

- [54] **RESILIENT PACKAGING SPACER**
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- [73] Assignee: **International Paper Company**, New York, N.Y.
- [22] Filed: **Jan. 5, 1972**
- [21] Appl. No.: **215,591**
- [52] U.S. Cl..... **229/14 C, 206/46 FR, 217/53**
- [51] Int. Cl..... **B65d 5/50**
- [58] Field of Search..... **229/14 C; 206/46 FC, 206/46 FR; 217/53**

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Primary Examiner—Davis T. Moorhead
Attorney—Louis F. Reed

[56]

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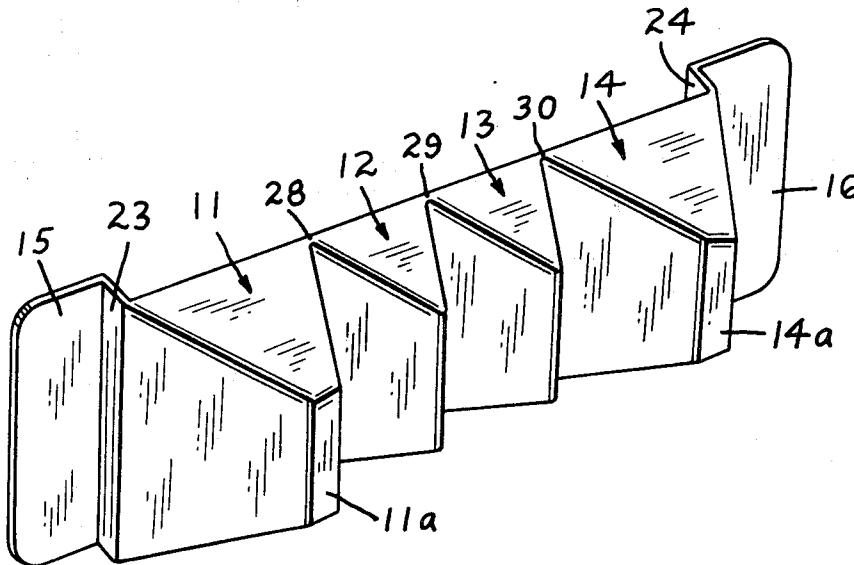
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[57] **ABSTRACT**

A resilient packaging spacer is provided comprising a plurality of flexible joined triangular or wedge-shaped elements, positioned in the same plane, said spacer being equipped with flexible insert means for attaching the spacer through a slit in a carton, such as a paper-board container. The resilient packaging spacer is intended to space cylindrical rectangular or square-shaped articles, such as a water heater, etc., in a container. For packaging cylindrical articles, the intermediate wedge-shaped elements are shorter than the exterior or terminal elements.

14 Claims, 13 Drawing Figures



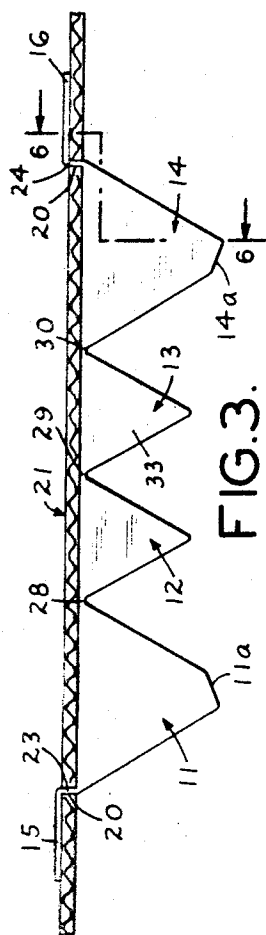
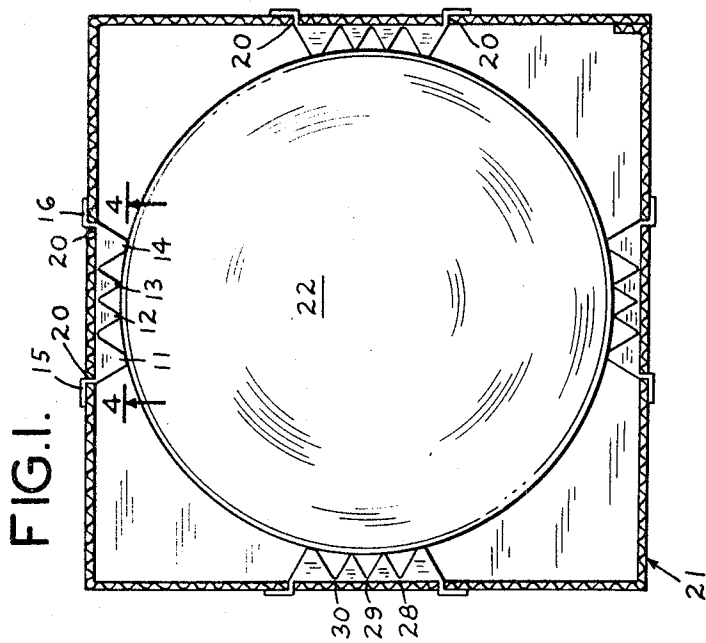


