July 26, 1966 S. P. BELSINGER 3,262,631

CONTAINER PROVIDED WITH AN ACCESS DOOR

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Fig. 1

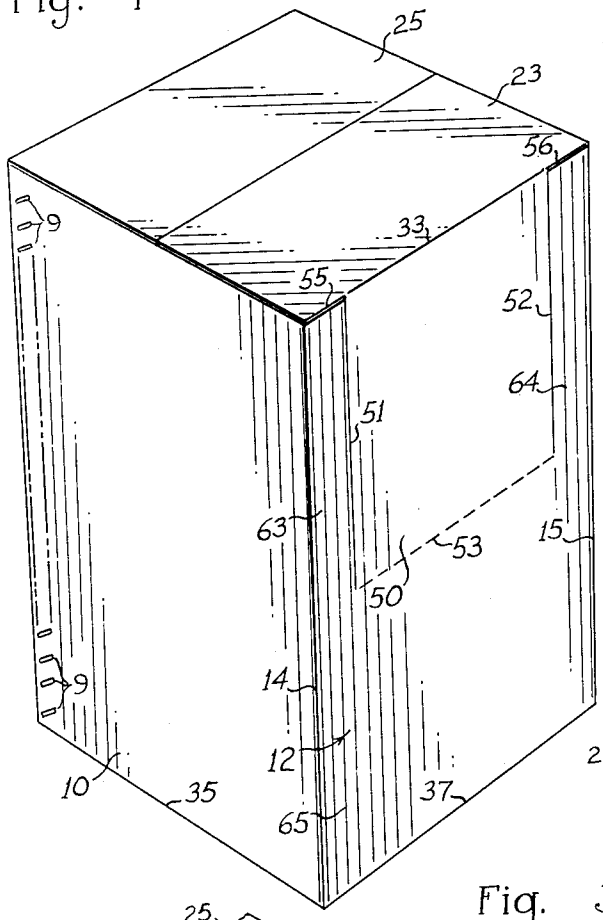


Fig. 1A

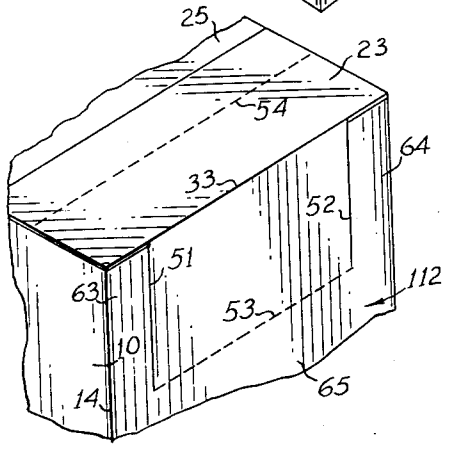


Fig. 2

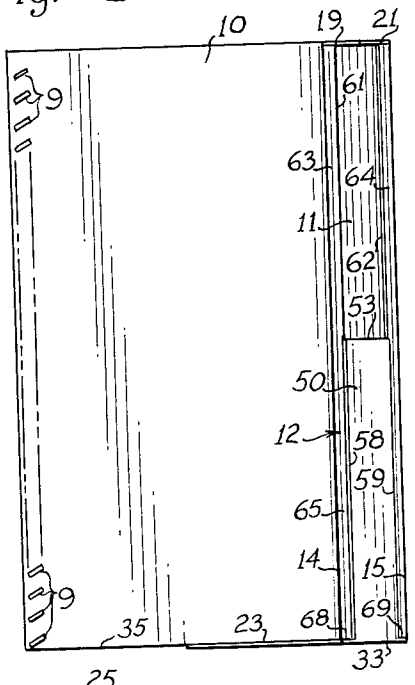
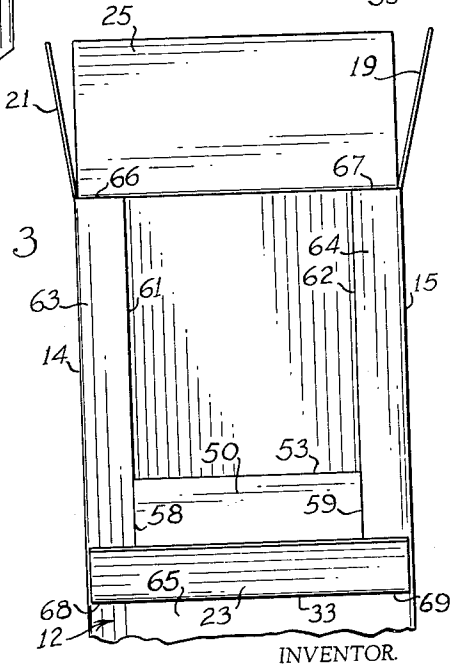


Fig. 3



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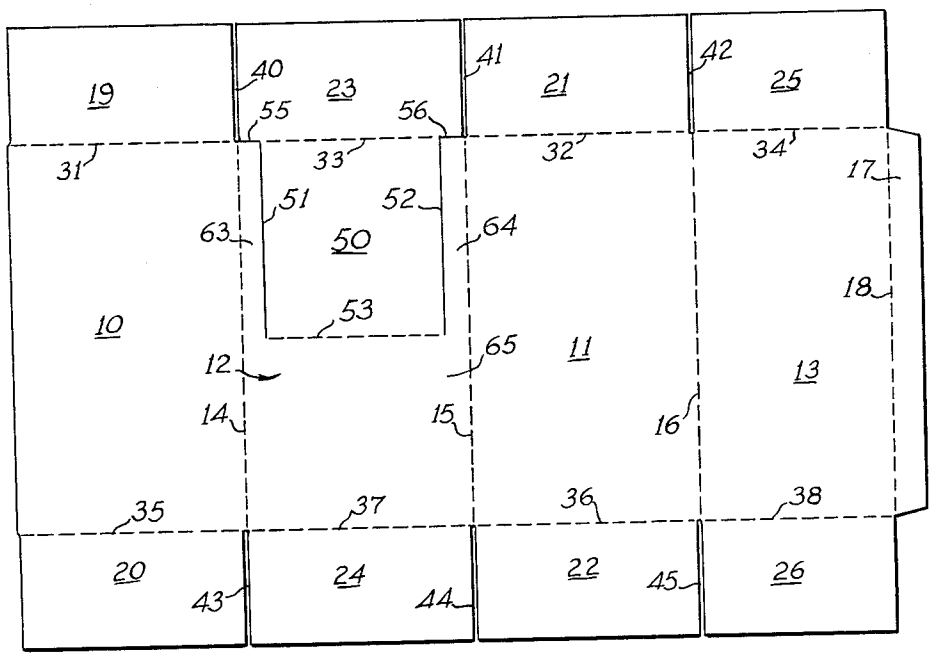


