Feb. 13, 1973 J. J. ESTY 3,715,860

METHOD OF PRESERVING PERISHABLE PRODUCTS

Filed July 23, 1971 2 Sheets-Sheet 1

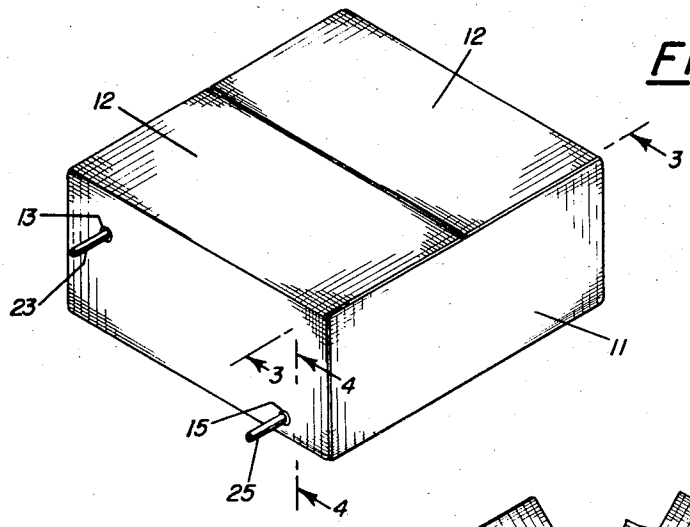

Fig.1

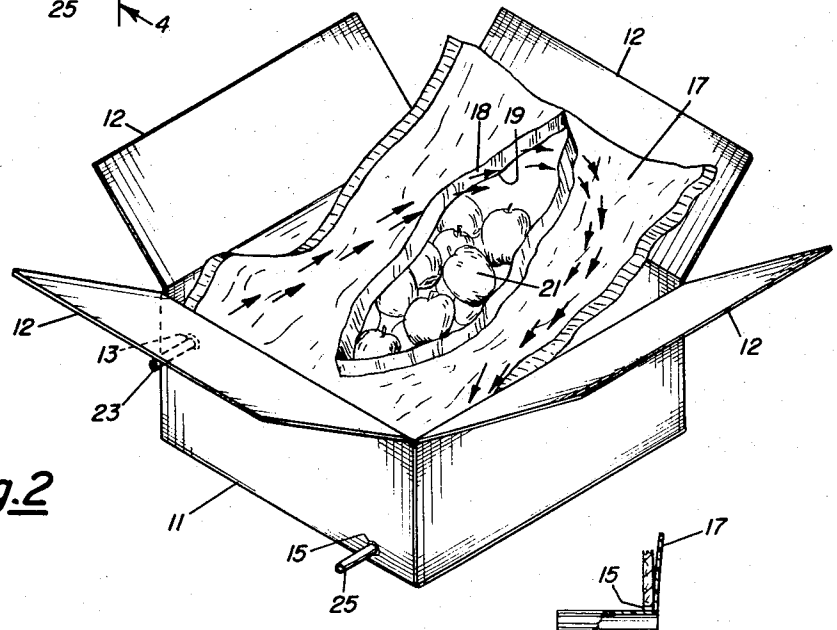

Fig.2

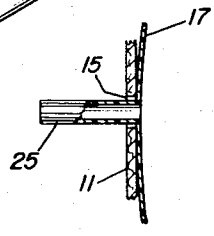

Fig.4

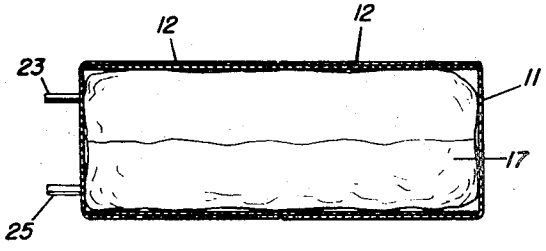

Fig.3

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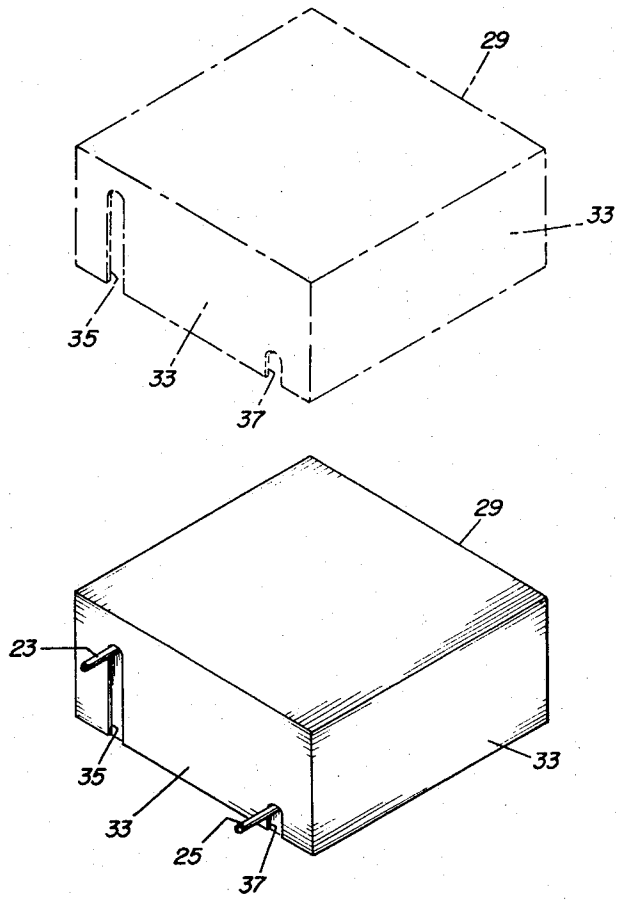

Fig. 5

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METHOD OF PRESERVING PERISHABLE PRODUCTS

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Continuation of abandoned application Ser. No. 58,266, July 27, 1970, which is a division of application Ser. No. 645,968, June 14, 1967. This application July 23, 1971, Ser. No. 165,398

Int. Cl. B65b *31/04*

U.S. Cl. 53—22 B 2 Claims

ABSTRACT OF THE DISCLOSURE

The method of packaging perishable products in a container and insuring preservation of the products while in the container, which method consists in permanently sealing the opening of the container after the product is packaged thereafter forcing an inert fluid to expel the air from the container through a port entry and exhaust, then sealing the port entry and exhaust while in the process of purging, thus trapping the inert fluid in the container.

CROSS REFERENCE TO RELATED APPLICATION

The present application is a continuation of S.N. 58,266 filed July 7, 1970 and now abandoned and which in turn is a division of the inventor's copending application Ser. No. 645,968, now Pat. No. 3,521,806, filed June 14, 1967.

BACKGROUND OF THE INVENTION

(1) Field of the invention

The invention is directed to the method of packaging and preserving perishable products after being packaged by purging the package of air after the perishable product is packaged and substituting an inert fluid for the air.

(2) Description of the prior art

Applicant is not aware of prior art directed to the method herein disclosed.

SUMMARY OF THE INVENTION

The method comprises the placing of the perishable product through product inlet opening. Then that opening is sealed closed. Thereafter the air is purged from the package by forcing inert fluid through the package, the package having fluid inlet and outlet openings. During the purging, the fluid inlet and outlet openings are sealed to entrap the purging fluid.