FIG. 3.

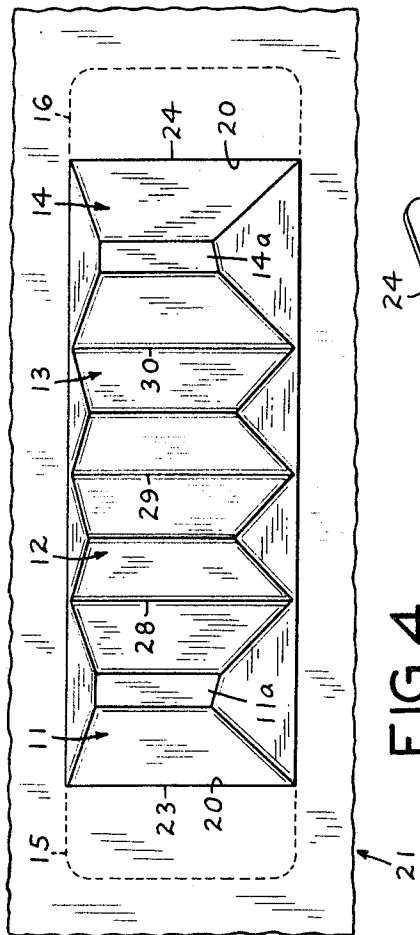


FIG. 4.

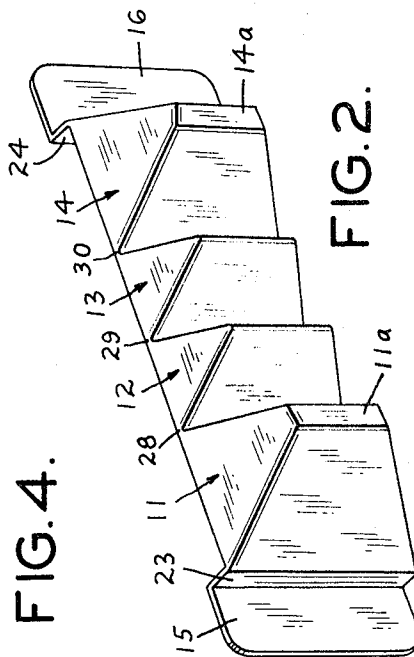


FIG. 2.

