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SEALED CARTON AND METHOD OF MANUFACTURE

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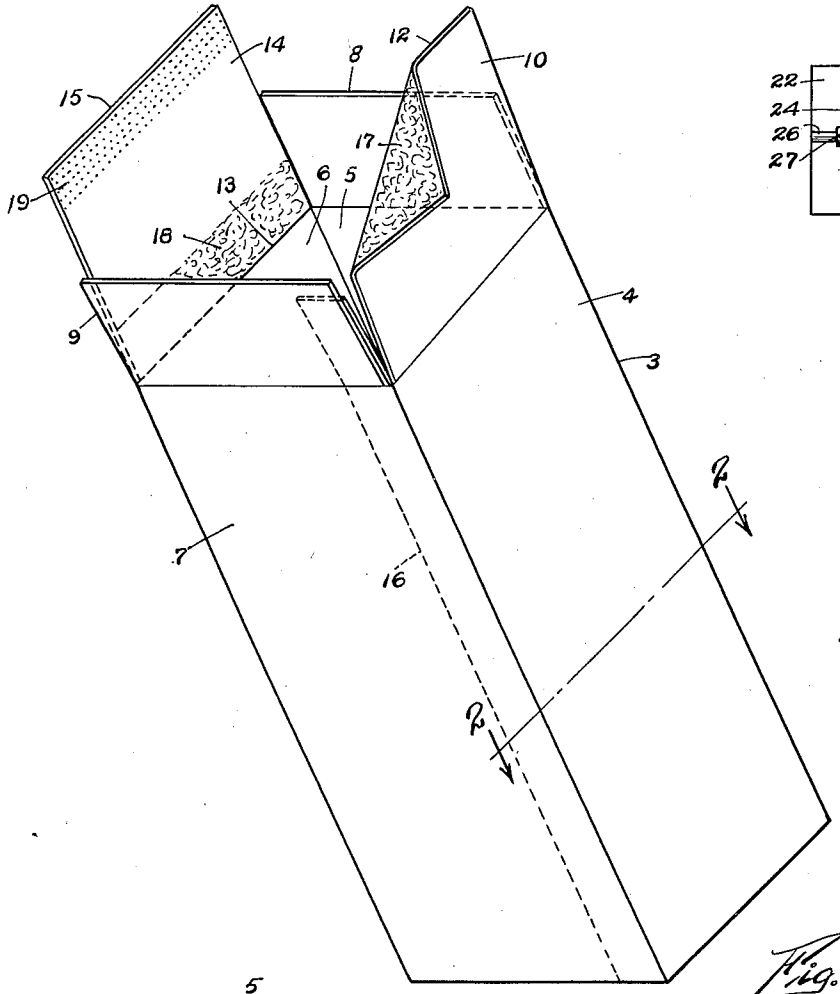


Fig. 1.

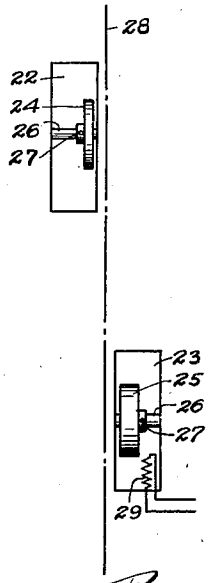


Fig. 4.

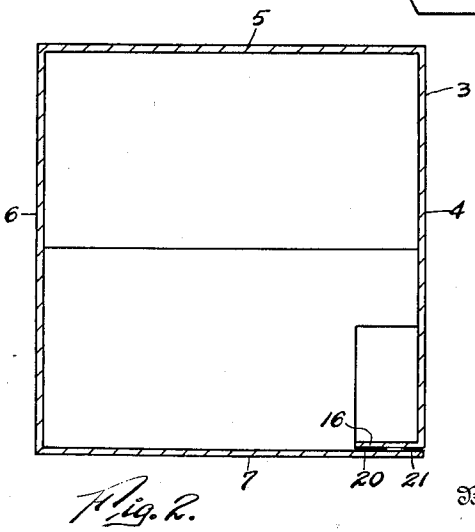


Fig. 2.

