Dec. 31, 1963 A. GREENE ETAL 3,116,008

SELF-SEALING CONTAINER

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FIG. 1

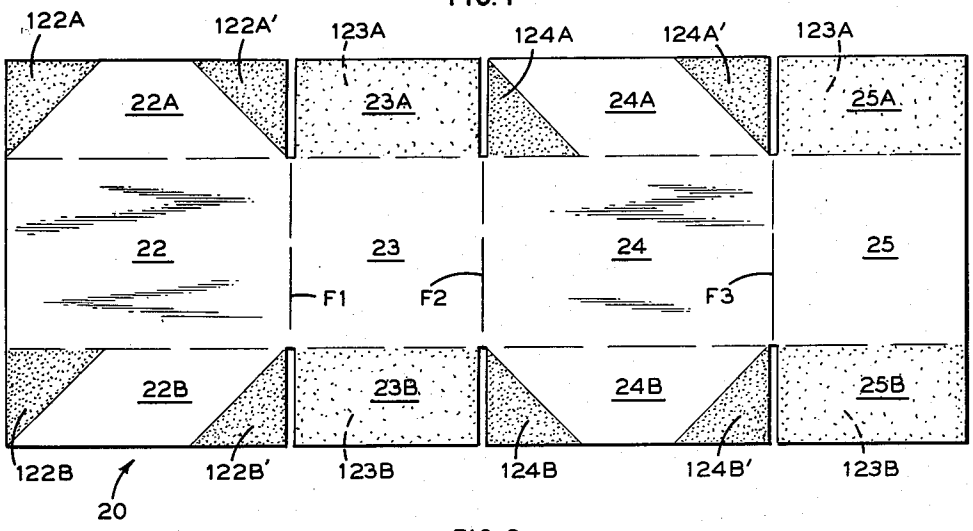
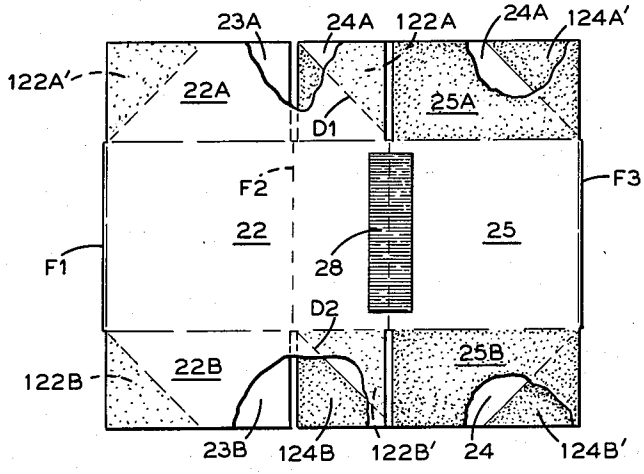


