Aug. 20, 1946. J. W. LIVELY 2,406,301

SEALED MOISTUREPROOF PAPER PACKAGE

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FIG. 1.

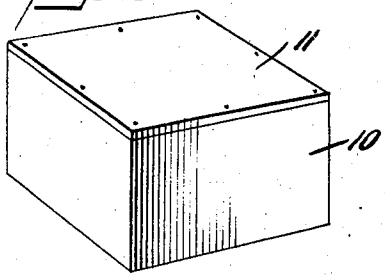


FIG. 2.

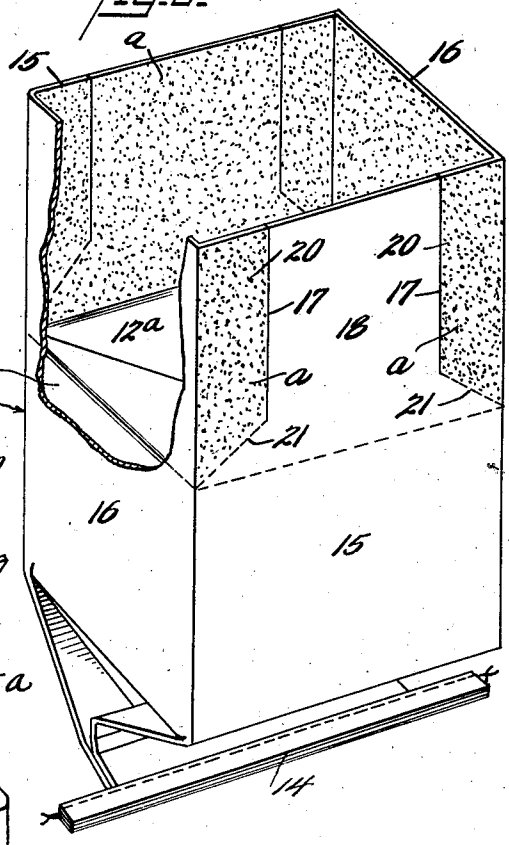


FIG. 3.

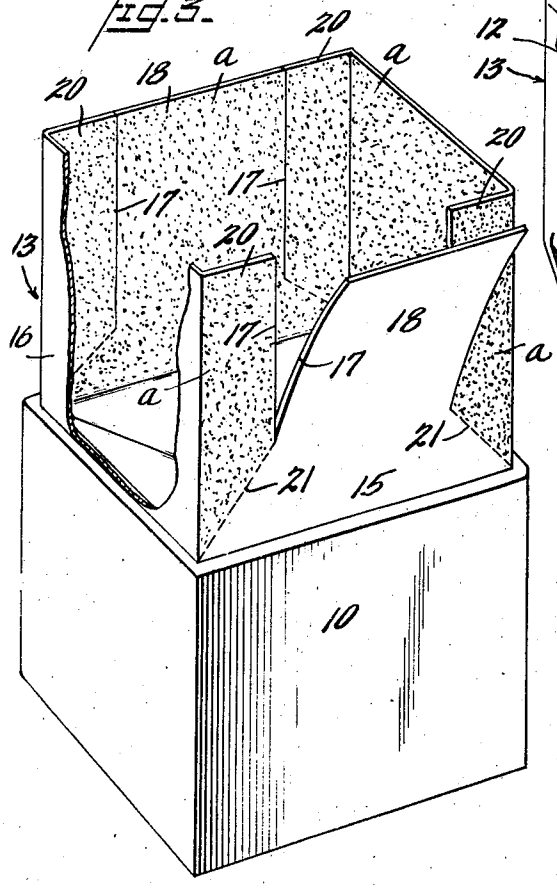
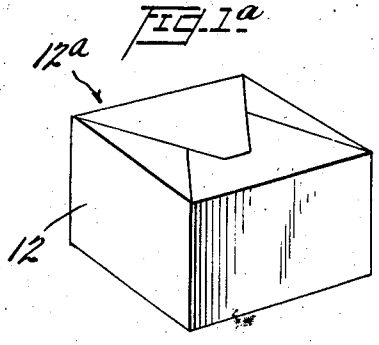


FIG. 1a.



