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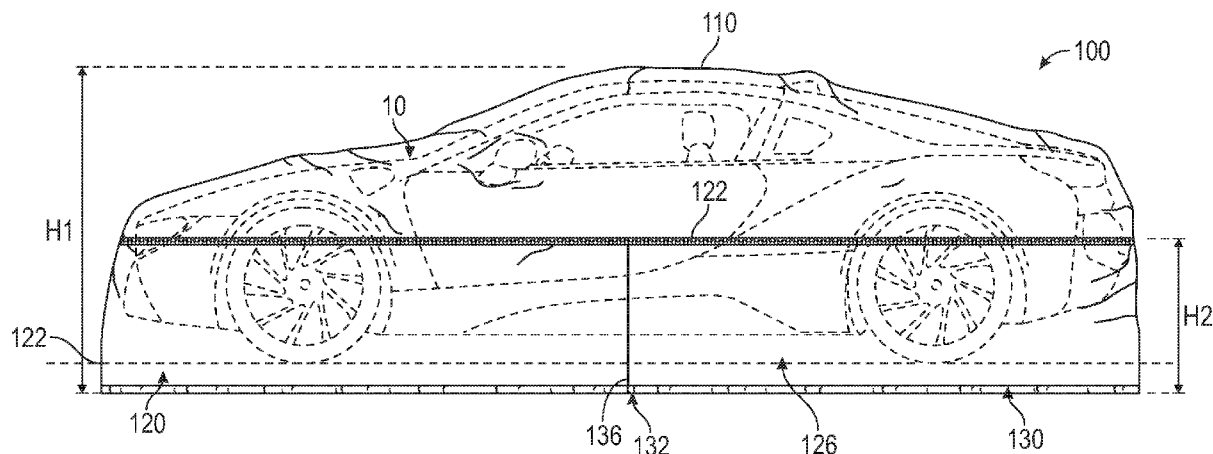


FIG. 1B

(57) Abstract: Protective cover with ground surface seal. In an embodiment, the protective cover comprises a protective top cover, comprising one or more edges, and an apron extending from the one or more edges of the protective top cover. The edge of the apron, opposite the one or more edges of the protective cover, may comprise a sealing tube that contains a compressible, contouring material, so as to form a seal between the edge of the apron and a ground surface when the protective cover is deployed.



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PROTECTIVE COVER WITH GROUND SURFACE SEAL

CROSS-REFERENCE TO RELATED APPLICATIONS

[1] This application claims priority to U.S. Provisional Patent App. No. 62/580,870, filed on November 2, 2017 – the entirety of which is hereby incorporated herein by reference.

BACKGROUND

[2] Field of the Invention

[3] The embodiments described herein are generally directed to a protective cover, and, more particularly, to a protective cover with a ground surface seal for protecting an object (e.g., vehicle, furniture, etc.) from intrusion by external influences, such as rodents, insects, weather (e.g., wind, rain, snow, etc.), and the like.

[4] Description of the Related Art

[5] Conventional protective covers do not provide any seal at the ground surface. Unfortunately, this allows intrusion by external influences, which can damage the object being covered. External influences may include, without limitation, rodents, insects, wind, rain, snow, and/or other weather, and/or any other influence that can penetrate a gap or loose fit between an edge of the protective cover and the ground. Thus, what is needed is a protective cover with a ground surface seal to protect the object from such influences.

SUMMARY

[6] Accordingly, a protective cover with a ground surface seal is disclosed. In an embodiment, the protective cover comprises: a protective top cover comprising one or more edges; and an apron extending from the one or more edges of the protective top cover, wherein an edge of the apron, opposite the one or more edges of the protective top cover, comprises a sealing tube that contains a compressible, contouring material, so as to form a seal between the edge of the apron and a ground surface when the protective cover is deployed. The apron may be detachable from the one or more edges of the protective top cover. For example, the apron may be attached to the one or more edges of the protective top cover by a zipper.

[7] In an embodiment, the apron is at least twelve inches wide between the one or more edges of the protective top cover and the sealing tube. The apron may comprise a

single segment whose ends are fixed to each other at an overlap region. Alternatively, the apron may comprise a plurality of segments, wherein each end of each segment overlaps with an adjacent end of an adjacent segment at an overlap region. In either case, the overlap region may be at least three inches wide.

[8] In an embodiment, each end may be attachable and detachable to another end (e.g., the opposite end if the apron is embodied as a single segment, or adjacent ends if the apron is embodied as a plurality of segments) by a first fastener. The first fastener may comprise Velcro™. Alternatively, each end may be permanently fixed to the overlapping end (e.g., by adhesive, stitching, and/or the like).

[9] In an embodiment, at least one end of the sealing tube of each segment (e.g., whether a single segment or a plurality of segments are used) may comprise a second fastener to close the at least one end of the sealing tube, so as to seal the contouring material within the sealing tube, and open the at least one end of the sealing tube, so as to provide access to the contouring material within the sealing tube. The second fastener may comprise Velcro™. Alternatively, the sealing tube may be permanently closed with the contouring material inside. In either case, the contouring material may comprise sand. In addition, the sealing tube may be substantially cylindrical, and the substantially cylindrical sealing tube may have a diameter or width of at least two inches.

[10] In an embodiment, the protective cover is configured to cover a vehicle. Alternatively, the protective cover is configured to cover furniture.

