HIGH STRENGTH PAPERBOARD CONTAINERS

Charles D. Welshenbach, Sandusky, Ohio, assignor to
West Virginia Pulp & Paper Company, New York,
N.Y., a corporation of Delaware

Filed May 9, 1968, Ser. No. 754,230
5 Claims. (Cl. 229—23)

This invention relates to paperboard containers and more particularly to containers or cartons that have strength and rigidity enough to make them suitable for use as shipping and storing containers for shipping and storing loose heavy articles such as nails, bolts, nuts, screws or the like, or for shipping other materials.

The present invention may comprise an inner box and cover box of identical construction except that the cover box is made slightly larger than the inner box so that its internal dimensions correspond to the external dimensions of the inner box to permit it to telescopeically receive the inner box.

The inner box and cover box may be formed from a substantially rectangular web section, and each has an end wall strongly united to the upright side walls, two adjacent side walls being single ply walls and the other two adjacent side walls being double ply walls.

The inner box and cover box may be so shaped that they can be interfitted only when the double ply walls of the cover box are contiguous to the single ply walls of the inner box and the single ply walls of the cover box are contiguous to the double ply walls of the inner box.

Containers having some of the above features have been previously provided. However, the present invention relates to box structure wherein these features are provided in a manner which enables the cover box and inner box to be shipped in a collapsed condition to thereafter be erected by the user without the necessity of the user employing any stapling or gluing or other equivalent fastening means whatsoever. Previously provided containers having some of the features mentioned above are extremely difficult and troublesome to use where high strengths are required, but they cannot be shipped in a collapsed position and then used without the user employing stapling or gluing or other fastening operations in erecting the container.

It is readily conceivable that in some circumstances and for some applications the user of containers contemplated by the present invention may not wish to have the containers pre-stapled, pre-glued or pre-fastened by the manufacturer. Even aside from the feature of being erectable from its collapsed position without fastening operations, the invention represents a significant contribution to the field of packaging due to its economy, its high stack strength which compares with the best containers of the prior art, and its usefulness in many packaging applications.

In another significant aspect, the invention contemplates containers which do not comprise a composite container consisting of a cover box and an inner box but which comprise a single box of the same or similar structure as each of the parts of the composite container. Such single box is provided with end flaps and may be preferably additionally provided with a liner. Such type of containers has been found to lend itself very well to packaging of relatively small amounts of loose heavy materials such as nails or other matter.

Other objects, uses and advantages will become apparent from the following description.

In the drawings:

FIGURE 1 is a perspective view of a container embodying the invention.

FIGURE 2 is a cross-sectional view on a slightly enlarged scale of the container shown in FIGURE 1.

FIGURE 3 is a horizontal cross-section taken on line 3—3 in FIGURE 2.

FIGURE 4 is a vertical cross-section taken on line 4—4 in FIGURE 2.

FIGURE 5 illustrates in six perspective views designated A—F the erection from collapsed position of the cover box of the container shown in FIGURES 1—4.

FIGURE 6 illustrates a pair of blanks from which the cover box and inner box of the container shown in FIGURES 1—4 may be formed, the blanks being viewed from what is to become their inner sides.

FIGURE 7 illustrates a pair of blanks from which slightly variant embodiments of the invention may be formed, the blanks being viewed from what is to become their inner sides.

FIGURE 8 is a vertical cross-section of a container made from the blanks of FIGURE 7 and embodying the invention.

FIGURE 9 is a vertical cross-section taken on line 9—9 in FIGURE 8.

FIGURE 10 is a horizontal cross-section taken on line 10—10 in FIGURE 8.

FIGURE 11 is a perspective view of another container embodying the invention.

FIGURE 12 is a cross-sectional view on a slightly enlarged scale of the container shown in FIGURE 11.

FIGURE 13 is a horizontal cross-section taken on line 13—13 in FIGURE 12.

FIGURE 14 is a vertical cross-section taken on line 14—14 in FIGURE 12.

FIGURE 15 illustrates in eight perspective views designated A—H the erection of the container shown in FIGURES 11—14.

FIGURE 16 illustrates a pair of blanks from each of which, together with a liner, the box of the container shown in FIGURES 11—14 may be formed, the blanks being viewed from what is to become their inner sides.

FIGURE 17 illustrates a pair of blanks from which slightly variant embodiments of the invention may be formed, the blanks being viewed from what is to become their inner sides.

FIGURE 18 is a vertical cross-section of a container made from one of the blanks of FIGURE 17 together with a liner.