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FIG. 4.

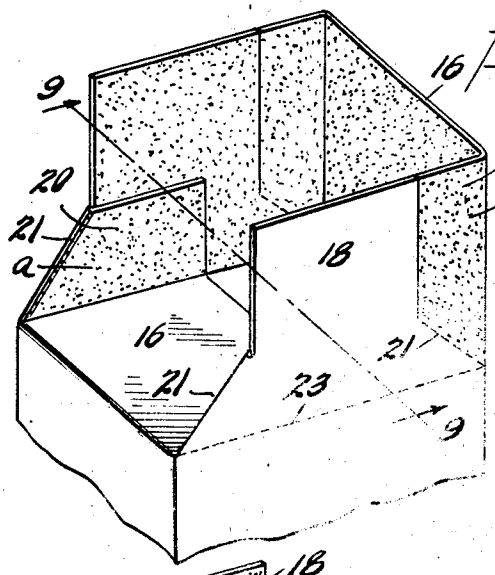


FIG. 7.

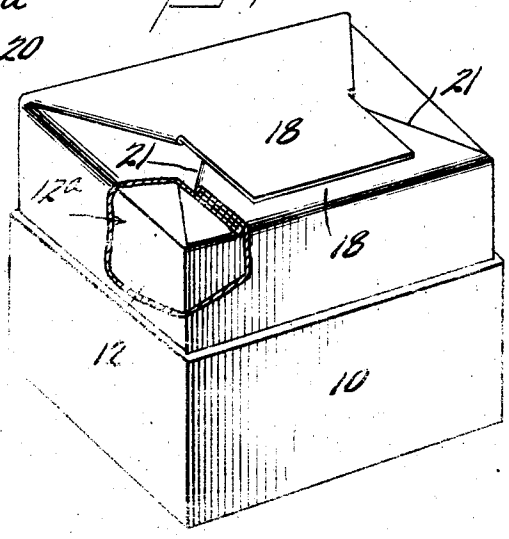


FIG. 5.

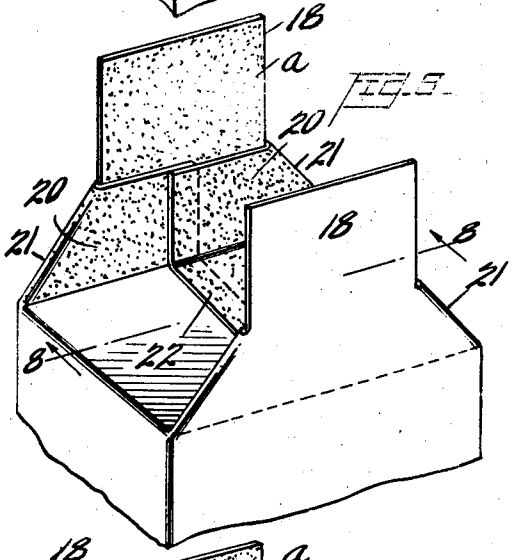


FIG. 8.

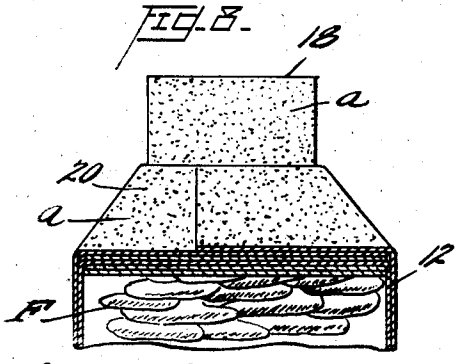


FIG. 6.

