Aug. 6, 1929. J. J. GANNON ET AL 1,723,150

CORNER SEAL FOR BOXES

Filed Dec. 15, 1926

Fig. 1.

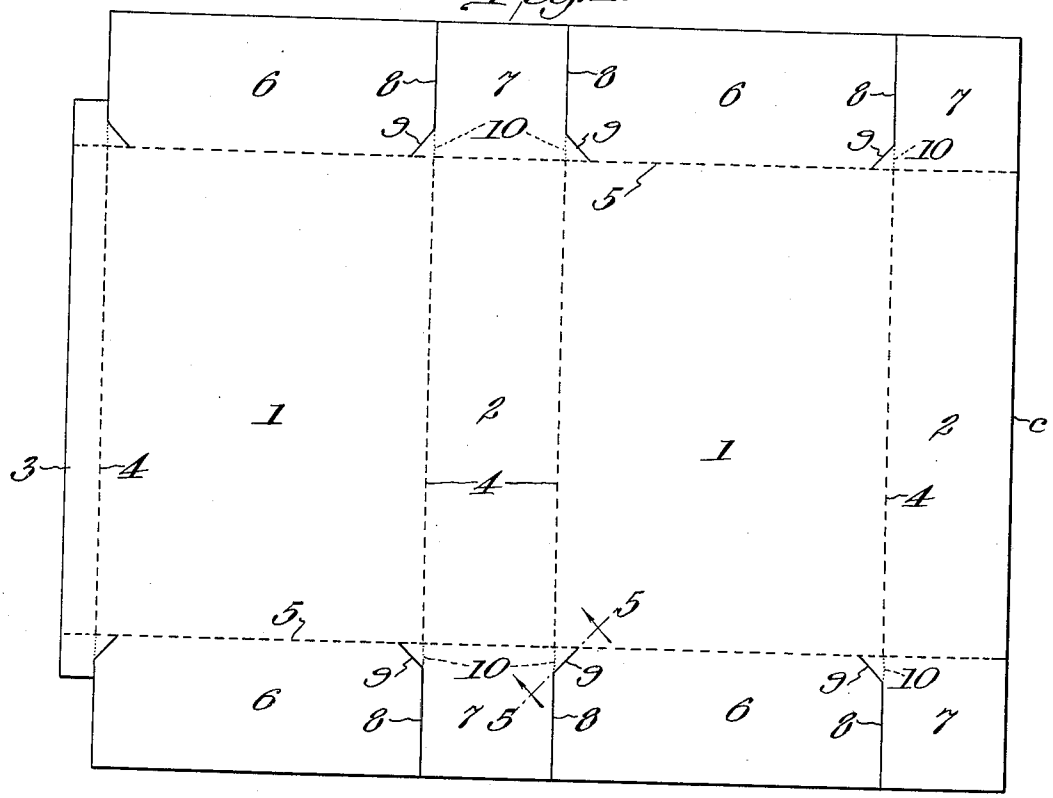


Fig. 2.

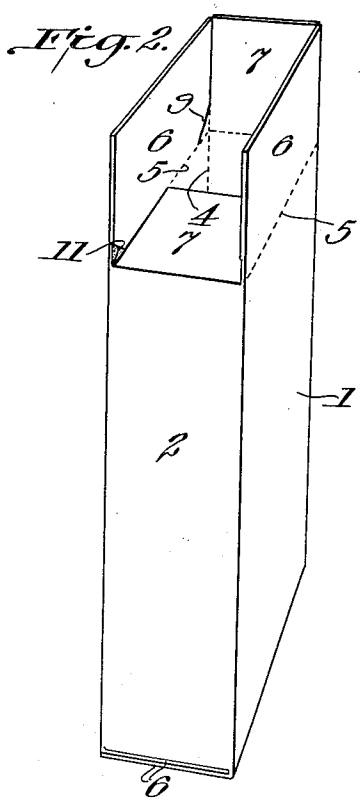
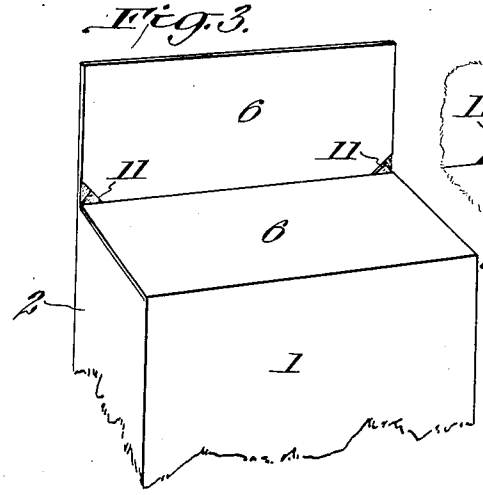


Fig. 3.



