United States Patent [19]

Skillen et al.

[11] **3,756,501**

[45] **Sept. 4, 1973**

[54] **BOX TOP CLOSURE**

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[73] Assignee: **Somerville Industries Limited,** London, Ontario, Canada

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[52] **U.S. Cl.** ..... **229/44 R,** 229/45

[51] **Int. Cl.** **B65d 43/16**

[58] **Field of Search** ..... 229/44 R, 44 CB, 229/45

[56] **References Cited**

UNITED STATES PATENTS

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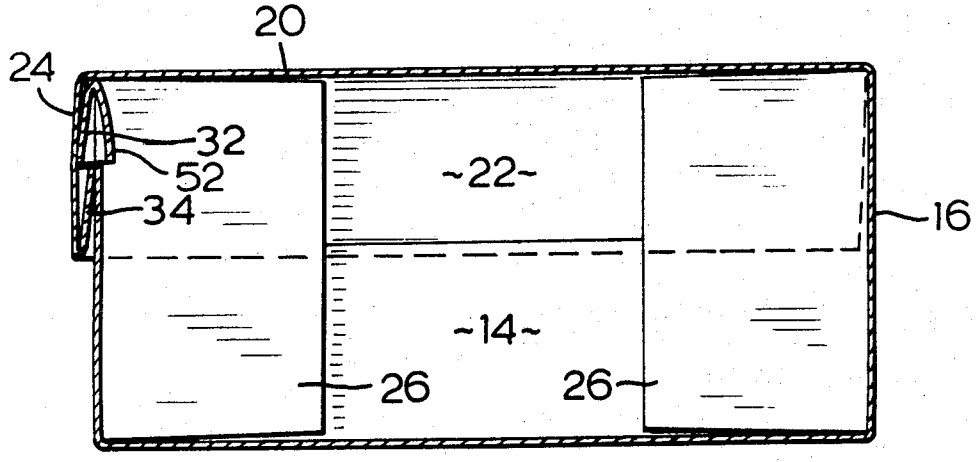
Assistant Examiner—Stephen P. Garbe
Attorney—Roy Harold Saffrey

[57] **ABSTRACT**

A reclosable paperboard carton having a container portion and a lid portion. The container portion has a front wall which has a lip panel at its upper end folded outwardly upon itself to provide a downwardly directed locking ledge on the outer surface of the front wall. The lid has a front wall with a lip panel at the lower edge thereof folded inwardly to provide an upwardly directed locking ledge. At least one of the lip panels is secured to its front wall at spaced intervals. The portions of the lip between the adhesively secured portions are outwardly biased by the resilient character of the paperboard so as to be spaced from its front wall. Preferably both of the lip panels have an outwardly biased portion and the outwardly biased portions are arranged in alignment with one another to engage one another when the carton is closed. The front wall of the container portion may also have a cut extending parallel to the downwardly directed locking ledge so as to permit the portions of the upper edge of the container portion adjacent to the outwardly biased locking ledge to twist during opening and closing of the carton.

