

Sept. 25, 1956

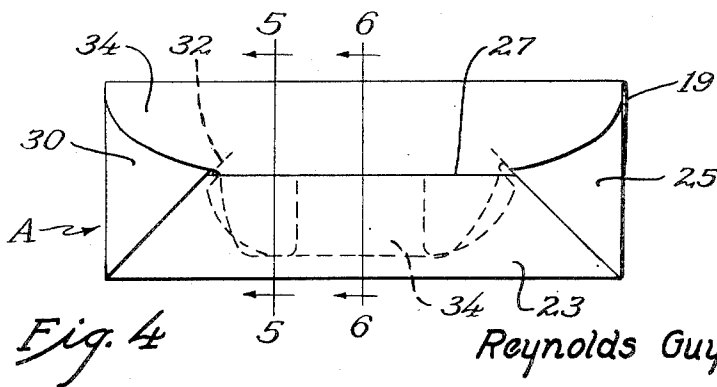
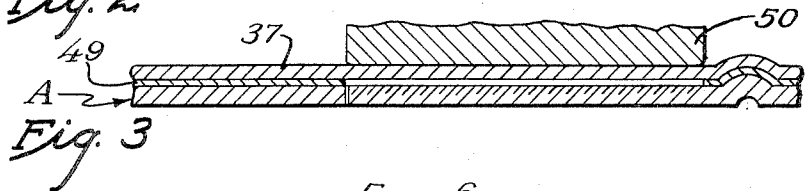
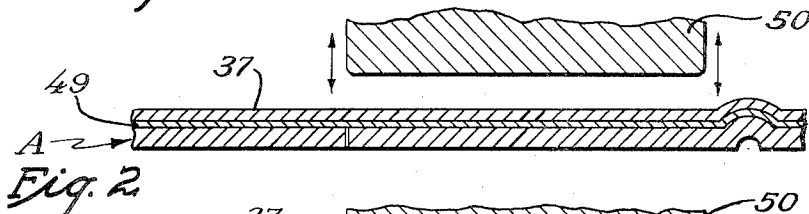
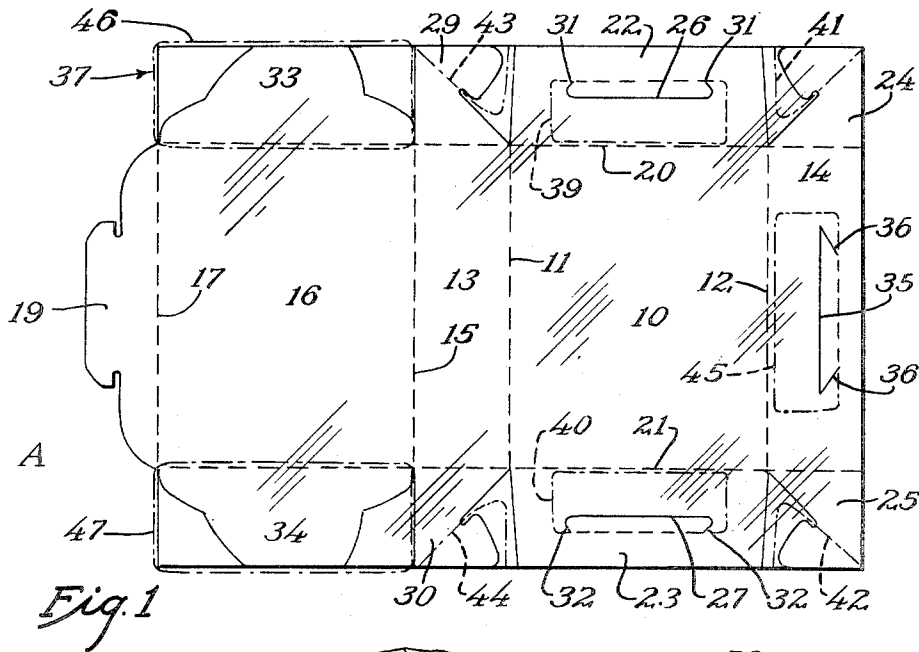
R. GUYER

