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R. M. BERGSTEIN

2,166,389

METHOD OF PACKAGING

Filed May 5, 1938

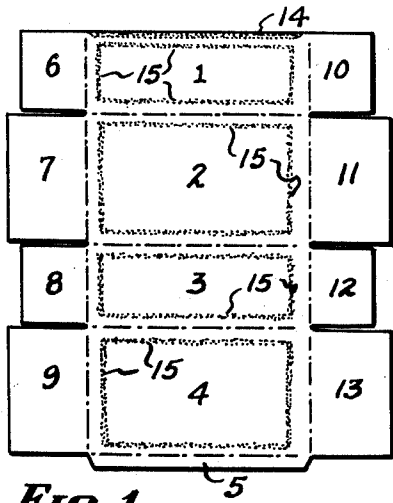


FIG. 1.

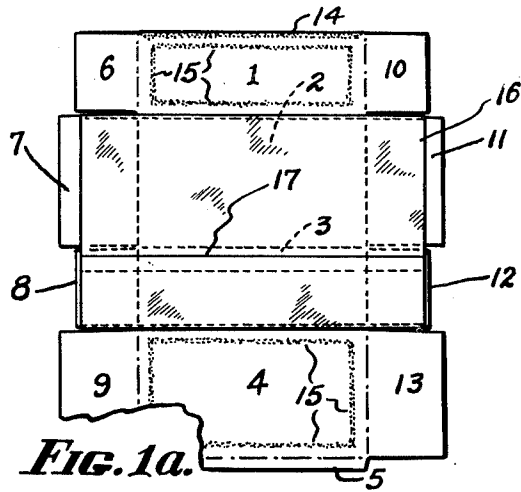


FIG. 1a.

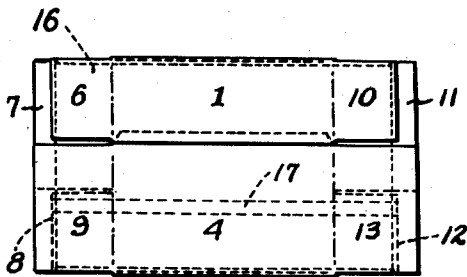


FIG. 2.

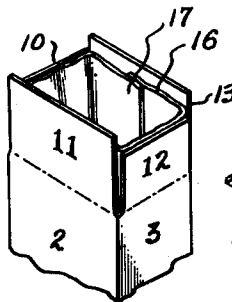


FIG. 3.

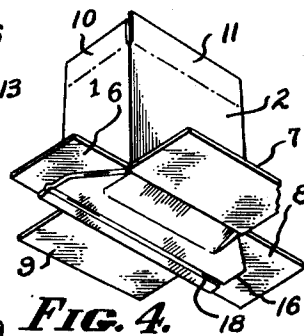


FIG. 4.

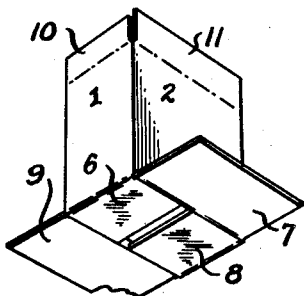


FIG. 5.

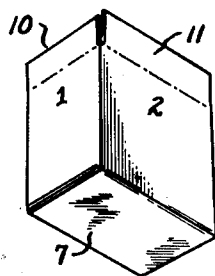


FIG. 6.

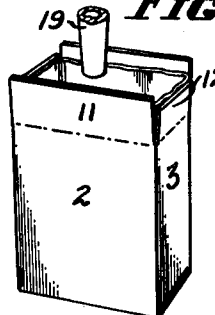


FIG. 7.

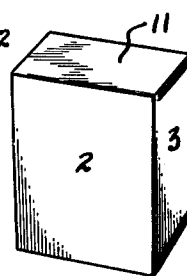


FIG. 10.

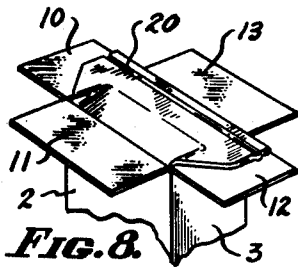


FIG. 8.