7 Claims, 5 Drawing Figures



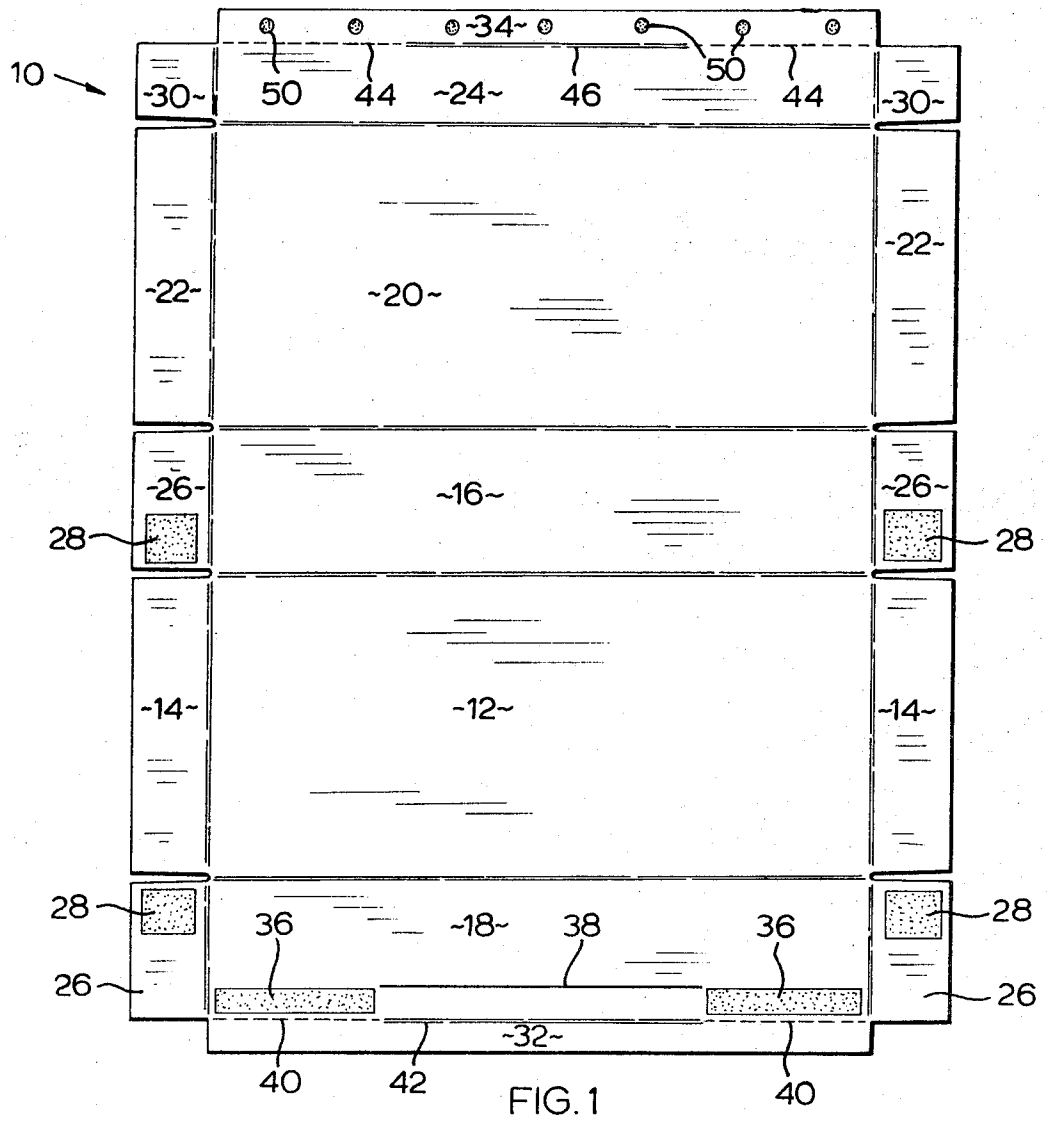

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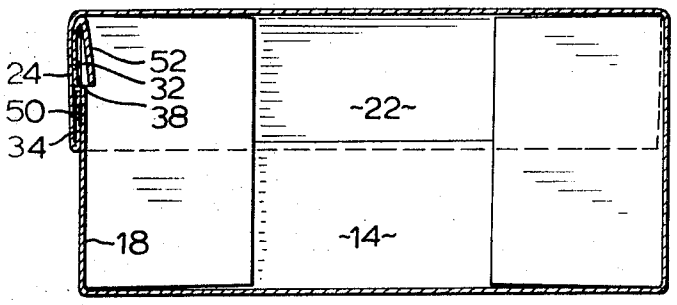
FIG. 1


24
52
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38
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18