2,764,069

METHOD OF PRODUCING A LINED CARTON

Filed Jan. 6, 1950

3 Sheets-Sheet 1



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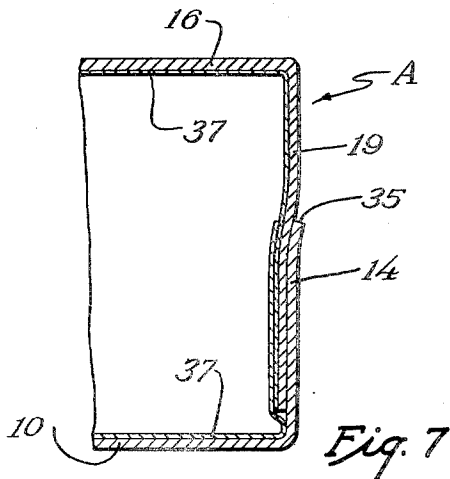
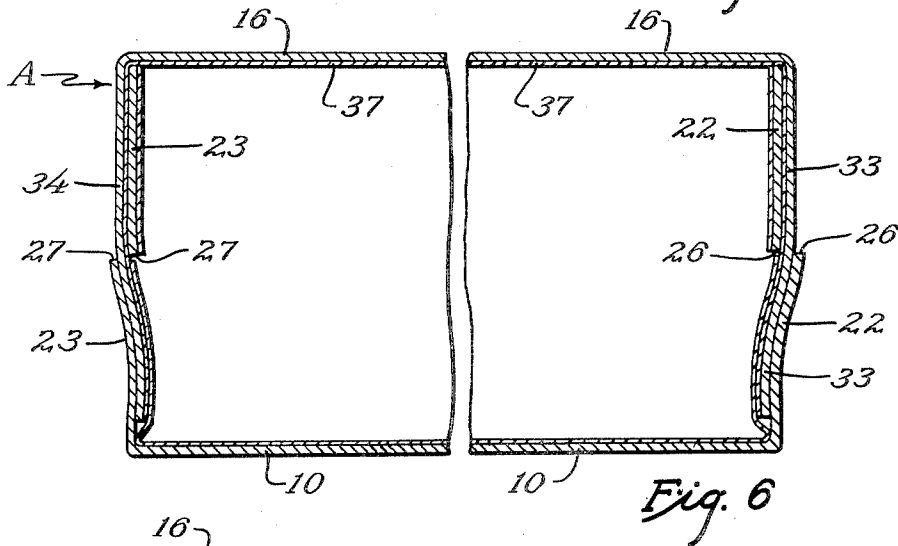
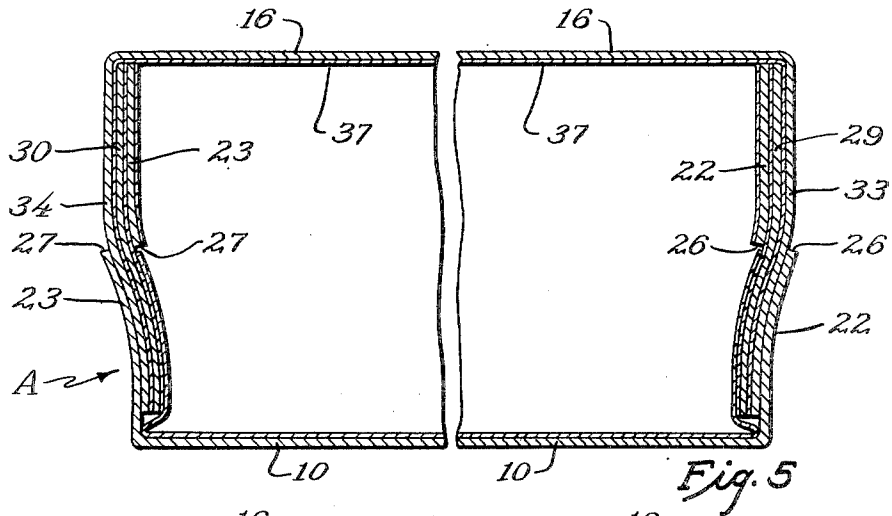
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METHOD OF PRODUCING A LINED CARTON