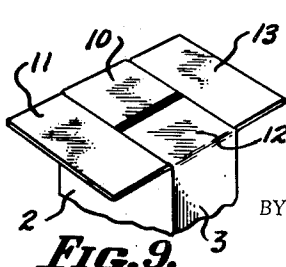


FIG. 9.

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UNITED STATES PATENT OFFICE

2,166,389

METHOD OF PACKAGING

Robert Morris Bergstein, Cincinnati, Ohio

Application May 5, 1938, Serial No. 206,224

4 Claims. (Cl. 93—3)

In my U. S. Patent No. 2,095,910, I have disclosed methods of making containers comprising an outer carton with a pre-formed tubular liner or bag therein, and in my copending application Serial No. 180,750, I have disclosed mechanisms for carrying out this method. I have found that when a container of this type is supplied with the liner having one end sealed, that the squaring up of the outer carton tends to throw some strain upon the sealed end of the liner, which is likely to disrupt the sealed end and prevent the integral condition desired. By my invention as herein disclosed I provide a packaging method which prevents this condition, and still provides an independently sealed bottom closure for the liner. This and other objects of my invention will be made clear by the drawing and specifications which follow, and the nature and scope of my invention will be set forth in the claims which follow, to which reference is hereby made.

In the drawing:

Figure 1 illustrates a flat blank suitable for my outer carton, the shaded portions indicating the adhesively covered areas on the interior surface of the blank.

Fig. 1a illustrates a pre-formed flexible tubular structure, open at both ends, in position on the flat blank, prior to folding and securing the blank about this tube.

Fig. 2 illustrates the blank after it is folded and secured, in which form the container is suitable for shipment to the point of use.

Fig. 3 illustrates the container shown in Fig. 2 upon being squared up, and it can be seen that squaring up the outer carton results in the inner liner also being brought into erect or squared-up form.

Fig. 4 shows the closing flaps at one end of the carton folded back, and a seam formed by heat-sealing between the walls of the liner, to close one end of the liner.

Fig. 5 shows a step in the process of folding the flaps about the closed end of the liner.

Fig. 6 shows the flaps completely folded and secured at this end.

Fig. 7 illustrates the contents being inserted into the package as shown in Fig. 6, the contents of course being introduced into the open mouth of the other end of the liner.

Fig. 8 shows forming a seam by heat between the two opposite walls of the open mouth of the liner, this step corresponding to the procedure as shown in Fig. 4, for the first closed end of the liner.

Fig. 9 shows the top flaps partially folded about

the sealed liner closure illustrated in Fig. 8 above.

Fig. 10 shows the top flaps now folded into full closing position, and secured, providing a finished package with contents therein ready for shipment.

I have illustrated my invention as employing the standard carton with closing flaps at both ends, which flaps are cemented together when closed. Its application to other carton forms with various closing flap arrangements will be obvious.

Referring now to Figure 1, the blank shown has four hingedly connected panels, Nos. 1, 2, 3 and 4. Hingedly connected to panel 4 is the usual glue flap 5. Foldably connected to the ends of the panels are closing flaps 6, 7, 8 and 9 at one end and 10, 11, 12 and 13 at the other. Adhesive has been applied to the shaded areas indicated. The shaded area indicated at 14 is for the purpose of securing this portion of the panel to the glue flap upon folding, and to retain the tubular form of the carton, and the shaded areas indicated at 15, is for the purpose of securing the pre-formed liner in desired position within the carton blank, so that as the finished structure is opened, the liner will open.

Fig. 1a shows a pre-formed tubular structure 16, having both ends open, in position overlying the panels 2 and 3. The liner is preferably made of heat fusible material on the inner surface at least, and the lengthwise seam 17 thereof is preferably a heat fused seam. If but a single ply material is used that is coated with heat fusible material and an overlap seam is provided, the heat fusible material may be placed on the outside of the sheet at the underlapped edge for heat sealing, as described in my co-pending application, Serial No. 184,841, filed January 13, 1938.