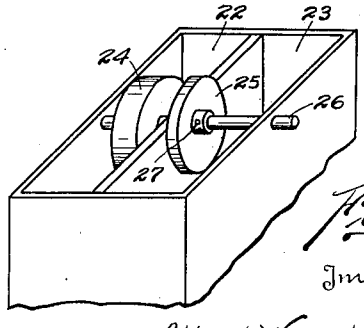


Fig. 3.

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SEALED CARTON AND METHOD OF MANUFACTURE

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6 Claims. (Cl. 229—43)

This invention relates to a container and a sealing method therefor.

An object of the invention is to provide a new and improved container or carton for keeping foods and other packaged goods in a fresh, sanitary and wholesome condition, without resort to the so-called "plural' type of container structure.

Another object of the invention is to provide an inexpensive and practical sealing method for single containers, whereby the containers are effectively sealed while at the same time the contents are protected from the odor and taste of the highly volatile and odorous commercial glue or adhesive which must be used, in practice, to effect rapid sealing of the containers.

Another object of the invention is to provide a practically effective seal for containers formed of impervious material, the proper sealing of which has long been a vexatious problem to manufacturers and packers.

The foregoing and other objects are attained by the means described herein and disclosed in the accompanying drawing, in which:

Fig. 1 is a perspective view of the improved container, showing the new method of glue or adhesive application.

Fig. 2 is a cross-sectional view taken on line 2—2 of Fig. 1.

Fig. 3 is a perspective view of a glueing apparatus.

Fig. 4 is a diagram of a modified glueing apparatus.

In the packaging of food products and the like, it is particularly desirable to employ a container designed and constructed to exclude moisture and foreign substances with which the container may come into contact, and to maintain within the container the original freshness, aroma and wholesomeness of the packaged product. Heretofore, this has been accomplished to a satisfactory extent by the use of relatively expensive containers. Some of the containers have been of metal, while others have been of the double or lined box construction commonly employed in the packaging of products such as breakfast foods and the like. The lined box construction requires the use of an inner waterproof container generally having a paraffine coating, or impregnated with paraffine, whereby to provide a substantially sealed container which in turn is placed within an outer container. The outer container is not sealed against moisture, air, and dust, except that the flaps thereof are glued in place with no particular degree of care, the package being considered complete so long as it holds together.

Packages of the kind just described are obviously more expensive to manufacture than were the single walled boxes or cartons used previously. Moreover, they require the installation of additional folding and assembling machines, and double the amount of stock that is necessary for production of a carton.

In the attempt to produce a single walled container equal in effectiveness to the double container, it was necessary first of all to treat paper and cardboard to render it substantially impervious to moisture, air, vermin, etc. This has been accomplished, and no difficulty is experienced in procuring cardboard and heavy paper so treated. Practical problems, however, have interfered with the satisfactory commercial use of cardboard or paper containers so treated, because the producer and packer have been unable to provide an effective sealing of the joints or corners at the time of closing the carton or container upon the contents thereof. The various difficulties above related have been effectively overcome by the practice of the invention disclosed herein.

With reference to the drawing accompanying this description, the character 3 indicates any kind of a paper or cardboard box, preferably, although not necessarily, one that has been treated with any of the common preparations for rendering the material thereof impervious to moisture, air, vermin and other extraneous elements that might otherwise enter the box or container. The container illustrated includes the opposed side walls 4, 5, 6 and 7, and a series of flaps integral with the side walls for closing the opposite ends of the container. The flaps 8 and 9 on the opposed walls 5 and 7, respectively, are referred to as the initially turned flaps which, during closing of the container, are directed inwardly and exposed to the interior of the container. The larger flap 10 which is integral with side wall 4, is known as an intermediate flap which is turned upon said initially turned flaps, so that its free marginal edge 12 assumes a position close to the score line 13 of the outer or cover flap 14. The outer or cover flap overlies the intermediate flap, and its forward marginal edge 15 may abut the upper face of flap 10, if desired. In some constructions, the edge 15 may over-hang the side wall 4 and be suitably fastened thereto in any known manner such as by means of a quick-setting adhesive. It is to be understood that both ends of the container may be closed by means of flaps as above explained.

