

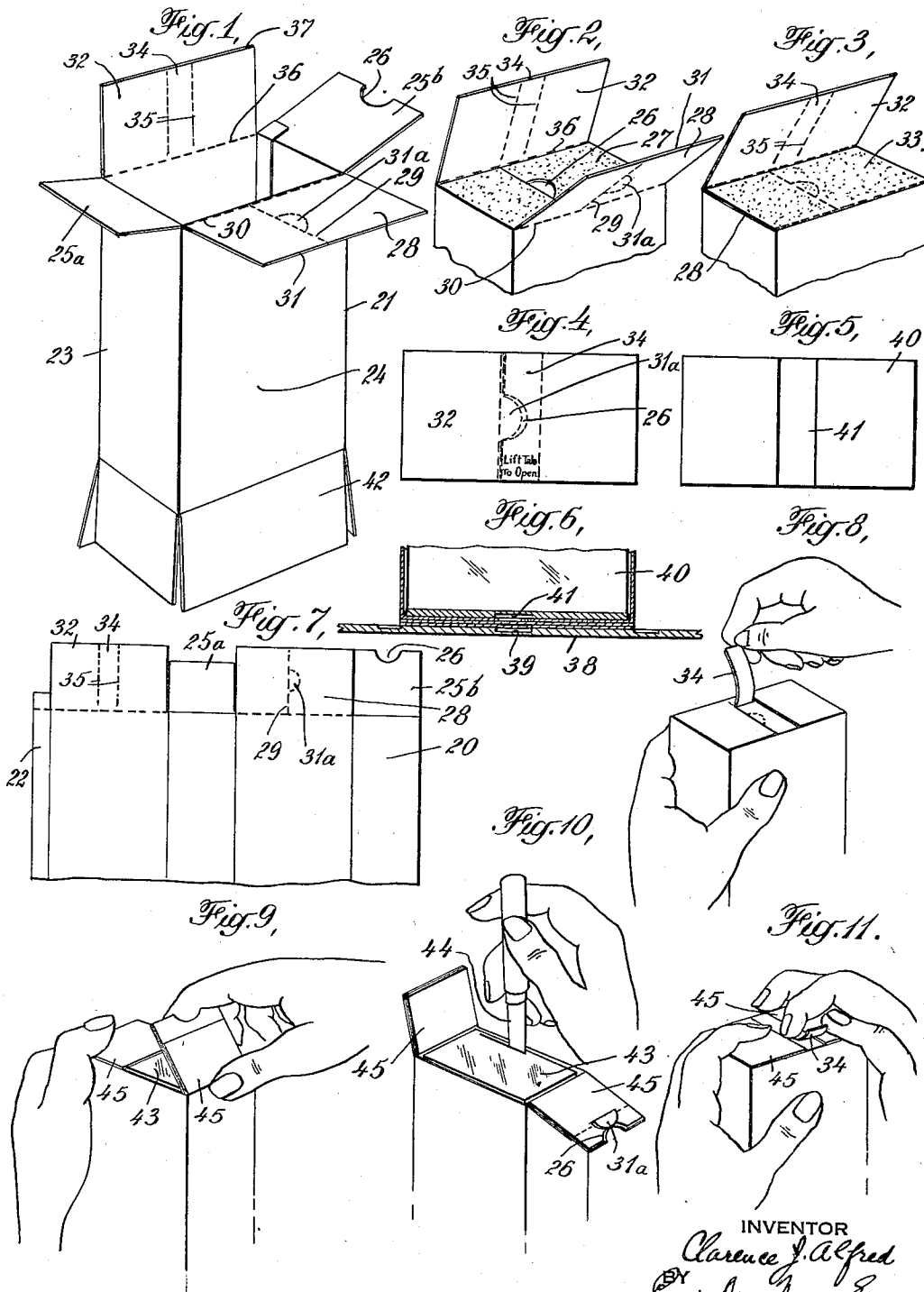
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CARTON

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CARTON

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This invention relates to cartons for use in the distribution of sugar, salt, and similar commodities, and is concerned more particularly with a novel carton so constructed that it may be readily opened for discharge of the contents thereof. The new carton is especially suitable for the distribution of materials which are particularly hygroscopic or which are not free-flowing, such as confectioners', brown, and similar sugars, and an embodiment of the invention for that purpose will, accordingly, be described in detail for purposes of explanation, although it is to be understood that the utility of the invention is not limited to its use in connection with any particular commodity.

