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(54) Titre : OUVERTURE DECOUPEE A L'EMPORTE-PIECE POUR EMBALLAGE SOUPLE A COUCHES MULTIPLES
(54) Title: DIE CUT OPENING FOR MULTI-LAYER FLEXIBLE PACKAGE

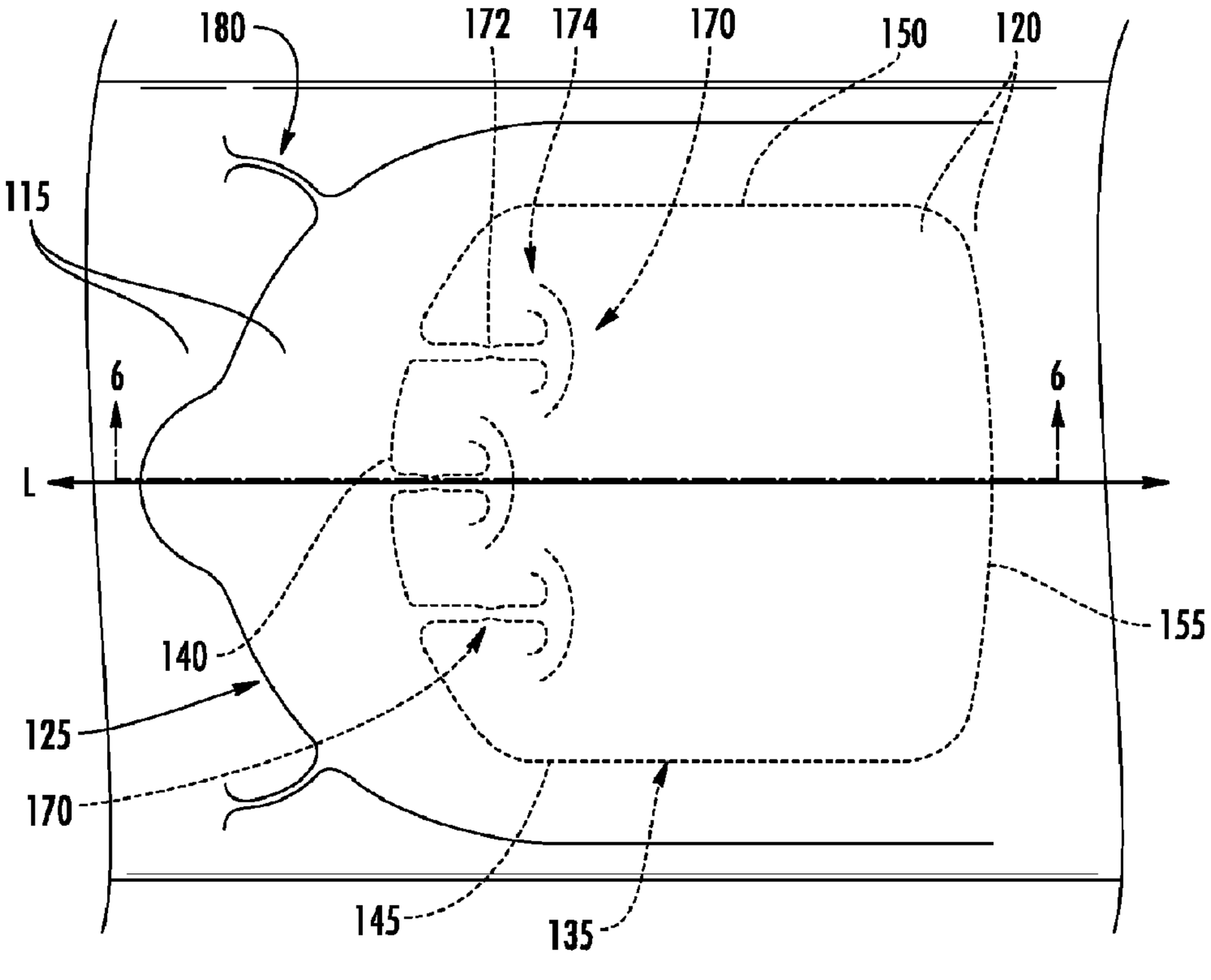

FIG. 3

(57) Abrégé/Abstract:
A reclosable package (10) is described that includes inner and outer film layers (20, 15). Each of the inner and outer film layers (20, 15) includes die cuts (25, 35) that are designed to create a peelable flap portion (30) that, when pulled back by the user, reveals an

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(57) Abrégé(suite)/Abstract(continued):
opening of the package for providing access to the contents of the package. In particular, the inner film layer (20) has an inner die cut (35) that includes a cross-directional cut line (55). While the cross-directional cut line in conventional packages is a straight line, the package described herein uses a line that has one or more radii of curvature. In this way, the vibrations that may otherwise be generated during the rotary die cutting process are reduced, and more consistent cut depths can be achieved.

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(54) Title: DIE CUT OPENING FOR MULTI-LAYER FLEXIBLE PACKAGING