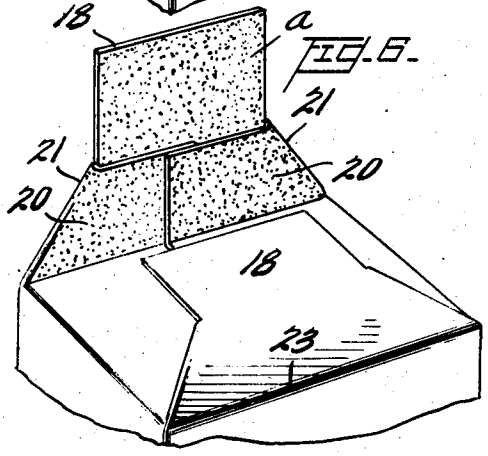
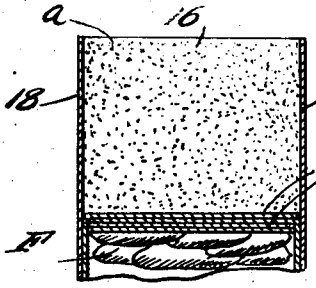


FIG. 9.



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UNITED STATES PATENT OFFICE

2,406,301

SEALED MOISTUREPROOF PAPER PACKAGE

James W. Lively, San Jose, Calif.

Application November 11, 1943, Serial No. 509,909

1 Claim. (Cl. 229—14)

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The present invention relates to moisture proof sealed protective composite packages particularly designed for food products such as dried fruits and the like and has for its object to provide certain new and useful improvements and advantages in packages of this character. However this package is equally adapted to be employed for packing any article or product wherein moisture-proof conditions are desirable.

The primary object of the invention is to provide such a package wherein the fruit or commodity is first enclosed within an inner folded and sealed wrapper sheet and thereafter enclosed within an outer waterproof bag of novel structural configuration. The folded portion of the outer bag is of such character as to effectually exclude moisture and air to such an extent as to render the completed package substantially hermetic to the end that the commodity is preserved indefinitely and may be stored or shipped to remote localities under varying temperature conditions.

A further object is to provide a package of the character described wherein provision is made for effectually protecting the package contents against changes in atmospheric conditions.

A still further object is to provide a package wherein provision is made to prevent leaching of preservatives which may be employed in making up the package.

A further object is to effectually prevent such a package from spoilage due to contact by water or liquids as well as from contamination of the package contents by toxic gases or by the formation of mold on the package contents. Provision is also made to insure the package contents against access thereto by insects or vermin.

A further object is to provide a composite package wherein provision is made to prevent puncture of either inner paper portion of the assemblage during handling, shipment and storage.

The invention further contemplates utilization of present preferred methods for packing dried fruits and the instant improved package is adapted to such methods in preparing the same.

A still further object is to provide a package of the character described wherein a minimum of machinery and operative procedure is necessary to effect an efficient practical moisture proof substantially hermetic assembly.

The instant improved package or assembly is essentially designed for dried fruits and shipment of the same for ultimate consumption at remote localities from the source. Dried fruits are hydroscopic in nature and tend to take on

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or give off moisture when exposed to relatively high or low humidities. The package or bag constituting the instant improvement is intended to prevent or minimize entrance or exit from the fruit of free air which would carry moisture to or away from the fruit per se. The assemblage is designed and closed in such a way that even though perfect air tight closure is not obtained, the long and tortuous course of any air in or out of the package due to "breathing" caused by changes in atmospheric pressure, will prevent any appreciable amount of air of a different humidity than that surrounding the fruit, from entering the fruit area.

Certain dried fruits are prepared with a preservative such as sulfur dioxide which has a tendency to leach out if first allowed to absorb moisture by exposure to high humidity and subsequent exposure to an atmosphere of low humidity, the sulfur dioxide passing off with the moisture in the drying out process. By preventing changes in the moisture content of the fruit as above described, this leaching of the sulfur dioxide or other equivalent gaseous preservative in the described manner is effectually prevented.

The present package, bag enclosure or assemblage, while possibly not strictly hermetic or water-tight, is designed to prevent and minimize spoilage of contents due to heat or moisture or other exposure to the elements as when placed in open storage. The package is also designed to afford some substantial protection from submergence in liquids for relatively short periods of time.