The cartons now commonly employed for such finely pulverulent materials as confectioners' sugar and for brown sugar are not sufficiently tight in themselves to protect the contents against outside atmospheric conditions. It has, accordingly, been the practice to place in such cartons a lining or inner container of a suitable material, such as waxed paper, which is filled with the sugar and then closed tight in any suitable manner, as by sealing. When the contents are to be removed from an ordinary container of this type, the top of the container must be cut or torn loose to expose the lining which is then punctured or cut away to provide an opening through which the contents may be poured out. Such containers are not wholly satisfactory because the operation of cutting off or removing the top may be somewhat difficult, and if only a portion of the contents of the carton is to be discharged, the carton, with portions removed, does not provide protection for the remainder of the contents.

The present invention is, accordingly, directed to the provision of a simple inexpensive carton for finely divided materials which is so constructed that the top may be readily opened to expose the lining which may then be punctured to permit discharge of all or a portion of the contents. Thereafter, the portions of the top which have been displaced may be restored to substantially their original positions to close the carton and provide protection for the part of the contents left behind. The operations of opening of the top may be easily done by the fingers, and after the desired portion of the contents of the carton is removed and the parts of the top replaced, the carton has a neat appearance. While the carton may be easily opened for the purpose mentioned, at the same time, it is sufficiently strong and durable to withstand ordinary handling without damage to the contents, and the provision of

means by which the carton may be opened does not add substantially to its cost.

The new carton is made of a blank of paper board or similar material, and it will ordinarily be of rectangular section. Its ends are closed by the usual closing flaps, and at the top, the carton has a pair of inner flaps folded inward over the end of the carton and lying with their end edges close together. An opening is provided in the inner flaps to serve as a finger hold, and for this purpose, the edge of one of the inner flaps may have a portion cut away, as, for example, of semi-circular shape. An intermediate flap extending from another face of the carton is folded inwardly over the inner flaps and secured thereto by adhesive, and this intermediate flap has a transverse weakened line which lies substantially in registry with the space between the end edges of the inner flaps. At one side of this weakened line, the intermediate flap has a movable tab, preferably of semi-circular form, defined by perforations, and the tab lies directly over the opening through the inner flaps. An outer flap extends from another wall of the carton and is folded inward over the intermediate flap and secured thereto by adhesive, and this outer flap is provided with a movable transverse section defined by spaced weakened lines. One of the lines defining the section is preferably in substantial registry with the weakened line in the intermediate flap, and the section overlies the tab in the intermediate flap, so that by lifting the section, the tab in the intermediate flap may be exposed. Both the intermediate and outer flaps are weakened, as by perforations, along the lines on which they are folded inwardly at the end of the carton, and all the weakened lines in the flaps are such that the flaps may be readily torn along those lines.

When the contents of the new carton are to be removed, the transverse section in the outer flap is first raised by tearing the flap along the spaced weakened lines at either side of the section. This exposes the tab in the intermediate section, and that tab may be lifted free by the finger nail or pushed inward. The end of the finger may then be placed in the finger hold opening in the inner flaps, and one of these flaps, a portion of the intermediate flap, and a portion of the outer flap, may then be raised as a unit, the intermediate and outer flaps being torn along their lines of folding in this operation. The other inner flap and the remaining portions of the intermediate and outer flaps may then be similarly raised together, whereupon the entire upper end of the

inner container or liner is exposed. The liner is then punctured, or a part cut away, and the contents of the carton may be discharged. When the carton is to be closed, the inner flaps with the portions of the intermediate and outer flaps connected thereto are folded back to their original positions, and the movable section of the outer flap is also folded back flush with the top of the carton. The end of the carton is thus closed neatly and the flaps with the liner provide the desired protection for the contents.

In order to facilitate the opening of the new carton by the operations above described, provision is made to insure that the movable section of the outer flap may be torn free without the use of an implement, and for this purpose, the section is less firmly secured by adhesive to the intermediate flap than the remaining portions of the outer flap. This is accomplished by reducing the pressure applied to the section and the portion of the intermediate flap immediately beneath it in the closing of the carton, and as a result of the use of lessened pressure, the section is only lightly secured to the intermediate flap, and the end of the section may be readily engaged and lifted by the finger nail.