Fig. 4

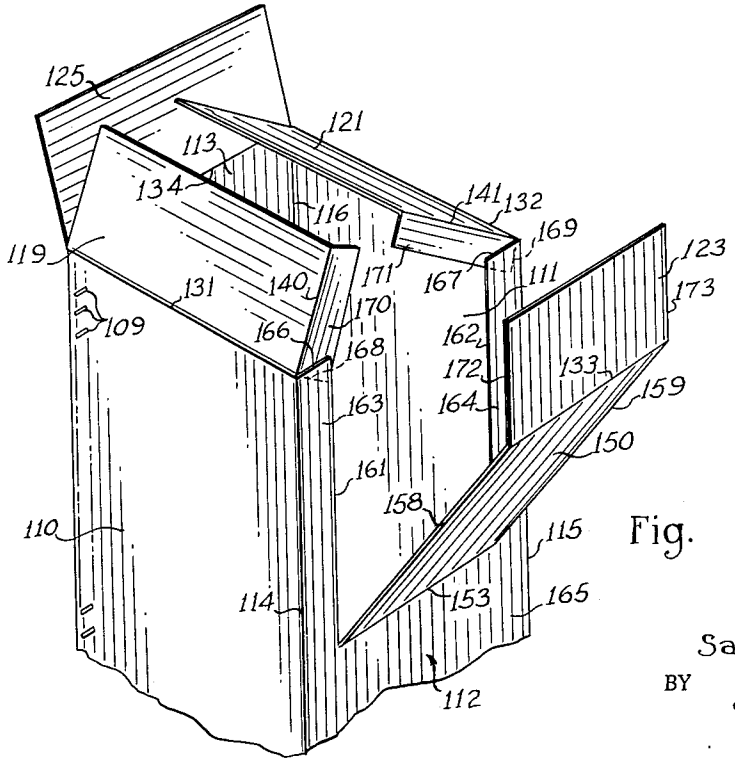


Fig. 5

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Fig. 6

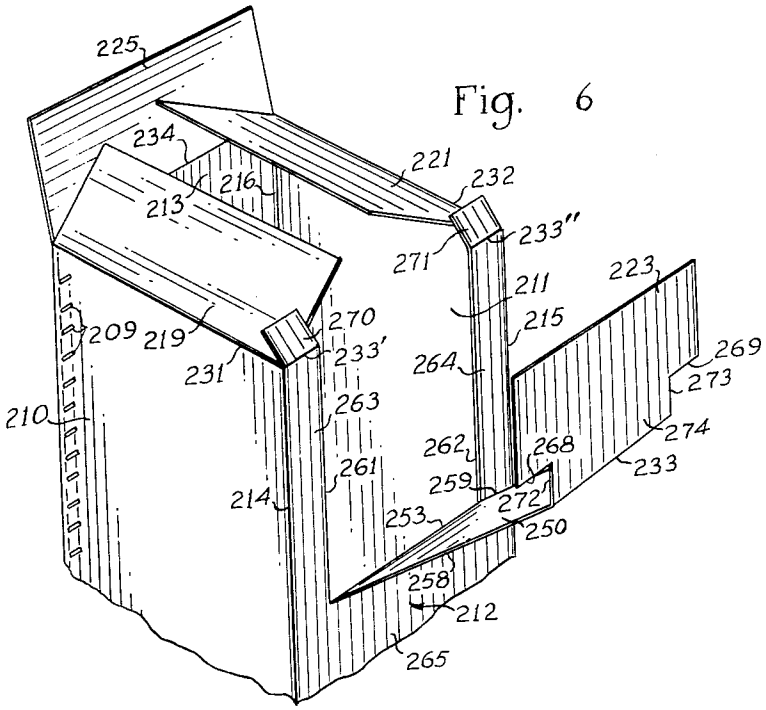
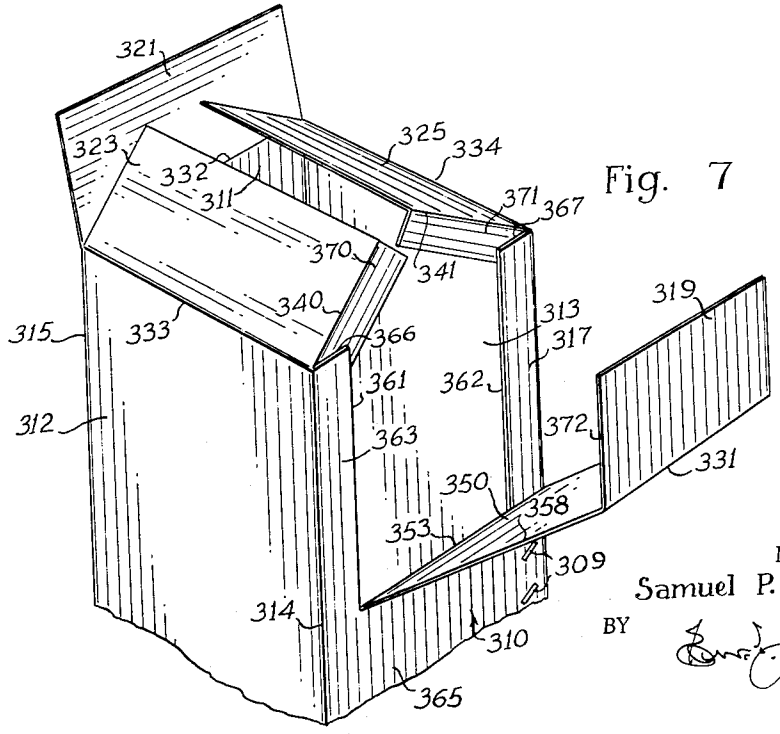