BRIEF DESCRIPTION OF THE DRAWINGS

[11] The details of the present invention, both as to its structure and operation, may be gleaned in part by study of the accompanying drawings, in which like reference numerals refer to like parts, and in which:

[12] FIGS. 1A and 1B illustrate a protective cover, according to alternative embodiments;

[13] FIG. 1C illustrates a perspective view of a protective cover, according to an embodiment;

[14] FIG. 2 illustrates an apron of a protective cover, according to an embodiment;

[15] FIG. 3 illustrates a sealing tube of an apron of a protective cover, according to an embodiment;

[16] FIGS. 4A-4C illustrates segmentation of an apron of a protective cover, according to embodiments;

[17] FIG. 5 illustrates fastening between segments of an apron of a protective cover, according to an embodiment; and

[18] FIG. 6 illustrates fastening of an end of a sealing tube of a segment of an apron of a protective cover, according to an embodiment.

DETAILED DESCRIPTION

[19] In an embodiment, a protective cover with a ground surface seal is disclosed. The protective cover may be used indoors or outdoors to store, cover, and protect objects (e.g., vehicles, furniture, etc.) from weather (e.g., wind, rain, snow, etc.), occupation or damage by rodents or insects, and/or the like. The cover may either loosely conform to the object (e.g., generic cover, such as for furniture) or tightly conform to the object (e.g., custom cover, such as a custom vehicle cover, for example, shaped for a particular vehicle). While the cover will be primarily described and illustrated herein as a vehicle cover, it should be understood that the cover may be sized and adapted to cover any object, including, without limitation, indoor and/or outdoor furniture (e.g., chairs, tables, grills, dressers, shelves, etc.).

[20] After reading this description, it will become apparent to one skilled in the art how to implement the invention in various alternative embodiments and alternative applications. However, although various embodiments of the present invention will be described herein, it is understood that these embodiments are presented by way of example and illustration only, and not limitation. As such, this detailed description of various embodiments should not be construed to limit the scope or breadth of the present invention as set forth in the appended claims.

[21] FIGS. 1A and 1B illustrate a protective cover with a ground surface seal, according to alternative embodiments, and FIG. 1C illustrates a perspective view of the protective cover illustrated in FIG. 1B, according to an embodiment. As illustrated, in both embodiments, the protective cover 100 comprises a protective top cover 110 and an apron 120. Protective top cover 110 may be made of a breathable, sun-reflective, and durable material. Apron 120 may be made of a water-proof or water-resistant material, which may be thicker than protective top cover 110, and which has a height H_2 . Protective top cover 110 and apron 120 may be made of the same material or different material. Furthermore, while protective top cover 110 and apron 120 are illustrated as separate components of protective

cover 100, in an alternative embodiment, protective top cover 110 and apron 120 may be manufactured as a single piece of material.

[22] In order to highlight its height and features, apron 120 is illustrated in FIGS. 1A and 1B as extending below the ground. However, it should be understood that, in an actual implementation, depending on height H_1 , apron 120 would either extend exactly flush with the ground (e.g., if H_1 is exactly the height of vehicle 10, i.e., from the bottom of its tires to the top of its roof) or, in a preferred embodiment, extend at least slightly beyond the bottom of the vehicle (e.g., if H_1 is greater than the height of vehicle 10) so that it bends outward or inward, or crumples or folds, to lie flush with the ground. While apron 120 could be sized so that it hangs above the ground (e.g., if H_1 is less than the height of vehicle 10), it should be understood that this would not be preferred if the objective is to provide a ground seal.

[23] In the embodiment illustrated in FIG. 1A, apron 120 is sealed or fixed (e.g., sewn) to protective cover at connection 122 without any gaps. In the alternative embodiment illustrated in FIG. 1B, apron 120 is detachably fixed to protective cover (e.g., by a zipper between the edge of protective top cover 110 and apron 120) at connection 122 without any gaps.

[24] Advantageously, detachable apron 120, illustrated in FIG. 1B, allows a user to separate apron 120 from protective top cover 110. This enables the user to take apron 120 with him or her. In addition, if protective cover 100 is a vehicle cover, detachable apron 120 enables a user to detach and leave apron 120 on the ground (e.g., with sealing tube 130 remaining in a substantially rectangular shape, representing the outline of the vehicle) and drive into or out of apron 120. In other words, the user only needs to place apron 120 once (e.g., in his or her garage, car port, or other parking space), and does not have to move it (or may only move it infrequently) for all subsequent uses. Furthermore, the user no longer has to lift apron 120 (which may be heavy due to sealing tube 130) over vehicle 10 for each use.

[25] Specifically, when exiting a parking space, a user may detach the top edge of apron 120 from the bottom edge of protective top cover 110 (e.g., by unzipping connection 122). Gravity will force apron 120 to collapse (e.g., crumple or fold) to the ground, but apron 120 will remain in its current outline (e.g., despite rain or other external influences), around vehicle 10, due to the weight of sealing tube 130. The user may remove protective top cover 110 from vehicle 10 and set it aside (e.g., by folding protective top cover 110 and/or placing protective top cover 110 within a storage space of a garage, vehicle 10, etc.). In some instances, the user could take protective top cover 110 with him or her (e.g., place it in a storage compartment of vehicle 10, such as the trunk), and use it elsewhere (e.g., in a public

parking space) without apron 120 or with a different apron 120 (e.g., previously placed in another private parking space). The user may drive vehicle 10 out from the surrounding apron 120 by simply driving over one side of apron 120 (i.e., the side in front of or behind vehicle 10). When the user returns to the parking space, the user may again drive over one side of apron 120 to once again position vehicle 10 within the center of apron 120. The user may then place protective top cover 110 over vehicle 10, and pull up and reattach the top edge of apron 120 to the bottom edge of protective cover 110 (e.g., by zipping connection 122), to once again protect vehicle 10 with protective cover 100 having a ground seal formed by sealing tube 130.