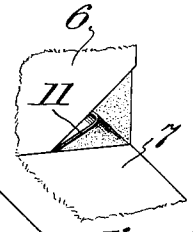


Fig. 4.

Fig. 5. a

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UNITED STATES PATENT OFFICE.

JOHN J. GANNON AND FREDERICK W. FOERSTNER, OF RITTMAN, OHIO, ASSIGNORS TO THE OHIO BOXBOARD COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

CORNER SEAL FOR BOXES.

Application filed December 15, 1926. Serial No. 155,024.

Paper and boxboard cartons and boxes or other containers as at present generally constructed, are not entirely satisfactory for packaging pulverulent, flaky and granular materials, such as salt, washing powder, soap flakes and the like, for the reason that such materials usually sift out of the packages through the very small openings at the corners of the cartons or boxes where the end flaps are folded and sealed.

Furthermore, where the contents of such packages are of a nature to absorb moisture and thereby deteriorate, these openings furnish a means of entrance for such moisture. Various expedients have been resorted to to meet this difficulty of properly sealing packages. In some cases the boxes or cartons are fitted with liners in the form of paper bags into which the contents are introduced. In other cases, especially where it is desired to exclude moisture, the boxes or cartons are wrapped in transparent paper and dipped in paraffin.

Both of these methods of packing, though in a measure answering the desired end of preventing sifting of the contents from the packages, have undesirable features. They both add to the expense of packing, and add to the weight of the packages. The paper bag liners are effective to prevent sifting only where the contents of the packages are of relatively large size, because the bag is folded in the usual manner at its top and fine granular material, such as salt or powdered substances, will sift through the fold. The paraffin dipped wrapper effectively prevents sifting from the package so long as it is properly sealed, but it does not prevent sifting from the carton or box into the inside of the wrapper and between it and the box. This, especially in the case of powdered substances makes the package unsightly and unfit for ordinary shelf display.

With these and other disadvantages of the present means of packaging in mind, and with a view to incorporating in a container all possible advantages for packaging pulverulent, flaky and granular substances, we have devised a container so constructed as to provide a perfect closure at each corner, without resort to accessory seals or containers, the entire container and its sealing means being formed in a single blank by virtue of the manner in which the blank is constructed, as we will proceed now to explain and finally claim.

In the accompanying drawings illustrating the invention, in the several figures of which like parts are similarly designated. Figure 1 is a plan of the complete blank for an ordinary rectangular box, carton or the like container. Fig. 2 is a perspective view of the container folded, but with only one of the end sealing flaps turned down. Fig. 3 is a perspective view of the end portion of the container with all but one of the sealing flaps turned down. Fig. 4 is a detail perspective view of one of the corner sealing webs. Fig. 5 is a section taken on line 5—5 of Fig. 1.

Obviously, the blank may be of any conformation to produce a container of the desired size and shape, but for purposes of illustration we have shown a blank for a box or carton in the form of a parallelopiped. This blank provides broad sides 1, narrow sides 2, and a pasting flap 3, all formed by the vertical creases or scores 4 and longitudinal creases or scores 5. Attached to the broad sides 1 at both ends are end sealing flaps 6, and attached to the narrow sides 2 at both ends are end sealing flaps 7. All of these sealing flaps are foldable upon the creases or scores 5, and are separated from each other by cuts 8.

In order to provide means for positively sealing the corners of the containers formed from blanks of this general character, we terminate the cuts 8 at a short distance from the creases or scores 5, and join their ends to these creases by diagonal cuts 9 which extend only part way through the material of the blank from the inner side *a* thereof, as indicated in Fig. 5. On the outside *b* of the blank the cuts 8 are joined to the creases or folding lines 5 by cuts 10, indicated in light dotted lines in Fig. 1 and by a full line in Fig. 5, which extend only part way through the material of the blank from the outer side *b* thereof.

The method of and apparatus for forming these blanks are described and claimed in our

copending application for patent for Method of and apparatus for forming the blanks for folded blank boxes, Serial No. 155,023, filed of even date herewith.

