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W. F. DALEY

2,026,216

CARTON SEALING

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Fig. 1.

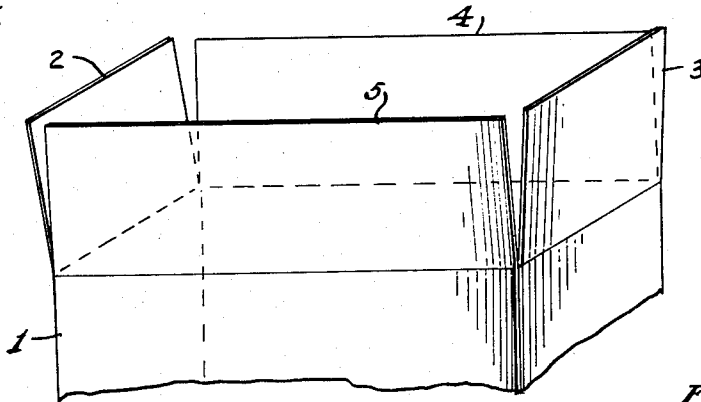


Fig. 2.

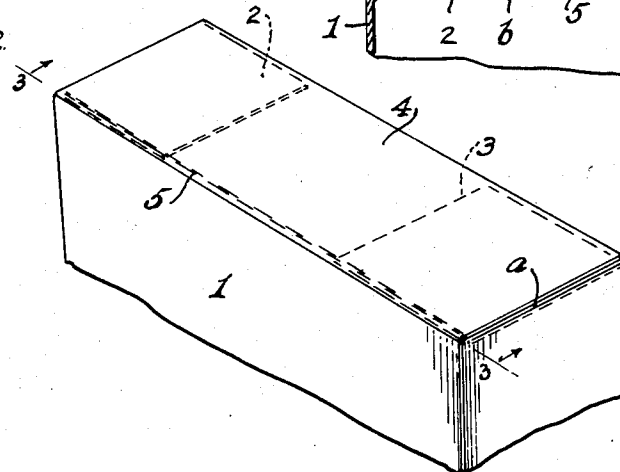


Fig. 3.

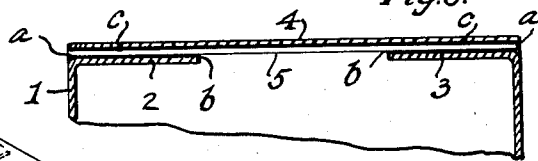


Fig. 4.

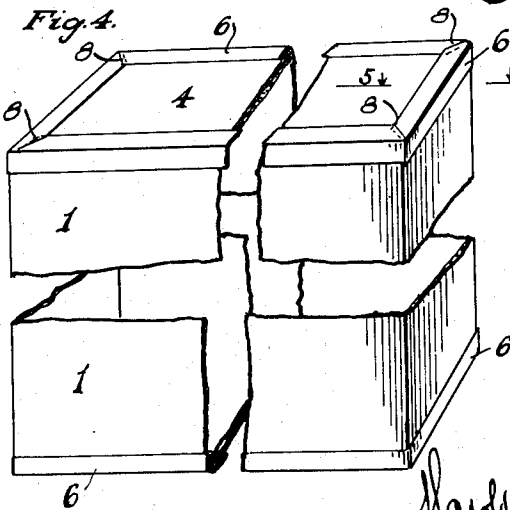
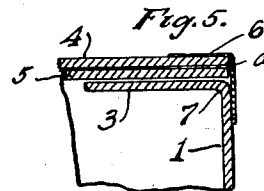


Fig. 5.



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CARTON SEALING

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Application July 9, 1931, Serial No. 549,681

7 Claims. (Cl. 93—2)

The present invention relates to paper boxes or cartons for packaging food products of various kinds having an animal and/or vegetable derivation and other solid granular or liquid products that are injured by the loss of native moisture or odors and has for its principal object the provision of a sealing means for the closure ends of such cartons whereby to make such cartons sift proof against loss of contents at such closure ends when the carton is finally sealed, and, also, to prevent the ready loss of moisture and/or essential oils from the packaged contents, and, also to prevent the ready loss of native odors from the packaged contents.

Another object is to protect the contents from entry therein of dust, dirt, atmospheric moisture, foreign odors, and vermin from the exterior.

A further object is to provide a sealing means for such closure ends, as will be preferably translucent or transparent, so as to not destroy or detract from the ornamental effect of such packages as it is well known that such packages, containing food staples such as cereals, butter, tea, coffee, and the like, as well as soap, soap powders and flakes are, in current practice designed with an eye to color, in various combinations and designs to render them attractive for shelf or other display.