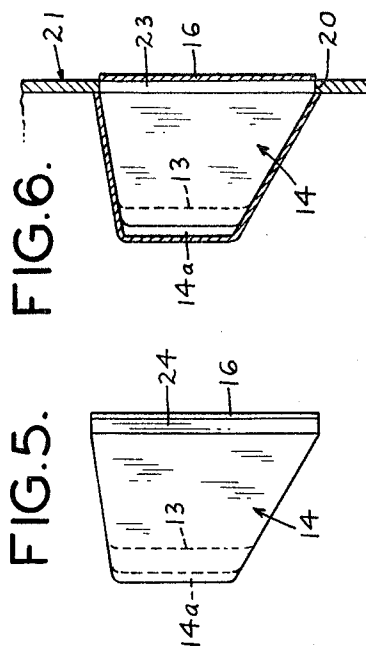
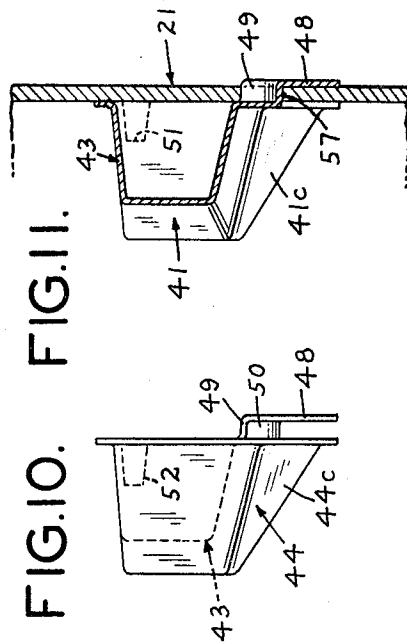
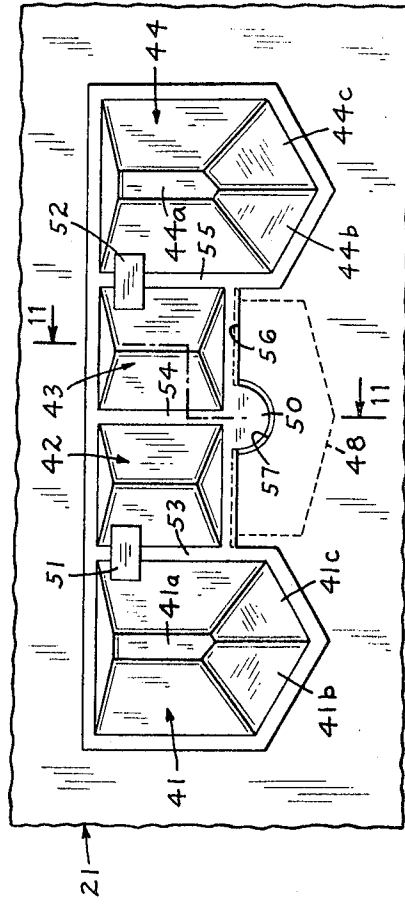
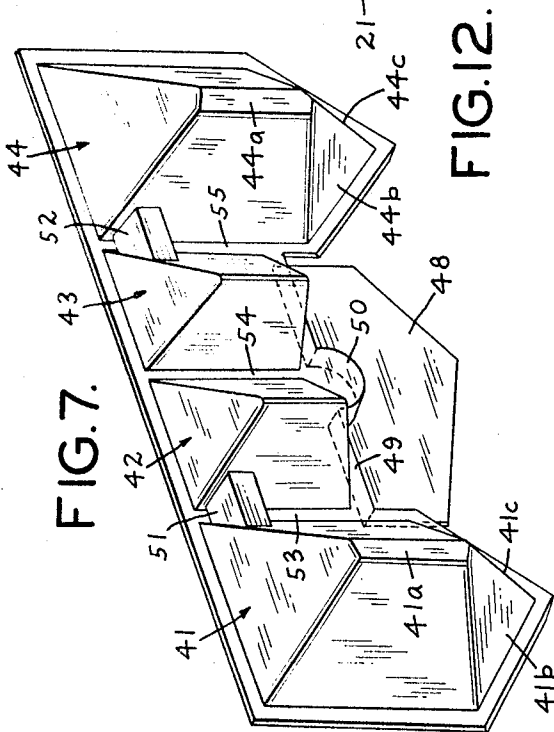
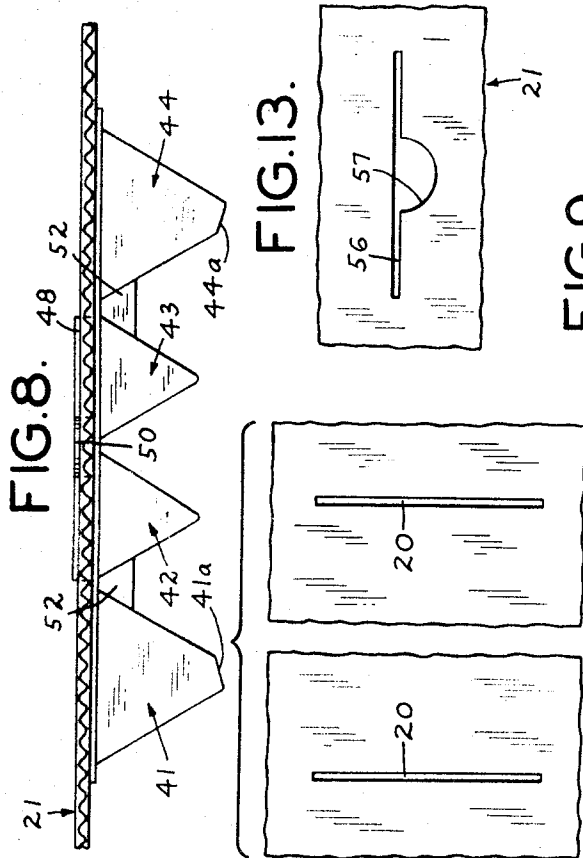


FIG. 5. FIG. 6.



