

Feb. 27, 1968

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3,370,775

SHIPPING AND STORAGE BIN CONTAINER CONSTRUCTION

Filed Oct. 10, 1966

2 Sheets-Sheet 1

FIG. 1.

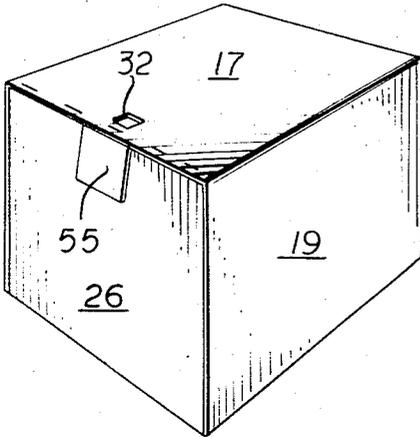


FIG. 2.

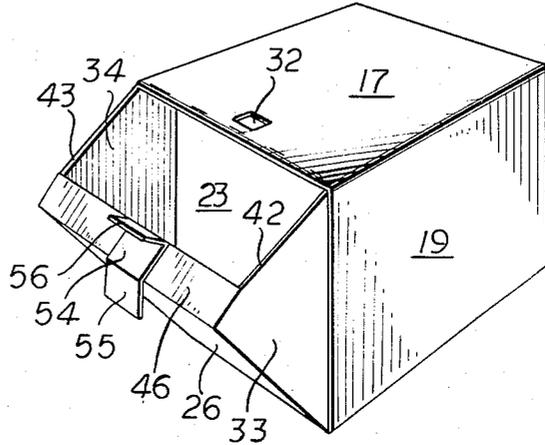


FIG. 3.

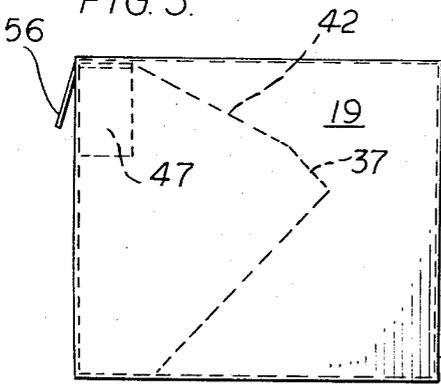


FIG. 4.

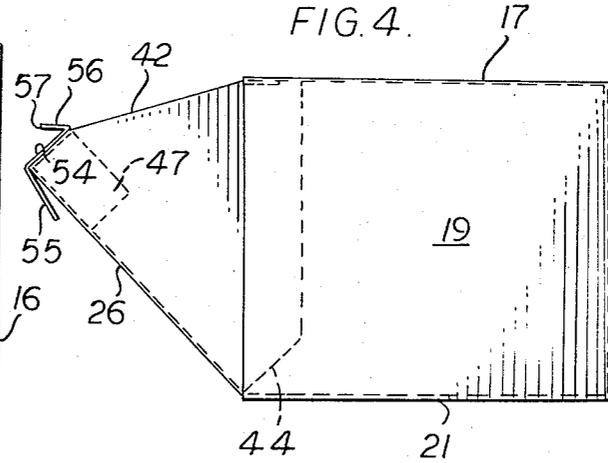
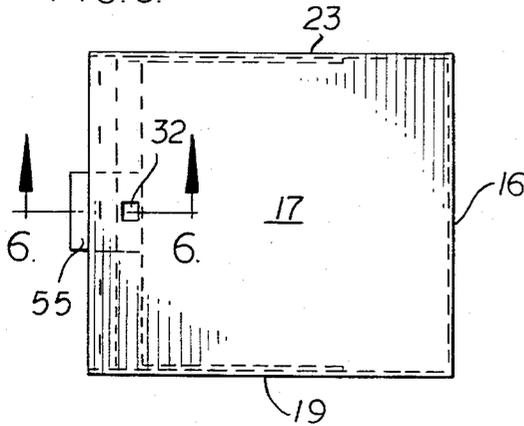


FIG. 5.