[26] As illustrated in a cut-out view in FIG. 2, apron 120 may comprise an apron extension 126, which extends from connection 122 towards the ground with a height H_3 . In a preferred embodiment, H_3 is at least twelve inches. In the embodiment illustrated in FIG 1B, with a detachable apron 120, the combined height of apron extension 126 (i.e., H_3) and sealing tube 130 (e.g., H_4) may be of a sufficient height to make it easy for the user to detach (e.g., unzip) apron 120 without having to uncomfortably bend over or lift sealing tube 130. For example, the total height of apron 120 (i.e., $H_2=H_3+H_4$) may be equal to or greater than eighteen inches.

[27] As illustrated in FIG. 3, conformance to the ground surface, in a resting state of apron 120, may be achieved by a sealing tube 130, which may be filled with a surface contouring material 134. Sealing tube 130 may be sealed or fixed (e.g., sewn) to apron extension 126 to prevent any gaps within apron 120. Contouring material 134 may be a dry material, such as dry, powdered sand or a material with similar characteristics. Alternatively, a wet material, such as water, may be used.

[28] In an embodiment, sealing tube 130 may comprise or be formed as an envelope that contains contouring material 134. The envelope may be at least two-inches wide to ensure that sealing tube 130 is of sufficient size and weight to conform to the ground surface. For example, the envelope may have a substantially cylindrical shape with a diameter of two or more inches. However, a width or diameter of less than two inches may be used (e.g., if the envelope is filled with a heavier contouring material 134).

[29] The type and amount of contouring material 134 and the size of the envelope in sealing tube 130 should be selected to gravitationally seal apron 120 to the ground surface with sufficient weight, so as to prevent or restrict rodents and/or insects from passing underneath sealing tube 130, without compromising the conformance of sealing tube 130 to the ground. If sealing tube 130 is overfilled (e.g., too much sand is used to fill the envelope),

sealing tube 130 may not properly conform to the ground. On the other hand, if sealing tube 130 is under-filled (e.g., too little sand is used to fill the envelope), sealing tube 130 may not be heavy enough to seal to the ground. In other words, gaps may form between sealing tube 130 and the ground, or sealing tube 130 may not be heavy enough to restrict the ingress of rodents or insects. A proper amount of contouring material 134 will allow the particles to flow in sealing tube 130, so as to be evenly distributed along the entire length of sealing tube 130.

[30] FIG 4A represents a top-down or bottom-up view of apron 120, according to an embodiment. As illustrated in FIG. 4A, in an embodiment, apron 120 (e.g., one or more of connection 122, apron extension 126, and sealing tube 130) may be manufactured as a single linear segment 132. Segment 132 may be bent, and then the two ends of segment 132 may be fixed to each other to form segment 132 into an apron 120 capable of surrounding an object. It should be understood that, as used herein, the term “segment” only refers to the outline of apron 120, and that a single segment may comprise numerous different materials and/or components (e.g., a connection 122, apron extension 126, and/or sealing tube 130 stitched together or otherwise affixed to each other).

[31] As illustrated in more detail in FIG. 4C, the ends of segment 132 may overlap in overlap region 136 to create a firm seal. Overlap region 136 has a length of L. In an embodiment, L is three or more inches (i.e., a minimum of three inches). The ends of segment 132 may be fixed to each other by any conventional means, including, without limitation, adhesive, stitching, Velcro™, and/or the like.

[32] FIG 4B represents a top-down or bottom-up view of apron 120, according to an alternative embodiment. As illustrated in FIG. 4B, in the alternative embodiment, apron 120 (e.g., one or more of connection 122, apron extension 126, and sealing tube 130) is segmented into a plurality of segments 132. This enables a user to easily fold protective cover 100 or apron 120 for storage or transportation. While four segments 132A-132D are illustrated, it should be understood that any number of segments 132 may be used. However, improper segmentation can lead to gaps between sealing tube 130 and the ground, which compromises the protective qualities of the ground seal. Thus, as illustrated in more detail in FIG. 4C, each segment 132 may overlap each adjacent segment 132 in overlap regions 136 to create a firm seal. Again, each overlap region 136 has a length of L, which, in an embodiment, is three or more inches (i.e., a minimum of three inches). The ends of segments 136 (e.g., the end of segment 132A and segment 132B in overlap region 136B) may be fixed to each other by any conventional means.

[33] FIG. 5 illustrates attachable and detachable segments ends which may be used in one or more overlap regions 136, according to an embodiment. As illustrated, a fastener 138 may be used at each overlap region 136 to ensure that the ends of segment(s) 132 remain detachably sealed together at their respective overlap region 136, so as not to compromise the seal between sealing tube 130 and the ground surface and so as not to separate from each other. In the illustrated embodiment, fastener comprises corresponding Velcro™ strips, for example, with a hook strip on the end of one segment 132A and a loop strip on the end of an adjacent segment 132B. However, it should be understood that other types of fasteners are possible.

[34] FIG. 6 illustrates a cut-away view of the end of a segment 132 of sealing tube 130, according to an embodiment. As illustrated, a fastener 140 may be used at one or both ends of each segment 132 to retain contouring material 134 within the envelope, formed by fabric 142, of each segment 132. This enables contouring material 134 in sealing tube 130 to be driven over or otherwise compressed (e.g., accidentally or on purpose), while still enabling contouring material 134 to be removed from sealing tube 130 for easier storage or transportation (e.g., shipping). In an embodiment, fastener 140 may comprise corresponding Velcro™ strips, for example, with a hook strip on one surface of the end of segment 132 and a loop strip on an adjacent surface of the end of segment 132. Alternatively, the ends of each segment 132 may be sealed, so as to permanently seal contouring material 134 within the sealing tube of each segment 132.