FIG. 2



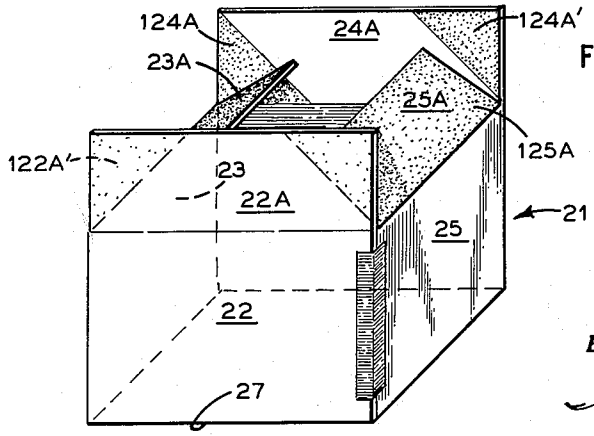


FIG. 3

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FIG. 4

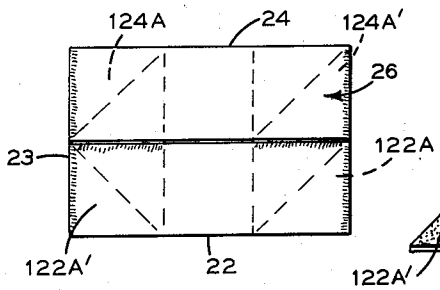


FIG. 3A

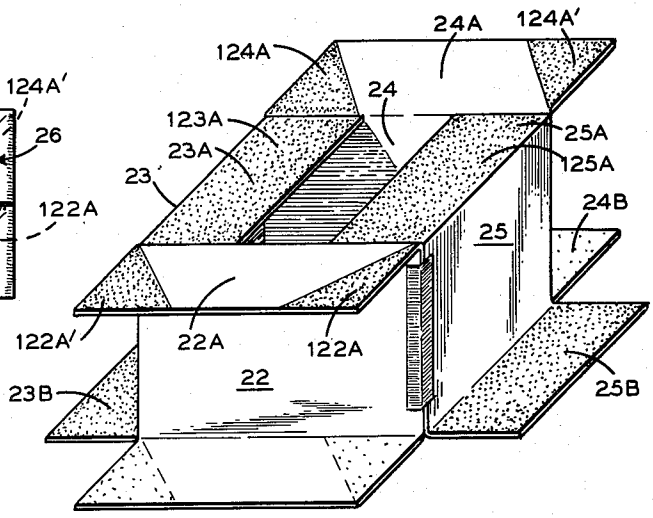
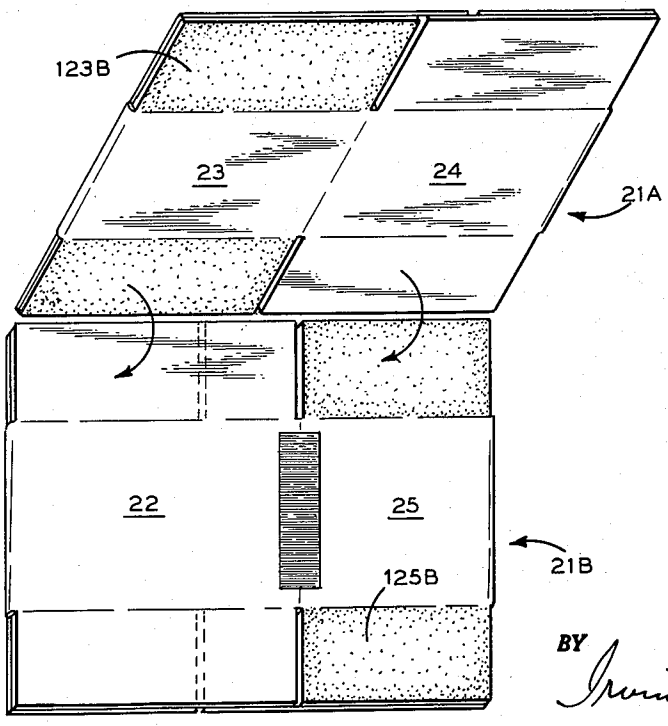


FIG. 5



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3,116,008
SELF-SEALING CONTAINER

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5 Claims. (Cl. 229—48)

This invention relates in general to a self-sealing container, and more specifically to a quadrilateral collapsible type, self-sealing container which is constructed and arranged so as to prevent portions of the same container or a stack of similary constructed collapsible containers from sticking together.

Considerable efforts have been expended in the past in an attempt to make a container, preferably of corrugated or solid fiber type carboard, paperboard or the like, which can be secured or rendered self-sealing with a pressure sensitive adhesive, and which when in the collapsed state will not adhere to itself or to other similarly constructed containers when stacked. Heretofore, most efforts have been directed to modifying or altering the general shape of the known container blanks to solve the dilemma in the art. However, this type of solution detracted from the use of the standard blank construction which is the most economical to manufacture and use, and for these reasons the most widely favored by the various users thereof. Such containers are generally referred to in the art as a "regular slotted container."