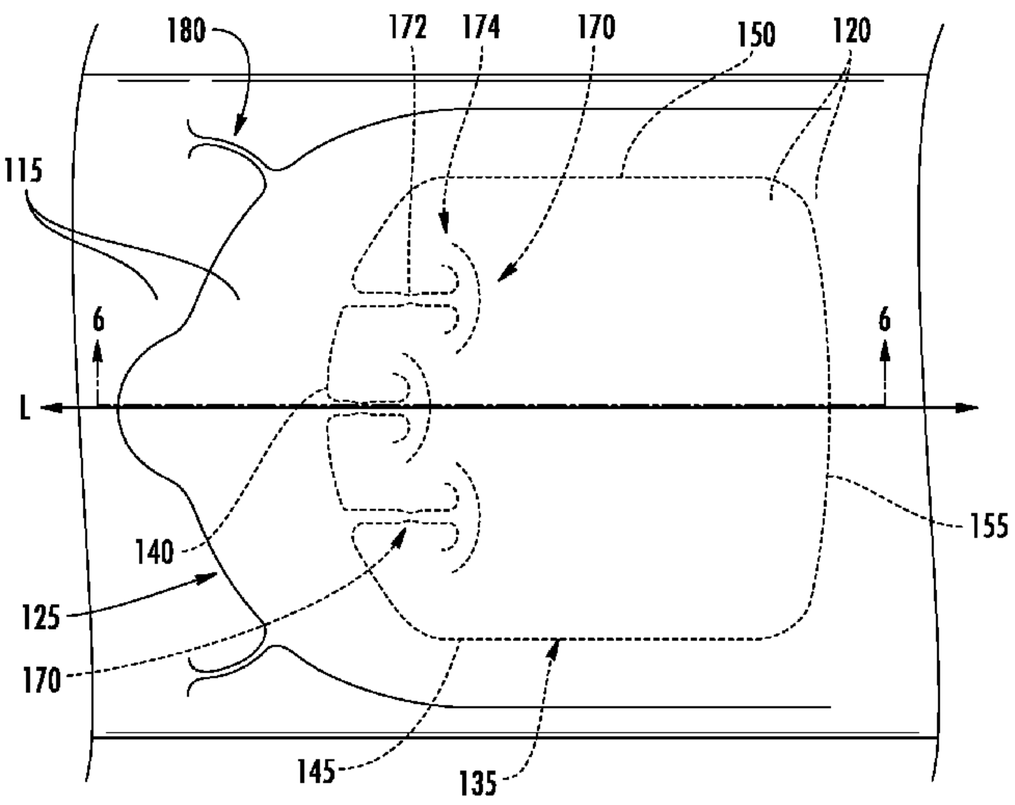

FIG. 3

(57) **Abstract**: A reclosable package (10) is described that includes inner and outer film layers (20, 15). Each of the inner and outer film layers (20, 15) includes die cuts (25, 35) that are designed to create a peelable flap portion (30) that, when pulled back by the user, reveals an opening of the package for providing access to the contents of the package. In particular, the inner film layer (20) has an inner die cut (35) that includes a cross-directional cut line (55). While the cross-directional cut line in conventional packages is a straight line, the package described herein uses a line that has one or more radii of curvature. In this way, the vibrations that may otherwise be generated during the rotary die cutting process are reduced, and more consistent cut depths can be achieved.

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DIE CUT OPENING FOR MULTI-LAYER FLEXIBLE PACKAGE

BACKGROUND

The present disclosure relates in general to packaging for products, and more particularly to packaging constructed from flexible film-based materials. The disclosure is especially concerned with packages having one or more die cuts that define a peelable portion and/or package integrity features for creating an opening to the package and methods for die cutting the peelable portion and opening.

Flexible film-based materials can be used to construct packages for products. Such a package can include an opening that is created when one layer of a multi-laminate construction is partially peeled away from another layer. For example, an outer film layer may be laminated to an inner film layer, and an opening may be cut in each film layer in such a way as to create a portion of the package that can be removed by the consumer to reveal the opening of the package. Thus, a consumer, by peeling back portions of the outer film layer and the inner film layer, can open the package and access contents of the package (e.g., food items, such as cookies). In some cases, the peelable portion may be designed to be re-adhered to the rest of the package to provide a reclosing feature for storing unused contents of an opened package.

BRIEF SUMMARY

Embodiments of the invention described herein provide improved packages and methods for die cutting package openings that allow for more consistent cut depths when creating the various die cuts that form a peelable portion and opening of a flexible package. In particular, embodiments of the packages and methods described below include a cross-directional cut line that includes at least one radius of curvature, such that vibrations during the die cutting process are reduced and more consistent and reproducible die cut depths through particular layers of the multi-layer laminate can be achieved, thereby reducing tolerances and improving the overall performance of the flexible package.

WHAT IS CLAIMED IS:

1. A package comprising:

an outer film layer comprising an outer die cut, wherein the outer die cut defines a peripheral edge of a peelable flap portion of the package; and

an inner film layer laminated to the outer film layer and comprising an inner die cut, wherein the inner die cut defines a location of an opening of the package, is formed inwardly of the outer die cut, and is formed on the peelable flap portion,

wherein the inner die cut comprises:

a first cross-directional cut line;

first and second longitudinal cut lines extending continuously lengthwise from opposite ends of the first cross-directional cut line, respectively; and

a second cross-directional cut line extending continuously between the first and second longitudinal cut lines opposite the first cross-directional cut line, and wherein the second cross-directional cut line has a non-zero radius of curvature.

2. The package of Claim 1, wherein the radius of curvature of the second cross-directional cut line is a first radius of curvature, and wherein a juncture of each of the first and second longitudinal cut lines with the second cross-directional cut line has a second radius of curvature that is different from the first radius of curvature.

3. The package of Claim 2, wherein the second radius of curvature is between approximately 0.125-inch and approximately 0.75-inch.

4. The package of Claim 1, wherein the first cross-directional cut line, the first longitudinal cut line, the second longitudinal cut line, and the second cross-directional cut line form a closed shape.

5. The package of Claim 1, wherein the first cross-directional cut line of the inner die cut comprises at least one package integrity feature.

6. The package of Claim 1, wherein the outer die cut and the inner die cut are formed using a rotary die cutting blade.

7. The package of Claim 1, wherein the mid-section of the second cross-directional cut line is cut before the opposite ends of the second cross-directional cut line.

8. The package of Claim 1, wherein the outer die cut includes at least one package integrity feature.

9. A method of manufacturing a package, the method comprising:

laminating an outer film layer to an inner film layer;

forming an outer die cut in the outer film layer to define a peripheral edge of a peelable flap portion of the package; and

forming an inner die cut in the inner film layer to define a location of an opening of the package, wherein the inner die cut is formed inwardly of the outer die cut and on the peelable flap portion, and wherein forming the inner die cut comprises:

forming a first cross-directional cut line;

forming first and second longitudinal cut lines extending continuously lengthwise from opposite ends of the first cross-directional cut line, respectively; and

forming a second cross-directional cut line extending continuously between the first and second longitudinal cut lines opposite the first cross-directional cut line,

wherein the second cross-directional cut line has a non-zero radius of curvature, such that at least a mid-section of the second cross-directional cut line is cut at a different instant in time than opposite ends of the second cross-directional cut line, thereby reducing vibrations generated during cutting.

10. The method of Claim 9, wherein laminating an outer film layer to an inner film layer comprises pattern-applying a permanent adhesive to first portions of an inner surface of a respective one of the inner film layer or the outer film layer and pattern-applying a pressure sensitive adhesive to second portions of the inner surface of the respective one of the inner or outer film layer.

11. The method of Claim 9, wherein the radius of curvature of the second cross-directional cut line is a first radius of curvature, and wherein a juncture of each of the first and second longitudinal cut lines with the second cross-directional cut line has a second radius of curvature that is different from the first radius of curvature.

12. The method of Claim 11, wherein the second radius of curvature is between approximately 0.125-inch and approximately 0.75-inch.

13. The method of Claim 9, wherein the first cross-directional cut line, the first longitudinal cut line, the second longitudinal cut line, and the second cross-directional cut line form a closed shape.

14. The method of Claim 9, wherein the first cross-directional die cut line of the inner die cut comprises at least one package integrity feature.

15. The method of Claim 9, wherein forming the outer die cut and forming the inner die cut comprise using a rotary die cutting blade.

16. The method of Claim 9, wherein the mid-section of the second cross-directional cut line is cut before the opposite ends of the second cross-directional cut line.

