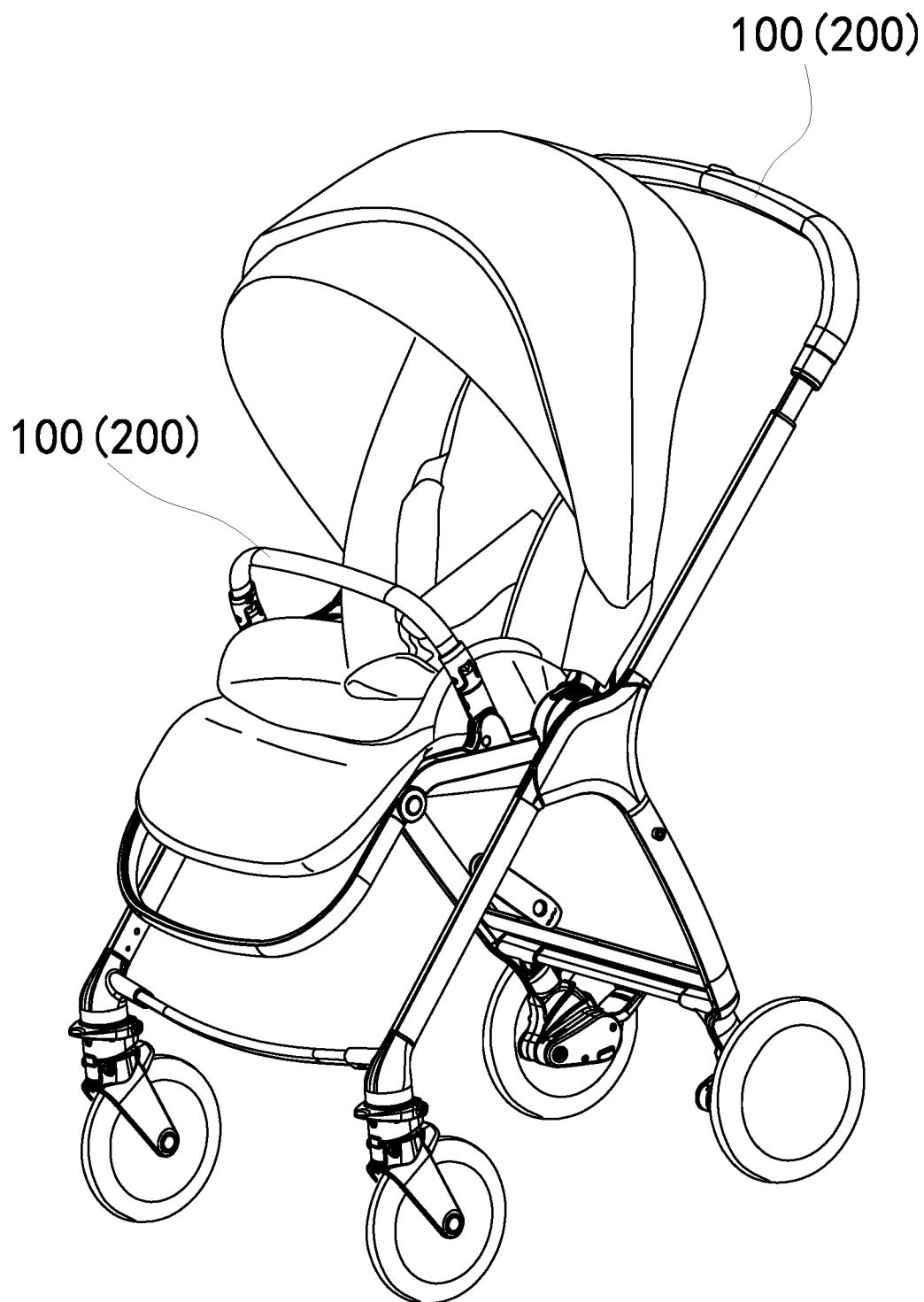


FIG. 14

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2024/068981

A. CLASSIFICATION OF SUBJECT MATTER					
INV.	B32B3/04	B32B1/08	B32B3/06	B32B3/10	B32B5/18
	B32B7/12	B32B9/02	B32B9/04		
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) B32B B62B					
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					
C. DOCUMENTS CONSIDERED TO BE RELEVANT					
Category*	Citation of document, with indication, where appropriate, of the relevant passages				Relevant to claim No.
X	US 2010/193108 A1 (AOYAMA MITSU HARU [JP] ET AL) 5 August 2010 (2010-08-05)				1-3,7-17
Y	paragraph [0053] paragraph [0061] - paragraph [0062] figures 1,12 claim 1				4-6

X	US 2018/044832 A1 (SCHALLER WOLFGANG [DE]) 15 February 2018 (2018-02-15)				1-3,7-17
Y	paragraph [0025] paragraph [0057] - paragraph [0058] figures 7,8 claim 1				4-6

Y	US 2022/203602 A1 (WU BO [CN]) 30 June 2022 (2022-06-30) paragraph [0017] - paragraph [0019] figures 1,4 claims 10-12				4-6

☐ Further documents are listed in the continuation of Box C.					
☒ See patent family annex.					
* Special categories of cited documents :					
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"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)			"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		
"O" document referring to an oral disclosure, use, exhibition or other means			"&" document member of the same patent family		
"P" document published prior to the international filing date but later than the priority date claimed					
Date of the actual completion of the international search			Date of mailing of the international search report		
17 September 2024			25/09/2024		
Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016			Authorized officer Sanchez Perucha, A		

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2024/068981

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