For a better understanding of the invention, reference may be had to the accompanying drawing, in which Figure 1 is a perspective view of the new carton prior to its being filled;

Figures 2 and 3 are perspective views showing the steps in the operation of closing the end of the carton which is later to be opened;

Figure 4 is a plan view of that end of the carton;

Figure 5 is a plan view of a pressure plate used in closing that end of the carton;

Figure 6 is a sectional view illustrating the manner in which the flaps are secured together;

Figure 7 is a view of the carton blank in flattened condition;

Figures 8, 9, and 10 are perspective views illustrating the operations of opening the end of the carton; and

Figure 11 is a perspective view illustrating the operation of closing the end of the carton after removal of a portion only of the contents.

Referring now to the drawing, the carton is illustrated as formed of a blank 20 of appropriate size and made of any suitable material, such as paper board. This blank is folded to rectangular shape to produce the carton body 21, and the blank is secured in that condition by adhesive applied between the outer surface of the longitudinal tab 22 and the inner face of one of the carton walls. The carton, as shown in Figure 1, is of rectangular section with a pair of narrow end walls 23 and a pair of broader walls 24. From the end of the narrow walls 23 extend inner flaps 25a and 25b which, when folded in over the end of the carton, as shown in Figure 2, lie with their end edges close together and preferably substantially in contact. An opening 26 is provided through the inner flaps to serve as a finger hold, and preferably, this opening is formed by cutting away a portion of one of the inner flaps at its end edge. In the operation of closing the end of the carton, the inner flaps are folded inward, and a film of adhesive 27 is applied over the outer surfaces thereof. An intermediate flap 28 extending from one of the broad faces of the carton is then folded in over the inner flaps to be secured in place by the adhesive, this intermediate flap being of a size substantially the same as the internal cross-section of the carton.

The intermediate flap 28 is subdivided into two portions by a weakened line 29 which extends across the flap from its line of union 30 with the wall 24 to its free edge 31, the line 29 lying in registry with the space between the end edges of the inner flap, or with their line of contact, as the case may be. The line 29 is weakened in any suitable way, as by perforating the flap, and the perforations are preferably of considerable length compared to the connecting portions between them, so that the flap may be readily ruptured along the line. The intermediate flap is also provided with a movable tab 31a which lies above the opening 26 through the inner flaps. Preferably, this tab is of the same semi-circular form as the opening, and, if desired, may be on a slightly smaller radius. The curved boundary of the tab is weakened, as by perforations, so that the tab may be readily pushed in through the opening or lifted free.

An outer flap 32 of the same size as the intermediate flap extends from the other wall 24 of the carton and is secured in contact with the intermediate flap 28 by a film of adhesive 33. The outer flap is provided with a movable section 34 defined by spaced lines 35 weakened, as by perforations, these lines extending across the flap from its line of union 36 with the wall 24 to its free edge 37. The movable section overlies the tab 31a and the opening 26, and the section is substantially broader than the radius of the opening and tab, so that when the section is torn free from the outer flap by rupture of the flap along the lines 35, the tab 31a will be fully exposed and may be removed or pushed in so as to provide access to the opening 26. Preferably, one of the lines 35 lies in substantial registry with the line 29 in the intermediate flap.

In assembling the carton, the inner, intermediate, and outer flaps are folded inward in the order named, the films of adhesive 27 and 33 being applied at the proper times. The flaps are then subjected to pressure to cause the adhesive to secure them firmly in position, and for this purpose, the carton is inverted and placed on a pressure plate 38 having channels 39, one of which extends transversely of the carton and lies beneath the movable section 34. A forming block 40 is then placed within the carton, this block having a pressure plate at its lower end which is formed with a transverse channel 41 similar to the channel 39 in the lower plate. When pressure is applied to the flaps by the block, the amount of pressure to which the movable section and those portions of the flaps directly above it, in the inverted position of the carton, are subjected is less than the pressure applied to the other portions of the flaps. As a consequence, the section becomes slightly offset outwardly from the portions of the outer flap on either side of it, and is only lightly secured by the adhesive to the intermediate flap. This weak adherence of the section to the intermediate flap makes removal of the section a simple operation by the finger nail.