[35] In the case of a generic protective cover – as opposed to a custom-fitted protective cover – protective top cover 110 may comprise fasteners (e.g., Velcro™ or other types of straps) that can be used to remove slack in protective top cover 110, and keep protective top cover 110 from touching the ground surface. This ensures that only apron 120 (e.g., which may be made of water-proof or water-resistant material) is in contact with the ground surface.

[36] The above description of the disclosed embodiments is provided to enable any person skilled in the art to make or use the invention. Various modifications to these embodiments will be readily apparent to those skilled in the art, and the general principles described herein can be applied to other embodiments without departing from the spirit or scope of the invention. Thus, it is to be understood that the description and drawings presented herein represent a presently preferred embodiment of the invention and are therefore representative of the subject matter which is broadly contemplated by the present invention. It is further understood that the scope of the present invention fully encompasses

other embodiments that may become obvious to those skilled in the art and that the scope of the present invention is accordingly not limited.

CLAIMS

What is claimed is:

1. A protective cover comprising:
a protective top cover comprising one or more edges; and
an apron extending from the one or more edges of the protective top cover, wherein an edge of the apron, opposite the one or more edges of the protective top cover, comprises a sealing tube that contains a compressible, contouring material, so as to form a seal between the edge of the apron and a ground surface when the protective cover is deployed.
2. The protective cover of Claim 1, wherein the apron is detachable from the one or more edges of the protective top cover.
3. The protective cover of Claim 2, wherein the apron is attached to the one or more edges of the protective top cover by a zipper.
4. The protective cover of any preceding claim, wherein the apron is at least twelve inches wide between the one or more edges of the protective top cover and the sealing tube.
5. The protective cover of any preceding claim, wherein the apron comprises a single segment with two ends, and wherein the two ends are overlapped and affixed to each other at an overlap region.
6. The protective cover of any preceding claim, wherein the apron comprises a plurality of segments, and wherein each end of each segment overlaps with an adjacent end of an adjacent segment at an overlap region.
7. The protective cover of Claim 5 or 6, wherein the overlap region is at least three inches wide.
8. The protective cover of any one of Claims 5 through 7, wherein each end is attachable and detachable to its overlapping end by a first fastener.
9. The protective cover of Claim 8, wherein the first fastener comprises Velcro™.

10. The protective cover of any of Claims 5 through 9, wherein at least one end of the sealing tube of each segment comprises a second fastener to close the at least one end of the sealing tube, so as to seal the contouring material within the sealing tube, and open the at least one end of the sealing tube, so as to provide access to the contouring material within the sealing tube.
11. The protective cover of Claim 10, wherein the second fastener comprises Velcro™.
12. The protective cover of any preceding claim, wherein the contouring material comprises sand.
13. The protective cover of any preceding claim, wherein the protective cover is configured to cover a vehicle.
14. The protective cover of any one of Claims 1 through 12, wherein the protective cover is configured to cover furniture.
15. The protective cover of any preceding claim, wherein the sealing tube is substantially cylindrical.
16. The protective cover of Claim 15, wherein the substantially cylindrically sealing tube has a diameter or width of at least two inches.