The "regular slotted container" is generally formed from a single blank of sheet material die cut and scored so as to define opposed side and end panels which when folded define a closed quadrilateral figure that may be either square or rectangular in cross section. Foldably connected to the upper and lower edges of the respective side and end panels is a flap. The respective flaps may be constructed so that when folded one or both pairs of opposed flaps may have their free ends disposed in substantially abutting relationship. Thus, the respective flaps generally do not exceed more than one half the length of the side or end panel disposed adjacent the wall to which the respective flap is hinged.

Such containers are generally shipped to the user in their collapsed state with several similar constructed containers stacked one on the other. In rectangularly shaped containers, i.e. one in which the sides are longer than the ends thereof, the end portions of the opposed side panel flaps overlap in the collapsed position of the carton. For this reason self-sealing containers tended to stick together when collapsed, or when stacked on one another, as in the shipment of the same when in collapsed position. U.S. Patent No. 2,874,891 discloses an effort to overcome this sticking problem with self-sealing containers. However, the patented disclosure had had the disadvantage that substantial portions of the marginal edges of the respective flaps were not securely fastened. This was necessitated by the specific manner in which the flaps had to be coated in order to avoid the flaps from sticking in the collapsed state. For this reason the flaps could be easily or accidentally pried loose, and thereby adversely affected the use and strength of such containers. In accordance with this invention it has been discovered that the flaps can be more firmly secured if more of the distance along the outer marginal edge portions of the flaps can be secured or held fast to the underlying end flaps. Since the area of the coated and uncoated portions of the overlapped portions of the opposed side panel flaps, when in a collapsed position of a container, is fixed for a given size container the problem to be solved was how to increase the linear marginal portions of such overlapped flap areas which could be bonded so as to enhance the adesive holding quality of the flaps, while at the same time prohibiting the opposed coated portions of

the overlapped end portions of the flaps from interfering or sticking to one another.

Therefore, an object of this invention is to provide an improved regular "slotted" container in which its strength and versatility is enhanced by increasing the linear marginal portions of the overlapping flap areas that can be made fast to the underlying end panels in the erected position of the container.

Another object is to provide for maximum linear adhesion along the marginal edge portions of the respective flaps without increasing the total coated area of the overlapping flap portions, or causing portions of the container to stick to itself in either its collapsed or stacked condition.

Another object is to provide an improved self-sealing slotted container that is relatively simple in construction, positive in operation and relatively inexpensive to fabricate.

A feature of this invention resides in the provision wherein the overlapped end portions of the flaps when in the collapsed state have opposed coated and uncoated portions which are delineated by a diagonal line so that a maximum amount of outer linear marginal edge portions of the respective overlapping flap portions can be made fast.

Other features and advantages will become more readily apparent when considered in view of the drawings and description in which:

FIG. 1 is an expanded inside view of the blank from which a "slotted container" is formed.

FIG. 2 illustrates the container in its collapsed position.

FIG. 3 illustrates the container in its partially erected position.

FIG. 3A is another view of the erected container to better illustrate the coated portion of the flaps in accordance with this invention.

FIG. 4 is a top view of the container illustrating the flaps in the closed position.

FIG. 5 illustrates two similarly constructed collapsed containers arranged to show how they stack.