A further object is in the method of treating a cellulose film and its subsequent cementing and shrinking to the carton edges to draw the film and its adhered sealing members tightly together to the body of the carton to tighten the closing contacts of the sealed parts.

In many instances the board stock from which such cartons are made, is so constructed as to render the same moisture and grease proof, as well as to render such board substantially evaporative proof. To this extent such board is, in the main, used currently for the purpose of not only retarding the loss of net weight of the contents by evaporation retardation of the moisture content, but also becomes of great value, in the case of food products, such as coffee, and in retarding the loss of the essences and odors. But such cartons, as customarily made are not entirely sealed and normally do not prevent the sifting losses previously referred to. Such a board for carton purposes is disclosed in the U. S. Patent No. 1,695,837, in the name of James M. Andrews, issued on December 18th, 1928, to the assignee, Robert Gair Company, of the present application.

In the accompanying drawing,

Fig. 1 is an enlarged perspective fragmentary

end view of a standard type of carton for packaging goods of the class above outlined, showing the closure flaps open, prior to closing and sealing;

Fig. 2 is a similar view in perspective, showing the said flaps closed;

Fig. 3 is a fragmentary sectional view taken on line 3—3 Fig. 2, looking in the direction of the arrows;

Fig. 4 is a fragmented perspective view of the carton showing the top and bottom end closing flaps in closed position and ensealed at the flap folds and scores as per the present invention; and

Fig. 5 is a fragmentary sectional view, taken on line 5—5, Fig. 4 illustrating the manner in which the sealing film embraces the cut and scored ends of the closure end of said cartons, when finally ensealed for protecting the contents against loss of material, essences, moisture and against contamination from the exterior.

The carton of Fig. 1 is one of standard type, structurally, the board comprising it being preferably treated by a suitable coating and construction, as in the above noted patent, to render it moisture, grease and evaporative proof, though other treatments and structure may be adapted for this protective purpose.

The bottom of the carton is not shown in Fig. 1, but it is to be understood that the bottom has the same structure as the portion shown.

To this end the body of the carton 1, is of the usual rectangular form, and is provided with cut and scored closing flaps 2—3—4, and 5. The flap 4 is continuous with the rear wall of said body; the flap 5 with the front wall, and the flaps 2, 3 with the respective interposed or lateral walls. The package after being filled with the desired product is then closed by bending the two end flaps 2—3 down upon the cartoned product, and then the side flaps 4—5, after a touch of glue are then folded down upon the side flaps 2—3 and the closure is so effected. As thus described, the filling, gluing and closing, in standard practice is done by automatic machines, this effects the closing of the carton in the standard manner and as shown in Figs. 2 and 3.

Thus, while the treated board from which the carton is made, is of moisture and grease proof properties, the scoring of the flaps for bending and the more or less loose assembly of the closed flaps leaves air spaces therebetween such as at the cut edges *a* of the closed flaps Figs. 2 and 3, and at *b* Fig. 3 a space is left between flaps 2 and

5 and flaps 3 and 5, and also at c—c between flaps 4 and 5. These spaces or crevices act as "breather" ports, which during shipping and handling permit air to constantly enter and exhaust from the package interior to atmosphere. Thus this action causes "sifting" of the contents, especially where there is a more or less pulverulent condition of the contents of the packaged product, and in addition, such breathing causes either an inflow of exterior contaminating particles or moisture, or the loss of natural moisture content of the package.

To meet with these conditions, and to provide an edge seal for the cut flap ends of the closing flaps of the carton, as well as to reinforce the possible leakage breaks in the scored bends of the foldable flaps, I have provided the cut or disturbed portions of the board formed carton with a closely adhering sealing film generally denoted by 6, Figs. 4 and 5.

This film is made in the form of a narrow strip, of requisite length, of a cellulosic compound, such as cellulose nitrate or cellulose acetate. This material is extremely thin, being only a few thousandths of an inch thick, and may be, preferably transparent.

As this material is impervious to water, grease and air, when cemented to the adjacent surfaces of the edges of the carton as disclosed in Figs. 4 and 5 it forms a hermetic seal about the closing cut edges and folding scores against the undesirable features previously noted.

In Fig. 5 the manner of sealing both the scored bent corner 7 and the cut edges *a* of the flaps is fully shown, the film being affixed to both the top surface of flap 4 and the side wall from which the flap 3 originates.

As the sealing strip is applied in one continuous piece, the top portions thereof at the bend of the corners, are overlapped as at 8—8 in order to keep the seal tightly closed.