Fig. 2 illustrates the container after panels 1 and 4 have been folded over, the panel 1 being lapped over the glue flap. After being folded the container is put under pressure, which serves to secure adhesion, both of the glue flaps retaining the outer carton in flat folded tubular form, and also to secure adhesion between the interior surfaces to which adhesive has been applied of the blank, to the outer surface of the liner.

In the form just described the container is suitable for shipment to the point of use, that is to the point where the contents are to be introduced.

Fig. 3 illustrates the first stage of my method, at the point where the contents are to be packaged. The outer carton has been squared up, and because the inner liner has been adhered

as described to the inner surface of the carton, squaring up the carton thereby results in the squaring up of the inner liner.

Fig. 4 illustrates the first step in closing the erected package, the flaps at one end as illustrated having been folded back to permit access to the projecting ends of the liner at that end, and the opposite walls of the liner at said end are secured together by a heat fused seam 18. It should be noted that the projecting end of the liner has thus been secured independently of the closing flaps of the carton, so that there is no interfolding of the flaps and the liner, but the opposite walls of the end of the liner have been sealed by the application of heat, resulting in closing the liner at this end, but not having any effect upon the closing of the outer carton.

Figure 5 illustrates the first stage in closing the flaps of the carton at the end where the liner has been sealed, the two opposite closing flaps 6 and 8 having been folded inwardly, about the sealed end of the liner. The liner is preferably of a length to overlie the closing flaps and the seal is made at a point beyond the fold lines of the closing flaps. This assures a bottom for the container which is square with the flaps.

Fig. 6 illustrates the final stage in closing the flaps of the carton at this end, the remaining closing flaps now having been brought into overlapped position, where they may be secured by adhesive or by locking or by any of a number of well-known closing means.

After the end of the container has been closed as described in the preceding steps, the contents are now introduced into the open mouth of the other end of the liner. This is illustrated by Fig. 7, in which a spout 19 diagrammatically illustrates the contents injector. At this point the liner may be charged with gas where gas packing is employed.

The same procedure as described in connection with Figures 4 to 6 is now followed in closing the remaining open end of the container. The first step, as illustrated in Fig. 8, is to independently heat-seal the seam across the open mouth of the liner as at 20. This is accomplished by drawing together the opposite walls of the liner mouth, and forming a seam therebetween in the presence of heat. The next step as shown in Fig. 9, is folding in the two opposite closing flaps 10 and 12, and finally as shown in Fig. 10 the folding in of the remaining two closing flaps 11 and 13, which may be secured by adhesive, by locking, or by any well known means as explained in connection with the closing of the flaps at the other end of the carton. In this closed and sealed form, the finished package is ready for shipment, and it can be seen that the contents are protected within an independently formed heat-sealed inner liner, which liner is supported by the outer carton which has been closed about it. I prefer that the seal 20 be located in a flattened portion of the liner mouth well above the line of juncture of the walls above the contents within the package to allow for expansion and contraction.

It is apparent that variations can be made in the example described in connection with the drawing, without departing from the spirit or scope of my invention. My packaging method provides a finished package with contents within an independently sealed liner having a heat-fusible interior, said sealed liner being supported within an outer carton which is closed thereabout, but in which the entire structure is made

in flat form originally constituting a unit consisting of a carton and a liner.

In my U. S. Patents Nos. 2,114,622, 2,114,623, and 2,114,624, dated April 19, 1938, I have shown mechanism for first elongating the mouth of a bag contained in an erected carton, and then heat sealing the same. Also liner heat sealing mechanisms, where the particular nature of the seal as shown in my said United States patents is not involved, are numerous in the arts, and provide various ways for heat sealing of liners in carton while maintaining the closing flaps out of the way, in an operation following the filling of the carton. In my practice, where the liner is adhesively joined with the carton and is seamed independently in a tube, it is simple and practical to employ the same mechanism for forming the end seal in a tube in the absence of any contents, as have been used where the contents are in place, and thus hold the liner in distended form.