FIGURE 19 is a vertical cross-section taken on line 19—19 in FIGURE 18.

FIGURE 20 is a horizontal cross-section taken on line 20—20 in FIGURE 18.

FIGURE 21 is a vertical cross-section of another container made from the other of the blanks of FIGURE 17 together with a liner.

FIGURE 22 is a vertical cross-section taken on line 22—22 in FIGURE 21.

FIGURE 23 is a horizontal cross-section taken on line 23—23 in FIGURE 21.

FIGURE 24 is a view of a supplemental liner such as that shown in FIGURES 18—20 and 21—23.

FIGURE 25 is a view of another supplemental liner which may be employed according to the invention.

FIGURE 26 is a perspective view showing a container embodying a very promising variant of the invention.

FIGURE 27 is a cross-sectional view on a slightly enlarged scale of the container shown in FIGURE 26.

FIGURE 28 is a horizontal cross-section taken on line 28—28 in FIGURE 27.

FIGURE 29 is a vertical cross-section taken on line 29—29 in FIGURE 27.

FIGURE 30 illustrates a pair of blanks from which the cover box and inner box of the container shown in
FIGURES 26-29 may be formed, the blanks being viewed from what is to become their inner sides.

FIGURE 31 illustrates a pair of blanks from which slightly variant embodiments of the invention may be formed, the blanks being viewed from what is to become their inner sides.

FIGURE 32 is a horizontal cross-section of a container made from the blanks of FIGURE 31 and embodying the invention.

FIGURE 33 is a horizontal cross-section taken on line 33–33 in FIGURE 32.

FIGURE 34 is a vertical cross-section taken on line 34–34 in FIGURE 32.

FIGURE 35 is a cross-sectional view of another container embodying the invention.

FIGURE 36 is a horizontal cross-section taken on line 36–36 in FIGURE 35.

FIGURE 37 is a vertical cross-section taken on line 37–37 in FIGURE 35.

FIGURE 38 illustrates a pair of blanks from each of which, together with a liner, the box of the container shown in FIGURES 35-37 may be formed, the blanks being viewed from what is to become their inner sides.

FIGURE 39 illustrates a pair of blanks from which slightly variant embodiments of the invention may be formed, the blanks being viewed from what is to become their inner sides.

FIGURE 40 is a vertical cross-section of a container made from one of the blanks of FIGURE 39 together with a liner.

FIGURE 41 is a horizontal cross-section taken on line 41–41 in FIGURE 40.

FIGURE 42 is a vertical cross-section taken on line 42–42 in FIGURE 40.

FIGURE 43 is a vertical cross-section of another container made from the other of the blanks of FIGURE 39 together with a liner.

FIGURE 44 is a horizontal cross-section taken on line 44–44 in FIGURE 43.

FIGURE 45 is a vertical cross-section taken on line 45–45 in FIGURE 43.

FIGURE 46 is a view of a supplemental liner such as that shown in FIGURES 40–42 and 43–45.

FIGURE 47 is a view of another supplemental liner which may be employed according to the invention.

Referring to FIGURES 1–6 of the accompanying drawings, the illustrated container may comprise an inner box or unit and a cover box or unit, the two boxes or units being preferably of equivalent construction except for the slight differences in dimensions necessary to permit the cover box to fit closely over the inner box.

In order to distinguish the parts of the inner box from the parts of the cover box where the two are in assembled relation while at the same time showing the similarity between the two boxes, the parts of the inner box are designated with the same reference numerals as the corresponding parts of the cover box with the addition of the reference character "a.

The cover box or unit of the present invention is preferably vertically elongated and has adjacent, upright, single ply walls 1 and 2. The other walls of the box are double ply walls having outer plies 3 and 4 and inner plies 5 and 6, respectively. Single plies (1 and 4) of two adjacent side walls (1 and 4, 6) are hinged to and integral with each other and each also is hinged to and integral with another ply (2 and 3 respectively) of the side walls (2 and 3, 5 respectively). The side walls will therefore be seen to comprise four rectangularly disposed walls with a pair of the side walls being double ply, the remaining pair of the side walls being single ply, and each member of each of such pairs being adjacent to the other member of its pair.

The end wall of the cover box or unit comprises an inner ply 7 and an outer ply 8. Each of the plies 7 and 8 is hinged to and integral with one ply on each of a twosome of opposite side walls. Thus, the ply 7 is hinged to and integral with the inner ply 5 of the double ply side wall 3, 5 and also is hinged to and integral with the single ply side wall 1. The ply 8 is hinged to and integral with the inner ply 6 of the double ply side wall 4, 6 and also is hinged to and integral with the single ply side wall 2.

