

[54] **PACKAGING DEVICE**

[75] Inventor: William A. Castine, Jr., Jeannette, Pa.

[73] Assignee: PPG Industries, Inc., Pittsburgh, Pa.

[22] Filed: Apr. 30, 1973

[21] Appl. No.: 356,257

[52] U.S. Cl. 206/454, 206/448, 206/449

[51] Int. Cl. B65d 85/48

[58] Field of Search 206/448, 454, 449, 450

[56] **References Cited**

UNITED STATES PATENTS

2,889,036	6/1959	Davis	206/449
3,148,469	9/1964	Umanoff	206/449

3,586,234	6/1971	Narman	206/454
3,618,755	11/1971	Kean	206/454

Primary Examiner—William I. Price

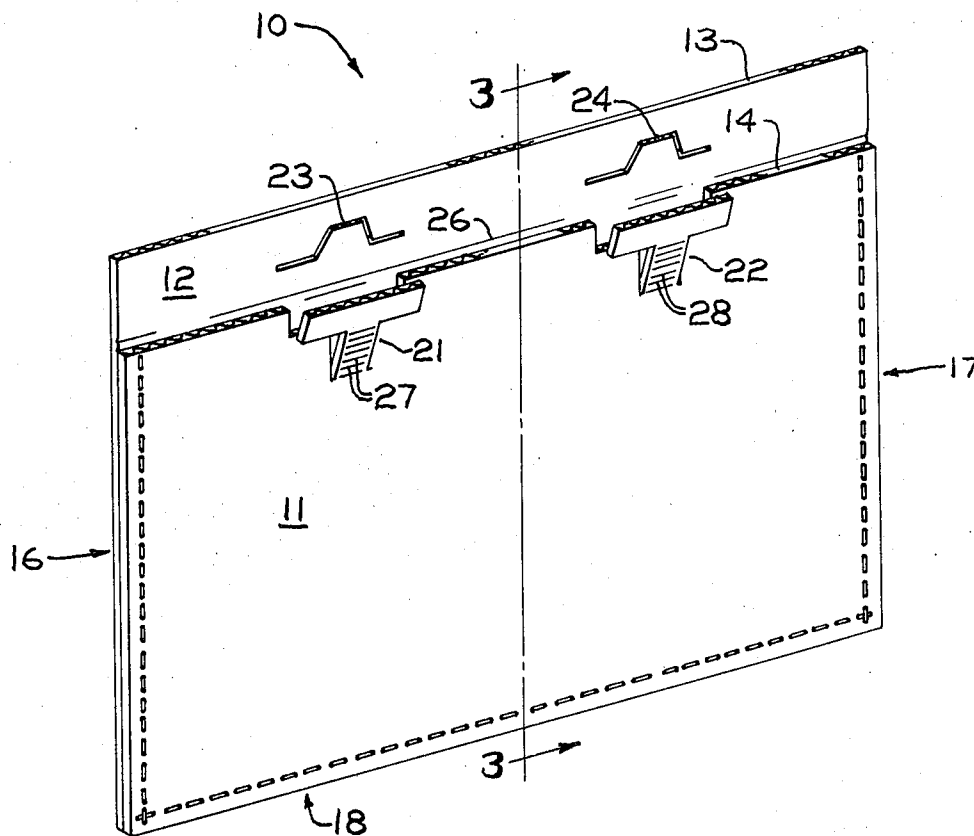