Fig. 7



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CONTAINER PROVIDED WITH AN ACCESS DOOR

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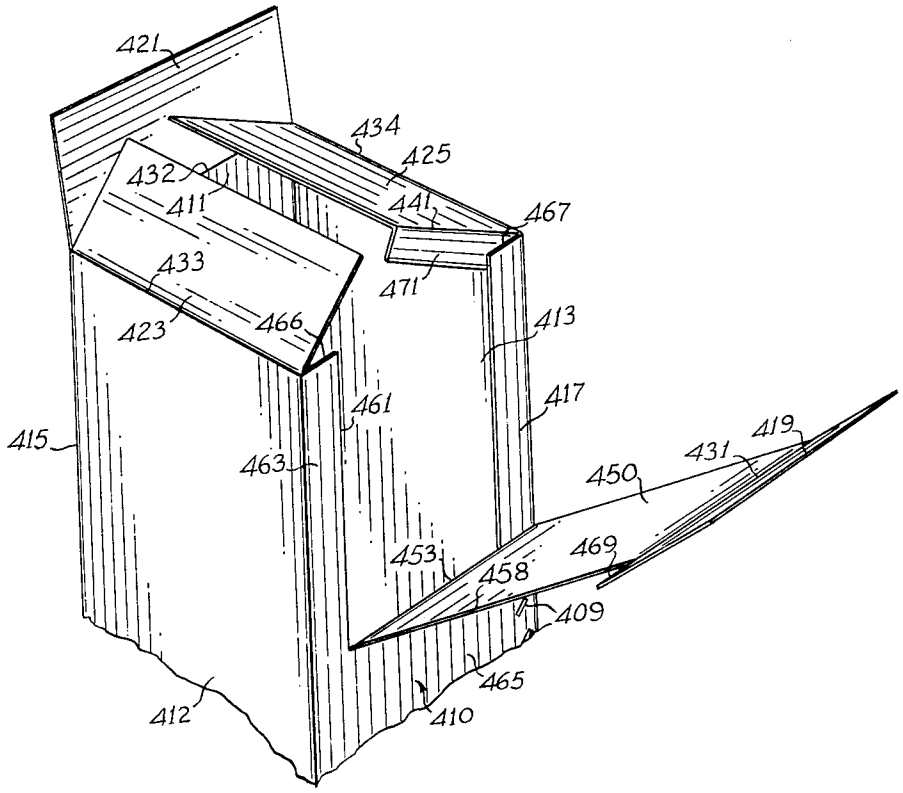


Fig. 8

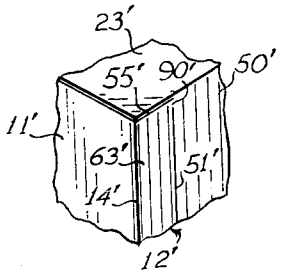


Fig. 9

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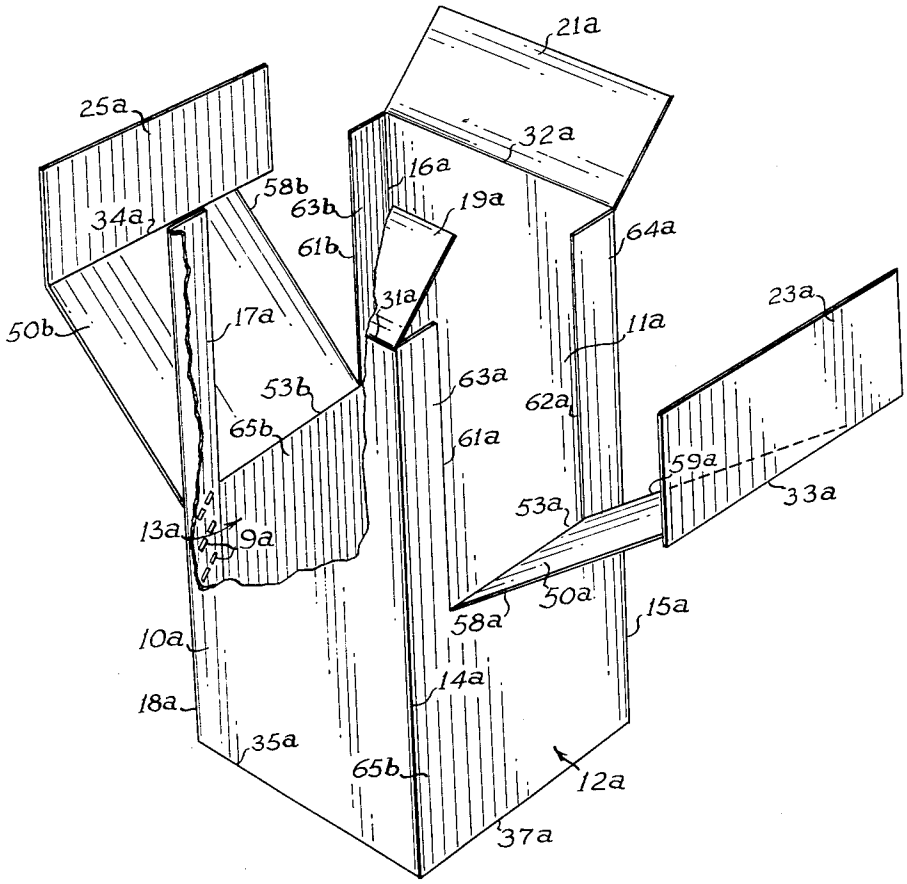


Fig. 10

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CONTAINER PROVIDED WITH AN ACCESS DOOR

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Filed Oct. 23, 1962, Ser. No. 232,463
9 Claims. (Cl. 229—37)

This invention relates to a container and is more particularly concerned with a container provided with an access door and formed preferably of fibre board.