After the upper end of the carton is closed in the manner described, the liner or inner container is placed in position and filled, and the other end of the carton is then closed by means of flaps 42 generally similar to the inner, intermediate, and outer flaps previously described, but without perforations or openings therein.

The operations of opening the carton are illustrated in Figures 8, 9, and 10, and the first stage is that of raising the section 34. For this pur-

pose, the finger nail is inserted under the free edge of the section and the latter is then torn free from the outer flap and raised, as illustrated in Figure 8. This operation exposes the tab 31a which can either be pushed inward or lifted clear of the intermediate flap. With the removal of the section 34, the flap structure consists of two units, each of which comprises a portion of the outer flap at one side of the movable section, a portion of the intermediate flap at one side of the weakened line 29, and one of the inner flaps. The elements in each of these units are secured together by adhesive, and the units may be raised from position to open the end of the carton by the operations indicated in Figure 9. As the units are thus bent back, the intermediate and outer flaps are torn along their lines of union 30, 36 with the carton walls from which they extend, and the operations are facilitated by reason of the lines of union being perforated. When the two units have been swung free of the carton, the liner 43 is exposed, and it may be punctured or cut away, as by means of a knife 44, and the contents of the carton poured out. If it is desired to close the carton after a portion only of the contents have been removed, the flap units 45 are swung back to their original positions, and the movable section 34 is returned to lie between them. The contents of the carton are then fully protected, and the carton may be easily reopened whenever desired.

What I claim is:

1. In a carton, the combination of a pair of inner flaps extending from opposite walls of the carton and folded inwardly, said flaps lying with their end edges almost in contact with one another, an intermediate flap extending inwardly from another wall of the carton over said inner flaps, said intermediate flap being sub-divided into two portions by a weakened line extending entirely across said flap and lying in substantial registry with the space between the end edges of said inner flaps, an outer flap extending from another wall of the carton and folded inwardly over said intermediate flap, said outer flap being provided with a movable section extending from the free edge of the flap to the line of junction with the latter to its carton wall and overlying the weakened line in said intermediate flap, said intermediate and outer flaps being weakened along their lines of junction with the walls of the carton from which they extend, and films of adhesive between the intermediate flap and the inner flaps and between the outer flap and the intermediate flap.

2. In a carton, the combination of a pair of inner flaps extending from opposite walls of the carton and folded inwardly, said flaps lying with their end edges substantially in contact with one another, an intermediate flap extending inwardly from another wall of the carton over said inner flaps, said intermediate flap being sub-divided into two portions by a weakened line extending across the flap from its free edge to its line of junction with the carton wall, said line lying in substantial registry with the space between the end edges of said inner flaps, an outer flap extending from another wall of the carton and folded inwardly over said intermediate flap, said outer flap being provided with a movable section defined by weakened lines and extending from the free edge of the flap to its line of junction with the carton wall, said section overlying said weakened line in the intermediate flap, said outer and intermediate flaps being weakened along

their lines of junction with the walls of the carton from which they extend, and films of adhesive between the intermediate flap and the inner flaps and between the outer flap and the intermediate flap.

3. In a carton, the combination of a pair of inner flaps extending from opposite walls of the carton and folded inwardly at one end thereof with their end edges lying close together, an opening being formed by removal of material from at least one of said flaps, an intermediate flap extending inwardly from another wall of said carton to overlie said inner flaps, said intermediate flap being sub-divided into two portions by a weakened line extending across the flap from its free edge to its line of junction with the carton wall and overlying said opening, said intermediate flap being provided with a movable tab overlying the opening in said inner flaps, and an outer flap extending from another wall of the carton and folded inwardly over said intermediate flap, said outer flap being provided with a movable section extending from its free edge to its line of junction with the carton wall and overlying the opening in said intermediate flap, said intermediate and outer flaps being weakened along their lines of junction with the walls of the carton from which they extend.

