

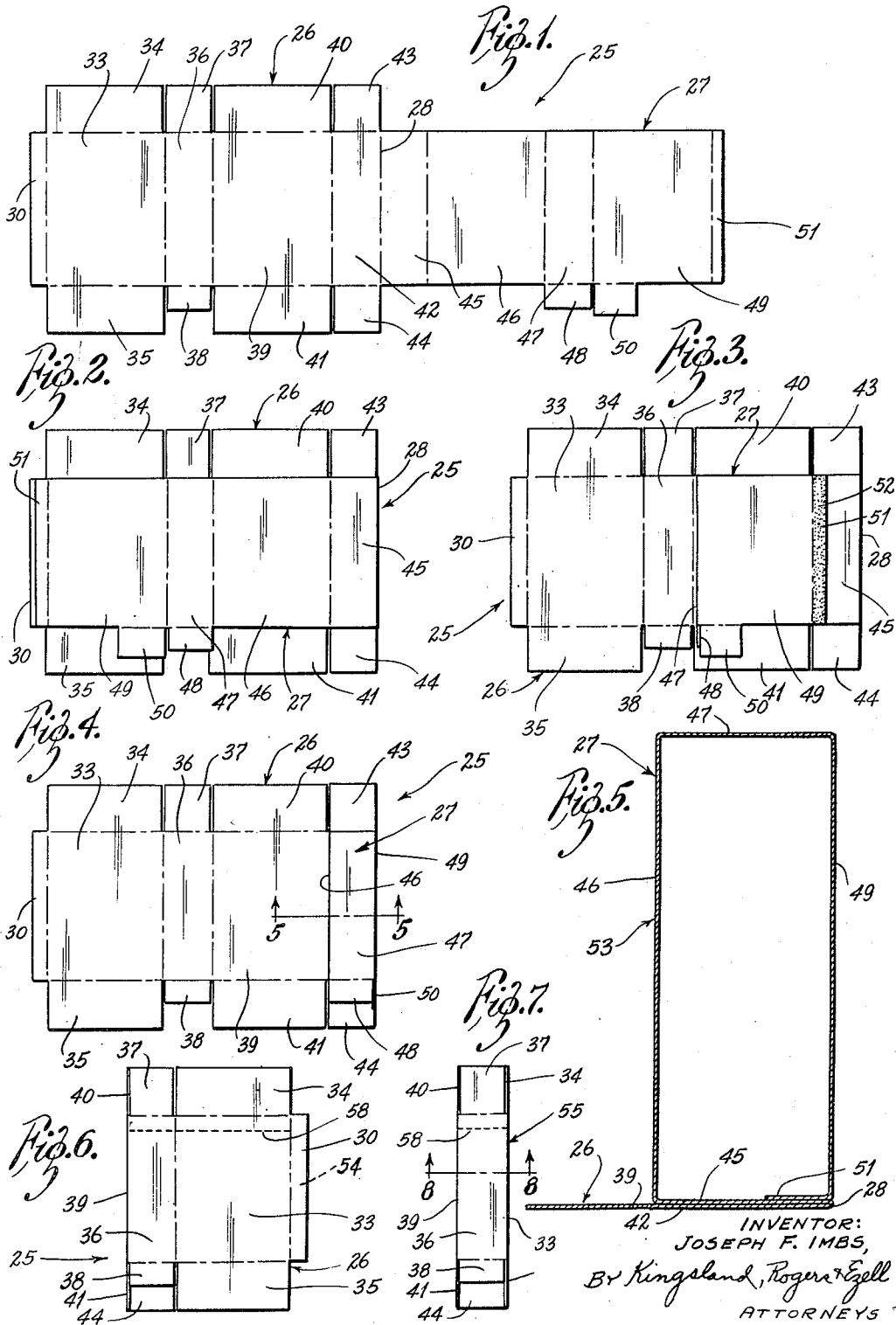
Aug. 14, 1956

J. F. IMBS
LINED CARTON

2,758,780

Filed Dec. 9, 1950

2 Sheets-Sheet 1



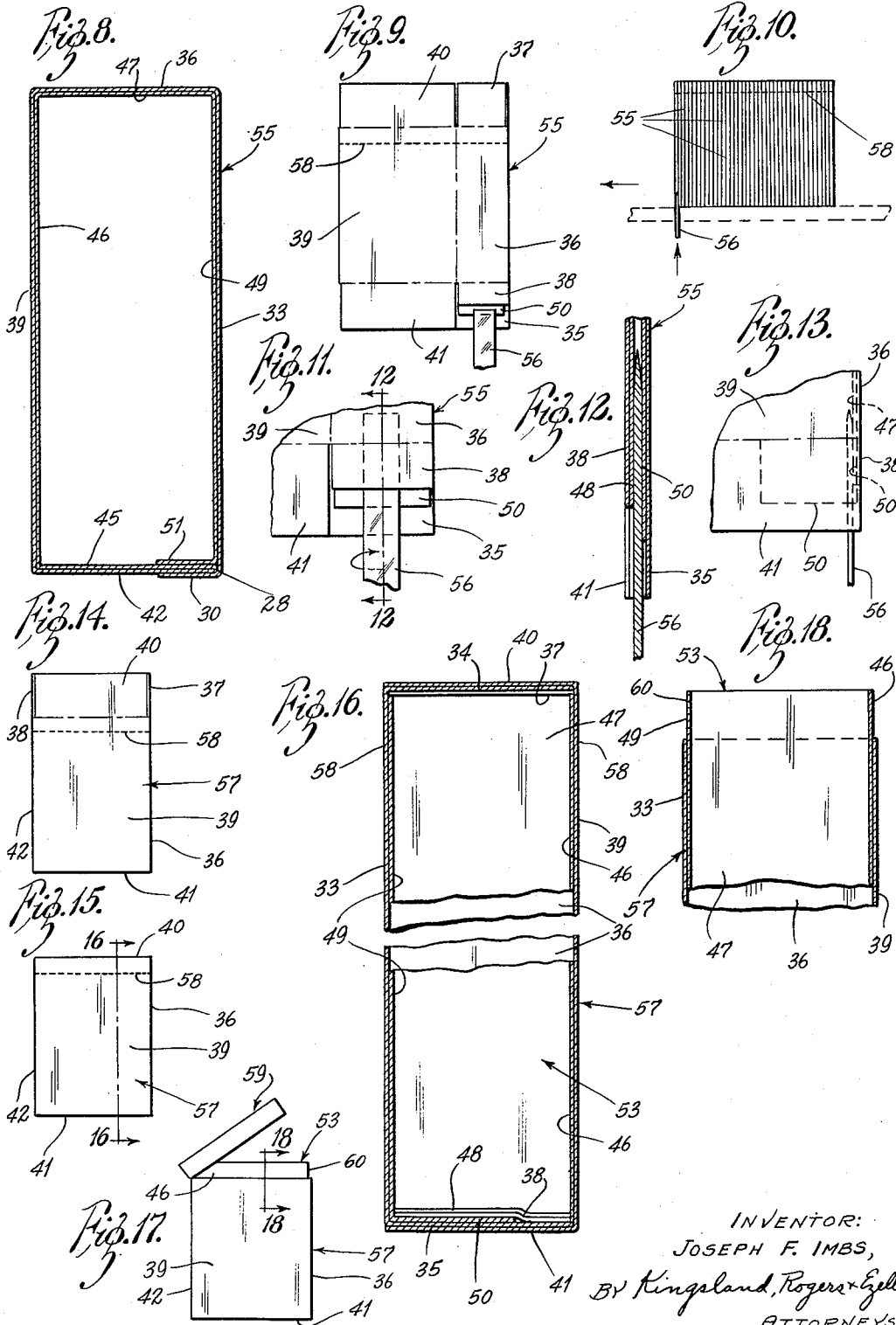
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LINED CARTON

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5 Claims. (Cl. 229—37)

The present invention relates to containers, and more particularly to a novel lined carton of cardboard or the like.

Briefly, the novel lined carton here disclosed comprises an exterior shell of conventional rectangular shape having a rectangular sleeve or liner disposed interiorly thereof so as to provide a double vertical wall construction. Both the exterior shell and the liner of the carton are die-cut from a single sheet of material and remain integrally related throughout the life of the carton. The four vertical exterior walls are scored along their intersection with a horizontal plane at a level somewhat below the top of the carton so as to permit these walls to be easily cut or broken therealong, thereby to provide a replaceable lid for the carton after it has once been opened. The lid thus formed is adapted to cooperate with the upper end of the liner to effect efficient closure of the carton.

In conventional use of cartons, the shells are delivered flat. The user, in the filling operation, supplies a mass of such flat shells, on edge, to a machine. These cartons successively reach a point wherein they are opened, then are sealed at the bottom, then are filled, and finally are sealed at the top. The opening of the flat shells is accomplished by a "knife" or blade that is slipped upwardly between the panels of the shell and twisted, so that the shell changes from flat to open condition. The opened shell is then passed onto a block that enters its upper end. The bottom closure flaps are closed and glued while the shell is on the block.