In the particular structure illustrated, the plies 2 and 3 are joined by a seam or flap 9 which is integral with the ply 2 and is suitably fastened to the ply 3 by stapling, as shown, or by gluing or other suitable means.

The cover box may be provided with handles (not shown) if desired. An appropriate type of handle structure is shown in U.S. Patent No. 2,761,610.

The inner box or unit of the present invention is preferably vertically elongated and has adjacent, upright, single ply side walls 1a and 2a. The other walls of the box are double ply, having outer plies 3a and 4a and inner plies 5a and 6a, respectively. Single plies 1a and 4a of two adjacent side walls (1a and 4a, 6a respectively) are hinged to and integral with each other and also each is hinged to and integral with another ply (2a and 3a respectively) of the side walls (2a and 3a, 5a respectively). The side walls will therefore be seen to comprise four rectangularly disposed walls with a pair of the side walls being double ply walls and the remaining pair of the side walls being single ply walls, and each member of each of such pairs being adjacent to the other member of its pair.

The end wall of the inner box or unit comprises an inner ply 7a and an outer ply 8a. Each of the plies 7a and 8a is hinged to and integral with one ply of each of a twosome of opposite side walls. Thus, the ply 7a is hinged to and integral with the inner ply 5a of the double ply side wall 3a, 5a and also is hinged to and integral with the single ply side wall 1a. The ply 8a is hinged to and integral with the inner ply 6a of the double ply side wall 4a, 6a and also is hinged to and integral with the single ply side wall 2a.

The plies 2a and 3a are joined by a seam or flap 9a which is integral with the ply 2a and is suitably fastened to the ply 3a by stapling or by gluing or by other suitable means.

When the cover box or unit and the inner box or unit are telescoped together with their closed ends at opposite ends of the resulting container, the double ply side walls of each box are positioned against the single ply side walls of the other box to provide a container having four triple ply side walls and two double ply end walls.

The width of the plies 7, 8, 7a and 8a between their bounding hinge lines is such as to cause the plies 5, 6, 5a and 6a, respectively, in the errected condition of the structure, to be positioned immediately and snugly adjacent the inner sides of the plies 3, 4, 3a and 4a, respectively. The transverse width of the plies 5, 6, 5a and 6a is preferably such as to cause the side edges of these plies to snugly engage the plies or walls against which these edges abut in the erected condition of the container.

The cover box may be shipped in the collapsed condition shown in FIGURE 5A. It is erected by the end user without any fastening operations by following the sequences of steps shown in FIGURES 5B to 5E. The box may be shipped in a different collapsed state by extending the long flaps, one of which consists of the members 5 and 7 and the other of which consists of the members 6 and 8, from the opposite or rear end of the box, as it is seen in FIGURE 5. However the box is less conveniently erected from this latter collapsed condition. The inner box may also be shipped in either of the above collapsed conditions. In any event, the arrangement is such that the inner ply 5 or 6 or 5a or 6a of each double ply side wall of the cover box and inner box may with its associated end wall be collapsed in-
wardly when the box is empty and separated from its partner box. However this may not be done when the cover box and inner box are telescoped together. In use, there will rarely be occasion to so collapse the structure, but the structural features which render the structure so collapsible also render it readily erectible without fastening operations, and this latter feature is of significance, as earlier explained.

It should be clear that for the cover box or unit shown in FIGURES 1-5, and similarly for the inner box or unit, the plies 1-4 or 1a-4a constitute four adjacent rectilinear tube-forming panels, the two laterally extreme panels of the four (2 and 3 or 2a and 3a) being seamed to each other by the flap 9 or 9a to provide a tube comprising the four panels. The panels 7 and 8 or 7a and 8a constitute two end-wall-forming panels each hinged at a first edge to its own one of an adjacent pair (1, 2 or 1a, 2a) of the four tube panels 1-4 or 1a-4a. The plies 5 and 6 or 5a and 6a constitute liner panels for forming the inner plies of two walls of the container unit which two walls' outer plies will comprise the tube panels 3, 4 or 3a, 4a. Each of the two end-wall-forming panels 7 and 8 or 7a and 8a is hinged at a second edge opposite to its above-mentioned first edge to one of the liner panels 5 and 6 or 5a and 6a. The width of each of the end-wall-forming panels between its above-mentioned first and second edges is sufficient to allow the hinged edge of its associated liner panels 5 and 6 or 5a and 6a to snugly engage the inner side of the tube at an end thereof when the tube is erected, but such width is insufficient to allow the fast-mentioned hinged edge to extend over the end of the tube.