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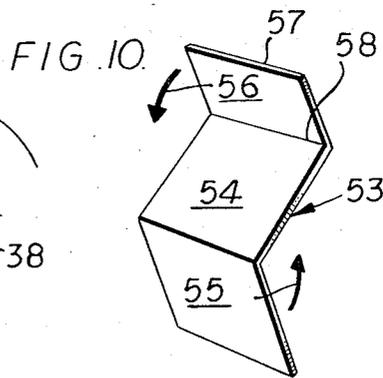
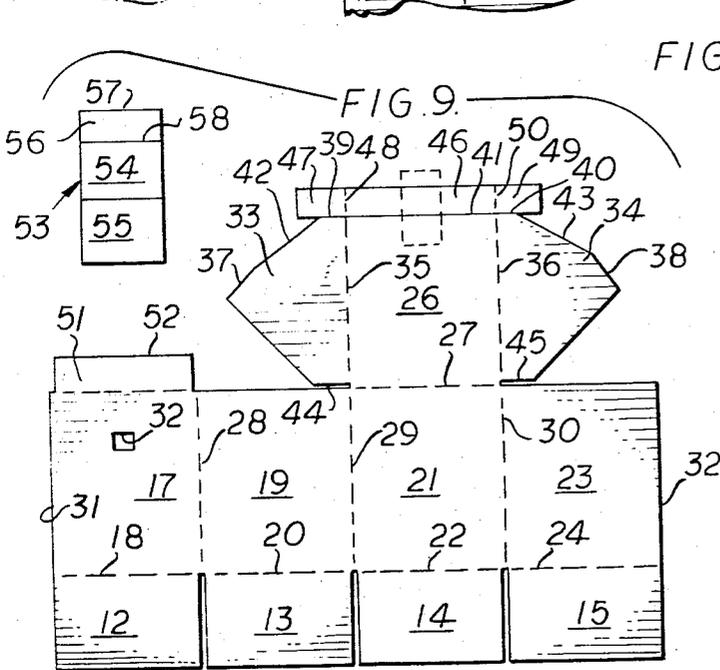
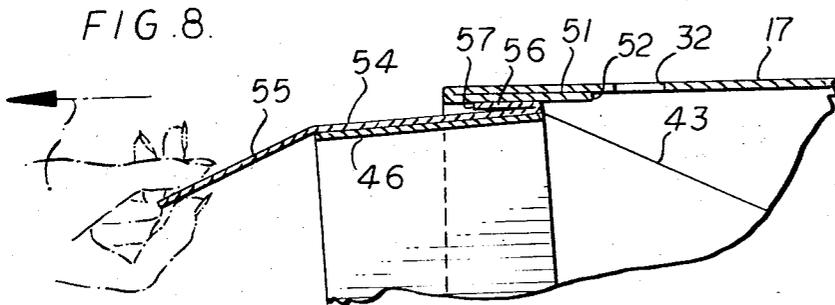
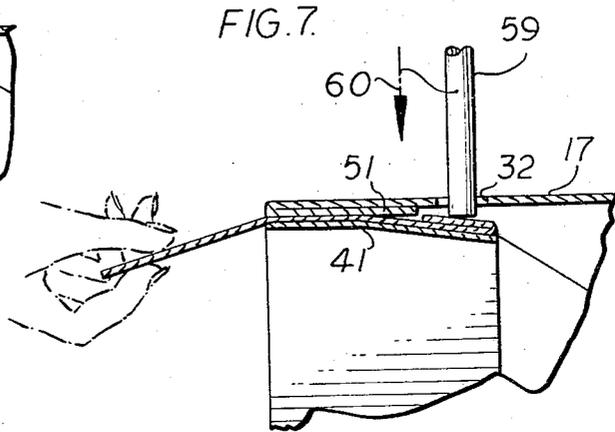
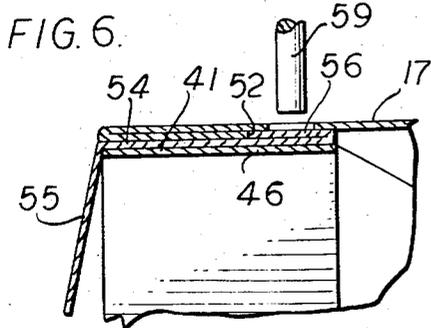
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SHIPPING AND STORAGE BIN CONTAINER CONSTRUCTION

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2 Sheets-Sheet 2



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**SHIPPING AND STORAGE BIN
CONTAINER CONSTRUCTION**

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This invention relates to a shipping and storage bin container construction and more particularly to a container formed of sheet material such as paperboard or the like and having a novel closure structure.

The primary objective of the present invention is to provide a container or carton which is not only usable as an enclosure for shipping various small articles or the like but also as a storage bin in a stock room or storehouse for such articles. Consequently, the labor heretofore required in transferring the articles from shipping cases or the likes to storage bins is eliminated.