FIG. 3

FIG. 2

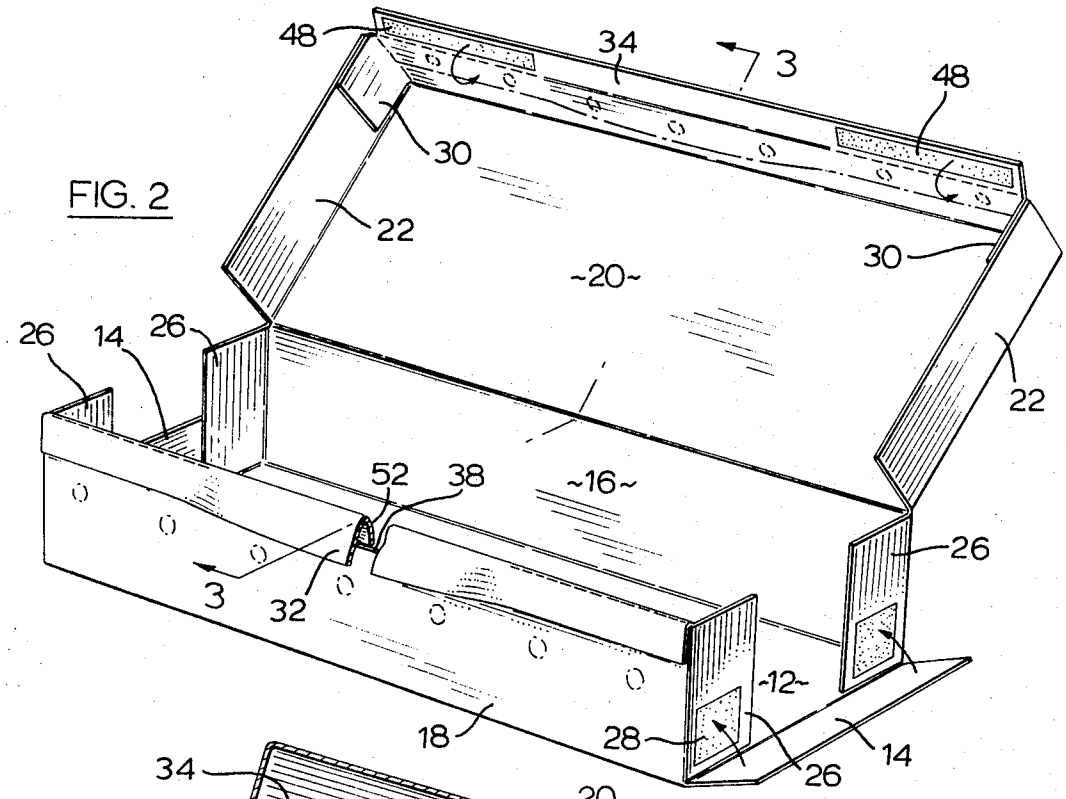


FIG. 4

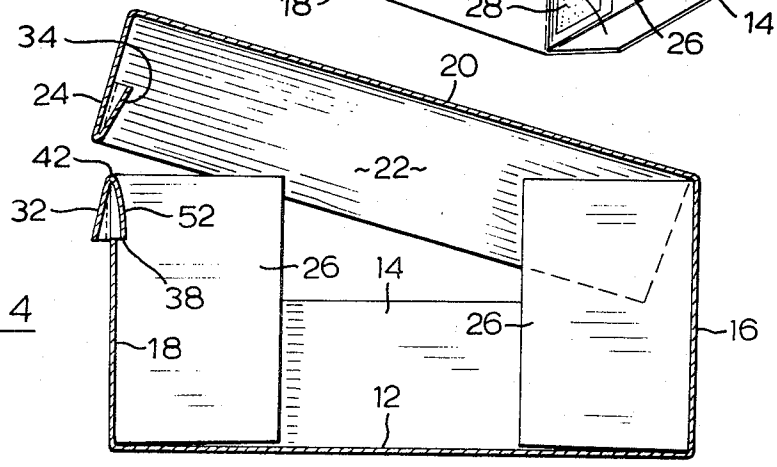
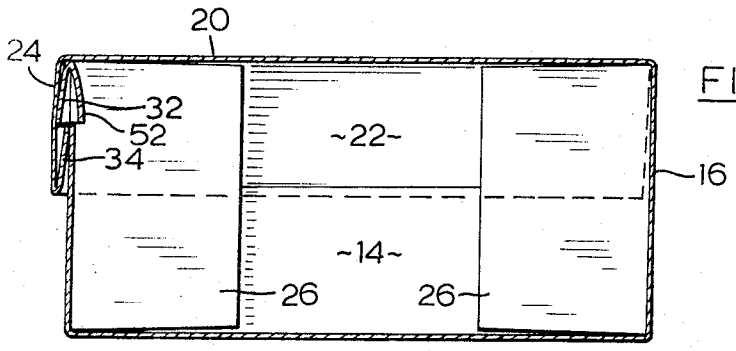


FIG. 5



BOX TOP CLOSURE

FIELD OF INVENTION

This invention relates to paperboard cartons. In particular, this invention relates to a reclosable paperboard carton having a lid which can be locked in a closed position after the carton has been opened.