The blanks shown in FIGURE 7 may also be made up into boxes or units embodying some or all aspects of the invention. The outer or cover box blank includes the plies or panels 11-18 and the flap 19. The inner box includes the plies or panels 11a-18a and the flap 19a. The blanks are made up into boxes by fastening the tabs 19 and 19a to the panels 13 and 12a, respectively, and folding the blanks as indicated. The boxes are assembled into a container having triple ply side walls and double ply end walls. A first side wall may comprise the plies 12, 13a, 15a, the plies being stated in the order of their disposition form outer to inner locations in the structure. A second adjacent side wall may comprise the plies 13, 12a, 16a. A third side wall adjacent to the second and opposite the first may comprise the plies 14, 15, 11a. The fourth side wall may comprise the plies 11, 16, 14a. The inner ply is ply 17 and the inner ply 18. The lower end wall comprises the outer ply 18a and the inner ply 17a.

The cover box or cover unit in this resulting container is vertically elongated and has adjacent, upright, single ply walls 12 and 13. The other walls of the box are adjacent, double ply walls having outer plies 11 and 14 and inner plies 16 and 15, respectively. The plies 11 and 14 are hinged to and integral with each other and also each is hinged to and integral with another ply (12 and 13 respectively) of another of the side walls (the single ply walls 12 and 13, respectively). The side walls will therefore be seen to comprise four rectilinearly disposed walls with a pair of the side walls being double ply, the remaining pair of the side walls being single ply, and each member of each of such pairs being adjacent to the other member of its pair.

Third wall of the cover box, made up from the panels 11-18, comprises an outer ply 17 and an inner ply 18. Each of the plies 17 and 18 is hinged to and integral with one ply on each of a twosome of opposite side walls. Thus, the ply 17 is hinged to and integral with the inner ply 15 of the double ply side wall 14, 15 and also is hinged to and integral with the single ply side wall 12. The ply 18 is hinged to and integral with the inner ply 16 of the double ply side wall 11, 16 and also is hinged to and integral with the single ply side wall 13.

The inner box or unit made up from the panels 11a-18a is vertically elongated and has adjacent, upright, single ply walls 11a and 14a. The other walls of this box are adjacent, double ply walls having outer plies 12a and 13a and inner plies 16a and 15a, respectively. The plies 11a and 14a are hinged to and integral with each other and also each is hinged to and integral with another ply (12a and 13a respectively) of another of the side walls (12a, 16a and 13a, 15a respectively). The side walls will therefore be seen to comprise four rectilinearly disposed walls with a pair of the side walls being double ply, the remaining pair of the side walls being single ply, and each member of each of such pairs being adjacent to the other member of its pair.

The end wall of the inner box or unit made up from the panels 11a-18a comprises an inner ply 17a and an outer ply 18a. Each of the plies 17a and 18a is hinged to and integral with one ply on each of a twosome of opposite side walls. Thus, the ply 17a is hinged to and integral with the inner ply 15a of the double ply side wall 13a, 15a and also is hinged to and integral with the single ply side wall 11a. The ply 18a is hinged to and integral with the inner ply 16a of the double ply side wall 12a, 16a and also is hinged to and integral with the single ply side wall 14a.

The width of the plies 17, 18, 17a and 18a between their bounding hinge lines is such as to cause the plies 15, 16, 15a and 16a respectively, in the erected condition of the structure, to be positioned immediately and snugly adjacent the inner sides of the plies 14, 11, 13a and 12a respectively. The transverse width of the plies 15, 16, 15a and 16a is preferably such as to cause the side edges of these plies to snugly engage the plies or walls against which these edges abut, in the erected condition of the carton.

The cover box or unit 11-18 and the inner box or unit 11a-18a may be collapsed, shipped and erected in the ways previously described in connection with the boxes 1-8 and 1a-8a.

Referring to FIGURES 11-16 of the accompanying drawings, the container other illustrated is not a composite container consisting of an inner box and an outer box, but rather comprises only one box, which is adapted to be combined with a suitable liner.

Since in connection with the container shown in FIGURES 11-16 there is no cover box or inner box, as such, the reference character "a" is not used in connection with these figures to show correspondence of parts, as was done in connection with FIGURES 1-10.