17. The method of Claim 9, wherein the outer die cut includes at least one package integrity feature.

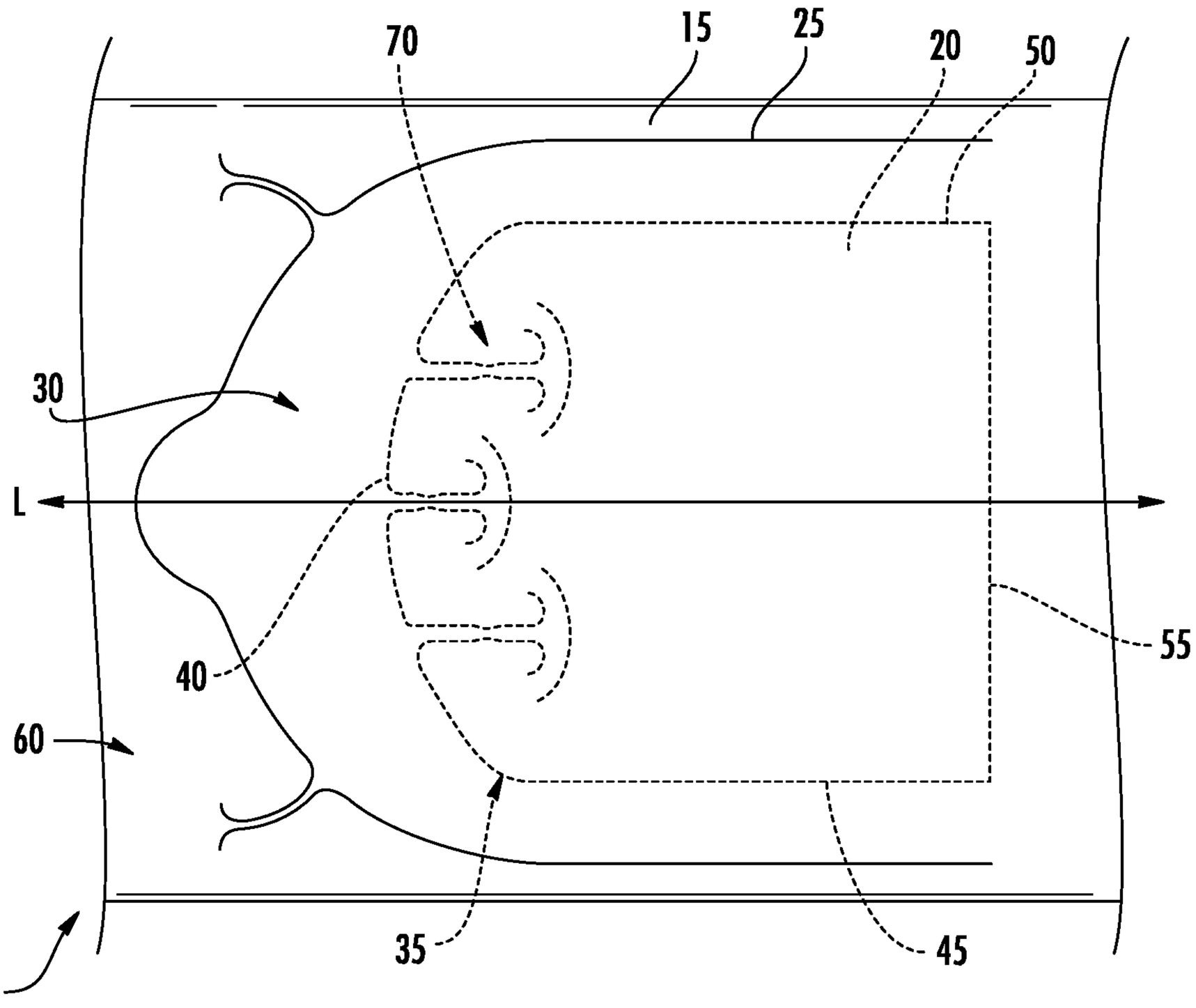

FIG. 1

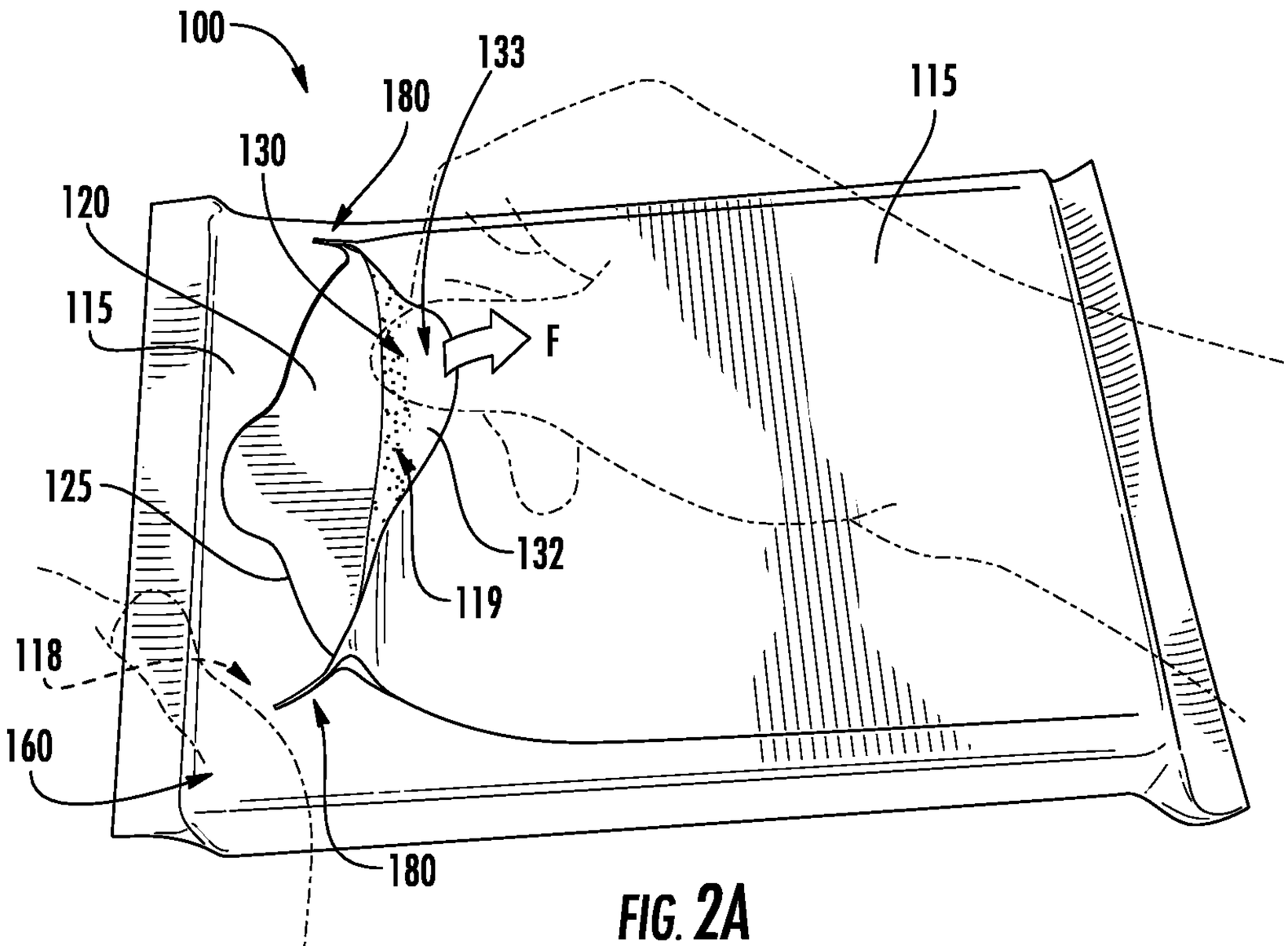
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FIG. 2A