In the past I have devised a number of shipping containers having access doors whereby the containers may be readily and easily packed and unpacked. The trade generally has accepted these and other access door containers; however, there still remains the problem of providing added strength to the container and reducing the cost and ease of packing and unpacking the containers. Any reduction in the floor space required for the packing and unpacking of such container is also a welcome advantage which reduces the cost of utilizing the containers.

With these problems in mind, I have devised a simple yet effective container which includes the usual rectangular cubed or squared fibre board box formed from a one piece rectangular blank, the box having side panels joined to form a tubular member which is closed or closeable by the end flaps which form the top and bottom of the box or container. The end of the panel of the container of the present invention includes an access door hingedly secured to the remaining portion of the panel. According to the present invention, the sides of the access door are spaced inwardly from their respective adjacent edges of the panel so that the common edges of all side panels which form right angles remain uncut. The container is, however, cut and scored in such a manner that the top flap remains connected to the access door to form a cooperating element which, when folded in its usual fashion to form a portion of the top of the container, retains the access door in a closed condition. The construction of the container of the present invention permits the manufacturer's joint, i.e., the overlapping junction between the extreme panels, to be stitched or otherwise joined throughout its entire height.

In the preferred embodiment of the present invention, the common score line or hinge line between the access door and its panel is approximately midway of the height of the container to permit the flap, carried by the access door, to perform the additional function of retaining the access door in an opened condition when the flap is inserted beneath the bottom of the container and maintained in that position by the weight of the container.

Accordingly, it is an object of the present invention to provide a container which is inexpensive to manufacture, durable in structure and efficient in operation.

Another object of the present invention is to provide a container which is readily and easily packed and occupies only a relatively small amount of floor in its opened or closed condition.

Another object of the present invention is to provide a container having an access door therein and yet a container the strength of which is not materially impaired by the provision of such a door.

Another object of the present invention is to provide a container having an access door therein, the door being so arranged that when the container is to be taped for shipping, the tape may be readily, easily and quickly applied thereto, and will effectively seal the container.

Another object of the present invention is to provide a container, the blank of which is more readily cut and scored in a sheet plant than prior art containers having access doors.

Another object of the present invention is to provide a container with an access door, the container requiring no appreciable adjusting or righting in order to be taped shut.

Another object of the present invention is to provide a container with an access door in which the weight of the container will retain the door in an opened condition for the packer, the container being capable of being moved from place to place with its access door held open and the access door being readily and easily released by a simple tilting operation.

Another object of the present invention is to provide a container with an access door, the inward movement of which is substantially arrested when the door has been closed to its properly closed condition.

Another object of the present invention is to provide a container which may be utilized for various purposes, such as a van line clothing shipper having a hanger bar installed therein for receiving articles of clothing or as a box for receiving cones of yarn.

Another object of the present invention is to provide a container with an access door wherein the danger of damage and deformation of the container due to shearing forces on the container is minimized commensurate with the necessity of providing the access door.

Another object of the present invention is to provide a container having an access door which when appropriately taped will provide a container which is substantially sealed from the ingress or dirt and other debris while, at the same time, providing a container in which, once the top has been opened, the door may be jerked open without the necessity of using a knife or other sharp instrument to sever the tape.

Other objects, features and advantages of the present invention will become apparent from the following description when taken in conjunction with the accompanying drawings wherein like characters of reference designate corresponding parts throughout the several views and wherein:

FIG. 1 is a perspective view of a container provided with an access door and constructed in accordance with the present invention.

FIG. 1*a* is a fragmentary perspective view of a portion of the container shown in FIG. 1, the access door assembly being provided with an additional score line.

FIG. 2 is a side elevational view of the container shown in FIG. 1, the container being rotated slightly to show the access door in its held open position with the weight of the container resting on the top flap connected to the access door.

FIG. 3 is a fragmentary front elevational view of the upper portion of the container shown in FIG. 1, the access door therein being in its normally opened position and the top of the container being open.

FIG. 4 is a plan view of a blank for producing the container shown in FIG. 1.

FIG. 5 is a fragmentary perspective view of a second embodiment of the present invention, the container being depicted with its access door and its top partially open.

FIG. 6 is similar to FIG. 5 and shows a third embodiment of the present invention.

FIG. 7 is a view similar to FIGS. 5 and 6 and shows a fourth embodiment of the present invention.

FIG. 8 is a view similar to FIGS. 5, 6 and 7 and shows a fifth embodiment of the present invention.

FIG. 9 is a fragmentary perspective view of a detail showing a corner of the container of FIG. 1 in which a portion of the cut forming the access door is left uncut.

FIG. 10 is a fragmentary perspective view of an embodiment of the present invention having a double access

door arrangement, one access door being constructed as the access door of FIG. 1 is constructed, and the other access door being constructed as the access door of FIG. 8 is constructed.

Referring now in detail to the embodiments chosen for the purpose of illustrating the present invention, it being understood that in its broader aspects the present invention is not limited to the exact details disclosed in the drawings, numerals **10**, **11**, **12** and **13** denote generally the four side panels of the fibre board blank of FIG. 4 and the assembled container of FIGS. 1, 2 and 3. More specifically, the numerals **10** and **11** denote the opposed side panels of the container while numeral **12** denotes the front panel and numeral **13** denotes the rear panel.

The panels are in side by side relationship, the panels **10** and **12** being joined by a common edge or score line **14**, the panels **12** and **11** being joined by a common score line **15** and the panels **11** and **13** being joined by a common score line **16**.

One of the outer panels **10** or **13**, such as panel **13**, is provided with the usual flange **17** along its outer edge, the flange **17** and panel **13** being joined along a common score line **18**.

The panels **10**, **11**, **12** and **13** are each rectangular members provided with top and bottom flaps. Thus, panel **10** is provided with a top flap **19** and a bottom flap **20**; panel **11** is provided with a top flap **21** and a bottom flap **22**; panel **12** is provided with a top flap **23** and a bottom flap **24**; and panel **13** is provided with a top flap **25** and a bottom flap **26**.