One feature of this invention comprises an arrangement wherein certain portions of the inner liner are lengthened and at least one end closing flap of the exterior shell is shortened so as to provide for the deft entrance of the knife into a folded carton for the purpose of expanding the carton to an open position for "blocking" preparatory to closing and securing the bottom flaps.

It is an object of the present invention to provide a novel lined carton of the kind described in which an upper portion may be converted into a replaceable lid adapted to cooperate with a liner in effecting an efficient closure.

Another object of the present invention is to provide a novel lined carton constructed from a single sheet of material, the inner liner and the outer shell being integral.

Another object of the invention is to provide a novel arrangement wherein a folded lined carton is particularly adapted to receive an automatically inserted knife for the purpose of expanding the carton.

Another object of the invention is to provide a novel lined carton in which a liner is attached to an outer shell, thereby to obviate a condition in which the liner may be inadvertently displaced relative to the outer sleeve.

Additional objects of the invention are to provide a novel lined carton which is particularly adapted to mass production by automatic methods, which is inherently strong and durable, and which is well suited for its intended use.

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These and other objects and advantages will be apparent from the following description taken with the accompanying drawings, in which:

Fig. 1 is a plan view of a one-piece blank suitable for forming a lined carton in accordance with the teachings of the present invention;

Fig. 2 is a plan view showing the blank folded so as to dispose a liner portion on top of a shell portion;

Fig. 3 is a plan view showing the blank with part of the liner portion folded back preparatory to completely forming a liner, an adhesive substance being shown applied to a side closing flap;

Fig. 4 is a plan view showing the blank with the liner completely formed;

Fig. 5 is an enlarged fragmentary sectional view through the blank taken generally along the line 5—5 of Fig. 4, showing a transverse section through the completely formed liner;

Fig. 6 is a plan view showing the blank with part of the shell portion folded over the completely formed liner preparatory to completely closing the shell portion over the liner;

Fig. 7 is a plan view showing the blank with the shell portion completely closed and secured over the liner to form an open-ended lined shell;

Fig. 8 is an enlarged sectional view through a partially folded blank taken generally along the line 8—8 of Fig. 7, showing a transverse section through the open-ended lined shell;

Fig. 9 is a front elevation of the open-ended lined shell in collapsed position, a knife being shown fragmentarily preparatory to insertion into the lined shell;

Fig. 10 is a side elevation viewed from the right of Fig. 9 showing a plurality of open-ended lined shells in collapsed condition, the knife being shown fragmentarily preparatory to insertion into one of the lined shells;

Fig. 11 is an enlarged fragmentary view showing the lower right-hand corner of the open-ended shell of Fig. 9 with the knife shown inserted into the open-ended shell preparatory to expanding the shell;

Fig. 12 is a further enlarged cross-sectional view taken generally along the line 12—12 of Fig. 11 showing the knife inserted into the open-ended shell preparatory to expansion of the shell;

Fig. 13 is a fragmentary view similar to Fig. 11 but with the knife rotated through 90° and the open-ended shell in expanded condition;

Fig. 14 is a front elevation of a lined carton having its lower end closing flaps closed and its top end flaps open;

Fig. 15 is a view similar to Fig. 14, but with the upper end closing flaps closed;

Fig. 16 is an enlarged sectional elevation taken generally along the line 16—16 of Fig. 15, showing a vertical section through a closed carton, a portion thereof being removed to conserve space on the drawing;

Fig. 17 is a view similar to Fig. 15, but with a portion of an outer shell separated from the remainder thereof to provide a replaceable lid for the carton;

Fig. 18 is a fragmentary view similar to Fig. 16, but taken generally along the line 18—18 of Fig. 17, showing a vertical section through the upper end of the carton with the lid in raised position.

Referring to the drawings more specifically by reference numerals, Fig. 1 shows a one-piece blank 25 suitable for forming a lined carton in accordance with the teachings of the present invention. The blank 25 is die-cut from a single sheet of cardboard or like material, and comprises a shell portion 26 and a liner portion 27 joined along a common boundary 28.