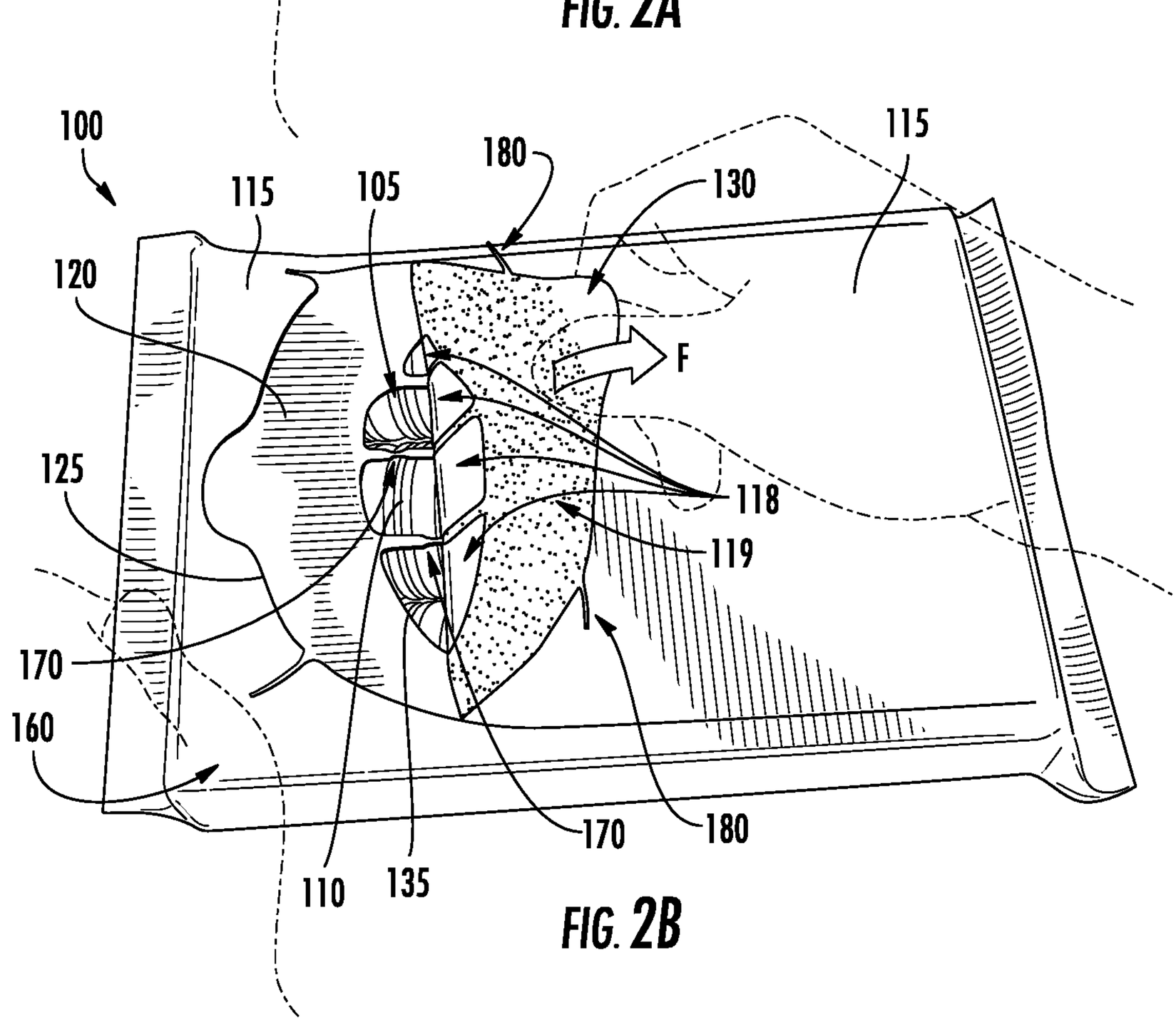
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FIG. 2B

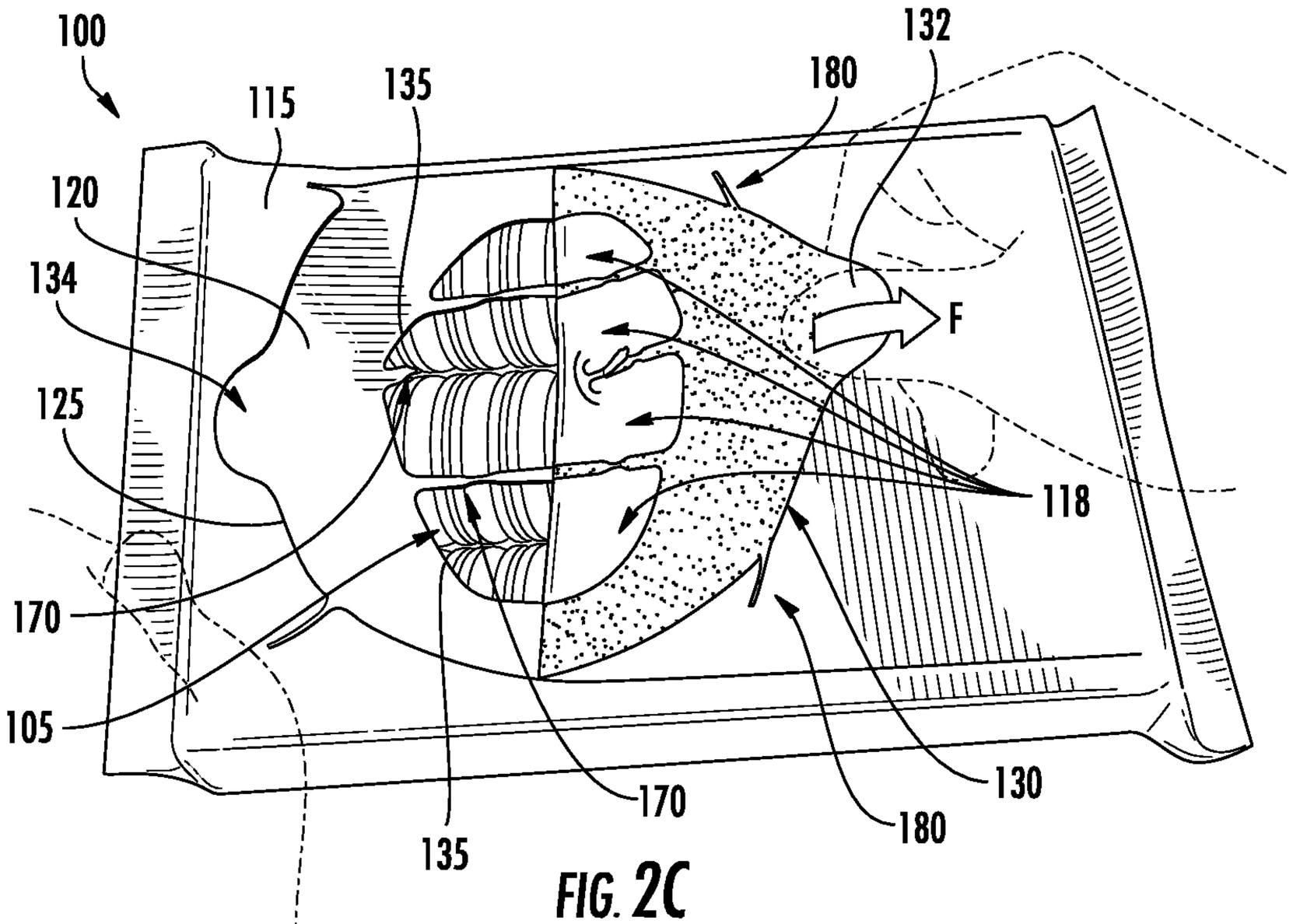
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FIG. 2C