The score lines or fold lines **14**, **15**, **16** and **18** are essentially parallel to each other and extend vertically or longitudinally of the blank and the container. The top flaps **19**, **21**, **23** and **25** are separated from their respective panels **10**, **11**, **12** and **13** by horizontal or transverse score lines or fold lines **30**, **31**, **32**, **33** and **34**. In like manner, the bottom flaps **20**, **22**, **24** and **26** are separated from their respective panels by score lines or fold lines **35**, **36**, **37** and **38**.

The flaps **19** and **23** are separated by a cut **40**, the flaps **23** and **21** by a cut **41**, the flaps **21** and **25** by a cut **42**, the flaps **20** and **24** by a cut **43**, the flaps **24** and **22** by a cut **44**, and the flaps **22** and **26** by a cut **45**. The cuts **40** and **43** extend from opposite ends of score line **14**; the cuts **41** and **44** extend from opposite ends of score lines **15** and the cuts **42** and **45** extend from opposite ends of score line **16**.

The one-piece rectangular blank of FIG. 4 thus far described is an essentially conventional structure which when formed for shipping from a sheet plant is folded along score line **15**, the flange **17** being folded inwardly along score line **18** and being stitched or otherwise secured to the outer edge portion of panel **10**. The box thus may be righted by being squared so that the outer panel **10** and the inner panel **11** are parallel and opposed and comprise the side panels of the tubular member while the inner panel **12** and outer panel **13** are likewise parallel and opposed and form the front and back panels of the tubular member. The tubular member thus formed is closed at its top by the folding of the opposed flaps **19** and **21** inwardly and then the folding of flaps **23** and **25** inwardly thereover. It is closed at its bottom by the folding of flaps **20** and **22** inwardly and the folding of flaps **24** and **26** inwardly thereover. Tape (not shown) is usually employed for sealing the container in a closed condition.

According to the present invention an access door **50** is formed in the front panel **12**. This access door is defined by a pair of straight parallel, vertical or longitudinal cuts **51** and **52**. The cut **51** is spaced inwardly from and parallel to score line **14** and the cut **52** is spaced inwardly from and parallel to score line **15**. The upper ends of cuts **51** and **52** terminate on score line **33** while the lower ends of cuts **51** and **52** terminate in the central portion of panel **12**. A straight, horizontal or transverse score line or fold line **53** joins the lower ends of cuts **51** and **52**.

If the functional advantage of providing a container with an access door which may be held open is desired, the score line **53** preferably should be essentially midway between score lines **33** and **37**. In those instances where this functional advantage is not desired, the score line **53** may be appreciably above or below the medial plane of the container. In other words, while it is highly desirable to provide the score line **53** at or near the medial plane of the container, i.e., substantially midway between score lines **33** and **37**, the invention in its broader aspects is not limited to such a location for score line **53**. However, by the use of the term "along the medial plane" or like terminology as appears hereinafter, I intend that the score line be so placed at or near the medial plane that the functional advantage mentioned in this paragraph be capable of being achieved.

It will be understood further that, by providing an additional score line or fold line **54** on the access door assembly parallel to score line **33** either on the flap **23** as shown in FIG. 1*a* or on the access door **50** thereof, the position of the score line **53** may be varied without losing the functional advantage. The determining factor, of course, is that the distance from score line **53** to score line **33** (or score line **54** if one is provided) be approximately equal to the height of the remaining sub-panel formed by that portion of panel **12** between the score line **53**.

Along the score line **33**, there are opposed cuts **55** and **56** which extend outwardly in alignment with each other, the cut **55** connecting the lower or inner end of cut **40** with the upper or outer end of cut **51** and the cut **56** connecting the lower or inner end of cut **41** with cut **52**. Thus, the access door assembly, i.e, the access door **50** and its flap **23**, is free to pivot about score line **53**.

With the access door **50** being formed in panel **12**, the remaining portion of panel **12** includes a pair of spaced, parallel rectangular side flanges **63** and **64** connected by their outer sides to panels **10** and **11**, respectively, along the score lines **14** and **15**. These flanges **63** and **64** are connected at their lower ends to the subpanel **65** thereby formed by panel **12** below the access door **50**. The flap **23** of panel **12** of course is now entirely connected to the access door **50**.

When access door **50** is opened, the edges **58** and **59** as illustrated in FIGS. 2 and 3 of the door **50** which were produced by these cuts **51** and **52** are seen. Likewise, the inner edges **61** and **62** of the flanges **63** and **64** are seen and hence identified in FIGS. 2 and 3.

In like manner, cuts **55** and **56** of FIGS. 1 and 4 produce the top edges **66** and **67** of flanges **63** and **64** and also the shoulders **68** and **69** of flap **23**, as seen in FIGS. 2 and 3.

From an examination of FIG. 9, it will be seen that, if desired, cuts for forming the access panel may be terminated a short distance from the cuts which separate the side panels and access door flat. In FIG. 9 is illustrated a container identical in every respect to the container of FIG. 1 except that the cut **51'** in side panel, i.e., front panel **12**, terminates slightly below the score line **33'** to provide an uncut portion or junction member **90'** between the side panel **63'** and the access door **50'**. The cut **51'** is nevertheless parallel to the common score line **14'** between side panel **11'** and the front panel **12'**. The horizontal cut **55'** terminates above the terminus of cut **51'**.

While the structure of FIG. 9 is assembled and operated in a manner substantially identical with the structure of FIG. 1, it will be understood that the uncut portion or junction member **90'** serves to hold the access door **50'** closed initially. When it is desired to open the door **50'**, the junction member is severed by a light pull outwardly on the access door **50'**.

While I have not illustrated the other parallel cut (not shown) corresponding to cut **52** in FIG. 1, it will be

understood that this cut, too, may be provided with an uncut portion or junction member similar to the member **90'**.

The second embodiment of the present invention, as illustrated in FIG. 5, includes substantially the identical structure as the device of the first embodiment. Therefore, the same elements appearing in the second embodiment will have the same number except that the numeral one will be placed in front of the numeral. The third embodiment will be characterized by the same numerals except that the numeral two will appear before the number, etc.