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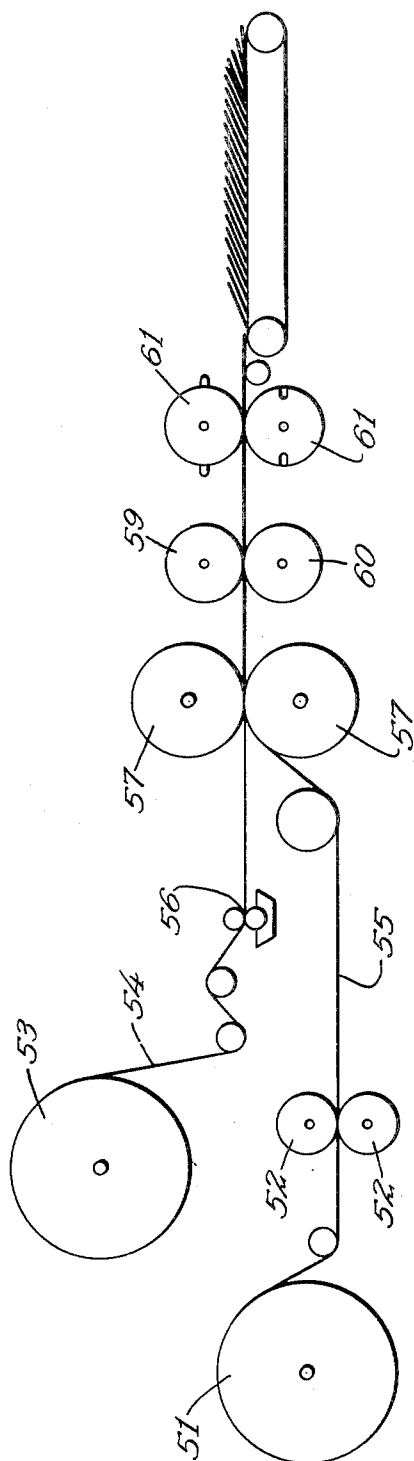


Fig. 8

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2,764,069

METHOD OF PRODUCING A LINED CARTON

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Application January 6, 1950, Serial No. 137,230

8 Claims. (Cl. 93—36.6)

This invention relates to an improvement in carton and method of producing the same and deals particularly with a type of carton designed to contain moisture bearing foods and the like.

Frozen foods are usually packed at the present time in a container having a moistureproof or moisture resistant inner liner. This liner is spot glued to the carton and is designed to fold therewith in the formation of the carton. As a result portions of the carton are loosely connected to the liner, causing considerable difficulty in handling the carton and in feeding the same through a forming or closing apparatus.

A purpose of the present invention lies in the provision of a carton having a waterproof or water resistant liner which is laminated to the carton blank. The carton blank is preferably provided with lock corners which include corner locks and slots in the carton blank through which the corner locks extend. The slots extend only through the carton blank and not through the liner attached thereto. In the past it has been considered impractical to employ a carton of this type having a laminated inner blank as the corner locks could not extend through the slots in the outer blank and between the carton blanks and the liner while it was laminated thereto.

An object of the present invention lies in the provision of a carton having a pre-cut carton blank and a moisture resistant liner laminated thereto throughout its entire surface. The carton blank and liner are preferably laminated together by means of a wax or other adhesive which is tacky at elevated temperatures. In order that the corner locks may extend between the slotted carton blank and the continuous liner sheet, the carton is delaminated at certain specific areas. This delamination is preferably accomplished by applying heat at the specified areas. This application of heat acts to delaminate the two materials at specific areas.

A feature of the present invention lies in the fact that when a heated plate or similar device is pressed against the carton at certain specified areas, the wax or other laminating agent is heated. The heat tends to cause the wax to be absorbed into the carton blank at the heated area. As a result after the heated plate is removed, the liner no longer adheres to the carton blank at the specified areas mentioned.

These and other objects and novel features of my invention will be more clearly and fully set forth in the following specification and claims.

In the drawings forming a part of my specification:

Figure 1 is a diagrammatic view of the carton blank with the liner adhered thereto.

Figure 2 is a sectional view through an enlarged detail portion of the carton blank showing the manner in which heat is applied thereto.

Figure 3 is a view similar to Figure 2 showing the results of applying heat and pressure in diagrammatic form.

Figure 4 is an end elevation view of the carton in closed position.

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Figure 5 is an enlarged sectional view through the locked portion of the carton showing the relationship of the various elements at this point, the position of the section being indicated by the line 5—5 of Figure 4.

Figure 6 is a section similar to Figure 5, the position of the section being indicated by the line 6—6 of Figure 4.

Figure 7 is a sectional view through the front wall of the carton showing the front lock structure.

Figure 8 illustrates diagrammatically the continuous formation of carton blanks.

The carton A is generally similar in form to that illustrated in Patent No. 2,430,610 which has been widely used for frozen foods. The carton includes a bottom panel 10 which is foldably connected along parallel fold lines 11 and 12 to a back wall 13 and a front wall 14, respectively. The back wall 13 is hingedly connected along a fold line 15 to a top panel 16. The top panel 16 is hingedly connected along a fold line 17 to a front lock 19. The bottom panel 10 is foldably connected on opposite edges by fold lines 20 and 21 to end wall panels 22 and 23, respectively. Locking tabs 24 and 25 are designed to engage in horizontal slots 26 and 27 respectively of the end wall panels 22 and 23. The locking tabs 24 and 25 are hingedly connected to the front wall panels 14 along continuations of the fold lines 20 and 21.