As clearly shown in Fig. 1, the shell portion 26 includes a side closing strip 30, a back panel 33 having

upper and lower end closing flaps 34 and 35, a right side panel 36 having upper and lower end closing flaps 37 and 38, a front panel 39 having upper and lower end closing flaps 40 and 41, and a left side panel 42 having upper and lower end closing flaps 43 and 44. The liner portion 27 includes a left side panel 45, a front panel 46, a right side panel 47 having a lower end tab 48, a back panel 49 having a lower end tab 50 and a side closing strip 51. It will be noted that each solid line of Fig. 1 represents a die-cut edge of the blank 25 and that each broken line of Fig. 1 represents an uncut hinge boundary of a section of the blank as above numeralized. It will be noted further that the blank 25 is adapted to be folded along each of the uncut boundaries thus represented and is, therefore, die-creased along each uncut boundary.

Figs. 2 through 8 of the drawings depict the manner in which the blank 25 may be successively folded so as to form an open-ended lined shell. As indicated in these figures, the liner portion 27 is first folded over the shell portion 26 along the boundary 28. The liner portion 27 is then folded along the vertical boundaries of the right side panel 47 so as to dispose the front and back panels 46 and 49 in parallel with each other and at a right angle to the panel 47. An adhesive substance such as mucilage or the like is applied to the side closing strip 51 as clearly shown at 52 in Fig. 3, whereupon this strip 51 is folded downwardly to form a right angle with the back panel 49 and the front panel 46 is folded upwardly to form a right angle with the left side panel 45 which remains flush against the left side panel 42 of the shell portion 26. As shown in Fig. 5, the side closing strip 51 is thus caused to adhere to a portion of the left side panel 45, thereby forming a rectangular sleeve or liner 53.

After the liner is formed and secured as above described, the shell portion 26 may be folded up and over so as to dispose the front panel 39 and the right side panel 36 thereof flush against the front panel 46 and the right side panel 47 of the liner portion 27, and an adhesive substance may be applied to the underneath side of the side closing strip 30 as indicated at 54 in Fig. 6. The back panel 33 may then be folded downwardly over the liner 53 and the side closing strip 30 may be folded over and cause to adhere to a portion of the left side panel 42 of the shell portion 26, as best shown in Fig. 8. There is thus formed an open-ended lined shell 55 as shown in Figs. 7 and 8.

The open-ended lined shell 55 may obviously be collapsed from its normally rectangular configuration as shown in Fig. 8 for convenience in stacking and storing. When it is subsequently desired to "block" the shell 55 preparatory to closing one end thereof, it has been found convenient to employ a "knife" which is automatically inserted into the collapsed shell 55 and then rotated about its longitudinal axis to expand the shell 55 to its normal rectangular configuration.

While such use of a knife for expanding an unlined shell presents no particular problem, it is obvious that a lined shell entails the possibility of the knife's being inadvertently inserted between the exterior shell and the liner. The present invention, therefore, contemplates a provision to obviate the likelihood of such inappropriate insertion of the knife. Thus, it will be noted that the lower end closing flap 38 is shorter than what may obviously be considered a normal length as demonstrated by all of the other end closing flaps of the shell portion 26. Also, the lower end tabs 43 and 50 constitute extensions from the liner portion 27 which are obviously not requisite to the lining function thereof. The tabs 43 and 50 are of different respective lengths, the former being equal in length to the end closing flap 38 and the latter having a length substantially in excess of that of the flap 38, but preferably somewhat shorter than the aforementioned other flaps of the shell portion 26 for a purpose to appear. It is apparent then that, when the shell 55 is completely formed as above described, the flap 38 and the tab 48 will

lie flush with each other, as will also the flap 35 and the tab 50, and, further, that, when the shell 55 is in collapsed position, the two first-mentioned elements will be caused to overlie the two last-mentioned elements, as clearly shown in Figs. 9 and 11.

A movable knife 56 is shown in Figs. 9 and 10, disposed in its lower limit position wherein it overlies portions of both the flap 35 and the tab 50 bearing thereagainst with slight pressure as a stack of collapsed shells 55 are advanced, as best shown in Fig. 10. As the knife 56 is moved upwardly from its lower limit position, the aforementioned slight pressure is sufficient to separate the tab 50 from the tab 48 so as to permit the knife 56 to enter therebetween, as shown in Figs. 11 and 12. Subsequent rotation of the knife 56 about its longitudinal axis then effects the desired expansion of the open-ended shell 55 to its normal rectangular configurations as shown in Fig. 13. A movable block (not shown) may then be inserted into the expanded shell 55 from above, and the shell removed upwardly from the knife 56, the latter then being reversely rotated and lowered to its lower limit position. It will be noted that the aforementioned movable block (not shown) may be automatically inserted as described without the likelihood of displacing the liner 53 relative to the shell portion 26, such an occurrence being obviated by direct attachment of the liner portion 27 to the shell portion 26 along the boundary 28.