The side wall 4 may include a connecting tab 16 which extends longitudinally of said wall, which tab is adapted to be secured to the inner face of the adjacent side wall 7 for the purpose of maintaining a tubular formation of the container.

The physical elements and the arrangement thereof above described, are old and well-known in the art, and the present invention therefore is not intended to cover the mere arrangement of flaps, tabs and walls, above described. The present invention, however, resides in the method

and means hereinafter set forth for effecting a perfect sealing of the container so as to preclude circulating air from acting upon the contents of the container, the container being so sealed as to prevent the contents from taking on the odor or taste of the ordinary commercial glue or adhesive used in the rapid processes of closing the containers. To explain more fully, it is well-known that the closing of containers is performed by machinery or mechanical means at a rapid rate, so that it is necessary to employ a thin-bodied highly volatile commercial glue which sets very quickly, so that the flaps will be held closed almost instantly upon application of the glue or adhesive and the folding of the flaps upon one another. This type of glue or adhesive is invariously odorous, and the vapors that emanate therefrom are liberated both interiorly and exteriorly of the container. The vapors that enter the container while the glue or adhesive is setting or drying have the effect of tainting the contents of the container, or imparting the glue odor thereto. This is a condition that the present invention is designed to obviate.

In practicing the invention, there is applied to the inner face of the intermediate flap **10**, a liberal quantity of heavy-bodied substantially odorless joint sealing or plugging substance, indicated by the character **17**. This substance may or may not be a glue or adhesive, but by preference it is a heavy adhesive of low volatility. By way of example, such a substance may comprise a mixture of balata gum, one part, two parts odorless resin, and one part petrolatum, the proportions to be varied as required by climatic conditions and the like, for securing the result herein set forth. The thick heavy-bodied substance will plug the cracks or joints which are formed along the marginal edges of the short flaps **8** and **9** after said flaps are turned inwardly at right angles to the side walls of the container. As the entire inner face of flap **10** is covered with the heavy-bodied joint sealing substance, it must be evident that no air may pass into or from the container, except possibly along the score line **13** of the outer flap **14**. The joint at said score line, however, is effectively plugged and sealed by the application of a quantity of the heavy-bodied sealing substance upon the area of flap **14** which is adjacent to the score line **13**. Said area and the coating thereon, are indicated by the reference character **18**.

Inasmuch as the heavy-bodied substantially odorless substance referred to is not highly volatile, it is necessarily of a very slow-setting or possibly non-drying character. Said substance, therefore, is not generally suitable for instantly fixing the flaps in their closed positions, wherefore it is desirable to provide the outer margin of the inner face of flap **14** with a ribbon **19** of quick-setting commercial glue or adhesive. At the location **19**, the use of the quick-setting highly volatile commercial glue is not objectionable because the vapors thereof cannot enter the container interior due to the fact that the heavy-bodied substance seals the container prior to and during the setting or drying of the ribbon of volatile adhesive indicated at **19**. The container, therefore, may be sealed or closed with all the joints and cracks effectively plugged by the heavy-bodied slow drying substance, without danger of the volatiles from the quick-setting glue entering the container and imparting the foreign odor or taste to the contents of the container.

The heavy-bodied slow-drying substance referred to herein may be varied as to its constituents, as no claim is made to the particular substance employed. Such substance, however, should be slow-drying, substantially odorless, and as near tasteless as possible.