The box shown in FIGURES 11-16 is preferably equal rather than elongated. It has adjacent, upright, single ply side walls 21 and 22. The other walls of the box are double ply, having outer plies 23 and 24 and inner plies 25 and 26, respectively. Single plies 21 and 24 of two adjacent side walls (21 and 24, 26 respectively) are hinged to and integral with each other and also each is hinged to and integral with another ply (22 and 23 respectively) of another of the side walls (22 and 23, 25 respectively). The side walls will therefore be seen to comprise four rectilinearly disposed walls with a pair of the side walls being double ply walls and the remaining pair of the side walls being single ply walls, and each member of each of such pairs being adjacent to the other member of its pair.

An end wall of the article comprises an inner ply 27 and an outer ply 28. Each of the plies 27 and 28 is hinged to and integral with one ply on each of a twosome of opposite side walls. Thus, the ply 27 is hinged to and integral with the inner ply 25 of the double ply side wall 23, 25 and also is hinged to and integral with the single ply side wall 21. The ply 28 is hinged to and integral with the inner ply 26 of the double ply side wall 24, 26 and also is hinged to and integral with the single ply side wall 22.

At the other end of the article, flaps 20 are integrally
The plies 22 and 23 are joined by a seam or flap 29 which is integral with the ply 22 and is suitably fastened to the ply 23 by stapling or by gluing or by other suitable means.

The container unit thus far described is preferably augmented by a supplemental liner, such as the supplemental liner 50 shown in FIGURE 24 or the supplemental liner 51 shown in FIGURE 25. In FIGURES 24 and 25, the article is shown provided with the supplemental liner 50. The use of the supplemental liner 50 provides a total of three plies of paperboard on each side of the assembled article. The use of the supplemental liner 51 provides a total of two plies of paperboard on each side of the assembled article. It will be seen that whichever supplemental liner is used, the number of plies of the supplemental liner at the single ply side walls formed by the plies or panels 21 and 22 exceeds by one the number of plies of the supplemental liner at the double ply side walls 23, 25 and 24, 26. The width of the plies 27 and 28 between their bounding hinge lines is such as to cause the plies 25 and 26, respectively, in the erected condition of the structure, to be positioned immediately and snugly adjacent the inner sides of the plies 23 and 24, respectively. The transverse width of the plies 25 and 26 is preferably such as to cause the side edges of these plies to snugly engage the plies or walls against which these edges abut in the erected condition of the carton.

The article may be shipped in the collapsed position shown in FIGURE 15A. It may be erected by the end user by following the sequence of steps shown in FIGURES 15B to 15H, except that the end flaps 20 need not be folded outwardly as shown in FIGURES 15B to 15H. They are shown in the drawings to enable the other parts to be more clearly seen. The article may be shipped in a different collapsed state by extending the two long flaps, one of which consists of the members 25 and 27 and the other of which consists of the members 26 and 28, from the opposite or rear end of the article, as it is seen in FIGURE 15. However, the article is less conveniently erected from this latter collapsed condition. In any event, the arrangement is such that the inner ply 25 or 26 of each double ply side wall of the article may, with its associated wall ply, be collapsed inwardly when the article is empty and the end flaps 20 are open. However, this may not be done when the end flaps 20 are closed. In use, there will rarely be occasion to collapse the structure, but the structural features which render the structure so collapsible also render it readily erectable, and this latter feature is of significance, as earlier explained.

It should be clear that for the article shown in FIGURES 11–15, the plies 21–24 constitute four adjacent rectilinear tube-forming panels, the two laterally extreme panels of the four (22 and 23) being sealed to each other by the flap 29 to provide a tube comprising the four panels. The plies 27 and 28 constitute two wall-forming panels each hinged at a first edge to its own one of an adjacent pair (21, 22) of the four tube panels 21–24. The plies 25 and 26 constitute liner panels for forming the inner plies of two walls of the unlined article which two walls’ outer plies will comprise the tube panels 23 and 24. Each of the two end-wall-forming panels 27 and 28 is hinged at a second edge opposite to its above-mentioned first edge to one of the liner panels 25 and 26. The width of each of the end-wall-forming panels between its above-mentioned first and second edges is sufficient to allow the hinged edge of its associated liner panels 25 and 26 to snugly engage the inner side of the tube at an end thereof when the tube is erected, but such width is insufficient to allow the last-mentioned hinged edge to extend over the end of the tube.

The blank shown in the left hand portion in FIGURE 17 may also be made up into an article embodying some or all aspects of the invention. A container employing this article is shown in FIGURES 18–20. With reference to these figures, the illustrated container again comprises only one box which is adapted to be combined with a suitable supplemental liner.