After removal of the open-ended shell 55 from the knife 56, the several lower end closing flaps of the shell 55 may be closed and secured in a well known manner to effect an open lined carton 57, as shown in Fig. 14. It will be noted, as clearly indicated in Fig. 16, that the tab 50 extending from the lower edge of the back panel 49 of the liner section 27, being shorter in length than the end closing flap 35, permits the free end of the latter to lie flush with the end closing flap 38 for adherence thereto. Thus a secure end closure is effected despite the incorporation of the aforementioned means to facilitate the insertion of a knife into the collapsed shell. Obviously, the several upper end closing flaps may subsequently be closed and secured in a conventional manner to effect a closed lined carton 57, as shown in Figs. 15 and 16.

Although unmentioned hereinbefore, the shell portion 26 of the original blank 25 is scored horizontally completely across the ultimate exterior face thereof including also the side closing strip 30. Portions of this scoring are shown as dash lines 58 in Figs. 6, 7, 9, 10, 14 and 15. It is obvious that the scoring 58 disposed as clearly indicated in these figures defines a horizontal plane which intersects the shell portion 26 of the carton 57 at a level somewhat below the closed upper end thereof, and it is further obvious that separation of the shell portion 26 along the scoring 58 as shown in Fig. 17 may easily be effected, thus not only to open the carton 57, but at the same time to provide a replaceable lid 59 by which it may be reclosed. Obviously, the lid 59 may be either completely detached from the remainder of the carton or left hinged thereto, the latter condition being effected by separating the shell portion 26 across only three sides thereof. As is clear from Figs. 17 and 18, the separation of the lid 59 from the remainder of the shell portion 26 permits a portion of the liner 53 to extend thereabove, thus providing a lip 60 with which the lid 59 may cooperate to reclose the carton 57.

Manifestly, there has been described a novel lined carton which fulfills the objects and secures the advantages sought therefor. It is to be understood that the foregoing description and the accompanying drawings have been given only by way of illustration and example. It is further to be understood that changes in form of elements, the rearrangement of parts, the substitution of equivalents, which will be obvious to those skilled in the art, are all contemplated as being within the scope of the invention, which is limited only by the claims which follow.

What is claimed is:

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1. In a one-piece die-cut blank adapted to form a lined carton, a paneled shell portion, a paneled liner portion, said shell portion including four upper and four lower end closing flaps, one of said flaps being of short length, the remaining of said flaps being of equal long length, said liner portion including a pair of tabs having unequal length intermediate said short length and said long length, said tabs being thereby adapted to cooperate with said one of said flaps for facilitating appropriate insertion of a knife between adjacent panels of said paneled liner portion during formation of said blank into a lined carton.

2. In a collapsible lined shell comprising an inner sleeve and an outer shell, the combination which includes a plurality of end closing flaps on said outer shell, one of said end closing flaps being of short length, the remaining of said end closing flaps being of long length, and a pair of tabs on said inner liner, one of said tabs having a length at least as great as that of said end closing flap of short length, the other of said tabs having a length greater than that of said one of said tabs, said one end closing flap being disposed flush against said one tab.

3. In a collapsible lined shell comprising an inner sleeve and an outer shell, the combination which includes a plurality of end closing flaps on said outer shell whereby to form a closed carton therefrom, one of said end closing flaps being of short length, the remaining of said end closing flaps being of long length, and a pair of tabs on said inner liner, one of said tabs having a length at least as great as that of said end closing flap of short length, the other of said tabs having a length greater than that of said one of said tabs, but less than the long length of said end closing flaps, said one tab being interposed flush between said one end closing flap and said other tab when the collapsible lined shell is in collapsed condition.

4. A collapsed carton comprising an open-ended lined

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shell in collapsed condition, said open-ended lined shell including an overlapped inner sleeve within an overlapped outer shell, said inner sleeve comprising two side panels, two end panels, and two tabs, said tabs being located adjacent each other at the lower ends of respective adjacent side and end panels and being of unequal length, said outer shell comprising two side panels, two end panels, and at least three flaps, said flaps being located at the lower ends of respective side and end panels, at least one of said flaps having a short length not exceeding the length of the shorter of said tabs, said short length flap and said shorter tab being disposed flush against each other.

5. The carton of claim 4 wherein the longer of said tabs is disposed flush against one of said flaps other than the one of short length, said other flap being longer than said longer tab.

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