It is a further object of the invention to provide a simple yet sturdy shipping container which is economical to manufacture and which container is readily capable of functioning at a storage bin.

A still further object of the invention is to provide a storage bin and shipping container having a swingable closure structure and simple yet effective releasable lock means for the closure structure whereby the closure structure cannot be accidentally opened but may be readily swung to its open position when desired.

Still another object of the invention is to provide a closure structure for a paperboard container which is capable of being releasably locked in its closed position without the use of adhesive, staples or any similar securing means and consequently the container is reusable for shipping.

A more specific object of the invention is the provision of a locking flange on the inwardly facing surface of one of the side walls of the container which is automatically engaged with a lock tab carried by the closure structure as the closure structure is being swung to its closed position for securely locking the closure structure in its closed position, and simple means for permitting disengagement of the tab from the locking flange and movement of the closure structure to its opened position.

The foregoing and other important objects and desirable features inherent in and encompassed by the invention, together with many of the purposes and uses thereof, will become better apparent from a reading of the ensuing description in conjunction with the next drawings in which:

FIGURE 1 is a perspective view of a storage bin and shipping container embodying the invention; the closure structure for the container is shown in its fully closed, locked position;

FIGURE 2 is a view similar to FIGURE 1 with the exception that the closure structure is shown in its fully opened position;

FIGURE 3 is a side elevational view of the container illustrated in FIGURE 1;

FIGURE 4 is a side elevational view of the container as illustrated in FIGURE 2;

FIGURE 5 is a top plan view of the container as illustrated in FIGURE 3;

FIGURE 6 is a vertical sectional view taken substantially along line 6-6 of FIGURE 5;

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FIGURES 7 and 8 are views similar to FIGURE 6 illustrating sequentially the relative positions of certain parts of the container during the closure unlocking and opening steps;

FIGURE 9 is a plan view of the blanks from which a container embodying the invention may be formed and assembled; and

FIGURE 10 is a perspective view of the element that serves as a pull tab as well as a lock tab.

Referring to the drawings in detail, wherein like reference characters represent like elements throughout the various views, the shipping and storage bin container embodying the invention is designated generally by reference character 10. The main body of the container 10 is preferably formed from a single blank or sheet 11 of material such as cardboard, fiberboard, or other like materials. As illustrated in FIGURE 9, the blank 11 includes four rectangularly shaped panels 12, 13, 14 and 15 of substantially identical size. The panels 12, 13, 14 and 15 are adapted to be brought in overlapping relation with each other to form the bottom wall 16 or an end wall if the container 10 is oriented as shown in FIGURE 4. The panel 12 has one edge hingedly connected to a side panel 17 at a fold or score line 18. The panel 13 is similarly connected to a rectangular side panel 19 at a score or fold line 20. A side panel 21 of the same size and shape as panels 17 and 19 is hingedly connected to the panel 14 at a score or fold line 22. A side panel 23 adjacent to and of the same size as the panel 21 is connected to the panel 15 along one edge thereof as defined by a score or fold line 24.

The closure structure, designated generally by reference character 25, of the container 10 includes a generally rectangularly-shaped panel 26 which has one edge hingedly connected to the panel 21 at a score or fold line 27. The score line 27 is spaced and parallel to the score line 22.

As best shown in FIGURE 9, panels 17 and 19 are hingedly interconnected at a score line 28 which is spaced and parallel from a score line 29 which defines the juncture at one side of each of the panels 19 and 21. In a similar manner the score line 30 is utilized to hingedly connect the adjacent panels 21 and 23. When the blank 11 is formed and the various panels thereof are folded during the assembly operation, the free edge 31 of the panel 17 is brought into abutting engagement with the free edge 32 of the panel 23 and suitable tape means (not shown) are utilized to hingedly connect the abutting panel edges 31 and 32 together. It will also be noted that the panel 17 is provided with an opening or aperture 32 therethrough which is spaced substantially midway between the score line 28 and the free edge 31. The purpose of the opening or aperture 32 will be pointed out hereinafter.