Other features and the advantages of the present invention will be apparent from the following description, reference being had to the accompanying drawings wherein preferred embodiments of the invention are illustrated.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of one embodiment of the package of this invention;

FIG. 2 is a perspective view of the package shown in FIG. 1, the stable carton being shown with the top open;

FIG. 3 is a sectional view of the package shown in FIG. 1, the view being taken along the line 3—3 of FIG. 1;

FIG. 4 is a fragmentary, sectional view of the package shown in FIG. 1, the view being taken along the line 4—4 of FIG. 1; and

FIG. 5 is a perspective view of another embodiment of the package.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring more in detail to the drawings, and particularly to FIG. 1, the package includes an inherently stable carton **11**. The carton **11** is preferably of the conventional cardboard crating type and includes closing flaps **12** extending upwardly from the sides thereof. The carton **11** includes an inlet opening **13** juxtaposed one side and the top and an outlet opening **15** juxtaposed the opposite side and the bottom on the same side of the carton.

A flexible, plastic, i.e. impermeable, container **17** is disposed in the carton **11**. The container **17** includes one side unsealed **18** forming an opening **19** for accepting perishable products such as fruits, vegetables, meats and flowers, apples **21**, being illustrative. Plastic tubes **23** and **25** are affixed to the flexible plastic and extend from the container. The tubes **23** and **25** are alignable with and extend through the inlet and outlet openings, **13** and **14**, respectively, and are supported by the walls forming the openings of the container.

Referring now to the embodiment shown in FIG. 5, the carton **11** is of the same general configuration as that shown in FIG. 1, except there are no flaps **12**. Rather, a cover **29** is provided for covering the container **17** receiving opening formed by the walls of the carton **11**. The cover **29** is shown in broken lines, removed from the carton **11**. The cover **29** includes walls **33** that surround the walls of the carton **11** and is adapted to be slidably extended thereover. One wall of the cover **29** includes slots **35** and **37** for accepting the tubes **23** and **25**, respectively. Thus, the cover **29** can be slipped over the carton **11** and secured into covering position with the tubes **23** and **25** extending therethrough and accessible to be connected and sealed.