Second embodiment

The second embodiment is formed from the same rectangular box including the same arrangements of side panels and bottom flaps (not shown) as in the first embodiment. As seen in FIG. 5, there are side panels **110**, **111**, **112** and **113**, the side panels being connected to each other along score lines **114**, **115** and **116** and their top flaps **119**, **121**, **123** and **125** along score lines **131**, **132**, **133** and **134**. The access door **150** is cut in panel **112** and is hingedly secured along a transverse score line **153** to the remaining portion of the panel **112** while cuts identical to cuts **51** and **52** separate the access door **150** and the remaining portions of the panel **112**, thereby providing opposed parallel edges **158** and **159** for the access door **150** and opposed edges **161** and **162** for the upright side flanges **163** and **164** of the panel **112**. Like the preceding embodiment, the side flanges **163** and **164** are provided with top edges **166** and **167** parallel to the score lines **131**, **132** (and **133** when the container is closed), the side flanges **163** and **164** being connected at their lower ends to the subpanel **165** formed by panel **112**.

The essential difference between the second embodiment and the first embodiment is that in place of the cuts **40** and **41** the score lines **14** and **15** are continued to provide flaps **119** and **121** with score lines **140** and **141**, while the cuts which form the door assembly are continued upwardly in a straight line to thereby produce a pair of abutment flanges **170** and **171** on the edges of flaps **119** and **121**, these flanges being separated from flaps **119** and **121** by the score lines **140** and **141**. The lower edges **168** and **169** of flanges **170**, **171** are produced by the horizontal cuts which produce upper edges **166** and **167** of the flanges **163** and **164**.

It is therefore seen that the upper or top flap **123** is now carried entirely by the access door **150** and that its outer edges **172** and **173** are parallel to and aligned respectively with edges **161** and **162** of access door **150**.

When the container of FIG. 5 is closed, the flaps **119** and **121** are folded inwardly whereby the flanges **170** and **171** pass inwardly of the flanges **163** and **164**, as illustrated in FIG. 5, so as to become essentially aligned with each other in a horizontal position as the flaps **119** and **121** become aligned in a common plane for closing the top of the box. Thereafter, the flaps **125** and **123** are folded over the flaps **119** and **121**.

Third embodiment

In FIG. 6 it will be seen that the third embodiment includes the side panels **210**, **211**, **212** and **213** and their flaps **219**, **221**, **223** and **225** connected to each other along score lines **231**, **232**, **233** and **234**. The panels have the usual score lines **214**, **215** and **216**.

When cut to form the access door assembly, the panel **212** includes the two side flanges **263**, **264** and the subpanel **265**, as in the previous embodiment. Therefore, the inner parallel opposed edges **261** and **262** of the side flanges **263** and **264** abut the side edges **261** and **262** of the access door **250** when it is folded to its closed position along its score line or fold line **253**.

According to the present embodiment, the cuts in the panel **212** (such as cuts **51** and **52** of the first embodiment) are continued into a portion of flap **223** to form side edges **272** and **273** which define a waist portion **274** in that portion of flap **223** adjacent score line **233**. To complete the waist portion, the horizontal cuts (such as cuts **55** and **56** in the first embodiment) are made parallel to but above the score line **233** in the flap **223**. Thus, shoulder edges **268** and **269** are formed in flap **223** and extend from the terminus of edges **272**, **273** outwardly to the side edges of flap **223**.

By so cutting the container of the third embodiment, the flanges **263** and **264** are respectively provided with short, essentially square or rectangular abutment tabs **270** and **271** which are joined along score lines **233'**, **233''** which were originally the outer portions of score line **233**.

When the container of the present embodiment is closed, the tabs **270** and **271** are folded inwardly so as to lie on top of the top flaps **219** and **221**. Otherwise, the container is closed in the same manner as the preceding embodiments.

Fourth embodiment

In FIG. 7 is the fourth embodiment which, like the preceding embodiments, includes side panels **310**, **311**, **312** and **313**; however, in the present embodiment, the blank is folded so as to form the tubular member with the panel **310** overlapping the flange **317** and access door **350** formed in the front panel **310**. The flange **317** is secured to the outer edge portion of only the lower portion of subpanel **356** of panel **310** by stitches **309**. Hence, in this embodiment the upper portion of the flange **317** serves a double function of being an abutment flange (such as flange **171**) and a strengthening flange (such as flange **62**).

The access door **350** of the present embodiment is defined by a horizontal or transverse score line **353**, the score line extending from the outer edge of panel **310** across panel **310** to terminate in spaced relationship to score line **314**. From this terminus, the cut forming the access door assembly extends upwardly throughout panel **310** and its flap **319**. Thus, a straight contiguous cut forms the edges **358** and **372** of the access door **350** and the flap **319**. The usual score line **331** forms a common edge for access door **350** and its flap **319**.

Additional score lines **332**, **333** and **334** form common edges between panels **311**, **312**, **313** and their respective flaps **321**, **323** and **325**.

In the present embodiment, the flange **317** continues beyond the upper edge of panel **313** and forms an abutment flange **371**, the flanges **317** and **371** being separated by a transverse cut aligned with the score lines **331**, **332**, **333** and **334**. Thus, a transverse upper edge **367** is provided on flange **317**. The flange **371** is secured to flap **325** along a score line **341** and is adapted, when flap **325** is folded inwardly, to pass beneath flange **317**.

It will be observed that the flange **363** formed in panel **310** is essentially the same width as flange **317** while its extension forms an abutment flange **370** which is secured to flap **323** by a score line **340**. The two flanges **363** and **370** are separated by a transverse cut aligned with the score lines **331**, **332**, **333** and **334**. The cut thus produces an upper edge **366** for the flange **363**. The flange **370** is adapted to be folded inside flange **363**.

Fifth embodiment

The fifth embodiment, as seen in FIG. 8, is similar to the fourth embodiment in that the access door **450** is formed in one of the end panels, i.e., panel **410**, and the panel **410** is stitched by stitches **409** to the stitch tab or flange **417** below the access door.