The rear wall panel 13 is provided with locking tabs 29 and 30 which are generally similar in form to the locking tabs 24 and 25. These tabs 29 and 30 are hingedly connected to the rear wall panel 13 along continuations of the fold line 20 and 21. These locking tabs 29 and 30 are designed to extend through the horizontal slots 26 and 27 of the end wall panels 22 and 23.

It will be noted that the slot 26 is provided with upwardly and inwardly inclined continuations 31 at each end of the slot so as to simplify the engagement of the locking tabs into the slots. The slot 27 is similarly provided with upwardly and inwardly extending continuations so as to simplify the engagement of the locking tab 25 and the locking tab 30 therein. All of the locking tabs illustrated are of hook form so as to remain engaged when once engaged in the respective slots.

The cover panel 16 is provided with a pair of tuck flaps 33 and 34 which are secured thereto along continuations of the fold lines 20 and 21. The cover panel 16 is also provided with the locking tab 19 which is designed to engage into a cooperable slot 35 in the front wall panel 14. The slot 35, similarly to the previously described slots, is provided with upwardly and inwardly inclined extensions 36. These extensions simplify the insertion of the locking tabs into the slots.

It will be understood that in closed position of the box, the various locking tabs 24 and 29 are engaged in the slot 26 and the locking tabs 25 and 30 are engaged in the slot 27. The tuck flap 33 is also engaged in the slot 26 while the tuck flap 34 is engaged in the slot 27. The locking flap 19 of the cover is engaged in the slot 35 to complete the locking engagement holding the carton in closed position.

The carton blank thus described is laminated to a liner sheet which is illustrated in general by the numeral 37. This liner sheet 37 is generally rectangular in form and extends across all of the wall panels, the locking tabs, and the tuck flaps. The liner also extends between the various parts and acts to connect them. In actual practice, the blank as well as the liner may be produced on a continuous sheet if desired and the blank and liner may be cut apart after the laminating operation is complete.

I have found that if wax or a similar material which is sensitive to high temperatures is used as the laminating agent, this wax may be driven into the carton stock by the application of heat to an area of the laminated sheet. Accordingly by pressing the laminated blank with a pre-

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heated die, this die engaging certain selected areas of the sheet, the stock may be delaminated at these points. As a result the carton is actually a laminated carton with the moistureproof lining laminated directly to the sheets throughout most of the area thereof while at the same time it is loose from the sheet at certain predetermined areas so that the locks of the carton blank may be engaged in their respective slots.

The manner in which the carton blanks may be delaminated is indicated diagrammatically in Figure 1 of the drawings. The carton wall 22 is provided with a rectangular area defined by a broken line 39 which indicates the area which may be delaminated in order that the locking tabs may be inserted between the liner and the carton stock. The end panel 23 is provided with a similar rectangular area 40 defined by a broken line. The area 40 extends across the slot 27 and permits the carton stock on each side of the slot to flex away from the liner and to permit the admission of the locking tabs between the liner and the sheets.

Before the various locking tabs may be inserted into the slots, certain portions of the locking tabs must be delaminated so that they are free of the liner at these points. The liner must be laminated throughout all areas which extend beyond a line arranged at 45 degrees from the fold lines 20 and 21 so that the liner may form a gusset fold at each corner of the carton. To accomplish this result an area defined by a broken line 41 may be delaminated upon the locking tab 24. A similar area defined by the broken line 42 may be delaminated from the locking tab 25. The locking tabs 29 and 30 are similarly delaminated along areas defined by the broken lines 43 and 44 respectively. The heated areas of the liner may extend somewhat beyond the area of the locking flaps as illustrated so that delamination throughout the entire area is insured.

In order that the locking tab 19 of the upper panel may be inserted into the slot 35 in the front wall of the carton, an area defined by the broken line 45 is delaminated in the front wall 14. The manner in which the locking tab 19 extends between the delaminated portion of the carton blank A and the liner is best illustrated in Figure 7 of the drawings.

In order to simplify the task of inserting the tuck flaps 33 and 34 into the slots 26 and 27, the liner is delaminated therefrom over a part or all of the surface of the element. A broken line 46 is shown encircling the tuck flap 33 so as to delaminate the entire area thereof. A similar broken line 47 is shown encircling the tuck flap 34 so as to delaminate the liner from this flap. If desired the liner may remain laminated to a portion of the flap as only the portions of these flaps which extend into the slots 26 and 27 need be delaminated.