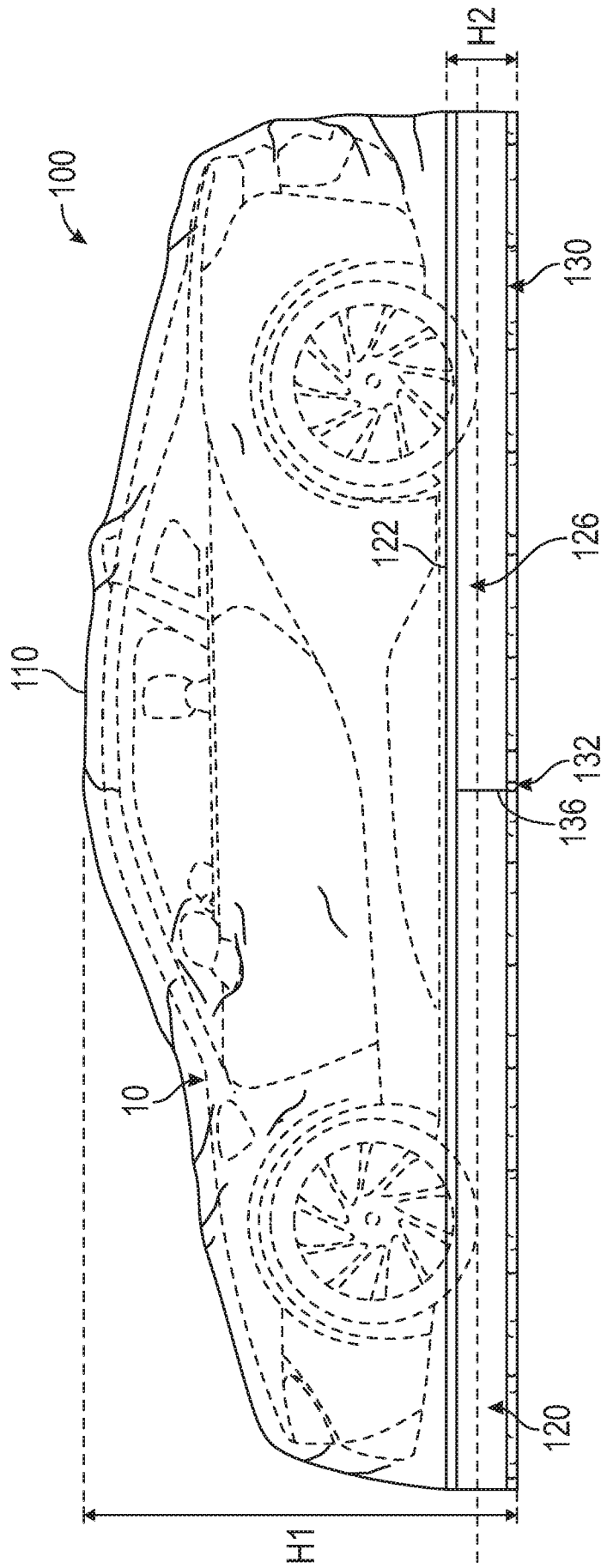


FIG. 1A

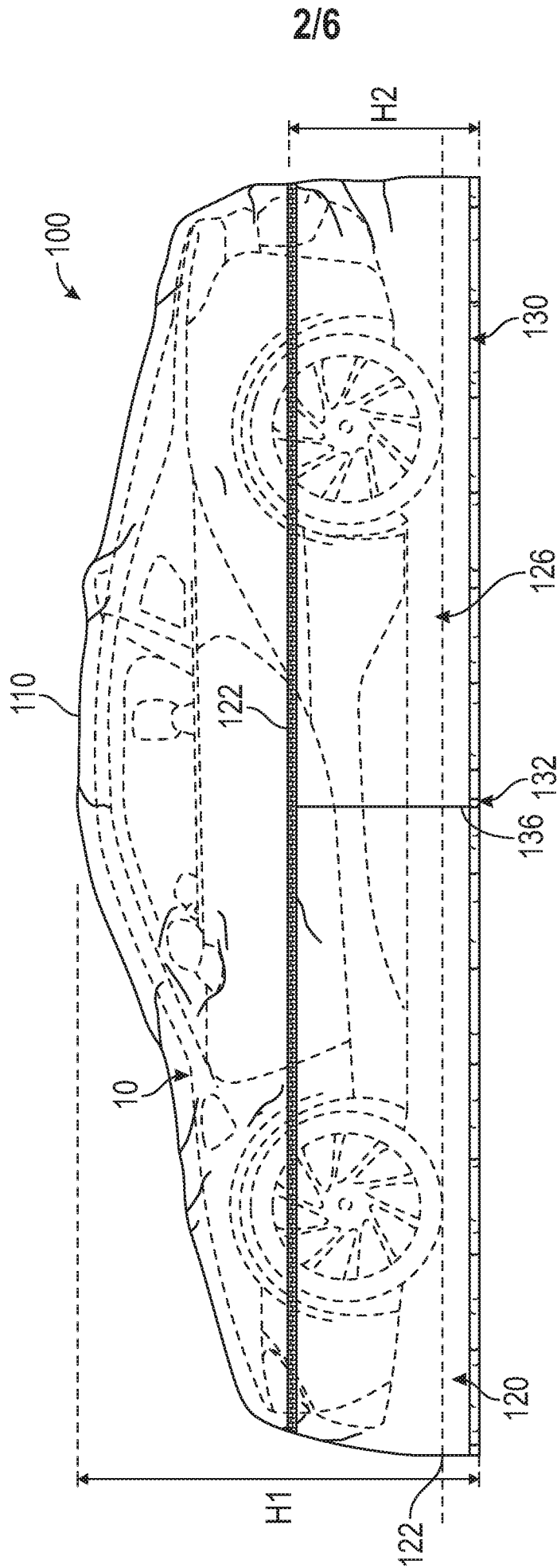


FIG. 1B

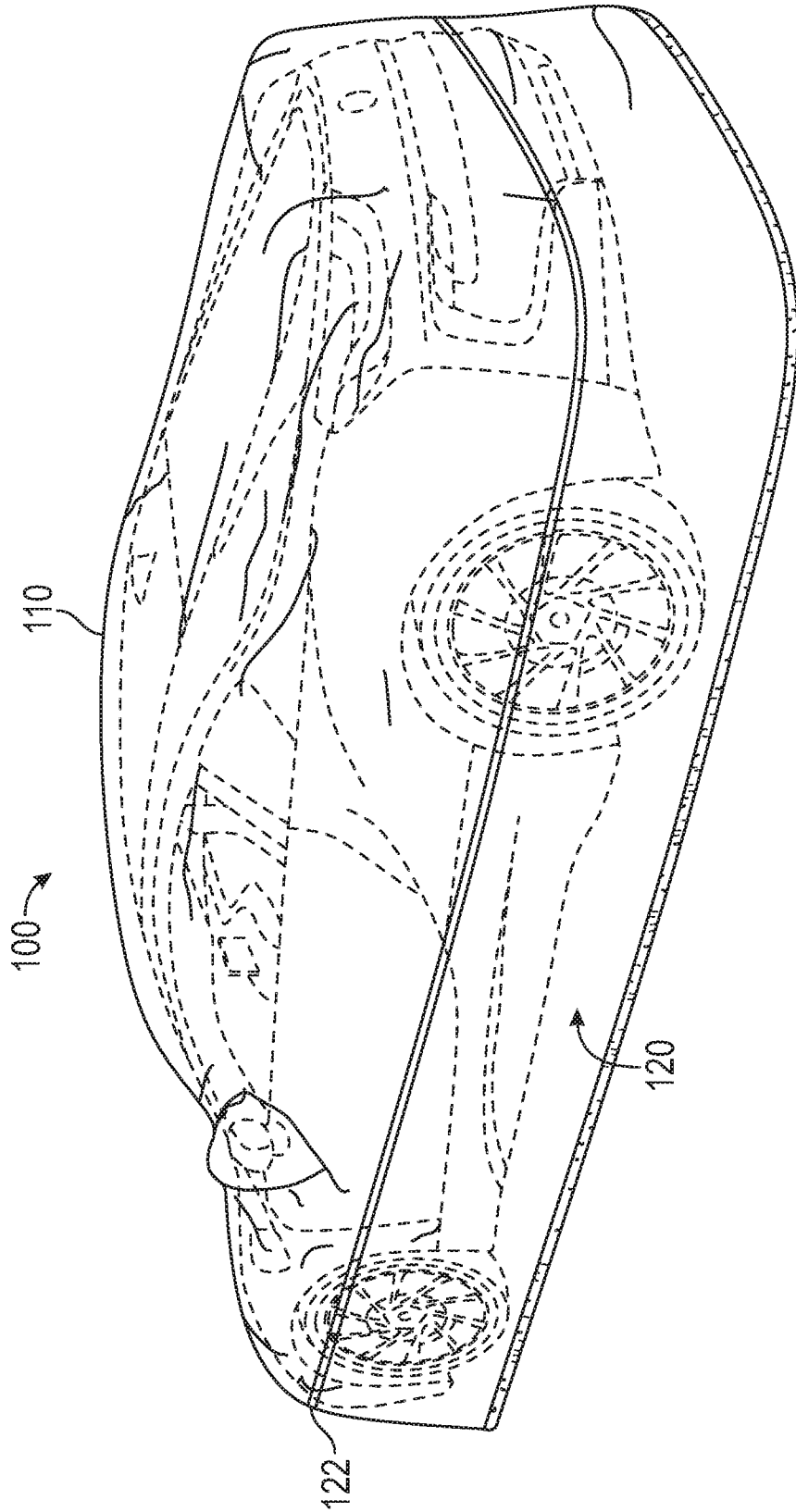