Assistant Examiner—R. E. Hart

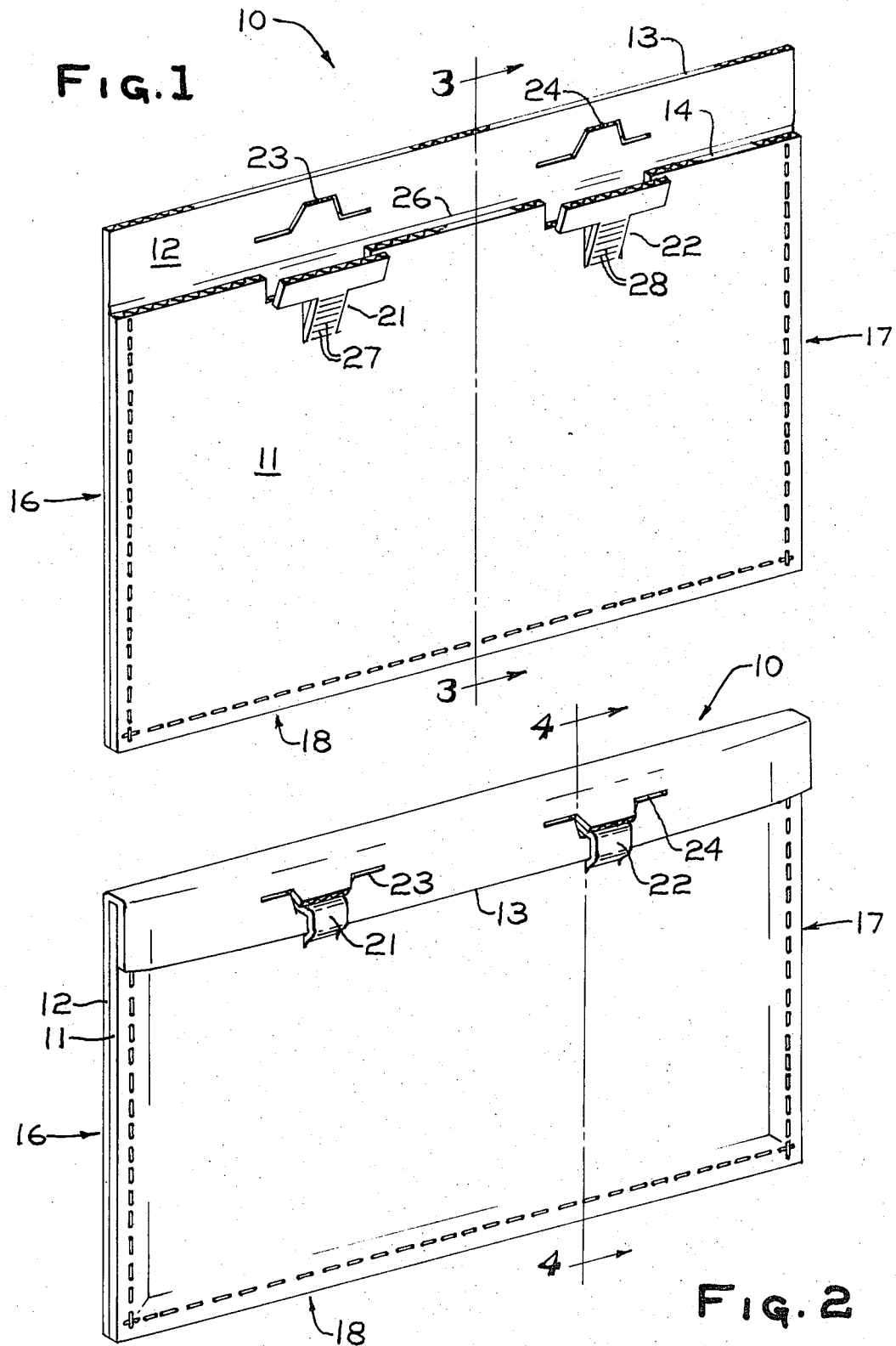
Attorney, Agent, or Firm—Donald Carl Lepiane

[57] **ABSTRACT**

A packaging device for a sheet-like glass article is comprised of fastened front and rear panels which define an envelope-type receptacle. The front panel is provided with locking tabs that cooperate with corresponding slots in the upper portion of the rear panel, the upper portion of the rear panel being folded over the top edge of the front panel but behind the locking tabs thereof when in use.