PRIOR ART

Considerable difficulty has been experienced in providing a reclosable paperboard carton of simple construction. Generally, reclosable cartons have employed locking tabs and corresponding openings which required careful manipulation in order to achieve a locked configuration on reclosing of the carton.

SUMMARY OF INVENTION

The present invention provides a simple and inexpensive reclosable carton which can be opened and reclosed without requiring any careful manipulation of the locking elements.

According to an embodiment of the present invention, a paperboard carton comprises a container portion having bottom, front, back and side walls and a lid portion having at least a top wall and front wall. A downwardly directed locking ledge is formed outwardly of the front wall of the container and spaced downwardly from the upper edge thereof and an upwardly directed locking ledge is formed inwardly of the front wall of the lid and spaced upwardly from the lower edge thereof. At least one of the ledges is formed by folding one of the front walls upon itself to provide a lip panel having an outer edge forming one of said locking ledges. The lip panel is adhesively secured to its front wall at spaced intervals and a portion of the lip panel between the adhesively secured portions is outwardly biased by the resilient character of the paperboard. The front wall of the lid has a sufficient length to overlap the front wall of the container portion to locate the locking ledge to the lid in a position underlying and closely adjacent to the locking ledge of the container portion when the lid is in the closed position. The front walls of the container portion and lid portion are sufficiently resilient to be deformable to disengage the locking ledges to permit the lid to move to an open position.

PREFERRED EMBODIMENT

The invention will be more clearly understood after reference to the following detailed specification read in conjunction with the drawings, wherein

FIG. 1 is a plan view of the outer surface of a paperboard blank for use in constructing a carton according to an embodiment of the present invention;

FIG. 2 (sheet 2) is a pictorial view illustrating the manner in which the blank is erected;

FIG. 3 (sheet 1) is a cross-sectional view of a closed carton taken along the line 3—3 of FIG. 2 showing the carton in a closed and sealed configuration;

FIG. 4 (sheet 2) is a cross-sectional view similar to FIG. 3 showing the carton in an open position; and

FIG. 5 is a cross sectional view similar to FIG. 3 showing the carton in an unsealed and reclosed configuration.

With reference to the drawings, the reference numeral **10** refers generally to a unitary paperboard blank suitable for manufacturing a reclosable carton according to an embodiment of the present invention. The blank consists of a container forming bottom wall panel **12**, side walls **14**, back wall **16** and front wall **18**. The lid portion of the blank consists of a top wall **20**, side walls **22** and front wall **24**. The back wall **16** and front wall **18** of the container portion are formed with end tabs **26**, each of which have a glue patch **28** which serves to secure the tabs **26** to the side walls **14** upon erection of the carton as will be described hereinafter. The front wall **24** of the lid also has tabs **30** which have glue patches (not shown) on the outside surface thereof which serve to secure the tabs **30** to the side walls **22** when the carton is erected. A locking lip panel **32** projects outwardly from the upper edge of the front wall **18** of the container portion and a similar locking lip panel **34** projects outwardly from the edge of the front wall of the lid portion. Glue patches **36** are provided on the outer surface of the front wall **18** of the container portion adjacent the side edges thereof. The glue patches **36** are spaced a substantial distance from one another. The front wall panel **18** is cut and severed along a cut line **38** extending between the glue patches. The edge at which the lip panel **32** is connected to the front panel **18** is weakened as shown by the broken lines **40** in the area adjacent to the glue panel **36** while the remaining portion **42** of this edge, which extends between the weakened portions **40**, is only very lightly creased so that the paperboard fibers in this area of the fold lines are not broken and do not lose their natural resilient characteristics. Similarly the lip **34** is connected to the front wall **24** of the lid along weakened crease lines **44** and substantially unweakened fold line **46**. The weakened sections **40** and **44** may be partially perforated. The lip **34** has glue patches **48** (see FIG. 2) on the inner surface thereof adjacent the weakened score line portions **44** and small glue patches **50** are located at spaced intervals along the outer surface of the lip **34**.