The box shown in FIGURES 18–20 has adjacent, upright, single ply side walls 31 and 34. The other walls of the box are double ply, having two plies 32 and 33 and inner plies 36 and 35 respectively. Single plies 31 and 34 of two adjacent side walls (31 and 34) are hinged to and integral with each other and also each is hinged to and integral with another ply 32 and 33 respectively of one of the side walls (32, 36 and 33, 35 respectively). The side walls are therefore seen to comprise four rectilinearly disposed walls with a pair of the side walls being double ply walls and the remaining pair of the side walls being single ply walls, and each member of each of such pairs being adjacent to the other member of its pair.

An end wall of the article comprises an inner ply 37 and an outer ply 38. Each of the plies 37 and 38 is hinged to and integral with one ply of each of a twosome of opposite side walls. Thus, the ply 37 is hinged to and integral with the inner ply 35 of the double ply side wall 33, 35 and also is hinged to and integral with the single ply side wall 31. The ply 38 is hinged to and integral with the inner ply 36 of the double ply side wall 32, 36 and also is hinged to and integral with the single ply side wall 34.

At the other end of the article, the flaps 39 are integral to the plies or panels 31–34. The flaps 39 are glued or otherwise suitably adhered or fastened to an end wall opposite to that formed by the plies or panels 37 and 38. These flaps 39 must be unfastened to conveniently collapse the box.

The plies 32 and 33 are joined by a seam or flap 39 which is integral with the ply 33 and is suitably fastened to the ply 32 by stapling or by gluing or by other suitable means.

The container unit thus far described is preferably augmented by a supplemental liner, such as the supplemental liner 50 shown in FIGURE 24 or the supplemental liner 51 shown in FIGURE 25. In FIGURES 18–20, the article is shown provided with the supplemental liner 50. It will be seen that which ever supplemental liner is used the number of plies of the supplemental liner at the single ply side walls 31 and 34 exceeds by one the number of plies of the supplemental liner at the double ply side walls 32, 35 and 33, 36.

The width of the plies 37 and 38 between their bounding hinge lines is such as to cause the plies 35 and 36, respectively, in the erected condition of the structure, to be positioned immediately and snugly adjacent the inner sides of the plies 33 and 35 respectively. The transverse width of the plies 35 and 36 is preferably such as to cause the side edges of these plies to snugly engage the plies or walls against which these edges abut in the erected condition of the carton.

It should be clear that for the article shown in FIGURES 18–20, the plies 31–34 constitute four adjacent rectilinear tube-forming panels, the two laterally extreme panels of the four (32 and 35) being sealed to each other by the flap 39 to provide a tube comprising the four panels. The plies 37 and 38 constitute two end-wall-forming panels, each hinged at a first edge to its own one of an adjacent pair (31 and 34) of the four tube panels 31–34. The plies 35 and 36 constitute liner panels for forming the inner plies of two walls of the unlined article which two walls’ outer plies will comprise the tube panels 32 and 33.
its above-mentioned first edge to one of the liner panels 35 and 36. The box shown in FIGURES 18–20 may be collapsed, shipped and erected in the ways previously described in connection with the box illustrated in FIGURES 11–16.

The blank shown in the right hand portion of FIGURE 17 may also be made up into an article embodying some or all of the aspects of the invention. A container employing this article is shown in FIGURES 21–23.

With reference to these figures, the illustrated container again comprises only one box which is adapted to be combined with a suitable supplemental liner rather than consisting of an inner box and an outer box.

The box shown in FIGURES 21–23 has adjacent, upright, single ply side walls 42 and 43. The other walls of the box are double ply, having outer plies 41 and 44 and inner plies 46 and 45 respectively. Single plies 41 and 44 of two adjacent side walls (41, 46, 44, 45) are hinged to and integral with each other and also each is hinged to and integral with another ply (42 and 43 respectively) of another one of the side walls (42 and 43 respectively). The side walls will therefore be seen to consist of four rectilinearly disposed walls with a pair of side walls being double ply walls and the remaining pair of the side walls being single ply walls and each member of such pairs being adjacent to the other member of its pair.

An end wall of the article comprises an inner ply 48 and an outer ply 47. Each of the plies 48 and 47 is hinged to and integral with one ply of each of a twosome of opposite side walls. Thus, the ply 48 is hinged to and integral with the inner ply 46 of the double ply side wall 41, 46 and also is hinged to and integral with the single ply side wall 43. The ply 47 is hinged to and integral with the inner ply 45 of the double ply side wall 44, 45 and also is hinged to and integral with the single ply side wall 42.