17 Claims, 8 Drawing Figures





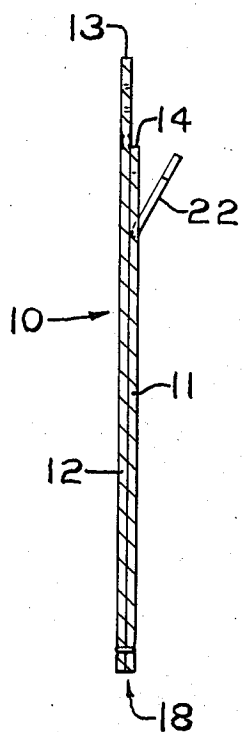


Fig. 3

Fig. 4

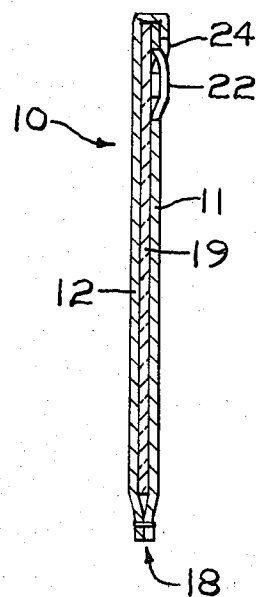


Fig. 5

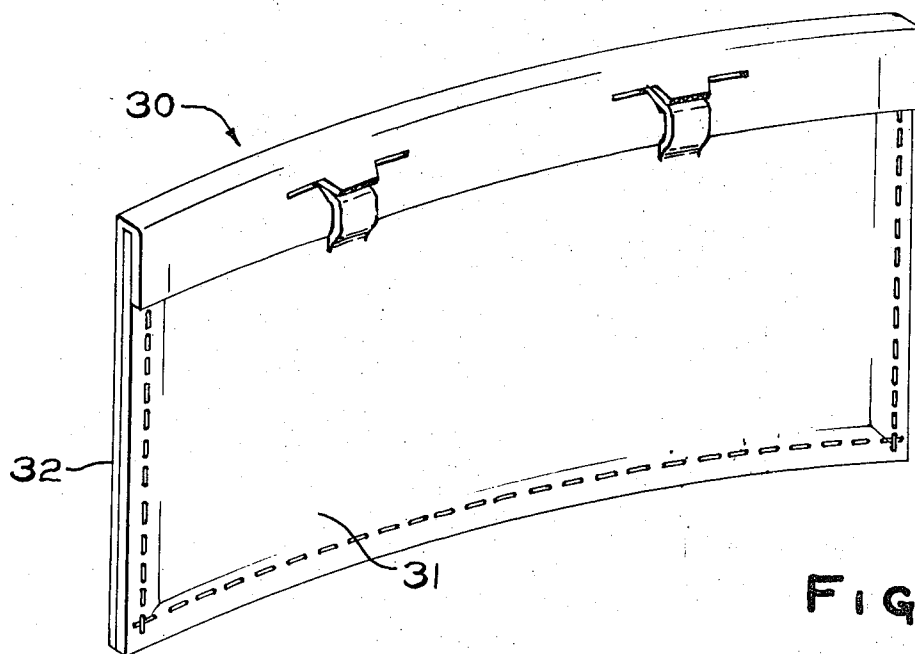
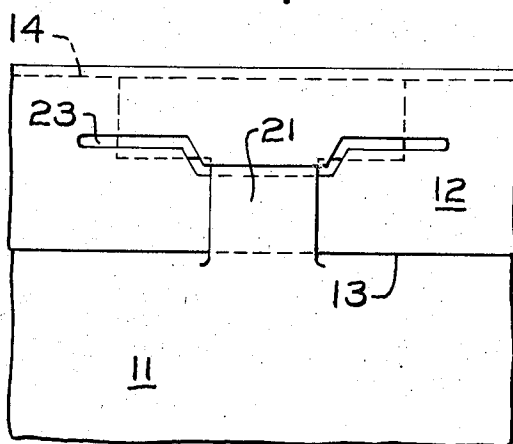