In this embodiment the score line **453** is identical to score line **353**; however, the cut which forms edges **458** and **461**, while being similar to the cut for the access door **350**, extends only to the score line **431** where a transverse cut outwardly forms the shoulder edge **469** of flap **419** and the upper edge **466** of the side flange **463**. It will be understood that the flange **417**, as in the previous

embodiment, extends along flap **425** to provide an abutment flange **471** separated from flange **417** by a horizontal cut which forms the upper edge **467** of flange **417**.

Therefore, when flaps **423** and **425** are folded inwardly along their fold lines or score lines **433** and **434**, only the flange **471** slides beneath its flange **417** since no corresponding flange is provided on the flap **423**. To complete the folding closed, the flap **421** is folded inwardly along its fold line **432** and the access door assembly is closed against flange **417** and flap **419** is folded toward flap **421**.

Double door embodiment

Referring to FIG. 10, it will be seen that the container of FIG. 1 may be provided with an additional door diametrically opposed to the original access door. In FIG. 10, the container includes a hollow tubular member formed from a blank (not shown) in which there are inner panels **11***a* and **12***a* and outer panels **10***a* and **13***a*, corresponding respectively to panels **11**, **12**, **10** and **13** of the container of FIG. 1 except that there is a stitch tab or flange **17***a* connected along score line **18***a* to the outer edge of panel **10***a* rather than to the panel **13***a*. Otherwise side panels **10***a*, **11***a*, **12***a*, **13***a*, the score lines **35***a*, **37***a*, **14***a*, **15***a*, **16***a*, **31***a*, **32***a*, **33***a*, **34***a* and **53***a*, the edges **61***a*, **62***a*, **58***a* and **59***a*, flaps **19***a*, **21***a* and **23***a*, and access door **50***a* are identical with the corresponding parts of the container in FIG. 1.

To provide the second access door **50***b*, the panel **13***a* is cut by a single vertical cut to provide a side flange **63***b* which corresponds to side flange **363**, and an access door **50***b* which corresponds to the access door **350**, the access door **50***b* being separated by a transverse score line or fold line **53***b* from the subpanel **65***b* in the same manner that access door **350** is separated from its subpanel **365**. Stitches **9***a* correspond to stitches **309** while the flap **25***a* corresponds to flap **319**, being joined along score line **34***a* to the access door **50***b*.

It will be observed that even with the two doors **50***a* and **50***b*, the four right angular vertical corners defined by the abutting panels **10***a*, **11***a*, **12***a* and **13***a* are preserved so that the container is not materially weakened.

By such a double door arrangement, two packers may have access simultaneously to the interior of the container, from opposite sides.

The container is closed by folding the access doors **50***a* and **50***b* to a position in a common plane with their respective subpanels so as to close both access openings. The flaps **19***a* and **21***a* constitute the lower flaps of the top while the flaps **23***a* and **25***a* when folded toward each other thereover form the upper flaps of the top. Suitable taping (not shown) seals the openings and cuts of the container when it is to be shipped.

Assembly

The assembly of the present boxes or containers should now be obvious to those skilled in the art. When shipped from the factory in flat form, the panels are respectively folded along score lines **15**, **115**, **215**, **315** and **415**, and are stitched closed by stitches **9**, **109**, **209**, **309** and **409** which respectively pass through the edge portions of panels **10**, **110**, **210**, **310**, **410** and through the stitch tabs or flanges, such as flanges **17**, **317**, **417**. In the last two embodiments, it will be remembered that only the sub-panels **365** and **465** are secured to only the lower portion of the flanges **317** and **417** respectively.

To right, the panels of the containers are squared and the bottom flaps, such as flaps **20**, **22**, **24** and **26**, folded inwardly and taped closed in the usual way. This provides containers open at their tops and closed at their bottoms.

The access doors **50**, **150**, **250**, **350** and **450** are then pulled outwardly whereby they pivot respectively outwardly and downwardly about their score lines or hinge lines **53**, **153**, **253**, **353**, **453** and are now open along their upper portions for ready access by the packer.

To maintain the doors **50**, **150**, **250**, **350**, **450** open, the flaps **23**, **123**, **223**, **319** and **419** are folded along their fold lines **33**, **133**, **233**, **331**, **431**, so that flaps **23**, **123**, **223**, **319**, **419** may be respectively placed beneath the bottoms of their respective containers, such as shown for flap **23** in FIG. 2. In such a condition the containers are completely opened and occupy no additional packing space than normal would be occupied when in a closed condition.

After being packed, the containers are respectively closed by first being tilted rearwardly whereby the doors **50**, **150**, **250**, **350**, **450** respectively urge their flaps outwardly due to the resiliency of the fibre board along the score lines **53**, **153**, **253**, **353**, **453**. Next the doors **50**, **150**, **250**, **350** and **450** are pivoted upwardly and urged into the same plane with their sub panels **65**, **165**, **265**, **365**, **465** and with their side flanges **63**, **64**, **163**, **164**, **263**, **264**, **363** and **463**. In the last two embodiments it will be observed that the doors **350** and **450** respectively overlie the upper portions of flanges **317** and **417**. The top is then closed by folding the flaps **19**, **21**, **119**, **121**, **219**, **221**, **323**, **325** and **423**, **425** inwardly toward each other until each opposed pair of flaps is in a common transverse plane with their outer edges adjacent each other or abutting each other.

When folding flaps **119** and **121** toward each other, it is desirable that the abutment flanges **170** and **171** be inside the side flanges **163**, **164**. Likewise, it is desirable that flanges **370** and **371** be within, i.e., beneath, flanges **363** and **317**. Also it is desirable for the flange **471** to be within flange **417**. This is not an absolute requirement, however, but is necessary in the event it is desired to have the doors **250**, **350** and **450** close completely, i.e., flush with their respective panels.

Furthermore, when the top of the container illustrated in FIG. 6 is to be closed, the tabs **270** and **271** should be folded above flaps **219** and **221** to form an abutment against the inadvertent inward movement of side flanges **263** and **264**.