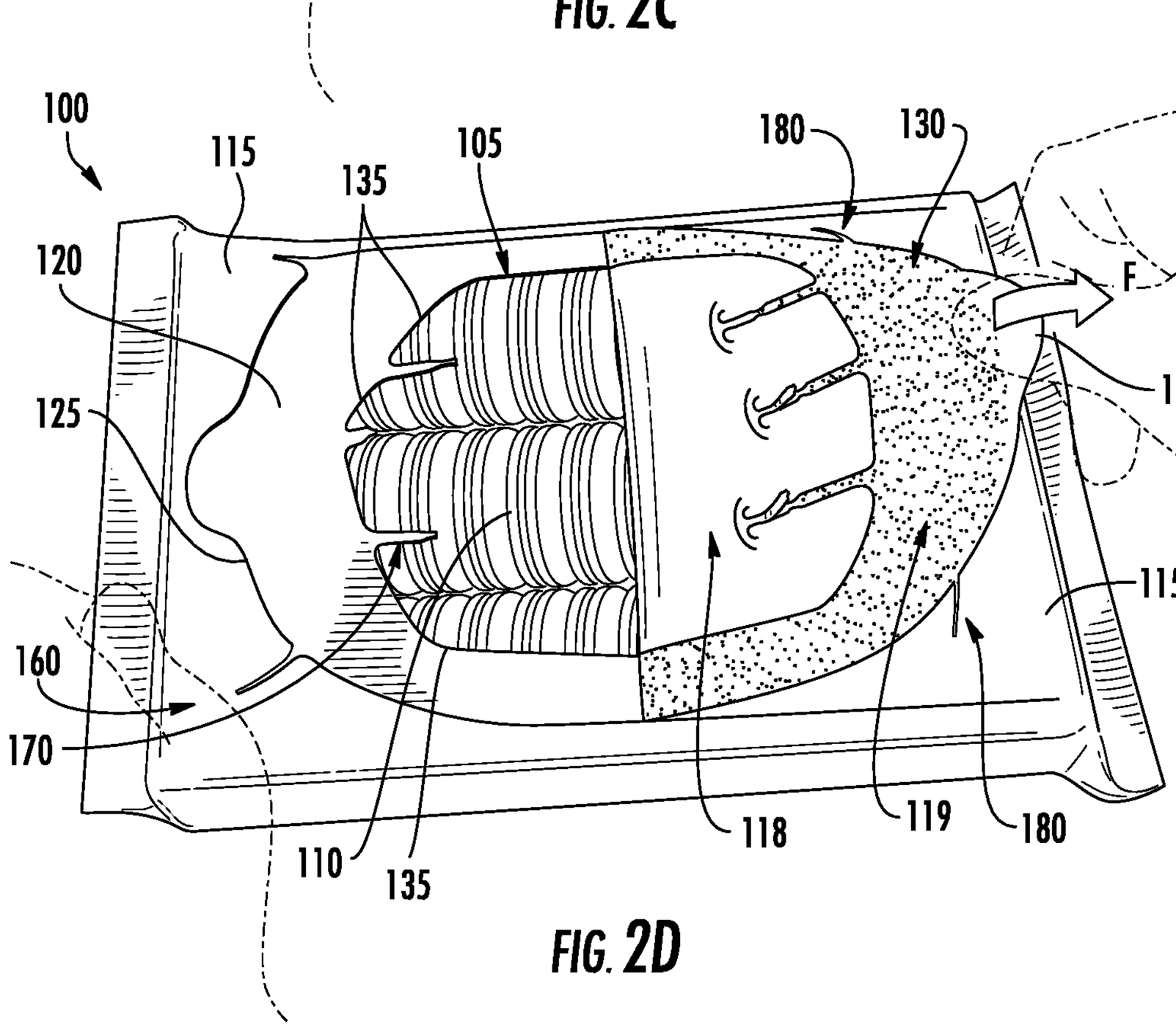
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FIG. 2D