At the other end of the article, flaps 40 are integrally hinged to the plies or panel 41–48. The flaps 40 are glued or otherwise suitably adhered or fastened to form an end wall opposite to that formed by the plies or panels 47 and 48. These flaps 40 must be unfastened to conveniently collapse the box.

The plies 42 and 43 are joined by a seam or flap 49 which is integral with the ply 43 and is suitably fastened to the ply 42 by stapling or by gluing by or other suitable means.

Again, the container unit thus far described in connection with FIGURES 21–23 is preferably augmented by a supplemental liner such as the supplemental liner 50 shown in FIGURE 24 or the supplemental liner 51 shown in FIGURE 25. In FIGURES 21–23 the article is shown provided with the supplemental liner 50. It will be seen that whenever supplemental liner is used, the number of plies of the supplemental liner at the single ply side walls 42 and 43 exceeds by one the number of plies of the supplemental liner at the double ply side walls 41, 46 and 44, 45.

Again, the width of the plies 47 and 48 between their bounding hinge lines is such as to cause the plies 45 and 46, respectively, in the erected condition of the structure to be positioned immediately and snugly adjacent the inner sides of the plies 44 and 41, respectively, and the transverse width of the plies 45 and 46 is preferably such as to cause the side edges of these plies to snugly engage the plies or walls against which these edges abut in the erected condition of the structure.

It should be clear that for the article shown in FIGURES 21–23, the plies 41–44 constitute four adjacent rectilinear tube-forming panels, the two laterally extreme panels of the four (42 and 43) being seamed to each other by the flap 49 to provide a tube comprising the four panels. The plies 41 and 48 constitute two end wall-forming panels, each hinged at a first edge to its own one of an adjacent pair (42 and 43) of the four tube panels 41–44.

The plies 45 and 46 constitute liner panels for forming the inner plies of two walls of the unlined article which two walls’ outer plies will comprise the tube panels 44 and 41. Each of the two end-wall-forming panels 47 and 48 is hinged at a second edge opposite to its above-mentioned first edge to one of the liner panels 45 and 46.

The box shown in FIGURES 21–23 may be collapsed, shipped and erected in the ways previously described in connection with the box illustrated in FIGURES 11–16.

The structure shown in FIGURES 26–30 comprises an inner box or unit and a cover box or unit, the two boxes or units being preferably of similar construction except for the slight differences in dimensions necessary to permit the cover box to fit closely over the inner box.

Again as before, in order to distinguish the parts of the inner box from the parts of the cover box where the two are in assembled relation while at the same time showing the similarity between the two boxes, the parts of the inner box are designated with the same reference numerals as the corresponding parts of the cover box, with the addition of the reference character "a".

The cover box or unit which is shown has adjacent, upright, single ply walls 61 (not seen in FIGURE 26) and 62. The other walls of the box are double ply walls having inner plies 63 and 64 and outer plies respectively. Single plies (61 and 64) of two adjacent side walls (61 and 64, 66) are hinged to and integral with each other and each also is hinged to and integral with another ply (62 and 63 respectively) of another one of the side walls (62 and 63, 65 respectively). The side walls will therefore be seen to comprise four rectilinearly disposed walls with one pair of the side walls being double ply, the remaining pair of the side walls being single ply, and each member of such pairs being adjacent to the other member of its pair.

The end wall of the cover box or unit comprises an inner ply 67 and an outer ply 68. Each of the plies 67 and 68 is hinged to and integral with one ply of each of a twosome of opposite side walls. Thus, the ply 67 is hinged to and integral with the outer ply 65 of the double ply side wall 63, 65 and also is hinged to and integral with the single ply side wall 61. The ply 68 is hinged to and integral with the outer ply 66 of the double ply side wall 64, 66 and also is hinged to and integral with the single ply side wall 62.

In the particular structure illustrated, the plies 62 and 63 are joined by a seam or flap which is integral with the ply 62 and is suitably fastened to the ply 63 by stapling, or by gluing or other suitable means. The outer ply 66 and 65 are affixed to the plies 63 and 64, respectively, as by gluing or other suitable means.

The inner box or unit which is shown has adjacent, upright, single ply side walls 61a and 62a. The other walls of the box are double ply, having inner plies 63a and 64a and outer plies 65a and 66a respectively. Single plies 61a and 64a of two adjacent side walls (61a and 64a, 66a respectively) are hinged to and integral with each other and also each is hinged to and integral with another ply (62a and 63a respectively) of another one of the side walls (63a and 65a, 65a respectively). The side walls will therefore be seen to comprise four rectilinearly disposed walls with a pair of the side walls being double ply walls and the remaining pair of the side walls being single ply walls, and each member of such pairs being adjacent to the other member of its pair.