In addition to the rectangularly shaped panel 26, the closure structure 25 of the container 10 includes a pair of projecting flaps 33, 34 which are mirror images of each other. The flap 33 is hingedly connected to the rectangularly shaped panel 26 at a score line 35 and, similarly, the flap 34 is hingedly connected to the panel 26 at a score line 36 spaced and parallel to the score line 35. Flap 33 has a relatively short straight edge portion 37 which is angularly oriented with respect to the score line 35 at an acute angle when the body of the container 10 is in its blank, unassembled form as shown in FIGURE 9. In a similar manner, the flap 34 is provided with a relatively short straight edge portion 38 of the same length as the straight edge

portion 37 which is angularly oriented with respect to the score line 36. Consequently, when the blank 11 is folded and assembled into a container 10 ready for use, the edge portions 37 and 38 lie in a common plane. The purpose of the edge portions 37 and 38 will be pointed out hereinafter. The flaps 33 and 34 are each additionally provided with a second relatively short straight edge portion, the second relatively short straight edge portion of the flap 33 being designated by reference character 39 and the second relatively straight edge portion of the flap 34 being designated by the reference character 40. When in the unassembled, blank form, the relatively straight edge portions 39 and 40 lie substantially in the same plane and are in alignment with a score line 41 spaced and parallel from the score line 27. The score line 41 defines one edge of the panel 26. Extending diagonally from one end of the relatively short straight edge portion 37 to one end of the relatively short straight edge portion 39 of the flap 33 is an edge 42. Similarly, the flap 34 is provided with a diagonal edge 43. The blank 10 is also slotted to provide flap edge portions 44, 45 defining the lowermost edges of flaps 33 and 34, respectively, as viewed in FIGURE 9. It will be noted that the flap edge portions 39 and 44 are substantially parallel with respect to each other and, likewise, flap edge portion 40 is substantially parallel to flap edge portion 45. When the container 10 is in its assembled condition and ready for use, the flaps 33 and 34 extend substantially normally to the plane of the panel 26, as best illustrated in FIGURE 2. Hingedly attached to the closure structure panel 26 at the score line 41 is an integrally formed, elongated strip 46 which is coextensive with the panel 26 measured along the score line 41. A tab 47 is hingedly connected to one longitudinal end of the strip 46 at a score line 48 and projects therefrom. Similarly, the opposite end of the strip 46 is provided with a tab 49 hingedly connected thereto at a score line 50. When the container 10 is in its assembled condition, the strip 46 is disposed in a plane substantially at right angles to the plane containing the closure panel 26 and each of the tabs 47, 49, in turn, is folded normally to the strip 46 and caused to abut the inwardly facing surface of a respective one of the flaps 33, 34 to which it is stapled or otherwise suitably secured. It will be noted that the dimension of the strip 46 measured along either the score line 48 or the score line 50 is such that when the container 10 is in its assembled condition, the flap edge portion 39 of the flap 33 is adjacent to and substantially coextensive with the score line 48 and the flap edge 40 of the flap 34 is adjacent to and is substantially coextensive with the score line 50.

The releasable lock means for securing the pivotal closure structure 25 in its closed position, as illustrated in FIGURE 1, includes a locking flange 51 which is hingedly connected to the side wall panel 17 along an edge spaced and parallel from the score line 18. The locking flange 51 is folded with respect to the side wall panel and arranged back-to-back with the surface of the panel 17 which is inwardly facing when the blank 11 is in its assembled condition. Staples or other suitable means are utilized for securing the locking flange 51 to the interior surface of panel 17.

Referring to FIGURE 8, it will be noted that the free edge 52 of the locking flange 51 is spaced a short distance from the opening or aperture 32 formed through the panel 17. In addition to the locking flange 51, the releasable lock means includes a combination pull and lock element, designated generally by reference character 53. The combination pull and lock element 53 is preferably made of cardboard, fiberboard or other like materials and is generally rectangular in shape when viewed in plan and when in a blank condition prior to being formed. The combination pull and lock element 53 includes a central portion 54 which is fixedly secured by any suitable means to the elongated strip 46 substantially midway between the flaps 33 and 34. The size of the central