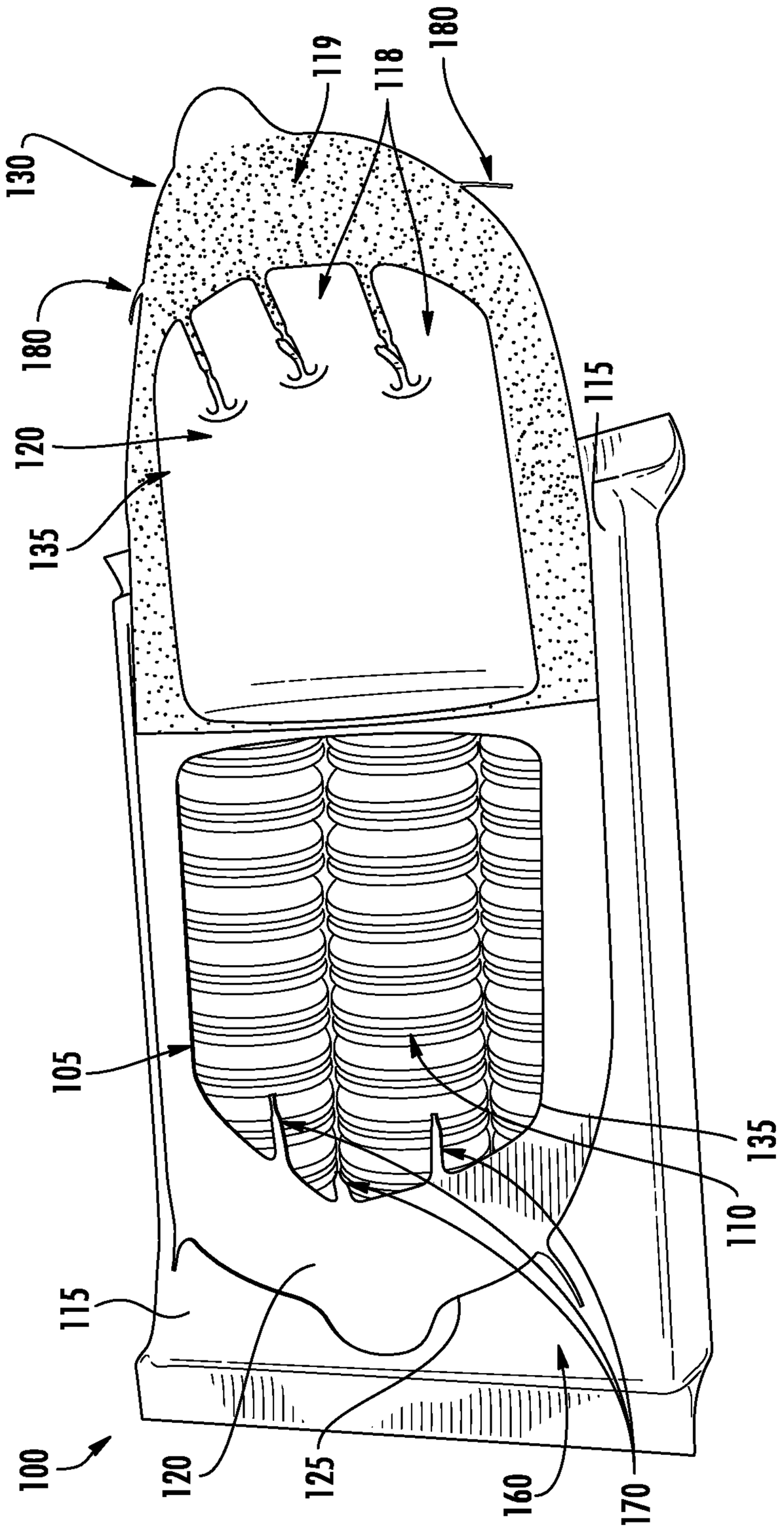
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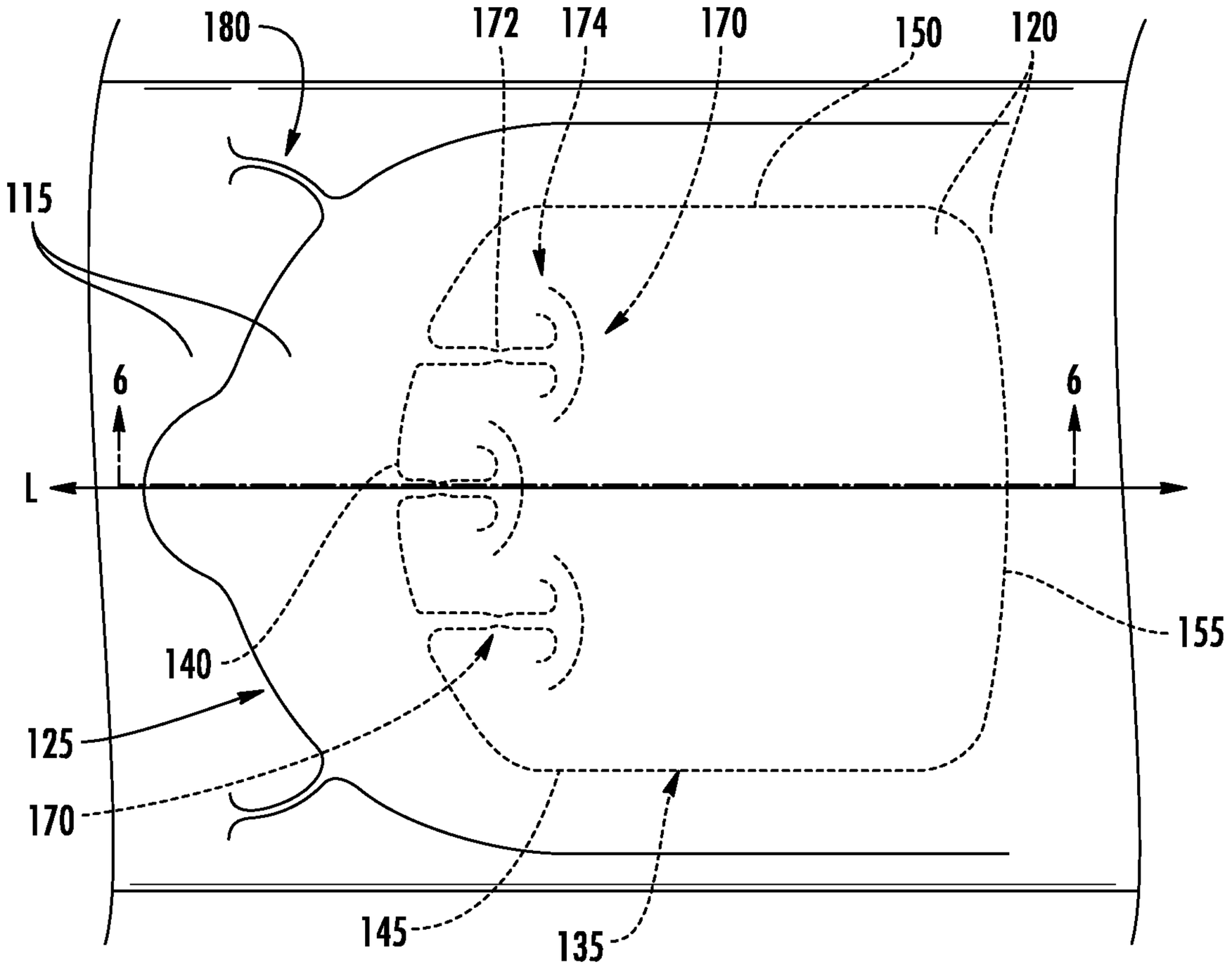
FIG. 2E