The box or carton made from this blank is folded, filled and closed as follows:—First the pasting flap 3 is folded inwardly along its adjacent crease or score 4 and pasted to the inner face of the narrow side 2 shown at the right of Fig. 1, with its fold on the crease 4 lying along the edge *c* of the side 2. Then the thus pasted blank is bent upon the scores or creases 4 to rectangular form. Then the sealing flaps 7 are bent inwardly toward each other, as indicated in Fig. 2. It is at this point in the operation of forming the box or carton that the corner-sealing means becomes operative. As will be seen by reference to Figs. 2, 3 and 4, when the sealing flaps 7 are bent inwardly the material of the box strips or peels between the cuts 9 and 10 because of one of its faces, the inside face, being left attached to both the side 1 and the flap 7. This stripping or peeling of the material substantially midway of its thickness, forms a web 11 at each corner of the box, which, when the sealing flaps 6 are folded down upon the previously in-folded flaps 7 and securely pasted, will completely close and seal the corners.

After one end is thus closed and sealed, the box may be up-ended, filled with the commodity to be packaged, and the other end closed and sealed by manipulation of the flaps 6 and 7 in the manner already described.

As will be seen, particularly by reference to Figs. 3 and 4, when the flaps 7 are folded in, the web 11 closing the corner is formed, and then, when the flaps 6 are folded down upon the flaps 7 and upon each other and pasted, a crimp or fold is formed in the web 11 and it becomes pasted to the adjacent adhering faces of the flaps 6.

The material of which the blank is formed, is optional to suit the purpose for which the finished container is to be used. If substances which, of their inherent nature, are apt to absorb moisture from the air, are to be packaged, it is desirable to use a material for the blank which is moisture-proof, and in such cases it will be apparent that, due to the perfect seal formed at the corners by the device of our invention, the container will be not only completely moisture-proof but will prevent sifting of the contents at the corners, thus obviating the necessity for the liners and wrappers now commonly used, as hereinbefore described.

Moreover, if a material which is both grease-proof and moisture-proof, such as that described in the patent of John J. Gannon, Louis W. Mahle and Fred B. Wells, granted November 9, 1926, No. 1,606,163, is used, the container will be both grease-proof and moisture-proof, thus fitting it for use as a container for such commodities as salted nuts, which are inherently oily or greasy, deteriorate in the presence of moisture, or in a humid atmosphere, and contain loose salt which would sift from the corners of ordinary containers.

It will thus be seen that we provide a folded blank box which provides a suitable container for pulverulent, granular and flaky substances, and which incorporates in a single blank all of the parts of the box including means for sealing the corners automatically upon folding of the end-sealing flaps.

In addition to the utility of the corner seal in preventing sifting of the contents of the container from its corners, it will be apparent that the seal will prevent entrance into the container of vermin.

Various changes are contemplated as within the spirit of the invention and the scope of the following claims.

What we claim is:—

1. In a folded-blank box or the like, the combination with the box body and end-sealing flaps, of a web of material formed integrally with the body and flaps and partially separable therefrom and adapted when the flaps are folded to close the corner of the box.

2. In a folded-blank box or the like the combination with the body and sealing flaps of the box of a partially severable member formed integrally with said flaps and body and adapted when said flaps are folded for closing the box to peel from said flaps to form a web for sealing the corner of the box.

3. In a blank for folded-blank boxes, folding creases defining the sides and end sealing flaps, cuts separating the sealing flaps one from the other, and cuts extending from said first-mentioned cuts and passing only partway through the material of the blank and leaving a web of the material of the blank integral with two sides and two flaps, for closing the box corner when the blank is folded to form a box.

4. In a blank for folded-blank boxes, folding creases defining the sides and end sealing flaps, cuts separating the sealing flaps one from the other, and diagonal cuts extending from said first-mentioned cuts and passing only partway through the material of the blank and leaving a web of the material of the blank integral with two sides and two flaps, for closing the box corner when the blank is folded to form a box.

5. A folded-blank box or the like container, provided with end-sealing flaps, having means connected with adjacent end-sealing flaps and peelable therefrom for automatically forming a corner-sealing web

upon folding of said flaps into end-sealing position.

6. A folded-blank box or the like container, provided with end-sealing flaps, having means connected with adjacent end-sealing flaps and forming an integral part thereof and peelable therefrom for automatically forming a corner sealing web upon folding of said flaps into end-sealing position.

In testimony whereof we have hereunto set our hands this second day of December, A. D. 1926.

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FREDERICK W. FOERSTNER.