Besides furnishing an effective seal for the container, the thick or heavy-bodied substance, when in the form of an adhesive, is capable of slightly penetrating the material of a carton which is treated to render it impervious to air, and under such circumstances the thick heavy-bodied substance holds the flaps in position upon one another until the highly volatile adhesive has had an opportunity to strongly join the flap **14** to the flap **10**. When the carton material is of the impervious type, the thick heavy-bodied adhesive holds the flaps in place as effectively as does the thin highly volatile adhesive, and in such a carton, the ribbon **18** of thick heavy-bodied adhesive may be extended outwardly to the margin **15** of flap **14**, or to the inner edge of the adhesive ribbon **19**.

As will be understood, the outer faces of the flaps **8** and **9** could carry the thick heavy-bodied adhesive, or said adhesive may be applied to all of the flaps, but in the preferred embodiment the inner faces of the flaps **10** and **14** would carry the adhesive in the manner illustrated in Fig. 1.

In Fig. 2, the heavy line **20** indicates a continuous ribbon of the thick heavy-bodied odorless and tasteless adhesive, extending along the innermost margin of the tab **16**, while the second heavy line **21** indicates a continuous narrow ribbon of thin-bodied highly volatile adhesive applied also to the tab **16**, but outwardly of the ribbon or coating **20**. By referring to Fig. 2, it will readily be evident that the thick heavy-bodied adhesive coating prevents entry of the vapors from coating or ribbon **21** from entering the container interior. From the foregoing it will be understood that the method employed herein comprises applying a heavy-bodied substantially odorless slow drying adhesive or other substance to the flaps and tabs of the carton at selected locations to preclude the volatile constituents of a quick-setting adhesive applied at other locations, from passing into the interior of the container. The thick heavy-bodied substance performs the function of plugging cracks and crevices at the various flaps and joints, while the highly volatile quick-setting adhesive performs the function primarily of joining and securing the parts.

Due to the slow or substantially non-drying character of the thick heavy-bodied substance repeated handling and rough treatment of the filled cartons will not destroy the effectiveness of the seal, as said substance may but flex with the material of the container. Upon filling of the carton or container of this invention, a coating of suitable lacquer or other elastic adhesive substance may be sprayed, brushed or otherwise applied to the various joints, in the manner disclosed in my copending application Serial No. 713,902, which was filed on March 3, 1934. Such a coating would of course provide double assurance of a tight seal, which would not ordinarily be necessary in the packaging of materials such as food products which reach the consumer within a relatively short period after packing.

Having described the article of the invention, and the method of manufacture thereof, I will now proceed with a description of one form of apparatus that may be used in applying the different coatings **18** and **19** to the flaps and tabs such as **14** and **16** of the carton or container. The

apparatus as disclosed in Fig. 3, may comprise a pair of reservoirs 22 and 23, one of which contains a quantity of the coating substance 19, and the other of which contains the coating substance 18. A pair of glue wheels 24 and 25 are mounted in side by side relationship, the wheel 24 being adapted to lift the thick heavy-bodied substance from reservoir 22 and apply it to a flap or tab while the other wheel 25 applies the thin highly volatile substance thereto from the reservoir 23. As will be understood, wheel 24 will apply a ribbon of substance as indicated at 18 of Fig. 1, whereas wheel 25 will apply a ribbon of substance such as is indicated at 19. The remaining flaps of the container, which require a coating of but one adhesive substance, may be treated in the usual manner, that is by means of a single glue wheel or applicator.

The wheels referred to may be rotated by means of power applied to an end of shaft 26, or if desired, rotation of the wheels may be effected by the friction resulting from moving the flap of the carton over the peripheries of the wheels. In either case, the two different types of substance contained within the reservoirs 22 and 23 will be applied in ribbon or line formation upon the face of a flap or tab. To accommodate carton flaps or tabs of different dimensions there is preferably provided any suitable means, such as for example a set screw or the like 27 on the hub of each wheel, whereby the wheels may be adjusted along the shaft toward and from one another. The wheels may be wider or narrower than those illustrated in Fig. 3, depending upon the size and character of flap or tab to be treated with substances from the reservoirs 22 and 23. It is to be understood that ribbons of substance may be applied to a tab such as 16, as well as to a flap such as 14, by the means illustrated in Fig. 3. The wheels 24 and 25 are preferably, though not necessarily, mounted upon a common supporting shaft such as 26.