FIG. 1C

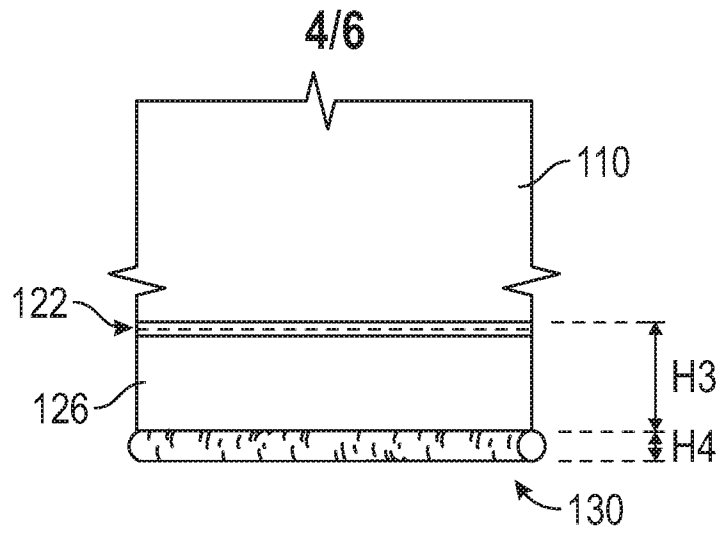


FIG. 2

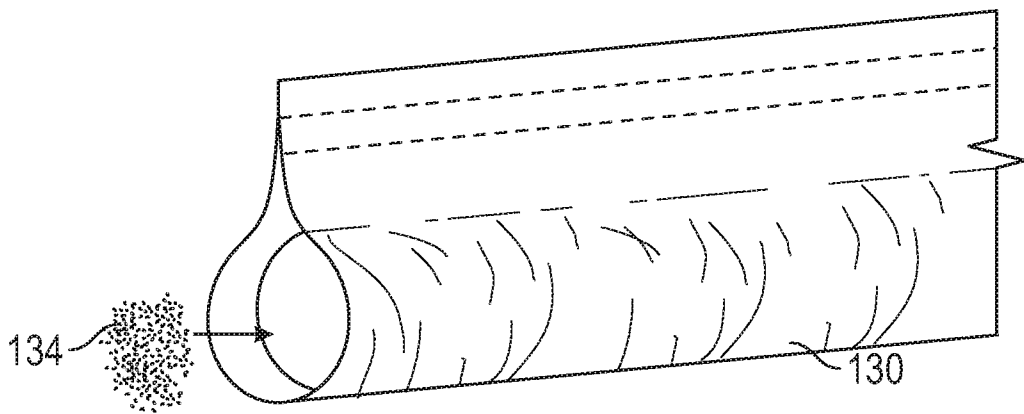


FIG. 3