The package is also designed for the purpose of protection of its contents against toxic gases, contamination by smoke, etc., by the use of materials resistant thereto and the prevention of their access to the package contents.

The invention further preferably contemplates the use of a closed rigid box around the more fragile paper bag assemblage so as to prevent puncture of the package per se during handling and shipping. In the event the outer bag of the composite asemblage is of such strength as to resist puncturing, the provision of such an outer box or casing would be unnecessary. Protection against the insect infestation may be obtained by the use of insecticides within the assemblage or by rendering the same sufficiently tight to prohibit entrance of insects to the fruit or other enclosed commodity.

The protecting bag and box are designed with the objective of their use with standard packing house equipment with a minimum of changes,

other than readily effected adjustments. The minimum requirements for the package closure contemplated herein are a pot of glue and a paint brush or in the case of a heat sealable adhesive, a thermoplate.

Numerous other objects and advantages of the invention will be apparent as it is better understood from the following description, which taken in connection with the accompanying drawings, discloses a preferred embodiment thereof.

In said drawings:

Fig. 1 is a perspective view of the completed package including the exterior protecting rigid box.

Fig. 1*a* is a similar view of the filled inner package having the innermost wrapper sheet completely folded therearound.

Fig. 2 is an enlarged perspective view partially broken away showing the completely folded package in Fig. 1*a* inserted within the outer sealing bag.

Fig. 3 is a similar view illustrating the assembly of Fig. 2 inserted within the outer protective wooden box of Fig. 1.

Fig. 4 is a perspective view illustrating the initial folding operation of the outer bag over the inner package.

Fig. 5 is a similar view illustrating the second folding operation.

Fig. 6 is a similar view showing the third folding operation or step.

Fig. 7 is a view similar to Fig. 3 and illustrating the final folding step applied to the outer bag, and the bag being inserted into the outer box.

Fig. 8 is a vertical section on line 8—8 of Fig. 5.

Fig. 9 is a similar view on line 9—9 of Fig. 4.

Referring to the drawings, the outer protective wooden box within which the composite folded package is encased for shipment is indicated at 10, said box having a cover 11. The food commodity, preferably dried fruit F, Figs. 8 and 9, is packed preferably by means of a suitable forming device, within a wrapper sheet 12 which may be of any desired character of paper compactly folded about the commodity in the usual manner to constitute the inner package 12*a* shown in Fig. 1*a*, said wrapper sheet 12 constituting the innermost sheet of the composite package.

The outer portion of the package constituting the essential novel portion of the instant improvement, preferably comprises a bag element generally indicated by the reference character 13 and which is preferably constructed of relatively heavy waterproof paper. The lower closed end of the bag may be of the well known satchel type best seen in Fig. 2 with or without a known form of stitched reinforcement indicated at 14 in said figure. Such a bag includes upstanding oppositely disposed side walls 15 and corresponding interposed end walls 16. The upper portion of each bag side wall is slitted vertically at spaced localities intermediate its extent as shown at 17, thereby setting off an intermediate flap 18 and opposite end flaps 20. These slits extend downwardly a predetermined distance depending upon the size of completed package which the bag is designed to accommodate. The lower end of said slots terminate in outwardly and downwardly extending scored or creased fold lines 21 which respectively extend as illustrated in each bag corner at substantially the locality where the top corner of the inner enclosed package 12*a* is disposed, (Fig. 2).

In the preferred embodiment of my invention the entire area of the inner surface at the upper end of the bag above the outer ends of the fold lines 21, is preferably coated with a suitable adhesive *a*, for example a dry heat sealable thermoplastic glue. Similarly the localized outer surfaces of the outer flap elements 20 of the bag side walls 15 defined by the slits 17 and crease or fold lines 21 are also coated with such an adhesive. The entire outer surfaces of the bag end walls 16 at this area are left uncoated and need not be slitted or scored. The described outer bag construction results in a substantially hermetic slitted moisture proof package for the commodity F, preferably dried fruits or the like.