Shipping cartons **11** of the type depicted in FIG. 1, are generally supplied to the packager in a collapsed form. Thus, when it is desirable to package the products **21** for shipping or storage, the carton **11** is erected as shown in FIG. 2. The container **17** is then placed in the carton through the top opening and the tubes **23** and **25** are extended through the inlet and outlet openings **13** and **15**, respectively. The produce, herein shown at **21**, is then inserted through the opening **19** in the container and the opening is sealed. In the embodiment shown in FIG. 1, the envelope **17** is plastic and the opening **19** is sealed by pressing the film **18**, forming the opening **19**, together with conventional heat sealing mechanism. The flaps of carton **12** are then closed and taped in a conventional manner.

Any suitable method can be employed for removing the air from the container and substituting an inert gas. I prefer to connect a hose (not shown) to a supply of inert gas, such as argon or nitrogen, and to the tube **23**. The inert gas is then released into the container **17** through the tube **23** and the inert gas expels the air through the outlet tube **25**.

It is noted that the inlet tube **23**-outlet tube **25** arrangement depicted, effects a very effective flow pattern. The flow pattern is depicted in FIG. 2 by arrows. The incoming gas enters the container **17** from the front and is propelled generally along and parallel to the side nearest the inlet tube **23**. When the gas reaches the back wall of the container **17**, it is deflected inwardly from the side and passes generally along the back wall until it reaches the side nearest the outlet tube **25**. The gas is again deflected and is directed back toward the front of the container **17** and will be forced downwardly to pass out the outlet tube **25**. Thus, flow is assured throughout the container **17** and no air pockets will be left uncirculated when the purge is completed.

The inert gas purge is continued for a time sufficient to drive essentially all of the air out of the container **17**. When the desired level of inert atmosphere is reached, approximately 99.8% the purge is discontinued and while the container **17** is still pressurized, the tubes **23** and **25** are sealed. Sealing is preferably effected by cutting of the plastic tubes **23** and **25** with hot scissors, thereby severing and sealing the tube simultaneously. Since both tubes **23** and **25** extend from the same side of the container **11**, they are readily accesssible to the worker during the packaging.

The remaining portions of the tubes **23** and **25** are then preferably tucked back into the carton **11**. If desirable, the openings **13** and **15** may then be covered in any conventional manner. The packaged produce **21** is then ready for shipment and is maintained in an inert atmosphere. Spoilage and decaying of the produce is obviated since essentially all the oxygen has been purged from the container **17** and photosynthesis is suspended. Pressurization of the envelope **17** is preferred since if the oxygen were expelled and a vacuum left in the container, there would be greater danger of oxygen seepage into the container. The lack of oxygen will cause any animal life included in the container **17** to quickly suffocate and the produce **21** will be protected from insect damage.

The above described method is preferred since it is generally much more economical to force a purge through the container **17** to purge the air therefrom, rather than to evacuate the air by vacuum. However, if it were desirable to evacuate the air by pulling a vacuum, only one tube, as for instance **23**, would be necessary. The air could be evacuated from the container **17** through the tube **23** and the container **17** could then be pressurized by pumping the inert gas in through the tube **23**. The tube **23** would then be sealed in the manner described above.

Referring now to packaging the produce **21**, in the package embodiment shown in FIG. 5, the same general procedure, as that first described, is followed, except that, rather than closing the flaps **12**, the cover **29** is slid into position and secured, as by taping. The container **17** is then purged and the tubes **23** and **25** sealed as described above.

From the foregoing it will be apparent that the method herein described, provides simple, effective and economical means of packaging perishable produce, meats and flowers.

Having described my invention, I now claim:

1. Those steps in the method of preserving a perishable product in a container formed of impermeable material having a product opening, an inlet tube for conveying a purging fluid to the container, and an outlet tube for withdrawing air from the container, the steps in the method comprising:

(A) inserting the product into the container through the product opening;

(B) thereafter permanently sealing the product opening;

(C) thereafter purging the interior of the container by forcing an inert fluid into the container through said inlet tube and forcing air from the container through said outlet tube;

(D) placing the container in a carton having more stability than the container;

(E) extending the tubes to the exterior of the carton;

(F) thereafter, and while the container is still pressurized with inert fluid, permanently sealing the tubes closed.

2. The steps in the method as defined in claim **1**, characterized in that the tubes are formed of plastic that, when cut with a hot scissor, is sealed closed; and further characterized in that the step of sealing the tubes closed is by severing the tubes with a hot scissor.

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TRAVIS S. McGEHEE, Primary Examiner

U.S. Cl. X.R.

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