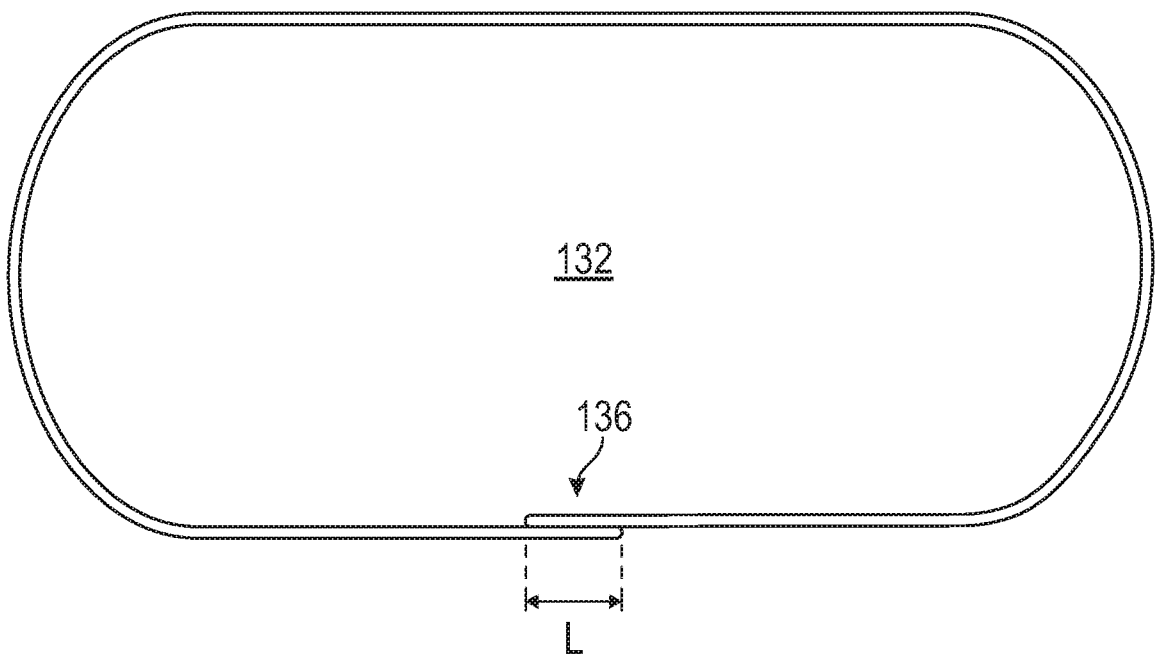


FIG. 4A

5/6

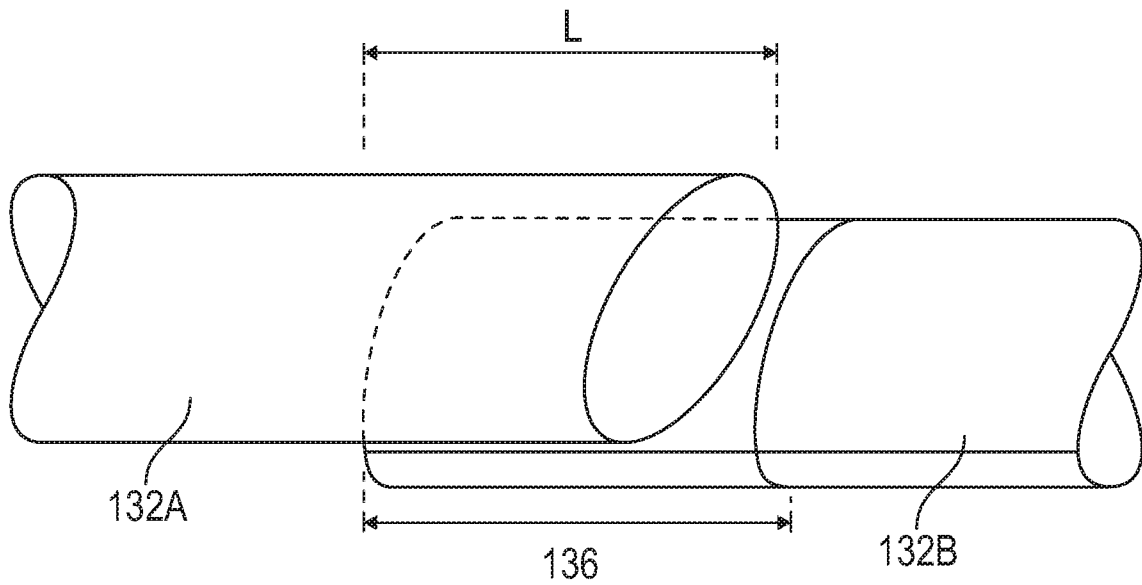
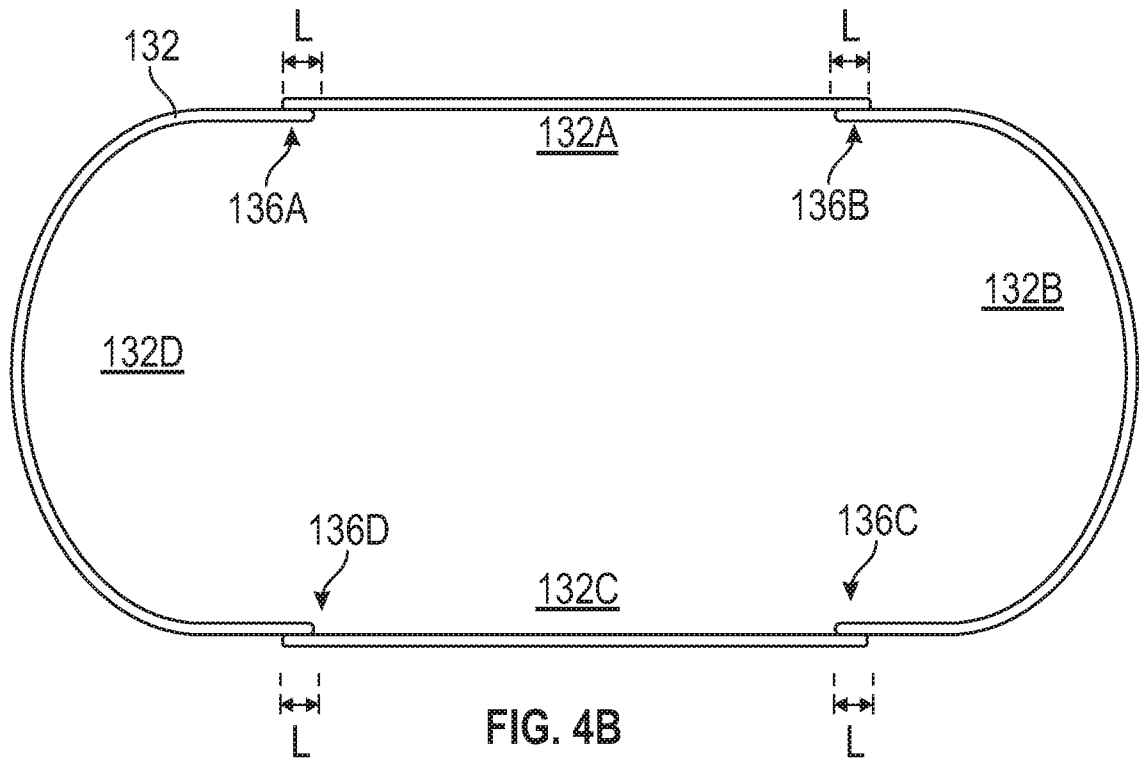