portion 54 is such that the length thereof measured along the edges parallel to the score lines 48 and 50 is substantially equal to the width of the strip 46 and, consequently, no part thereof overhangs the strip 46. It will also be noted that the width of the strip 46 or length of the central portion 54, as such length is defined above, is such that when the closure structure 25 is in its closed position and the panel 26 lies in a plane substantially containing the edges of the side panels 17, 19, 21 and 23 defining the access opening of the container 10, the central portion 54 bridges the opening or aperture 32 with the innermost edge of the strip 46 spaced further inwardly than the opening 32, as clearly illustrated in FIGURE 6. Integrally formed with and preferably hingedly connected to the central portion 54 is a pull tab 55 which is conveniently disposed exteriorly of the container 10 when the closure structure 25 is in its closed position in order to facilitate opening and closing of the closure structure 25. The combination pull and lock element 53 also includes a lock tab 56 which is folded along the line 58 with respect to the central portion 54 in the direction of the uppermost arrow of FIGURE 10. Inasmuch as the pull and lock element 53 is made from material which is somewhat resilient in nature, there is a tendency for the lock tab 56 to assume the position illustrated in FIGURES 2 and 4 with respect to the central portion 54 when unrestrained. It will also be noted that the size of the lock tab 56 is such in relation to the central portion 54 that when such central portion 54 and lock tab 56 are arranged back-to-back, as illustrated in FIGURE 6, the spacing between the free edge 57 of the lock tab 56 and the juncture of the central portion 54 and the pull tab 55 is just sufficient to accommodate the locking flange 51 when the closure structure 25 is in its fully closed condition. Consequently, when the closure structure 25 is in its fully closed condition, the locking flange 51 and the lock tab 56 lie substantially in a common plane with a portion of the edge 52 of the locking flange 51 in abutting engagement with the free edge 57 of the lock tab 56. As a result of the interaction of the lock tab 56 and the locking flange 51, it will be appreciated that pivoting or swinging movement of the closure structure 25 toward its opened position is effectively prevented. Furthermore, because of the inherent resilient characteristic of the pull and lock element 53 and the strip 46 upon which it is mounted, the edge 57 of the lock tab 56 is continually and yieldably urged outwardly and away from the outer or exposed surface of the central portion 54. Thus, the possibility of inadvertent disengagement of the abutting edges 52 and 57 is mitigated. In order to unlock the closure structure 25 so as to permit moving of the same to an open position, one end of a rod, bar or the like 59 is inserted through the opening 32 and caused to engage the lock tab 56. Thereafter, by applying a force to the rod 59 in the direction of the arrow 60 of FIGURE 7 of sufficient magnitude, the lock tab 56 and areas or sections of the central portion 54 and the strip 46 are depressed sufficiently to cause the edge 57 of the lock tab 56 to move out of abutting engagement with the locking flange 51. Once the locking edges 52 and 57 are disengaged, a slight pull on the tab 55 while simultaneously maintaining the edges 52 and 57 out of engagement with each other, will cause the closure structure 25 to commence its opening movement. Once the closure structure 25 has been moved a slight amount toward its fully opened position, the lock tab edge 57 will clear the lock flange edge 52 and the lock tab 56 will then slidingly engage the inwardly facing surface of the locking flange 51, as illustrated in FIGURE 8, and, thus the closure structure 25 may be readily moved to its fully opened position, as illustrated in FIGURES 2 and 4, without the continued application of pressure to the lock tab 56 by the lock releasing rod 59.

As best illustrated in FIGURES 3 and 4, when the closure structure 25 is in its fully closed position, the flap edge portions 44 and 45 engage the interior surface of

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the panel 21 to limit inward swinging movement of the closure structure 25. In a similar manner, the flap edge portions 37 and 38 engage the interior of the panel 17 adjacent the access opening to limit outward swinging movement of the closure structure 25 and thus, establish the fully opened position thereof. Hence, the flap edge portions 44, 45, 37 and 38 function as stop means for establishing the fully opened and fully closed positions of the closure structure 25 and for limiting swinging movement of the closure structure 25.

It will also be appreciated that during the latter part of the closing movement of the closure structure 25 from its fully opened position the lock tab 56 will be engaged by the outermost edge portion common to the panel 17 and locking flange 51. Continued closing movement of the closure structure 25 thereafter causes the lock tab 56 to be cammed into a position wherein it is disposed substantially back-to-back with the central portion 54 of the pull and lock element 53. Once the closure structure 25 has been moved to its fully closed position with the flap edge portions 44 and 45 in engagement with the panel 21, the lock tab 56 and the locking flange 51 are no more in overlapping relation and because of the aforementioned resilient characteristic of the lock tab 56 and strip 46, the edge 57 of the lock tab 56 automatically moves or springs outwardly into abutting engagement with the locking flange edge 52 to lock the closure structure 25 in its closed position.

The embodiment of the invention chosen for the purposes of illustration and description herein is that preferred for achieving the objects of the invention and developing the utility thereof in the most desirable manner, due regard being had to existing factors of economy, simplicity of design and construction and improvements thought to be effected. It will be appreciated, therefore, that the particular structural and functional aspects emphasized herein are not intended to exclude but rather to suggest such other adaptations and modifications of the invention as fall within the spirit and scope of the invention as defined in the appended claims.