In instances where the contents of one reservoir may require heating to secure the best results, it is desirable to separate the reservoirs and to mount the glue wheels on separate shafts. A suitable arrangement for use under such conditions is illustrated by Fig. 4, wherein the reservoirs and glue wheels are disposed at opposite sides of the line of travel 28 of the flaps or tabs, as they move through the glueing and folding machine. By means of this arrangement, the contents of one reservoir may be heated without affecting the contents of the other reservoir. The glue wheels may be power rotated or not, as desired. An electrical heater for reservoir 23 is indicated conventionally by the character 29.

What is claimed is:

1. A container constructed of a sheet of material formed to provide sides and a series of foldable closure flaps, at least two of which flaps are initially turned inwardly and exposed to the interior of the container, leaving small cracks along certain margins of the turned flaps, an intermediate flap turned upon said initially turned flaps and having applied thereto a non-drying substantially odorless adhesive of heavy body character for plugging the cracks along said margins of the initially turned flaps, and an outer flap overlying the intermediate flap and secured thereto by means of a highly volatile quick-setting adhesive.

2. A container constructed of a sheet of material formed to provide sides and a series of foldable closure flaps, at least two of which flaps are initially turned inwardly and exposed to the interior of the container, leaving small cracks along certain margins of the turned flaps, an intermediate flap turned upon said initially turned flaps and having applied to one entire face thereof a generous coating of odorless substantially non-drying character for plugging the cracks along said margins of the initially turned flaps, and an outer flap having a similar coating along its line of meeting with an adjacent container side and a coating of quick-setting adhesive between the flaps for maintaining said outer flap in position upon the intermediate flap.

3. A container constructed of a sheet of material formed to provide sides and a series of foldable closure flaps, at least two of which flaps are initially turned inwardly of the carton and exposed to the interior thereof, leaving small cracks along certain margins of the turned flaps, an intermediate flap turned upon said initially turned flaps and having applied to one face thereof a generous coating of substantially tasteless and odorless non-drying heavy-bodied adhesive substance for plugging the cracks along said margins of the initially turned flaps, and an outer flap having a similar coating upon a portion of the outer flap which abuts the intermediate flap near the hinge line of the outer flap, and a separate coating of highly volatile and odorous quick-setting adhesive joining a different portion of the outer flap to the intermediate flap.

4. A carton in the process of manufacture, comprising a blank of sheet material having a body portion, closure flaps, and a connecting tab on the body portion for holding the body portion in tubular shape, said tab having applied thereto two ribbon-like coatings one of which coatings is a highly volatile quick-setting adhesive, and the other of which is a heavy-bodied substantially odorless non-drying joint-sealing substance, said coatings being located side by side lengthwise of the tab.

5. The method of precluding the contents of a carton from taking on the taste and odor of the quick-setting adhesive used for sealing the carton, which method comprises applying a heavy-bodied substantially odorless non-drying adhesive to the flaps and tabs of the carton at locations where the volatile element of the quick-setting adhesive could pass to the carton interior, and using a highly volatile quick-setting adhesive at other locations where the volatile constituent thereof may escape into the atmosphere outside the carton.

6. The method of tightly sealing the contents of a carton against the deteriorating effects of circulating air, which method comprises rendering the carton material impervious to air, applying a heavy-bodied substantially odorless non-drying crack-plugging substance to the flaps and tabs of the carton at locations where air may enter into the interior of the carton through cracks formed along the margins of the flaps and tabs, and using a highly volatile quick-setting adhesive on the flaps and tabs at locations where the crack-plugging substance blocks the entry of the volatile constituent of said adhesive into the carton interior.

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