After folding of the inner or lower pairs of opposed flaps **19**, **21**, **119**, **121**, **219**, **221**, **323**, **325**, **423**, **425**, the outer or upper pairs of opposed flaps are folded toward each other, i.e., flaps **23**, **25**, **123**, **125**, **223**, **225**, **319**, **321**, **419**, **421** are folded toward each other into respective common transverse planes across the lower or inner flaps.

Thereafter, tape is applied along the open seams to seal the containers. In other words, to seal the container of the first embodiment, tape is applied along cuts **51** and **52**, across the seam between flaps **23** and **25**, across the right angular abutment between the upper edges of panels **10** and **11** and the side edges of flaps **23** and **25** and across the cuts **55** and **56** so as to extend between flap **23** and the upper end portions of side flanges **63** and **64**.

The other embodiments are taped in substantially the same manner, as will be obvious to those skilled in the art, and hence the taping of each embodiment is not described herein.

Since, in taping the doors **50**, **150**, **250** closed, tape is required only on a flat surface on either side of the cuts, such as cuts **51** and **52**, it is an extremely simple matter to apply the tape and be assured of a tight seal along the doors. Nevertheless, such doors are readily opened without the manual removal of the tape or the cutting thereof by simply grasping the flaps **23**, **123**, **223** and pulling them outwardly, once the top has been opened. This saves an appreciable amount of time which previously was required for cutting the tape of the prior art doors.

Furthermore, the containers of the present invention do not require the shifting of one surface with respect to another in order to bring them into proper alignment before the tape is applied. The right angular construction of each corner, i.e., the corners formed by score lines **14**, **15**, **16** and **17** (and the corresponding score

lines of the other embodiments) are sufficiently strong that little or no deformation of the container is present under normal conditions.

The right angular construction of all corners is also a great factor in determining the strength of the containers. Since in the present embodiments all vertical corners are right angular throughout their length, the strength of such containers is preserved, regardless of whether their doors are opened or closed.

In the third embodiment, the corners are further strengthened by the provision of tabs **270** and **271** which extend transversely or horizontally with respect to the vertical or longitudinal corners adjacent the access door **250**. In the second and fourth embodiments, the flanges **170**, **171** and **370**, as well as the flanges **317** and **417**, form abutments to limit the inward folding or movement of their respective doors.

By providing horizontally hinged doors which pivot along score lines **50**, **150**, **250**, **350**, **450**, the panel having the access door is not materially weakened, nor do the doors tend to deform other portions of the containers when opened.

The containers of the present invention, because of their right angular corners which are not sacrificed by the provision of the doors, while providing the additional packing space needed within the reach of the average packer, essentially retain the strength characteristics of containers without such access doors. Thus, the containers of the present invention, when packed, may be stacked one on the other without appreciable danger of collapse of the container.

Furthermore the containers here disclosed are produced from single sheets of essentially rectangular fibre board and require no separate liner or top or other appendage which would add expense.

The blanks for the various embodiments may be manufactured on present day machinery of commerce and require only two special knives for the slotters to produce the offset cut of certain of the embodiments.

The containers may also be modified by the addition of a hanger bar, as taught in my previous patents, to serve the function of a wardrobe container or van line container.

It will be obvious to those skilled in the art that many variations may be made in the embodiments chosen for the purpose of illustrating the present invention without departing from the scope thereof as defined by the appended claims.

I claim:

1. A substantially rigid, generally rectangular, fiber board shipping container provided with a substantially rigid, generally rectangular, pivotally movable access door including, pairs of opposed side panels at least one of said side panels including spaced longitudinally extending cuts, inwardly spaced from the sides of said panel, extending from parallel points intermediate the top and bottom of said panel to the top of said panel and a transverse score line joining the lower ends of said cuts, said cuts and score line defining an integral access door pivotally movable, on said score line within the confines of said panel to and from the plane of said panel.

2. The shipping container as defined by claim **1** in which the access door includes an integral extension beyond the top edge of the panel from which it is formed said extension constituting a foldable flap.

3. The shipping container as defined in claim **2** in which the foldable flap extends laterally beyond the sides of the access door to constitute a flap width equal to the full width of the side panel.

4. A substantially rigid, generally rectangular shipping container formed from a single blank of cut and scored fiber board and provided with a substantially rigid, generally rectangular pivotally movable access door including integral front, back and side panels defined by intermediate foldable score lines, at least one of said panels including parallel spaced longitudinally extending cuts, inwardly spaced from the sides of said panel to define equal rectangular side flanges and, extending from parallel points intermediate the top and bottom of said panel to the top of said panel and a transverse score line joining the lower ends of said cuts, said cuts and score line defining an integral access door between said side flanges pivotally movable on said score line to and from the plane of said panel.

5. The shipping container as defined in claim **4** in which two panels are provided with access doors in the manner set forth.

6. The shipping container as defined in claim **5** in which the two panels are on opposite sides of the container and each of said access doors includes an integral foldable flap extending beyond the top edge of its panel, each flap extending laterally beyond the sides of its access door to constitute a width equal to the full width of its panel.

7. The shipping container as defined in claim **4** in which the score lines define four consecutive parallel panels, two of which are end panels and two of which are intermediate panels and in which an access door, as described, is formed in one of the end panels.

8. The shipping container as defined in claim **4** in which the score lines define four consecutive parallel panels, two of which are end panels and two of which are intermediate panels and in which the access door is formed in one of the intermediate panels and in which an access door, as described, is formed in one of the end panels.

9. The shipping container as defined in claim **4** in which the score lines define four consecutive parallel panels, two of which are end panels and two of which are intermediate panels and in which the access door is formed in one of the intermediate panels and in which each panel includes an inwardly foldable lower flap interengageable to form the bottom closure for the container and in which each panel, not including an access door, is provided with an inwardly foldable upper flap and in which each access door is formed with an inwardly foldable extension equal in width to the total width of its panel, and in which an access door, as described, is formed in one of the end panels.

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