To form the erected carton to the configuration shown in FIG. 2 of the drawings, the various walls are folded along their hinge lines so that the back wall **16** and front wall **18** of the container portion are located in an upright position with the tabs **26** extending inwardly towards one another. The end walls **14** are folded upwardly as shown by the arrows in FIG. 2 so as to be adhesively secured by the adhesive patches **28** to the flaps **26**. Similarly the end walls **22** of the lid are adhesively secured to the flaps **30** so that the front wall **24** of the lid and the side walls **22** are held in an erect position.

The lip **32** is folded along the fold lines **40** and **42** so as to be disposed on the outer surface of the front wall panel **18** and adhesively secured thereto by the adhesive patches **36**. It will be noted that as shown in FIG. **2** of the drawings, the portion of the lip which is located between the adhesively secured end portions tends to bulge outwardly from the front wall panel due to the fact that the resilient character of the paperboard has not been destroyed by folding along fold line **42**.

The lip **34** is folded inwardly of the front wall at **24** of the lid and adhesively secured in this position by the adhesive patches **48**. Again, the portion of the lip **34** which is disposed between the adhesively secured portions tends to bulge inwardly of the lid away from the front wall panel **24** due to the resilient character of the paperboard.

After the carton has been erected in the manner described above, it is loaded with the wares which are to be shipped and the lid is closed to the position shown in FIG. 3. In this position, the glue patches **50** formed on the lip **34** are adhesively secured to the front wall **18** of the container portion so that the carton is sealed in a closed position. In this closed position, the side walls **22** of the lid overlap the side walls **14** of the container portion so as to close the ends of the carton.

When the carton is loaded with wares which substantially full the container cavity, the postion of the front wall identified by the reference numeral **52** which is located between the cut **38** and the front wall **18** and the upper edge of the front wall is forced to assume a position generally in line with the remainder of the front wall **18.**

To open the carton, the lower edge of the front wall of the lid manually separated from the front wall of the container portion to thereby destroy the seal provided by the adhesive patches **50.** It will be noted that even after the adhesive has been severed, opening of the carton is prevented by the fact that the downwardly directed ledge formed by the lower edge of the lip **32** abuts the upwardly directed ledge formed by the upper edge of the lip panel **34.** In view of the fact that both of these lip panels are outwardly urged by the resilient character of the paperboard as previously described, it is necessary to pull the front wall of the lid portion outwardly a sufficient distance to ensure that the abutting ledges clear one another before the lid can be opened. It will be noted that the effective width of the ledges formed by both lips is substantially greater than the single thickness of the paperboard material.

As shown in FIG. 4 of the drawings, when the lid is opened the resilient character of the paperboard causes the ledge portions of the lip to recover to their fully outwardly extended form.

After the carton has been opened, it may be reclosed simply by returning the lid to its original sealed position as shown in FIG. 5 of the drawings. In this position, the ledge formed by the lip **34** once again underlies the ledge formed by the lip **32** and the lip is held in a closed position by the interlocking ledges. It has been found that the carton may be opened and closed many times without destroying the interlocking relationship between the lid and the container portion.

As shown particularly in FIG. 4 of the drawings, the cut **38** which is formed in the front wall **18** of the container permits the portion **52** of the upper edge of the front wall to move inwardly from the plane of the front wall. By providing the cut **38,** it is possible to increase the radius of curvature at the hinge line **42** so that the amount of permanent damage done to the fibres of the paperboard as a result of bending along the hinge line **42** is minimized. This structure permits the lip portion **32** to be depressed into the plane of the remainder of the front wall **18** of the container when the lid is moving to the closed position and this again serves to reduce the bending which occurs along the fold line **42.** The cut **38** also permits the locking ledge to twist during opening of the carton and this reduces the fraying which otherwise occurs at the edges of the lips as a result of repeated opening and closing of the carton.

From the foregoing it will be apparent that the embodiment of the invention described above provides a simple and inexpensive reclosable carton construction which has a well defined locking structure.