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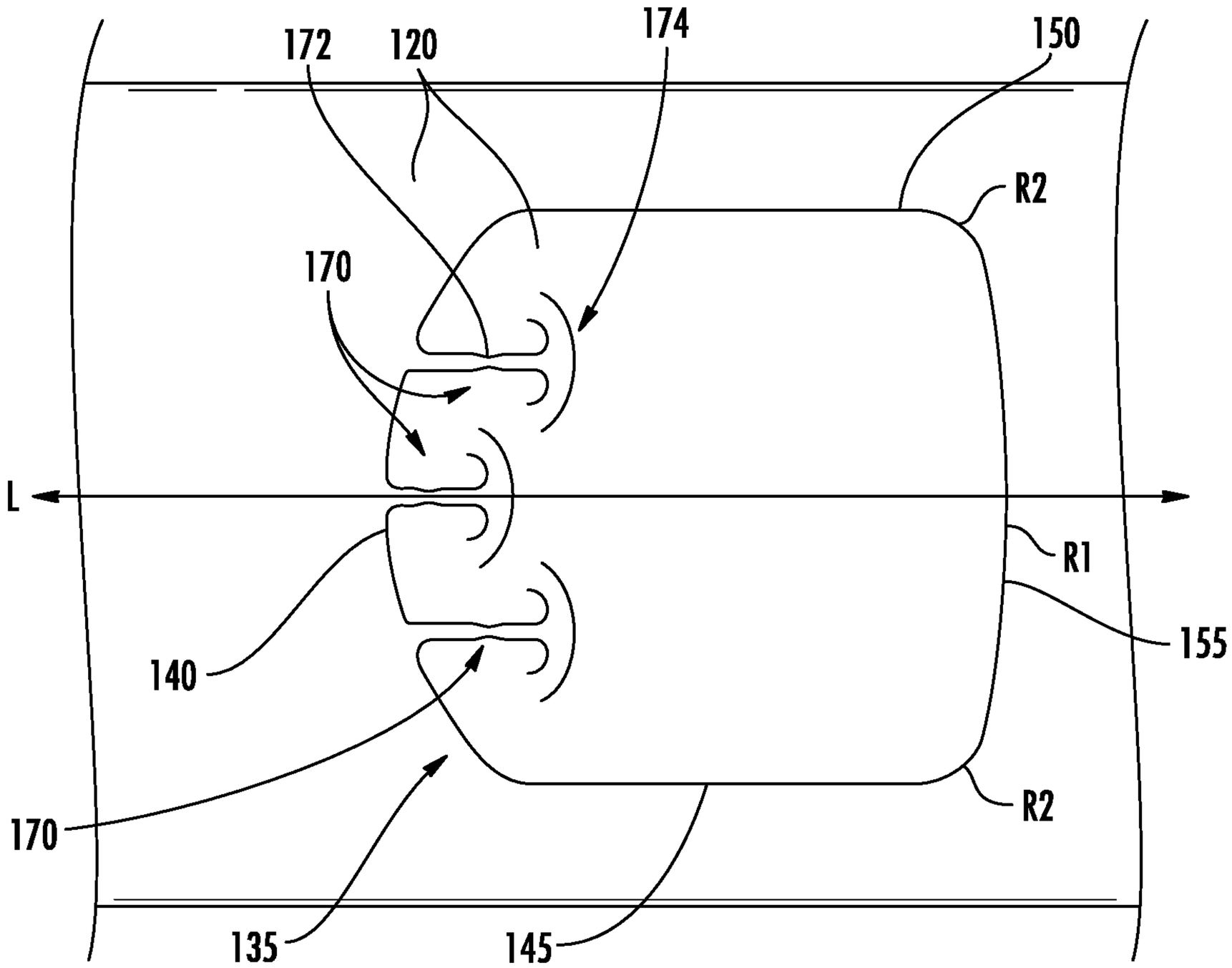