Fig. 6

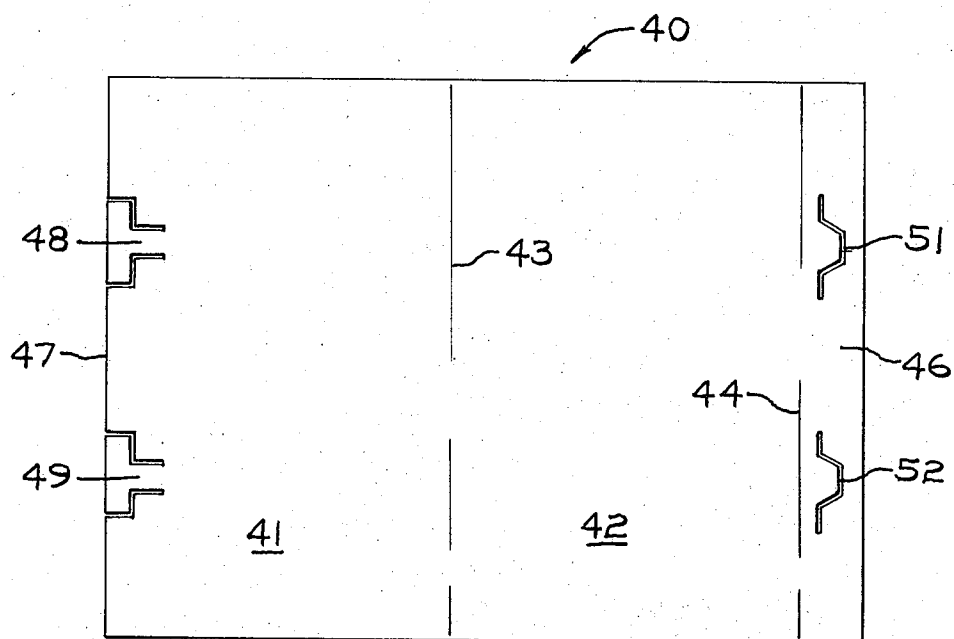


FIG. 7

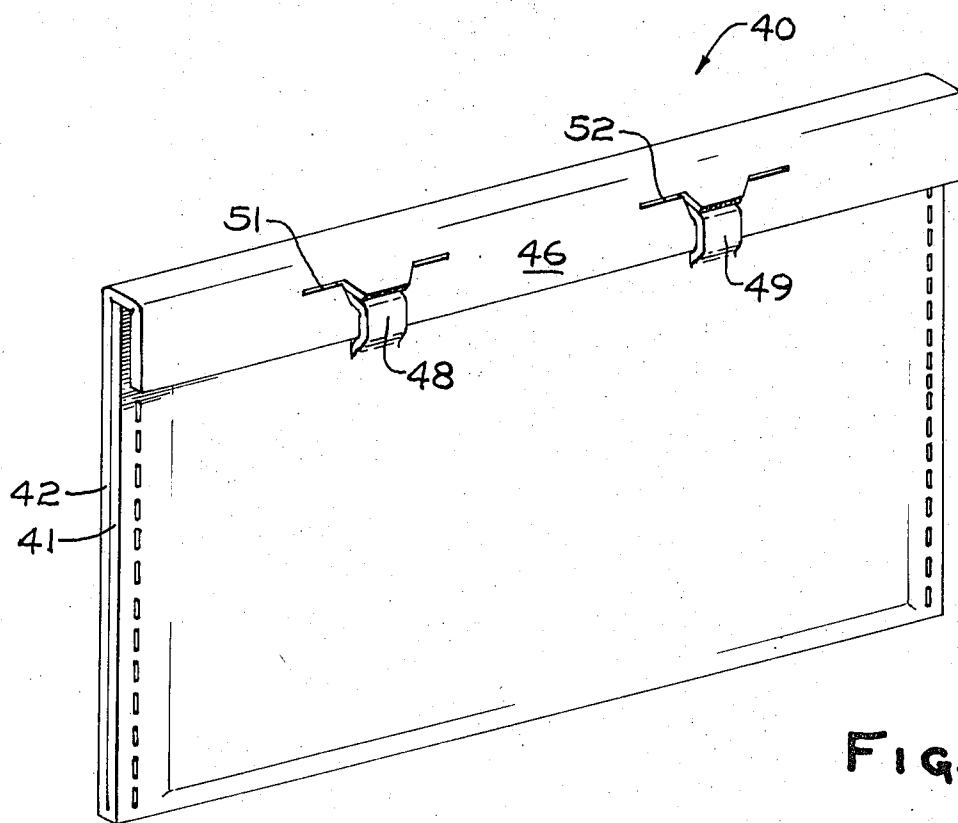


FIG. 8

PACKAGING DEVICE

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to a packaging device for fragile plate-like articles and, more particularly, to a packaging device for individual lites of glass such as front and rear automobile windshields, glass windows, and glass plate members of various curvatures.

2. Discussion of Problem

It is common today to produce lites or sheets of glass having a relatively large surface area, such as vehicle windshields. These windshields, whether for the front or the rear of a given vehicle, and whether planar or curvilinear, are difficult to handle and are often cracked, scratched or otherwise damaged during shipping.

Accordingly, it would be advantageous to provide a packaging device for individual lites of glass, which packaging device protects the lite from being damaged during shipping and handling.

SUMMARY OF THE INVENTION

This invention relates to a packaging device for a fragile plate-like article including a first generally rectangular panel having at least one foldable T-shaped tab member and a second generally rectangular panel having a foldable upper portion fastened to the first panel. The panels are fastened along their side and bottom marginal edges to continually urge a first surface of the first and second panels toward each other such that the upper portion of the second panel extends above the top edge of the first panel and the space between the first surface of each of the panels defines an envelope-like receptacle. The upper portion of the second panel includes slots for receiving the tab members when the upper portion is folded over the top edge of the first panel downwardly between the tab members and the surface of the first panel opposite to the first surface thereof.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a perspective view of an embodiment of the invention illustrating a two-piece device for packaging a planar sheet-like glass article;