Various modifications of the preferred embodiment described above will be apparent to those skilled in the art without departing from the scope of this invention. For example, the front wall **18** may be formed without being severed along the cut line **38.** The resilience in the paperboard material is sufficient to ensure that the lip **32** will project out a sufficient distance from the plane of the front wall **18** to provide a locking ledge of adequate depth. As previously indicated, the cut **38** serves to reduce the amount of damage done to the resilient paperboard material as a result of folding along the fold line **42.** In addition, it is not essential to weaken the hinged connections of the lips as shown at **40** and **44** in the drawing. This feature does, however, have a considerable advantage over an unweakened hinge connection in that it relieves a considerable portion of the strain which would otherwise be applied to the adhesive connection with the front wall panels. Furthermore, it is desirable to minimize the width of the ledge adjacent the side edges of the carton so that it will not be unnecessarily restricted at the outer edges of the lips **32** and **34.** No difficulty is experienced in resiliently deforming the central area of the upper wall of the lid to release the centrally located locking ledges but if these ledges were extended to the edges of the carton, considerable difficulty could be expected.

What we claim as our invention is:

1. A paperboard carton comprising:

a. a container portion having front, back, bottom and side walls,

b. a lid portion having at least a top and front wall,

c. said top wall of said lid being hingedly connected to said back wall of said container,

d. downwardly directed locking ledge means formed outwardly from said front wall of said container and spaced downwardly from the upper edge thereof,

e. upwardly directed locking ledge means formed inwardly of said front wall of said lid and spaced upwardly from the lower edge thereof,

f. at least one of said ledge means being formed by folding one of said front walls upon itself to provide a lip panel having an outer edge forming one of said locking ledges,

g. said lip panel being adhesively secured in the folded configuration to its front wall at widely spaced longitudinal intervals,

h. said lip extending continuously between said widely spaced adhesively secured portions thereof and being outwardly biased by the resilient character of the paperboard,

i. the front wall of said lid having a sufficient length to overlap the front wall of said container portion to locate the locking ledge of the lid in the position underlying and closely adjacent the locking lip of the container when the lid is in a closed position,

j. said front walls being resiliently deformable to disengage said locking ledges to permit said lid to move to an open position.

2. A paperboard carton comprising:

a. a container portion having front, back, bottom and side walls,

b. a lid portion having at least a front wall and a top wall,

c. said lid being hingedly connected to said back wall of said container portion,

d. said front wall of said container portion being folded outwardly upon itself at its upper end to provide a lip panel disposed outwardly from said front wall and forming a downwardly directed locking ledge thereon,

e. said front wall of said lid being folded inwardly on itself at its lower end to provide a lip panel disposed inwardly from said front wall of said lid and forming an upwardly directed ledge thereon,

f. at least one of said lips being adhesively secured to the front wall from which it extends at widely spaced longitudinal intervals to retain said one lip in the folded configuration,

g. said lip extending continuously between the adhesively secured portions thereof and being outwardly biased by the resilient character of the paperboard,

h. the front wall of said lid having a sufficient length to overlap the front wall of said container portions to locate the locking ledge of the lid in a position underlying and closely adjacent to the locking ledge of the container portion when the lid is in a closed position,

i. said front walls being resiliently deformable to disengage said locking ledges to permit said lid to move to an open position.

3. A paperboard carton as claimed in claim **2** wherein both of the lip panels are adhesively secured to their respective front walls at widely spaced longitudinal intervals, the adhesive connections being arranged such that the portions of each lip panel which are located between the adhesive connections are arranged in alignment with one another, each of said portions being outwardly biased to increase the locking interference between locking ledges.

4. A paperboard carton as claimed in claim **1**, wherein said front wall panel of said container portion is severed along a line which is generally parallel to the upper edge of the front panel and spaced inwardly from the side edges of the front panel.

5. A paperboard carton as claimed in claim **4** wherein said severed portion of said front wall is coextensive with the portion of the lip panel which is located between the adhesively secured portions thereof.

6. A paperboard carton as claimed in claim **5** wherein said lip of said front wall of said lid is adhesively secured to the front wall of said container portion when said carton is sealed for shipping purposes.

7. A paperboard carton as claimed in claim **1** wherein the edge along which the lip panel is connected to its front wall is weakened in the area of the adhesively secured portions of the lip.

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