It is desirable that the cement used to affix the sealing film contain some softening agent therefor, such as ethylene glycol mono methyl ether, in varying percentages of one or more thereof as determined by the structure of the sealing film so that when applying the strip, it is first coated with a cement or glue having a sealing film softening agent therein and while in the softened condition is applied to the carton edges. After the drying of the film is accomplished the film tightens up and draws all the associate parts to which it is attached in firm relation, and thus the sealed portions of the carton are hermetically sealed and held under tension of the shrunken film.

It will thus be seen that the carton is sealed with a non-hygroscopic water proof grease proof protection which is sift proof and non-breathing, and which holds the appurtenant sealed members under a tension, after drying.

Having thus described the invention, what is claimed is:

1. A carton of moisture and grease-proof cardboard having faces having meeting portions at corners and at intersections of adjacent faces, said carton having a transparent tough, non-brittle air-tight, odor tight, moisture- and grease-proof strip of cellulose nitrate or acetate firmly cemented over said corners and intersections to said faces under drum-tight tension over said edges, and drawing said portions tightly together, thereby forming a transparent, strong, tough, non-brittle, tensioned water-proof grease-proof seal for said carton.

2. A carton of moisture and grease-proof cardboard including closure members having faces having meeting edges at an intersection of adjacent planes, said carton having a transparent tough, non-brittle moisture- and grease-proof strip of material, selected from cellulose nitrate or cellulose acetate, and firmly cemented to said faces under drum-tight tension over said edges and drawing said edges tightly together, thereby forming a transparent, strong, tough, split-proof non-brittle, drum-tight, water-proof grease-proof seal for said carton.

3. A method of sealing a carton having adjacent portions, said method including the steps of applying, to a strong, tough, non-brittle, odor-proof moisture- and grease-proof strip, a cement containing an agent for softening said strip and which will give to the strip the power to contract greatly on drying; maintaining the cement thereon long enough to soften the strip; adhering the cement treated strip to said portions at their juncture; and permitting the adhered strip to dry whereby there is an accompanying shrinking, thereby drawing said portions tightly against each other with a strong, tough, split-proof, non-brittle, odor tight, water-proof, grease-proof seal having high tension.

4. A method of sealing a carton having adjacent portions, said method including the steps of applying a softening and cementing agent to a strong, tough, non-brittle moisture- and grease-proof strip of a cellulose derivative selected from a group containing cellulose nitrate and cellulose acetate; maintaining the agent thereon long enough to soften the strip and to give the strip the quality of shrinking on drying; adhering the agent treated strip to said portions at their juncture; and permitting drying, thereby shrinking the adhered strip enough to draw said portions tightly against each other, thereby forming a strong, tough, non-brittle, drum-tight, water-proof, grease-proof seal.

5. A method of sealing a carton having adjacent portions at edges and end-corners of the carton, said method including the steps of applying, to a strong, tough, non-brittle moisture- and grease-proof strip of a cellulose derivative, a cement containing an agent for softening said strip, thereby rendering the strip flexible and foldable maintaining the cement thereon long enough to soften the strip; adhering the cement treated surface of said strip to said portions at their juncture and around the end corners; and permitting the adhered strip to dry whereby there is an accompanying shrinking, thereby drawing said portions tightly against each other with a strong, tough, non-brittle, drum-tight, water-proof, grease-proof seal.

6. A method of tension-sealing a carton of moisture and grease-proof material having faces having meeting edges, said method including the steps of applying, to a transparent, tough, non-brittle moisture-proof, grease-proof strip of cellulose acetate, a cement containing a softening agent adapted to soak into and soften said strip; maintaining the cement on the strip long enough to soften the strip and render the same freely pliable; firmly adhering the cement treated surface of said strip to said faces over said edges; and permitting the adhered strip to dry whereby there is an accompanying shrinking, thereby drawing and holding said edges tightly against each other with a transparent, strong, tough, non-brittle, drum-tight, water-proof, grease-proof seal.

7. A method of tension-sealing a carton of moisture and grease-proof cardboard having faces having meeting edges at corners at an intersection of three adjacent faces of the carton, said method including the steps of applying, to a moisture- and grease-proof strip of cellulose nitrate, a cement containing a softening agent including ethylene glycol monomethyl ether; maintaining the cement thereon long enough to soften the strip and to render it freely flexible; firmly adhering the cement treated surface of said strip to said faces over said edges at said intersection and corners, and permitting the adhered strip to dry whereby there is an accompanying shrinking, thereby drawing and holding said edges tightly against each other with a transparent, strong, tough, split-proof, non-brittle, drum-tight, air-tight, odor-tight, water-proof, grease-proof seal.

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