FIG. 2 is a perspective view of a packaging device of FIG. 1 having a sheet-like glass article placed and packaged therein;

FIG. 3 is a side elevational view taken along lines 3—3 of FIG. 1 illustrating the locking feature thereof when the device is in an open position;

FIG. 4 is a side elevational view taken along lines 4—4 of FIG. 2 illustrating the packaging device in a locked position;

FIG. 5 is a front elevational view, with portions removed and broken away, illustrating the packaging device of FIG. 1 in the locked position;

FIG. 6 is a perspective view illustrating a two-piece packaging device having a curvilinear glass article placed and packaged therein;

FIG. 7 is a plan view illustrating a one-piece packaging device in accordance with the present invention; and

FIG. 8 is a perspective view of the packaging device of FIG. 7 in its locked condition.

DESCRIPTION OF THE INVENTION

Referring now to the drawings, and more particularly to FIGS. 1-5, there is shown a packaging device 10 for packaging planar sheet-like glass articles such as front and rear vehicle windshields, windows, and the like. The packaging device 10 is comprised of two generally rectangularly shaped front and rear blanks or panels 11 and 12, respectively, which panels are formed from corrugated paper material or its equivalent. Generally speaking, the relative size of the panels 11 and 12 depends upon the size of the glass article to be packaged therein. However, as described more fully below, it is a feature of the present invention that the top edge 13 of the rear panel 12 extends a predetermined distance above the top edge 14 of the front panel 11. It is also preferred that the side marginal edges 16 and 17 of the respective panels 11 and 12 coincide with each other.