Referring to the drawings, there is shown in FIG. 1 the blank 20 from which a container 21 is formed in accordance with this invention. The blank 20 is die cast and scored to define front panel 22, a left end panel 23 hingedly connected thereto along fold line F_1, a back or rear panel 24 connected along fold line F_2 to the left end panel 25, and a right end panel 25 connected to the back wall 24 along fold line F_3. The upper and lower edge portion of the respective front, end and rear panels 22 to 25 respectively, have hingedly connected thereto a flap which in the erected position of the container is folded to define the top 26 and bottom 27 of the container. As shown, flaps 22A and 22B are connected to the opposed edges of front panel 22, flaps 23A, 23B are hingedly connected to the end panel 23, flaps 24A, 24B are connected to the back panel 24 and flaps 25A and 25B are connected to the other end panel 25. In the illustrated embodiment the width of each flap is made substantially the same. Generically, however, the width of the respective flaps do not exceed more than one half the length of the side or end panels adjacent the panel to which the flap is connected. For example, as shown in FIG. 4, the flaps 22A, 22B and 24A, 24B connected to the respective front and back panels 22 and 24 do not exceed more than half the width of the end walls 23, 25. Thus in the folded and erected position of the container 21 the flaps 22A, 24A and 22B, 24B defining the top 26 and bottom 27 have their free edges disposed in substantially abutting or contiguous relationship, as best seen in FIG. 4, and overlying the adjacent end flaps.

In the collapsed position the blank 20 is folded so that the front and right end panel 22, 25 respectively overlie the left end and back panels 23, 24 as do the respective flaps connected thereto. A strip of tape 28 or other suitable fastening means secures the free edge of the front panel 22 to the free edge of the right end panel 25 to define the closed quadrilateral figure of the container when it is erected as seen in FIG. 3.

Referring in particular to FIG. 2 it will be noted that diagonally disposed end portions of the flaps 22A, 22B and 24A, 24B overlap in the collapsed position. For this reason, the instant invention contemplates a unique disposition of a pressure sensitive adhesive coating to the overlying portions of the respective side flaps so as to enhance the strength of the container, as will be hereinafter described.

In order to render the container 21 of this invention self-sealing, each of the respective flaps 22A, 22B; 23A, 23B; 24A, 24B; and 25A, and 25B have portions thereof coated with a layer of pressure sensitive adhesive of any well-known brand. As shown in FIGS. 1, 3, 3A, the outside surfaces of the end flaps 23A, 23B; 25A, 25B are preferably coated over the entire area thereof with a coating of pressure sensitive adhesive 123A, 123B; 125A, 125B, while the opposed end portions of the front and rear panel flaps 22A, 22B; 24A, 24B are coated with a layer of pressure sensitive adhesive 122A, 122A'; 122B, 122B'; 124A, 124A'; 124B, 124B'. It will be understood that the adhesive applied to each of the side and end flaps is of the same type so that the respective panels will adhere to one another when the coated areas are placed in face to face contact. It is to be noted that the respective pressure sensitive coatings 122A, 122A'; 122B, 122B' and 124A, 124A'; 124B, 124B' applied to the end portions of the respective side panel flaps 22A, 22B, 24A, 24B, are disposed on one side of the blank whereas the coating 123A, 123B; 125A, 125B applied to the end flaps 23A, 23B; 25A, 25B are disposed on the opposite side of the blank 20.

In "slotted type" rectangular containers it has been observed that as the rectangular shape of the container approaches that of a square, the amount of overlap in the side panels is progressively decreased. For this reason the adhesive coating which can be applied on the end or near the end portions of the side panel flaps which overlap, is seriously restricted. This is readily apparent in FIG. 2 where it will be noted that as the end panels are increased in width, the amount of the overlapping portion of the side panel flaps is diminished. As a result the amount of area that can be coated with the adhesive is limited, and consequently the bonding force made possible by the overlapped end portions so limited, when the container is erected, is seriously affected. Thus the strength of the container is progressively reduced as the size of a rectangular container approaches that of a square, but not a square.

In accordance with this invention a novel arrangement is provided in coating the overlapped end portions of the opposed side panel flaps so that self-sealing containers, not a square but approaching a square, can be substantially strengthened, rather than weakened.