4. In a carton, the combination of a pair of inner flaps extending from opposite walls of the carton inwardly at one end of the carton and lying with their end edges close together, at least one of said flaps having a portion of its end edge cut away to provide an opening, an intermediate flap extending inwardly from another wall of said carton to overlie said inner flaps, said intermediate flap being sub-divided into two portions by a weakened line extending across the flap from its free edge to its line of junction with the carton wall and being provided with a movable tab in at least one of said portions, said tab being defined by a weakened boundary and overlying the opening through said inner flaps, an outer flap extending from another wall of the carton and folded inwardly over said intermediate flap, said outer flap being provided with a movable section extending across the flap from its free edge to its line of junction with the carton wall and overlying the movable tab of said intermediate flap, said outer and intermediate flaps being weakened along their lines of junction with the walls of the carton from which they extend, and films of adhesive between the intermediate flap and the inner flaps, and between the outer flap and the intermediate flap.

5. In a carton, the combination of a pair of inner flaps extending from opposite walls of the carton inwardly at one end of the carton and lying with their end edges close together, at least one of said flaps having a portion of its end edge cut away to provide an opening, an intermediate flap extending inwardly from another wall of said carton to overlie said inner flaps, said intermediate flap being subdivided into two portions by a weakened line extending across the flap from its free edge to its line of junction with the carton wall and overlying the space between the end edges of said inner flaps, said intermediate flap having a movable tab defined in part by said line and in part by another weakened line, said tab overlying the opening through said inner flaps, and an outer flap extending from another wall of the carton and folded inwardly over said intermediate flap, said outer flap having a movable section extending across the flap from its

free edge to its line of junction with the carton wall and overlying the tab in said intermediate flap, said section being defined by spaced weakened lines one of which lies substantially in registry with the transverse weakened line in said intermediate flap, said intermediate and outer flaps being weakened along their lines of junction with the walls of the carton from which they extend.

6. In a carton, the combination of a pair of inner flaps extending from opposite walls of the carton and folded inwardly at one end thereof with their end edges lying close to one another, one of said flaps having a portion cut away at its end edge to provide an opening, an intermediate flap extending from another wall of said carton inwardly to overlie said inner flaps, said intermediate flap being subdivided into two portions by a transverse weakened line extending across the flap from its free edge to its line of junction with the carton wall and being provided with a movable tab defined by a weakened boundary a part of which is provided by said transverse weakened line, said tab overlying the opening through said inner flaps, and an outer flap extending from another wall of the carton and folded inwardly over said intermediate flap, said outer flap having a movable section extending across the flap from its free edge to its line of junction with the carton wall and overlying the tab in said intermediate flap, said movable section being defined by spaced weakened lines one of which lies in substantial registry with the transverse weakened line in said intermediate flap, said intermediate and outer flaps being weakened along their lines of junction with the walls of the carton from which they extend.

7. In a carton, the combination of a pair of similar inner flaps extending from opposite walls of the carton inwardly at one end thereof, the end edges of said flaps lying close together at the middle of the end of the carton, an intermediate flap extending inwardly from another wall of the carton and overlying the inner flaps, said intermediate flap being subdivided into two

portions by a transverse weakened line extending across the flap from its free edge to its line of junction with the carton wall and lying in registry with the space between the end edges of the inner flaps, an outer flap extending inwardly from another wall of the carton and overlying the intermediate flap, the outer flap having a movable section defined by parallel weakened lines extending across said flap from its free edge to the line of junction of said flap with the carton wall, said section being removable to expose the transverse weakened line in the intermediate flap and said outer flap being of a shape and size to close the entire end of the carton, and films of adhesive securing the contacting flaps together.

8. In a carton, the combination of a pair of similar inner flaps extending from opposite walls of the carton inwardly at one end thereof, the end edges of said flaps lying close together at the middle of the end of the carton, an intermediate flap extending inwardly from another wall of the carton and overlying the inner flaps, said intermediate flap being subdivided into two portions by a transverse weakened line extending across the flap from its free edge to its line of junction with the carton wall and lying in registry with the space between the end edges of the inner flaps, said intermediate flap having a movable tab in one of its portions at the weakened line separating the portions and near the middle of the end of the carton, an outer flap extending inwardly from another wall of the carton and overlying the intermediate flap, the outer flap having a section defined by parallel weakened lines extending across said flap from its free edge to the line of junction of the outer flap to the carton wall, said section being removable to expose the transverse weakened line and the entire tab in the intermediate flap and said outer flap being of a shape and size to close the entire end of the carton, and films of adhesive securing the contacting flaps together.

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