As illustrated, the panels 11 and 12 are machine sewn or otherwise joined adjacent their side marginal edges 16 and 17 and along their bottom marginal edge 18 to (1) form an envelope-like package having an opening along the top edge 14 of the front panel 11 for receiving an individual glass article 19, and (2) continually urge the panels 11 and 12 toward each other.

The front panel is provided with two generally T-shaped locking tabs 21 and 22 which are punched out or otherwise formed from the front panel 11, and which are spaced at equal distances from the side marginal edges of the front panel. The locking tabs 21 and 22 are adapted to be inserted into corresponding slots 23 and 24 formed in the rear panel 12 (see FIGS. 4 and 5). In this latter regard, while it is preferred to provide two locking means comprised of the mating locking tabs and slots, it may be desirable in certain instances to utilize more or less than two locking means. Accordingly, the present invention contemplates a packaging device which comprises one, two, three, etc., locking means of the type described above.

In use, it will be apparent that the glass article 19 to be packaged and protected by the packaging device 10 may be placed between the panels 11 and 12 through the opening along the top edge 14 of the front panel 11, and then pushed toward the stitching along the bottom marginal edge 18. The upper portion of the rear panel 12 is then folded over the top edge 14 of the front panel 11, but behind the locked tabs 21 and 22, whereupon the lock tabs 21 and 22 are inserted into the slots 23 and 24, respectively, to lock the glass article 19 in the packaging device 10. It will be apparent that the rear panel may be provided with a fold line 26 to facilitate folding the upper portion of the rear panel 12 over the front panel 11. Similarly, the lock tabs 21 and 22 may be provided with score lines 27 and 28 to facilitate bending the tabs during the locking procedure.

In FIG. 6, a slightly modified version of the packaging device 10 is shown wherein the front and rear panels 31 and 32, respectively, are curved so as to define an envelope-like package 30 for a curvilinear lite of glass such as a curved windshield. In all other respects, the packaging device 30 is the same as the previously described packaging device 10.

A still further modification of the packaging device 10 is shown in FIGS. 7 and 8, wherein there is shown a one-piece packaging device 40 comprised of a single sheet of corrugated paper or its equivalent having front and rear panels 41 and 42, respectively, separated by

a fold line 43. The rear panel 42 may also be provided with a fold line 44, corresponding to the fold line 26 of the packaging device 10 to facilitate folding the top portion or flap 46 of the packaging device 40 over the edge 47 of the front flap 41 and behind the lock tabs 48 and 49 thereof. As illustrated, the rear panel 42 is provided with slots 51 and 52 which receive the locking tabs 48 and 49 when the packaging device 40 is in use. Accordingly, it will be apparent that the one-piece construction of the packaging device obviates the need for fastening the front and rear panels along their adjoining edge, and that in all other respects the packaging device 40 may be the same as the packaging device 10 or the packaging device 30.

It will thus be seen that there is provided a complete packaging device for a sheet-like glass article which can be shipped without further packaging. The glass article itself furnishes adequate strength for the unit and the packaging device provides a protective cover which prevents damage to the glass article. The glass article is positively spaced from the load bearing edges of the package by means of the stitching along the marginal edges of the device, so that the glass articles, which are usually shipped on edge, will be cushioned against direct contact.

While the packaging device hereindescribed is for the purpose of illustration only, it is to be understood that the present invention includes all modifications and equivalents which fall within the scope of the invention as defined by the appended claims.

What is claimed is:

1. A packaging device for a fragile plate-like article which comprises:

a first generally rectangular panel having at least one foldable T-shaped tab member formed therefrom and attached thereto;

a second generally rectangular panel having a foldable upper portion;

means for fastening said first and second panels along their side and bottom marginal edges to continually urge a first surface of said first and second panels toward each other such that the space between the respective panels defines an envelope-like receptacle, and such that said upper portion of said second panel extends above the top edge of said first panel; said upper portion including slot means for receiving said T-shaped tab members when said T-shaped tab members are folded in the direction away from said receptacle and when said upper portion is folded over the top edge of said first panel and downwardly between the T-shaped tab members and surface of said first panel opposite to the first surface thereof.