What is claimed is:

1. A shipping and storage bin container construction, comprising, a plurality of side wall panels, each of said side wall panels being hingedly connected to and disposed substantially at right angles to the side wall panels adjacent thereto; end wall means for closing one end of the container, said end wall means being disposed at a respective end of each of said side wall panels, the end edges of said side wall panels opposite said end wall means defining an access opening; closure structure including a closure panel having one end hingedly connected to an edge of a first one of said side wall panels partially defining the access opening, said closure panel being pivotal between a closed position wherein it lies substantially in the plane containing said edges of said side wall panel defining the access opening and a fully opened position wherein said closure panel is disposed in a plane angularly oriented with respect to said first one of said side wall panels at an obtuse angle greater than 90°; and releasable lock means for securing said closure structure in its closed position including a locking flange secured to and arranged back-to-back with the interior surface of a second one of said side wall panels spaced and parallel from said first one of said side wall panels, said locking flange being disposed at the edge of said second one of said side wall panels partially defining the access opening and having an edge spaced and substantially parallel to said edge of said second one of said side wall panels, said releasable lock means further including a generally rectangular, combination pull and lock element, said element having a central portion fixedly secured to said closure panel at the edge thereof opposite the edge hingedly connected to said first one of said side wall panels, said element being provided with a lock tab hingedly connected to said central portion, said lock tab being disposed within the container and having an edge in abutting engagement with

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said edge of said locking flange when said closure panel is in its closed position so as to prevent pivotal movement of said closure panel toward its fully opened position, said lock tab edge being disengageable from abutting engagement with said locking flange edge exteriorly of the container so as to permit movement of said closure panel to its fully opened position.

2. A shipping and storage bin container construction as set forth in claim 1, wherein said central portion of said combination pull and lock element lies substantially in a plane parallel to and spaced from said second one of said side wall panels and substantially perpendicular to said closure panel and said lock tab is interposed between said central portion and said second one of said side wall panels when said closure panel is in its fully closed position, and resilient means yieldably urging said lock tab edge away from said central portion and maintaining said central portion substantially perpendicular to said closure panel.

3. A shipping and storage bin container construction as set forth in claim 2, wherein an end portion of said combination pull and lock element opposite said lock tab serves as a pull tab, said pull tab being exposed exteriorly of the container for facilitating the pivoting of said closure structure between its open and closed positions.

4. A shipping and storage bin container construction as set forth in claim 3, wherein said locking flange extend across and abuts a part of the total surface area of one side of said central portion of said combination pull and lock element and said lock tab is arranged substantially back-to-back with and abuts the remaining surface area of said one side of said central portion when said closure structure is in its closed position.

5. A shipping and storage bin container construction as set forth in claim 4, wherein said closure structure includes a pair of flaps, each of said flaps being hingedly connected to a respective edge of said closure panel and extending substantially perpendicular with respect thereto, each of said flaps slidingly engaging the interior surface of a respective one of said side wall panels during pivotal movement of said closure structure between its opened and closed positions; and stop means for establishing the closed and opened positions of said closure structure.

6. A shipping and storage bin container construction as set forth in claim 5, wherein said stop means includes a first straight edge portion of each of said flaps, said first straight edge portions being substantially coextensive and parallel, said first straight edge portions abutting the interior surface of said first one of said side wall panels when said closure structure is in its closed position to preclude movement of said closure structure in one direction, said stop means further including a second straight edge portion of each of said flaps, said second straight edge portions being coextensive and parallel, said second straight edge portions operatively engaging the interior surface of said second one of said side wall panels when said closure structure is in its fully opened position to prevent further movement of said closure structure in one direction.

7. A shipping and storage bin container construction as set forth in claim 6, wherein said second one of said side wall panels is provided with an aperture therethrough spaced substantially midway between the adjacent side wall panels, said lock tab bridging said aperture when said closure panel is in its closed position and said closure structure is in its locked condition, said aperture affording accessibility to said lock tab in order to depress said lock tab and move said central portion out of perpendicular relation with said closure panel to disengage said lock tab edge from said locking flange edge against the biasing action of said resilient means.

8. A shipping and storage bin container construction as set forth in claim 7, wherein said closure structure includes an elongated strip fixed to said closure panel and said flaps, said strip lying in a plane substantially perpendicular to said closure panel and said flaps, said cen-

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tral portion of said combination pull and lock element
being fixed to a midportion of said strip.

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