This is attained by applying the respective overlapped portions of the side panel flaps 22A, 22B; 24A, 24B with an adhesive coating which covers substantially one half the overlapped area and which half area is defined by a diagonal line D_1, D_2 extending between diametrically disposed corner portions of the overlapping end portions. Accordingly, the overlapped portion of the respective side panel flaps each have one diametric half of the overlapped area coated whereas the other diametric half is uncoated, the arrangement being such that the coated substantially diametric half portion of one flap faces the uncoated diametric half portion of the opposite flap. With the arrangement described, the facing overlapped portions of the respective flaps are prevented from sticking in the collapsed position of the container.

In accordance with this invention, by coating the respective overlapping portions of the respective pairs of side panel flaps, e.g. 22A, 24A and 22B, 24B into opposed diametrical coated and uncoated areas, it will be noted that the adhesive coating of the respective overlapped areas will traverse a greater linear distance along the circumference or the free outer edges of the respective flaps than if the adhesive were applied in strips or bands wherein the edge of the coated strip or band were parallel with the free edge of the respective side panel flap. For example it will be noted in FIG. 3, 3A and 4 that the coated portions 122A', 122A, 124A' of the flaps 22 and 24 defining the top panel in the erected position of the container, are securely fastened or bonded to the end flaps 23, along their entire outer marginal edges which overlie the end panels. In other words the outer marginal edges of the side panel flaps at the coated corner portions 122A', 122A, and 124A' that overlie the end panels will be securely adhered thereto. Thus, the end corner portions are not readily or accidentally pried loose. The odd corner 123A will have at least one full outer marginal portion thereof secured to its adjacent end flap. The same conditions above described apply to the flaps 22B, 23B, 24B and 25B which define the bottom 27 of the container 21 in its folded and erected position.

While corner portions 122A, 122B, and 124A', 124B' are shown coated over a diametrical area, it will be appreciated that these specific corners are not the critical corner areas, and therefore the specific pattern in which these corners are coated can be varied. That is, these corners may be coated with a band in which the edge of the band is parallel to the free or outer edge of the respective flaps. However, the same cannot apply to the ends or corners 122A, 124A or 122B, 124B in the overlapped portion of the side flaps 22A, 24A or 22B, 24B as these overlapped areas are deemed the critical area.

FIG. 5 illustrates how two collapsed containers 21A, 21B may be stacked and not stick to one another. It will be noted that the containers 21A, 21B are stacked front to back. Thus the uncoated outer surface of the side panel flaps 24A, 24B of container 21A will engage the outer coated surfaces 125A, 125B of the preceding container 21B in the stacked position. Therefore so long as the exposed coated portions of container 21A do not make contact with the coated portions of container 21B, the respective containers can be readily stacked.

From the foregoing it will be readily apparent that the instant construction has particular application in those standard sized slotted type containers which approach a square but not a square, i.e. one in which the side ands are proportioned so that overlapped portions of the respective side panel flaps define a substantially square area. This relatively shaped container is one of the most popular in use today, and therefore it is highly desirable that such self-sealing container be made as strong as its physical limitations will permit. With the instant invention, the versatility and strength of such containers is enhanced and increased over that of any known construction for the given size containers and with which this invention is most applicable.

While the instant invention has been disclosed with reference to a particular embodiment thereof, it is to be appreciated that the invention is not to be taken as limited to all of the details thereof as modifications and variations thereof may be made without departing from the spirit or scope of the invention.

What is claimed is:

1. A self-sealing container which is both collapsible and stackable comprising opposed side and end panels hingedly connected together to define a quadrilateral closed figure, said side panels being longer than said end panels, closure flaps extending from and hingedly connected to the edge of each of said side and end panels, said flaps being substantially coextensive in length with respect to their connected panel, the flaps hingedly con-