FIG. 4

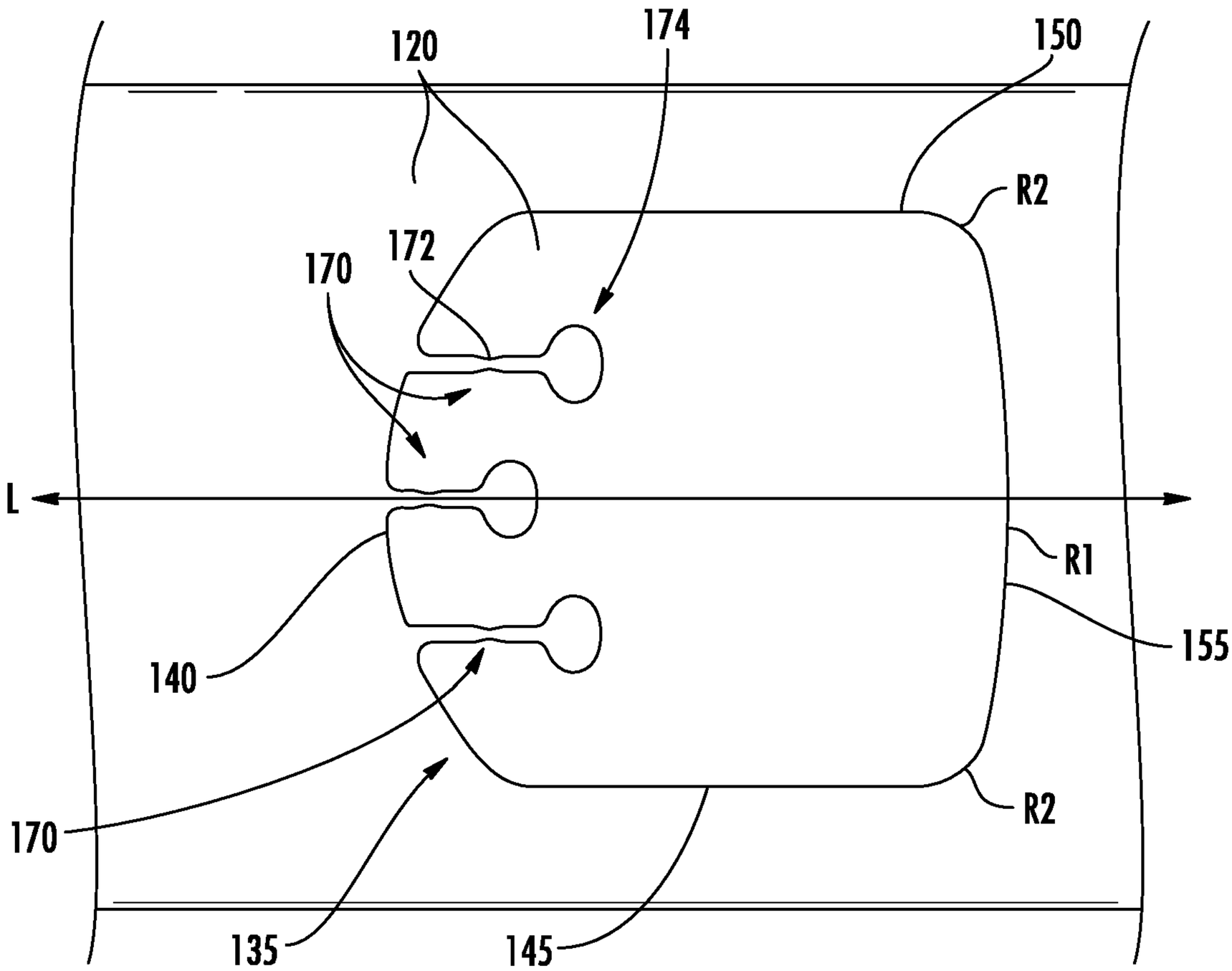


FIG. 5

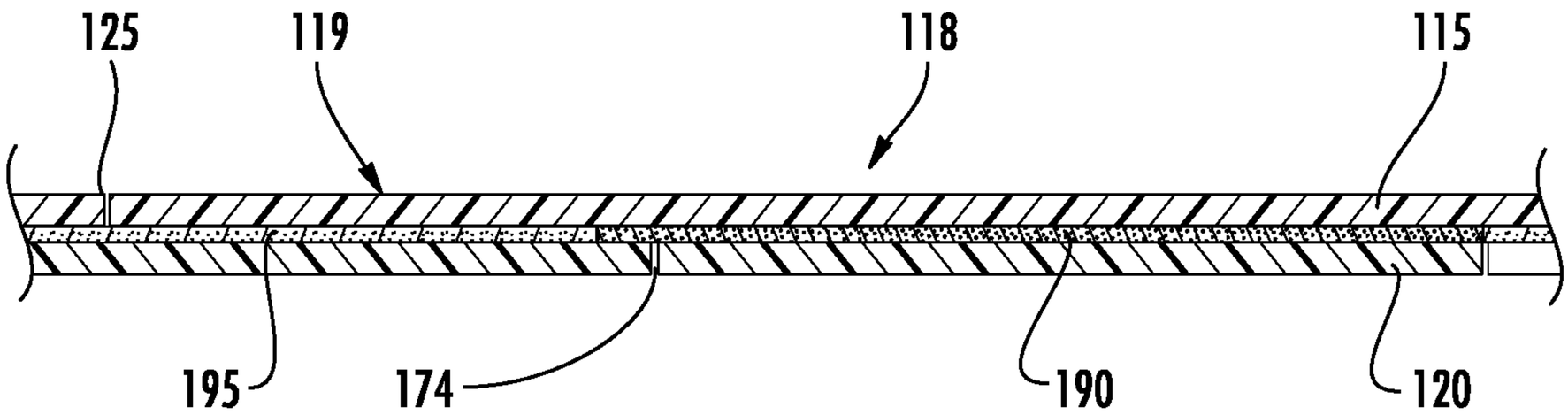
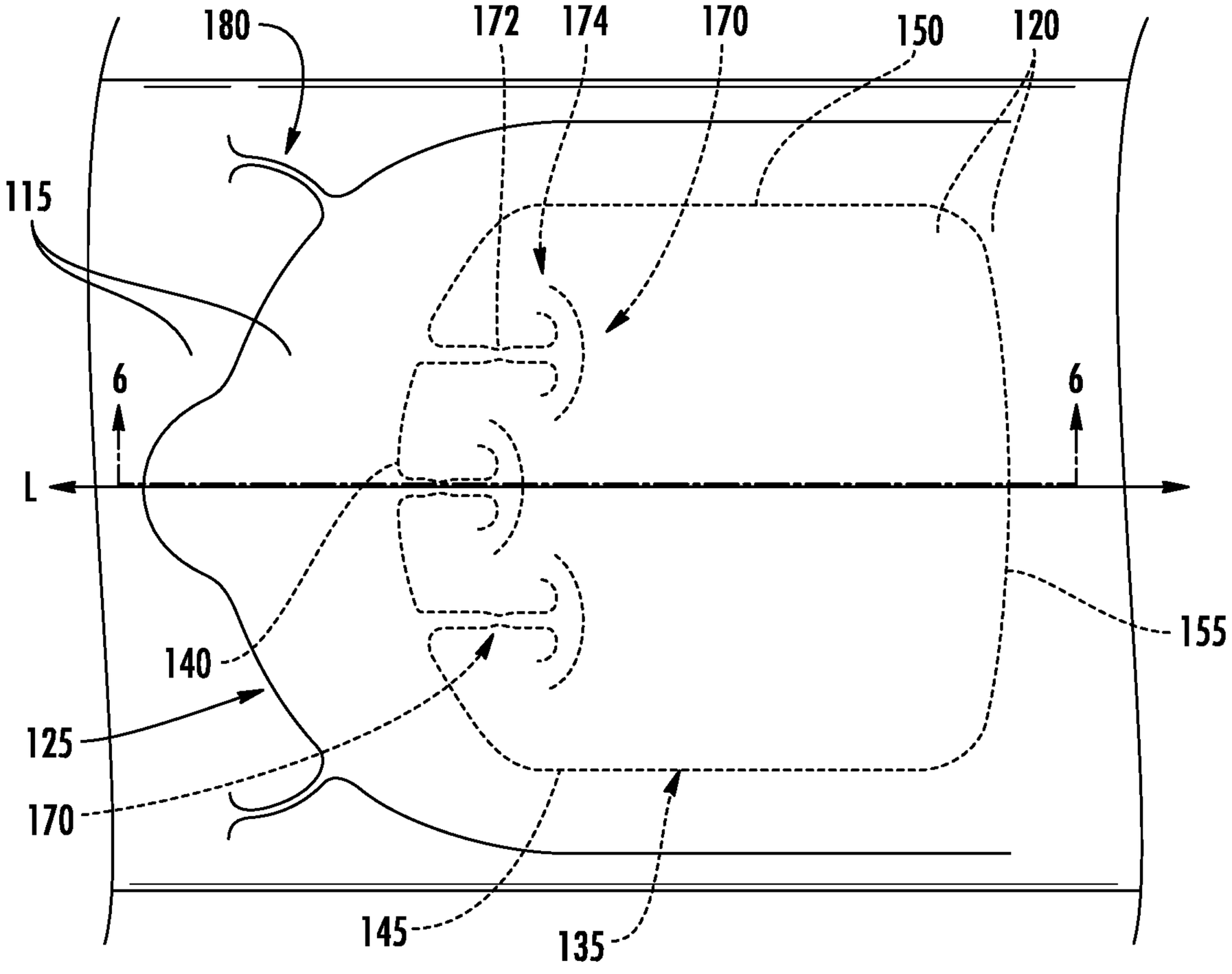


FIG. 6



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