In Figure 2 of the drawings, I illustrate the manner in which the delaminating operation may take place. In this figure a carton blank is illustrated in general by the letter A and the liner 37 is shown laminated thereto by means of a film 49 of wax or other similar material which is sensitive to heat. A die 50 is shown suspended above the carton blank just before the delaminating operation takes place.

In Figure 3 of the drawings, I disclose the die 50 in contact with the liner 37 and the heat of the die has penetrated through the liner 37 and has heated the wax 49. As the wax is melted, it tends to absorb into the carton blank A as indicated in the drawings. When the die 50 has been removed, the wax film which previously adhered the liner to the carton stock has been absorbed into the carton board and no longer acts as an adhesive. As a result the local areas which were engaged by the heated die are delaminated and the various locking tabs may be readily inserted between the carton stock and the liner.

It is important to note that by this arrangement a carton may be formed which is liquid tight, and the bottom of the carton forms a liquid tight tray into which food to be frozen or other such produce may be inserted.

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The blank may be more easily handled than a carton blank having a lining adhered thereto by spot glue or the like, as the liner is more securely fastened to the blank and the blank may be handled as a single piece of material. Furthermore, the blank and the liner sheet may be connected together in continuous films rather than in separate units, thus speeding up the formation of the combined blanks.

In the event the cartons are to be formed continuously, this may be done in any suitable manner, one such way being indicated in Figure 8. A roll 51 of paperboard passes between cutting and scoring dies 52, so that the blanks may be cut and creased throughout most of their periphery, the cartons remaining connected together along their parallel side edges so that the continuity of the web is not destroyed. A roll 53 of lining material of a water resistant type supplies a second web 54, this web being narrower than the web 55 from the roll 51 if the entire surface of the blank is not to be covered. Wax is applied to the liner at 56, and the two webs are pressed between laminating rolls 57.

The combined webs may pass between a heated die 59 and a backing roll 60. The blanks are next cut apart by cutting means 61, producing the separated cartons. If vertically reciprocable cutting, creasing and heating dies are preferred, portions of the webs may be held stationary momentarily during these operations, and provision is made for the web to sag or festoon on opposite sides of the dies, as in the well known Mercury printing press.

In accordance with the patent statutes, I have described the principles of construction and operation of my carton and method of producing the same, and while I have endeavored to set forth the best embodiment thereof, I desire to have it understood that obvious changes may be made within the scope of the following claims without departing from the spirit of my invention.

I claim:

1. The method of producing a carton which includes the steps of laminating a carton blank composed of material capable of absorbing a heated laminating agent to a second sheet using a laminating agent sensitive to heat, the amount of laminating agent employed over the blank area being less than sufficient to saturate the blank but above a non-effective binding limit, and applying heat at specified areas of said carton blank and delaminating these specified areas, the heat driving the laminating agent into and blank and freeing the second sheet from attachment with the carton blank at these points.

2. The method of delaminating a carton blank having a plurality of plies of material laminated with a heat sensitive adhesive, at least one ply being capable of absorbing heated adhesive, the adhesive being present in an amount less than sufficient to saturate said one ply but above the non-effective binding limit, the method consisting in applying heat to certain local areas of the blank and heating the adhesive at these local areas sufficiently to cause the adhesive to be absorbed into the material of at least said one ply, thereby delaminating the plies in said local areas.

3. The method of forming a carton blank including the steps of laminating a plurality of plies of material together with a heat sensitive adhesive, at least one of said plies being capable of absorbing heated adhesive, the adhesive being present in an amount less than sufficient to saturate said one ply but above the non-effective binding limit, cutting at least one of the plies to form the carton blank outline and scoring at least said one ply, and applying heat to certain local areas of the blank and heating the adhesive at these local areas sufficiently to cause the adhesive to be absorbed into the material of said adhesive absorbent ply, thereby delaminating the plies in said local areas.

4. The process described in claim 3 and including the additional step of forming the sheet thus formed into a tray shaped formation.

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5. The method of claim 3 and in which the adhesive absorbent ply is cut and scored prior to lamination.

6. The method of claim 3 and in which at least one ply is formed in a continuous sheet, and the blanks are cut apart after lamination.

7. The method of claim 3 and in which both plies are formed in continuous sheets, and the blanks are cut apart after lamination.

8. The method of claim 3 and in which only one ply is cut and scored and the other ply is generally rectangular in form.

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