RESILIENT PACKAGING SPACER**BACKGROUND OF THE INVENTION**

This invention relates to a resilient packaging spacer comprised of a molded flexible sheet of plastic material having a plurality of joined triangular or wedge-shaped elements positioned in the same plane, having flexible tab means for attaching the spacer to the sides of a container, such as a paperboard carton to thereby space a cylindrical rectangular or square-shaped article within the container.

It has long been the practice in the packaging industry to protect package contents from the damaging effects of impact, shock and jarring unavoidably inherent in any shipping operation by providing some type of resilient spacing material either between the article itself and an enclosing carton or between inner containers carrying such objects and surrounding outer containers. In this latter manner the contents are tightly suspended within the outer container and at the same time are separated therefrom on all sides by the cushioning material, which serves to absorb any mechanical shocks or impacts to the outer container and dampen their effects on the contents.

In regard to spacing devices, several practical requirements must be considered. First of all, the device should be capable of being easily and quickly applied to the flat surfaces of a container in such a manner that its manipulation is relatively foolproof. This is due to the fact that such spacers are almost universally applied by hand, and in any situation where manual operations are involved the cost of labor must be held to a minimum. Secondly, the spacers must be formed in such a manner that little or no material is wasted or scrapped both during their fabrication and their subsequent application to containers. This requirement arises because in any packaging operation the over-all cost must be reduced to a commercially acceptable or competitive level, and the expense of the raw material as well as the finished spacer product is a significant factor in the cost breakdown.

It is customary to ship water-heaters and other large cylindrical shaped objects in rectangular cartons such as corrugated cartons. This presents a problem in spacing and positioning the cylindrical article within the corrugated carton. Various means have been proposed for this, but these have generally been of an expensive or unsatisfactory nature. For example, Stonebanks U.S. Pat. No. 3,159,326, Van Antwerpen U.S. Pat. No. 3,101,166, Welshenbach et al., U.S. Pat. No. 2,681,733, and Gaulke U.S. Pat. No. 3,095,970 disclose spacing strips, but these are intricate spacers which require relatively expensive construction or are insufficiently flexible to be suited for the purpose. It is always a goal in the packaging industry to provide a less expensive packaging means. They also fail to provide a spacer which is suitable for spacing a cylindrical object within the rectangular cross-sectioned carton.

The spacer of the present invention is inexpensive to produce, is light in weight, and is readily inserted and positioned in the carton at the time of introducing the contents. These spacers are capable of being nested when stored prior to use and therefore take up very little space. They can be readily conformed from thermoplastic materials by compression molding, such as from a sheet of about 40 mils thick of high density polyethyl-

ene, at extremely low cost. They can also be formed by injection molding or thermoforming.

BRIEF SUMMARY OF THE INVENTION

The resilient packaging spacer of the present invention comprises in general a plurality of flexible, joined triangular or wedge-shaped elements positioned in a substantially single plane. For packaging cylindrical objects, the outer elements are somewhat larger than the intermediate elements. For rectangular or square articles the elements may be of substantially equal size. The spacer is equipped with flexible integral tab means for insertion into a slit into a paperboard carton to thereby position or hold the spacer into position onto the walls of the paperboard carton to space or center the object to be packaged in the carton.

It is an object of the present invention to provide an inexpensive flexible, resilient, hollow packaging spacer which can be economically produced.

It is also an object of the invention to provide a hollow resilient packaging spacer which can be stored in a minimum of space by nesting a number of the spacers until intended to be used.

It is a further object of the invention to provide an integral resilient packaging spacer comprising a plurality of flexible hollow prisms or pyramids having a tab means for attaching said spacer to the inner walls of a container, for example, a rectangular container, and in which said prisms or pyramids conform to the shape of a portion of the side walls of a cylinder, such as a water heater, or other article to be packaged.