This is an important feature of my invention, because if the liner was not adhered to at least two opposite walls of the carton, according to my invention, it would be almost impossible to successfully close an open end of the liner. As previously mentioned, the fact that my liner is secured to the main body of the carton as described, makes it practical to readily foldably manipulate the open end of the empty liner, to provide a closure at one end, prior to the introduction of the contents.

The usual carton filling machine requires a preliminary squaring up of the cartons, and then the machine first proceeds to fold inwardly and adhesively secure the closing flaps of the carton, after which contents are introduced into the carton and the machine then closes and seals the closing flaps at the top of the carton. My present practice can be carried out on such machines by merely interpolating heat sealing mechanisms for the two ends of the tubular liner, which heat sealing mechanisms may be those described in my said co-pending application for Letters Patent.

The usual practice where liners are used with cartons is to erect the liner about a mandrel and then insert it into the carton. The liner will usually be formed with a folded bottom on such mandrels. Such liners by their very nature cannot be made impermeable to moisture or gas. In my practice where the liner has its own independent lengthwise seal, and is then placed in the carton which is formed up around it in flat form at all times, and in which at the place of use the carton is squared up thus squaring up the tubular liner, whereupon an independent bottom seam is formed in the liner, I am able to provide for a completely impermeable liner structure which is formed into a bag before the contents are inserted, as a step in the necessary operation of closing the bottom flaps of the carton preparatory to introducing the contents into the package.

I thus avoid the defect incident to sealing the liner at one end to form a complete bag prior to the erection of the carton. As already noted the result of such a procedure is to distort the bottom seam of the bag. However, where the bottom seam is made preparatory to closing the bottom flaps of the carton in the usual way, this defect is overcome, and yet the highly desirable feature of a liner complete and independently seamed throughout is provided.

The heat fused seams are undoubtedly the most efficient and readily made and my invention is

directed mainly to this end. However, adhesive seams could be substituted and if so, many of the advantages of my practice will still be retained except that the sealing would be by adhesive rather than heat.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. That method of packaging which comprises providing a flat folded carton having at least four parallel crease lines, and closing flaps at the ends thereof, said carton having adhesively fastened to its inner surface a liner with its longitudinal edges fastened to one another independent of the fastening of the container, and the open end of said liner projecting beyond the main body panel of said outer carton and free of attachment to the closing flaps, which method comprises squaring up said carton, thereby simultaneously squaring up said inner liner, thereafter sealing one of the open ends of the liner, closing the flaps of the outer container about the sealed end, thereafter filling with contents, sealing the other end of the liner and closing the flaps thereabout.

2. That method of packaging which comprises providing a flat folded carton having at least four parallel crease lines, and closing flaps at the ends thereof, said carton having adhesively fastened to its inner surface a liner with its longitudinal edges fastened to one another independent of the fastening of the container, the inner surface of which liner is heat-fusible, and the open end of said liner projecting beyond the main body panel of said outer carton and free of attachment to the closing flaps, which method

comprises squaring up said carton, thereby simultaneously squaring up said inner liner, thereafter heat-sealing one of the open ends of the liner, closing the flaps of the outer container about the sealed end, thereafter filling with contents, heat-sealing the other end of the liner and closing the flaps thereabout.

3. That method of packaging which comprises providing a flat folded carton within which is secured an independent open-ended tubular liner, said liner being heat fusible on its inner surface at least, and the open ends of said liner projecting free of the closing flaps at the ends of said carton, which comprises squaring up said carton thereby squaring up said inner liner, heat sealing one end of said liner, and closing the carton flaps thereabout, filling contents into remaining open end of said liner, and thereafter heat-sealing said end and closing the carton flaps thereabout.

4. That method of packaging which consists in providing a four-sided flat carton within which is secured an independently sealed flat tube, said tube being adhesively secured to the walls of the carton so that it will open when the carton is opened, but said tube being sufficiently free of the closure flaps of the carton to permit independent closure of the tube at both ends of the said carton, then erecting the said carton, then sealing the projecting portion of the tube at one end of the carton, then placing the contents within the package through the other open end of the tube, and finally sealing the said remaining open end of the tube.

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