In order to complete such a package successive folding operations are performed as illustrated in the drawings. The first operation is illustrated in Fig. 4 and consists in folding inwardly over the inner package 12*a* one of the end walls 16 of the outer bag. This results in the outer side wall flap extensions 20 being disposed substantially vertically with an adhesive to adhesive contact between the same and the intermediate flap element 18, as well as providing the outer exposed adhesively coated flap portion 20 as illustrated. The outer flaps 20 are thus folded along the scored or crease lines 21 with the intermediate flap extension 18 above such score line projecting vertically above such outer side wall flap extension 20.

The next folding step is illustrated in Fig. 5 and consists in similarly folding inwardly over the package the opposite adhesively coated upper portion of the end wall 16, also along its corresponding scored or crease lines 21. This preferably results in a slight overlap between the end walls intermediately of the package with the same contacting and exposed relation of the oppositely adhesively coated outer side wall flap extension 20. It will be noted that an adhesive bond occurs between the described overlapping portions of the bag end walls, best illustrated at 22 in Fig. 5 and which results in a hermetic moistureproof seal at this locality.

The next operation is performed as illustrated in Fig. 6 and consists in folding inwardly over the overlapped end walls, one of the multiple thickness bag side walls including the intermediate flap 18. This fold may be made against the adjacent upper edge of the inner package along a predetermined crease or fold line 23 (see also Fig. 4). This results in an adhesive contact between the entire inwardly folded portion of the bag side wall and a corresponding portion of both inwardly folded bag end walls.

The final step of completing the package is performed as illustrated in Fig. 7. The opposite multiply side wall flap 18 of the package is folded inwardly as in the instance of the immediately preceding step and over the opposite side wall flap 18 with an adhesive contact between corresponding overlapping portions of such flaps. It will be noted that this final folding operation results in an adhesive union or contact between the side flaps 18 for substantially the width of the bag or package.

A hot thermoplate or iron may then be applied with firm pressure entirely over the top of the bag to effect the desired adhesive union between the described contact surfaces where adhesive is present and a completely moisture proof substantially hermetic package results which will effectually preserve and protect the package contents such as dried fruits or the like.

As an alternate procedure it will be obvious that each end flap 16 may be adhesively secured to the top of the inner package and to each other

successively and by means of heat after each folding step rather than as an entirety after the folding operations have been completed.

The bag and inner package folded and heat sealed as described may then be inserted into the outer protective wooden box or crate 10 in the manner suggested in Fig. 7.

From the foregoing described manner of constructing the upper end of the bag, applying and securing adhesive thereto and folding the same over the inner package, it will be apparent that all joints are reinforced as by multiple folds or laps to the end that access of air or moisture or egress thereof, must necessarily follow a very long and tortuous course with the result that the package is for practical purposes substantially moisture proof and hermetic. If desired the outer crate or box with the empty bag inserted may be used as the initial forming device for the goods packed and remain as the outer portion of the completed bag.

It is thought that the invention and many of its attendant advantages will be understood from the foregoing description, and it will be apparent that various changes may be made in the form, construction and arrangement of the parts

without departing from the spirit and scope of the invention or sacrificing all of its material advantages, the form hereinbefore described being merely a preferred embodiment thereof.

What is claimed is:

A composite sealed moistureproof paper package, comprising an inner wrapper sheet folded over and completely enclosing the commodity, and an outer bag enclosing said wrapped commodity, opposite bag walls at the upper end thereof being coated on their inner surfaces with adhesive and provided with spaced intermediate longitudinally disposed slits for a portion of their extent, the outer surfaces of said walls outwardly of said slits being coated with adhesive and folded inwardly in contact with the inner surfaces of the intermediate wall portions in conjunction with the remaining inwardly folded opposite bag walls adhesively secured to the outer surface of said inner wrapper sheet to provide opposite adhesively coated flaps of multiple thickness, said flaps being in turn folded inwardly in overlapped relation over said inwardly folded and adhesively secured remaining opposite bag walls and adhesively secured thereto and to each other.

JAMES W. LIVELY.