2. The packaging device of claim 1, wherein said first panel comprises two T-shaped tab members equispaced with respect to the marginal side edges of said first panel, and wherein said upper portion of said second panel comprises two corresponding tab-receiving slots.

3. The packaging device of claim 2 wherein said first and second panels are stitched along their side and bottom marginal edges.

4. The packaging device of claim 3 wherein said T-shaped tab members include fold lines to facilitate inserting said tab members into said corresponding slots.

5. The packaging device of claim 4 wherein said second panel includes a fold line dividing the same into

said upper portion and the portion thereof which is fastened to said first panel.

6. The packaging device of claim 4 wherein said first and second panels are flat and wherein said packaging device is adapted for packaging planar articles.

7. The packaging device of claim 6 including a planar, sheet-like glass article packaged therein.

8. The packaging device of claim 4 wherein said first and second panels are curvilinear and wherein said packaging device is adapted for packaging curvilinear articles.

9. The packaging device of claim 8 including a curvilinear sheet-like glass article packaged therein.

10. A packaging device for a fragile plate-like article, which comprises:

a generally rectangular body having a first longitudinal fold line dividing said body into first and second panels, and a second longitudinal fold line dividing said second panel into a lower portion and an upper portion, said first panel having substantially the same dimensions as the lower portion of said second panel, said body being folded along said first fold line such that said first panel and said lower portion of said second panel are disposed in face-to-face relationship with the longitudinally disposed edge of said first panel being adjacent said second fold line;

means fastening said first and second panels along their side marginal edges such that the space between the respective panels defines an envelope-like receptacle;

said first panel having at least one foldable T-shaped tab member formed therefrom and attached thereto adjacent said longitudinal edge thereof;

said upper portion of said second panel including slot means for receiving said T-shaped tab members when said T-shaped tab members are folded in the direction away from said receptacle and when said upper portion of said second panel is folded over said longitudinally disposed edge of said first panel and downwardly between the T-shaped tab members and the surface of said first panel which faces away from said receptacle.

11. The packaging device of claim 10 wherein said first and second panels are stitched along their side marginal edges.

12. The packaging device of claim 11, wherein said T-shaped tab members include fold lines to facilitate inserting the same into said corresponding slots.

13. The packaging device of claim 12 including a sheet-like glass article packaged therein.

14. A packaging device for sheets of frangible material such as vehicle windshields and the like, which comprises:

a frangible sheet having forward and rearward surfaces;

a first generally rectangular panel member overlying said forward surface of said sheet and having dimensions greater than said sheet, said first panel member having at least one foldable T-shaped tab member formed therein and attached thereto adjacent the top edge thereof;

a second generally rectangular panel member overlying said rearward surface of said sheet and having side and bottom marginal edges which coincide substantially with the corresponding side and bottom marginal edges of said first panel member, the

5

vertical dimension of said second panel member being greater than the vertical dimension of said first panel member such that said second panel member includes a generally rectangular upper flap portion which extends above the top edge of said first panel;
said upper flap portion being foldable in the forward direction over said first panel and including slots corresponding to said T-shaped members and adapted to lockingly receive said T-shaped members when said T-shaped members are folded in the forward direction and the flap portion is folded over the top edge of said first panel and between

6

said T-shaped members and the forward surface of said first panel member.
15. The packaging device of claim 14 wherein said first panel includes two T-shaped members equispaced from the side marginal edges of said first panel, and wherein said flap portion includes two corresponding tab-receiving slots.
16. The packaging device of claim 15 wherein said frangible sheet comprises a planar glass article.
17. The packaging device of claim 15 wherein said frangible sheet comprises a curvilinear glass article.
* * * * *

15

20

25

30

35

40

45

50

55

60

65