Other objects will be apparent to those skilled in the art from the present disclosure and the appended drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a schematic representation of one embodiment of the resilient packaging spacers of the invention attached to each of the four walls of a rectangular shaped shipping carton to space for illustrative purposes a cylindrical article, such as a hot water heater, within the carton.

FIG. 2 is a perspective view of one embodiment of the packaging spacers of the invention.

FIG. 3 is a top view of the embodiment of the spacer illustrated by FIG. 2 shown in use position.

FIG. 4 is a front view of the embodiment of the spacer illustrated by FIG. 2, also shown in use position, taken along line 4-4 of FIG. 1.

FIG. 5 is a side or end view of the embodiment of the spacer illustrated by FIG. 2.

FIG. 6 is a vertical section of the spacer illustrated by FIGS. 2 through 5, taken generally along line 6-6 of FIG. 3.

FIG. 7 is a perspective view of another embodiment of the packing spacers of the invention.

FIG. 8 is a plan view of the embodiment of the spacer illustrated by FIG. 7, shown in use position.

FIG. 9 is a front view of the embodiment of the spacer illustrated by FIG. 7, also shown in use position.

FIG. 10 is an end view of the embodiment of the spacer illustrated by FIG. 7.

FIG. 11 is a vertical sectional view in use position, of the spacer illustrated by FIGS. 7 through 10, taken generally along line 11-11 of FIG. 9.

FIG. 12 is a fragmentary portion of the carton sidewall or blank showing the cut-outs through which the

tabs 15 and 16 of the embodiment of FIGS. 2 through 6 are inserted.

FIG. 13 is a similar view of a portion of a carton side-wall or blank showing the cut-out of the carton wall for the insertion of tab 48 and button 50 of the embodiment of FIGS. 7 through 11.

DETAILED DESCRIPTION OF THE INVENTION

Referring to the drawings wherein the same reference numerals are intended to designate like structural elements in the figures throughout, FIG. 1 shows the utility of the invention wherein four of the spacers of the invention are positioned in the planar side walls of a rectangular shipping carton to center and space a cylindrical object, such as a cylindrical hot water heater, within the rectangular carton. Of course, any number of spacers may be employed and a suitable number will depend to some extent upon how high the carton will be. Similarly, the spacers may be constructed to space square or rectangular shaped articles, instead of cylindrical articles.

FIGS. 1 through 6 illustrate one embodiment 10 of the packing spacer of the invention. In this embodiment the plurality of resilient joined wedge-shaped elements 11, 12, 13 and 14 are thermoformed or vacuum formed from a sheet of thermoplastic material, such as a sheet of 40 mil thick high density polyethylene, and having flexible tab means 15 and 16 at the ends of the spacer for inserting into slits 20 in the paperboard carton 21. As shown in FIG. 3, the tabs 15 and 16 are connected to the remainder of the spacer 10 through bends 23 and 24, respectively. The intermediate wedge-shaped elements 12 and 13 are smaller than terminal elements 11 and 14 to thereby more readily center the cylindrical object 22 to be packaged in the carton 21 as shown in FIG. 1. Elements 11 and 14 have the facing tips of the wedges bevelled as shown at 11a and 14a, respectively, to more effectively center the cylindrical object within the carton.

In the embodiment shown in FIGS. 1-6, the wedges themselves are hollow to provide resilience having been formed by molding of a sheet of plastic material. Wedges 11, 12, 13 and 14 are integrally connected to each other at their bases as shown at 28, 29 and 30.

FIGS. 7 through 11 illustrate another spacer of the invention wherein the wedge-shaped elements 41, 42, 43 and 44 are similar to those in the embodiment of FIGS. 1 through 6, but with ribs 51 and 52 being introduced, respectively, between elements 41 and 42 and 43 and 44 to impart greater rigidity to the spacer. As in the case of the embodiment of FIGS. 1 through 6, the intermediate wedge-shaped elements 42 and 43 are smaller than terminal elements 41 and 44. Also, the terminal elements 41 and 44 are bevelled as shown at 41a and 44a, respectively, to assist in centering the cylindrical object 22 in the carton 21. The spacer of FIGS. 7 through 11 is equipped with a single tab means 48 through bend 49 for insertion in a single horizontal slit in the walls of a carton to thereby hold the spacer in place. This embodiment is further equipped with button 50, which assists in placing the spacer in a slit in the walls of the container shaped to conform to the tab and the button.