FIG. 4C

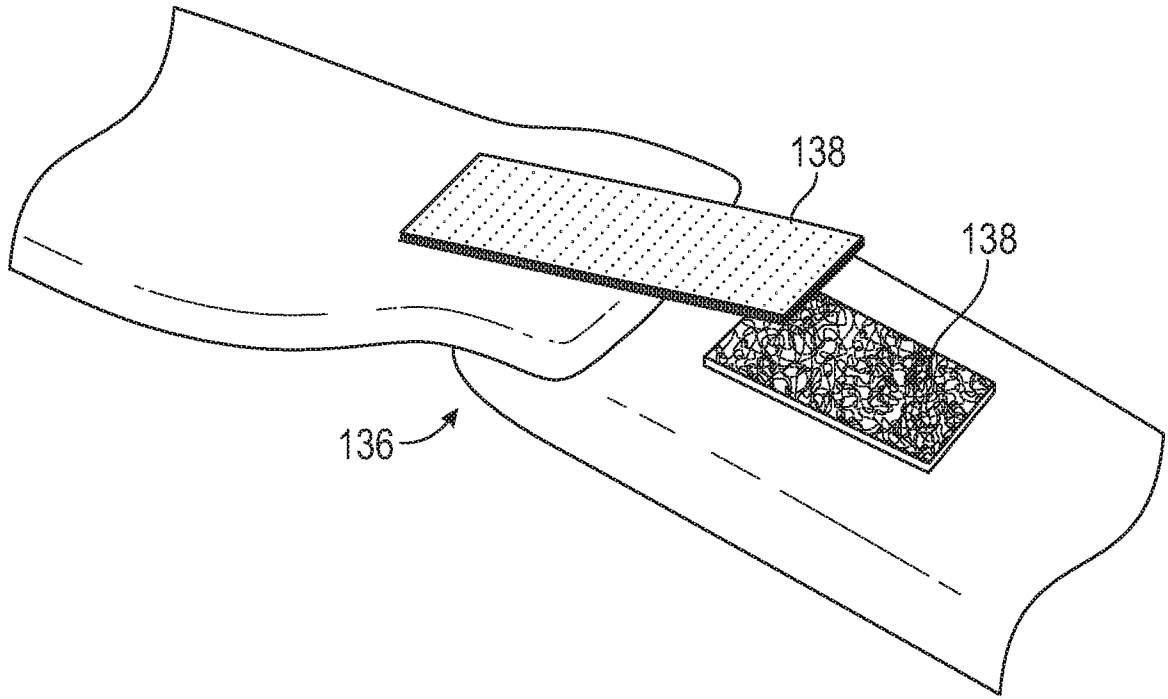


FIG. 5

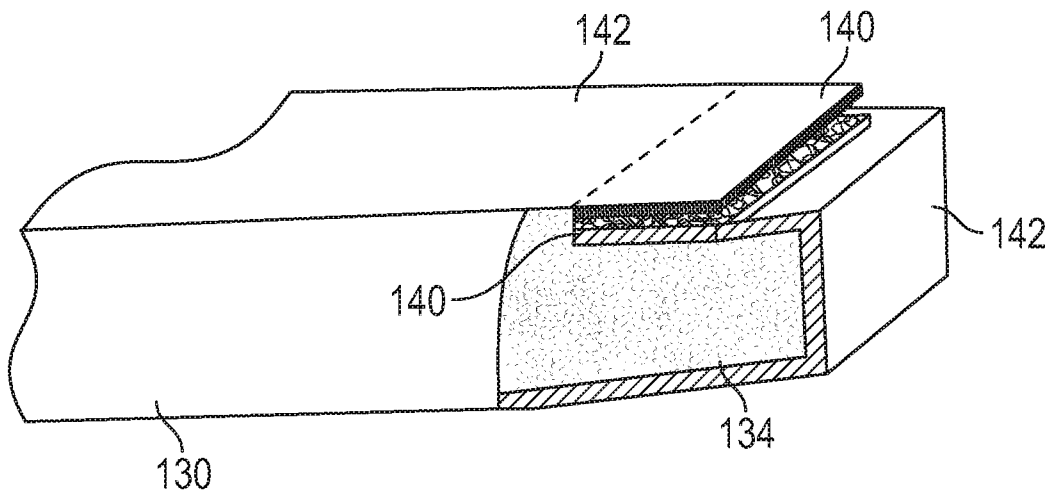


FIG. 6

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2018/055616

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. Claims Nos.: 5-16
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of additional fees.
3. As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2018/055616

A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - B32B 3/04; B32B 3/00; B32B 3/02; B32B 3/06 (2018.01)

CPC - B32B 3/04; B32B 3/02; B32B 3/06; B32B 3/12; B60J 11/00; B60J 11/02; E04D 5/141 (2018.08)

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)

See Search History document

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

USPC - 52/3; 52/23; 296/136.1; 296/138; 428/72 (keyword delimited)

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

See Search History document

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 3,862,876 A (GRAVES) 28 January 1975 (28.01.1975) entire document. See pg. 5 of ISA/237.	1-4
A	US 2001/0038226 A1 (HOENACK) 08 November 2001 (08.11.2001) entire document	1-4

Further documents are listed in the continuation of Box C.

See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

17 November 2018

Date of mailing of the international search report

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