nected to said end panels having a width no greater than one-half the length of said side panels, and the flaps hingedly connected to said side panels having a width no greater than one-half the length of said end panels, said flaps in the collapsed position of the container being disposed in face to face contacting relationship whereby the diagonally opposed end portions of the respective side panel flaps are disposed in overlapping relationship with one another in the collapsed position of said container, and a coating of pressure sensitive adhesive applied to a surface portion of all of said flaps, said end panel flaps having an outer surface portion coated with said adhesive, and said overlapping diagonally opposed end portions each having an adhesive coated portion and an uncoated portion whereby the coated and uncoated portion of one of said overlapping end portions contact in face to face relationship the uncoated and coated portions respectively of said other of said overlapping end portions in the collapsed position of said container, and said coated and uncoated portion of the respective overlapped end portions being defined by a diagonal line extending from a corner defined by the longitudinal hinged edge and the adjacent end edge of the respective overlapped end portions of said side flaps to a point located on the other longitudinal edge portion of the respective overlapping portion whereby said second mentioned point is spaced from the respective end edge of the flap a distance not greater than the width of the adjacent end panel flap.

2. A self-sealing container which is both collapsible and stackable comprising opposed side and end panels hingedly connected together to define a quadrilateral closed figure, said side panels being longer than said end panels, closure flaps extending from and hingedly connected to both the upper and lower opposed edges of each of said side and end panels, said flaps being substantially co-extensive in length with respect to their connected panel, the flaps hingedly connected to the opposed edges of said end panels having a width no greater than one-half the length of said side panels, and the flaps hingedly connected to the opposed edges of said side panels having a width no greater than one-half the length of said end panels, said flaps in the collapsed position of the container being disposed in face to face contacting relationship whereby the diagonally disposed end portions of the respective side panel flaps are disposed in overlapping relationship with one another in the collapsed position of said container, and a coating of pressure sensitive adhesive applied to a surface portion of all of said flaps, said end panel flaps having an outer surface portion coated with said adhesive, and said overlapping diagonally opposed end portions each having an adhesive coated portion and an uncoated portion whereby the coated and uncoated portion of one of said overlapping end portions contact face to face the uncoated and coated portions respectively of said other of said overlapping end portions in the collapsed position of the container and said coated and uncoated portion of the respective overlapped end portions being defined by a diagonal line extending from a corner defined by the longitudinal hinged edges and adjacent end edges of the respective overlapped end portions to a point located on the other longitudinal edges of the respective overlapping portions whereby said second mentioned point is spaced from the respective end edges of the flaps a distance not more than the width of the respective adjacent end panel flaps.

3. The invention as defined in claim 2 wherein the respective corresponding diagonals of the overlapped portions of the respective upper and lower side flaps extend parallel to one another in the squared position of said container.

4. A self-sealing container which is both collapsible and stackable comprising opposed side and end panels hingedly connected together to define a quadrilateral closed figure, said side panels being longer than said end panels, closure flaps extending from and hingedly connected to the edge of each of said side and end panels, said flaps being substantially co-extensive in length with respect to their connected panels, the flaps hingedly connected to said end panels having a width no greater than one-half the length of said side panels, and the flaps hingedly connected to said side panels having a width no greater than one-half the length of said end panels, said flaps in the collapsed position of the container being disposed in face to face contacting relationship whereby diagonally disposed end portions of the opposed side panel flaps are disposed in overlapping contacting relationship, said respective overlapping end portions of the respective flaps defining substantially a square area, and a coating of pressure sensitive adhesive covering a surface portion of each of said flaps, said end panel flaps having their outer surface portion coated with said adhesive, and said overlapping portions of the respective side panel flaps having an adhesive coated portion and an uncoated portion whereby the coated and uncoated portions of one of said overlapping end portions contact in face to face relationship the uncoated and coated portions respectively of the other of said overlapping end portions, and the coated and uncoated portions of the respective overlapping end portions being defined by a diagonal line extending substantially between opposed corner portions of the squared area of the respective overlapping end portions.

5. The invention as defined in claim 4 wherein the other end portion of the respective side flaps has a diagonal corner portion coated with a layer of pressure sensitive adhesive.

No references cited.