In the embodiment shown in FIGS. 7 through 11, terminal wedges 41 and 44, respectively, have one end angled as shown by 41b and 41c and 44b and 44c. The wedges themselves are hollow to provide resilience,

having been formed by molding a sheet of plastic material. The wedges are integrally connected to each other at their bases as shown at 53, 54 and 55.

The embodiment of FIGS. 7 through 11 is inserted into a cut-out in carton wall 21 as shown in FIG. 13, which has a slit 56 and a disc aperture 57, to accommodate tab 48 and button 50, respectively, as shown in FIG. 9.

The spacers of the invention can be produced from sheets of polymeric material, such as polypropylene, polybutadiene, polyvinyl chloride, ABS polymer, polymethylmethacrylate, polyvinyl acetate, and the like.

The terms and expressions which have been employed are used as terms of description and not of limitation, and there is no intention in the use of such terms and expressions of excluding any equivalents of the features shown and described or portions thereof, but it is recognized that various modifications are possible within the scope of the invention claimed.

What is claimed is:

1. A resilient spacer adapted to be selectively applied to the surfaces of an article to be packaged to cushion and space same during handling, comprising an integral plurality of resilient wedge-shaped elements positioned in substantially the same plane, said spacer being equipped with a flexible tab means to removably position said spacer on the wall of a container by insertion into a slit in said container wall, said flexible tab means comprising an integral resilient intermediate portion to register with a slit in said container wall, said resilient intermediate portion integrally communicating with a flexible end portion capable of removably retaining said resilient spacer against said container wall.

2. A spacer according to claim 1, wherein the flexible tab means are strips at each end of a row of said wedge-shaped elements.

3. A spacer according to claim 1, wherein the flexible tab means is a strip applied at the side of a row of said wedge-shaped elements.

4. A spacer according to claim 3, wherein said flexible tab means is also equipped with a protrusion to hold said tab means in the slit of the planar side wall of a container.

5. A spacer according to claim 1, wherein the intermediate wedge-shaped elements are smaller than the terminal elements.

6. A spacer according to claim 1, wherein the wedge-shaped elements are of substantially the same size.

7. A spacer according to claim 1, wherein the terminal wedge-shaped elements are bevelled at their facing tips.

8. A spacer according to claim 1, wherein the terminal wedge-shaped elements are connected to the intermediate wedge-shaped elements through reinforcing ribs.

9. A spacer according to claim 1, made of polyethylene.

10. A spacer according to claim 1, wherein the intermediate portion is at a substantially right angle to the plane of said spacer.

11. A spacer according to claim 10, wherein the flexible end portion is at a substantially right angle to said intermediate portion.

12. In combination with a container, a resilient spacer selectively applied to the surfaces of a packaged article to cushion and space same during handling, said resilient spacer comprising an integral plurality of resil-

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ient wedge-shaped elements positioned in substantially the same plane, said spacer being removably positioned against a wall of said container by means of an integral flexible tab means by insertion of said tab means into a slit in said container wall, said flexible tab means comprising an integral resilient intermediate portion in registration with said slit in said container wall, said resilient intermediate portion integrally communicating with a flexible end portion which removably retains

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said resilient spacer against said container wall.

13. A combination according to claim 12, wherein the intermediate portion is at a substantially right angle to the plane of said spacer.

14. A combination according to claim 12 wherein the flexible end portion is at a substantially right angle to said intermediate portion.

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,752,384 Dated August 14, 1973

Inventor(s) Gene E. Siburn

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

In the references cited, the class for Freeman patent 3,399,797 should be "229/14 C XR" and not "229/14 C X".

Column 3, line 3, the word "potion" should be "portion";

Column 3, line 26, the word "amterial" should be "material".

Column 4, line 19, after the word "thin" the extra "t" should be omitted.

Signed and sealed this 27th day of November 1973.

(SEAL)
Attest:

EDWARD M. FLETCHER, JR.
Attesting Officer

RENE D. TEGTMEYER
Acting Commissioner of Patents