The end wall of the inner box or unit comprises an inner ply 67a and an outer ply 68a. Each of the plies 67a and 68a is hinged to and integral with one ply of each of a twosome of opposite side walls. Thus, the ply 67a is hinged to and integral with the outer ply 65a of the double ply side wall 63a, 65a and also is hinged to and integral with the single ply side wall 61a. The ply 68a is hinged to and integral with the other ply 66a of the double ply side wall 64a, 66a and also is hinged to and integral with the single ply side wall 62a.

The plies 62a and 63a are joined by a seam or flap 69a
which is integral with the ply 62a and is suitably fastened to the ply 63a by stapling, or by gluing or by other suitable means. The plies 65a and 66a are affixed to the plies 63a and 64a, respectively, as by gluing or other suitable means.

When the cover box or unit and the inner box or unit are telescoped together with their closed ends at opposite ends of the resulting container, the double ply side walls of each box are positioned against the single ply side walls of the other box to provide a container having four triple ply side walls and two double ply end walls.

Cutouts 60 may be provided in the cover box and a cutout 65b may be provided in the inner box, as shown in FIGURE 30. The arrangement is such that when the container is assembled the cutouts 60 associated with the plies 63 and 65 are aligned and also aligned are the cutouts 60 and 65a associated with the plies 61 and 66a, respectively. In this manner a handle for the container is provided. Similar handles may be provided for the container of FIGURES 1–4, 8–10, and 32–34. For example, in the container of FIGURES 1–4 cutouts equivalent to the cutouts 60 could be provided in the panels 1, 2, and 3 and an equivalent to 65a could be provided in panel 4a. In the container of FIGURES 8–10, cutouts equivalent to 60 could be provided in panels 12, 14, and 15 and an equivalent to 65a could be provided in panel 13a. In the container of FIGURES 32–34 cutouts equivalent to the cutouts 60 could be provided in panels 72, 74, and 75 and an equivalent 65a could be provided in panel 75a. An edge of the inner box or unit of the filled and assembled container may be engaged at only one side of the container (at the cutouts in panels 4a, 13a, 65a and 75a) by one handling the container; nevertheless the handles work satisfactorily even though the inner box is urged to drop out of the outer box by a contained load of 50 or 100 pounds.

It should be clear that for the cover box or unit shown in FIGURES 26–30, and similarly for the inner box or unit, the plies 61–64 or 61a–64a constitute four adjacent, rectilinear, tube-forming panels, the two laterally external panels of the four (62 and 63 or 62a and 63a) being seamed to each other by the flap 69 or 69a to provide a tube comprising the four panels. The plies 67 and 68 or 67a and 68a constitute two end-wall-forming panels each hinged at a first edge to its own one of an adjacent pair (61, 62 or 61a, 62a) of the four tube panels 61–64 or 61a–64a. The plies 65 and 66 or 65a and 66a constitute a face panel for forming one of the side walls of the container unit which two walls outer plies will comprise the tube panels 63, 64 or 63a, 64a. Each of the two end-wall-forming panels 67 and 68 or 67a and 68a is hinged at a second edge opposite to its above-mentioned first edge to one of the face panels 65 and 66 or 65a and 66a. The width of each of the end-wall-forming panels between its above-mentioned first and second edges is just sufficient to allow the hinged edge of its associated face panel 65 and 66 or 65a and 66a to snugly engage the outer side of the tube when the tube is erected.

The blanks shown in FIGURE 31 may also be made up into boxes or units embodying some or all aspects of the invention. The outer or cover box blank includes the plies or panels 71–78 and the flap 79. The inner box includes the plies or panels 71a–78a and the flap 79a. The blanks are made up into boxes by fastening the tabs 79b and 79c to the panels 73 and 72a, respectively, and folding the blanks as illustrated. The blank is provided to a container having triple ply side walls and double ply end walls. A first side wall may comprise the plies 72, 75a, 73a, the plies being stated in the order of their disposition from outer to inner locations in the structure. A second adjacent wall may comprise the plies 73, 76a, 72a, the side walls being designated as the first may comprise the plies 75, 74, 71a. The fourth side wall may comprise the plies 76, 71, 74a. The upper end wall comprises the outer ply 77 and the inner ply 78. The lower end wall comprises the outer ply 78a and the inner ply 77a.

The cover box or cover unit in this resulting container has an upright, single ply side wall 72 and 73. The other walls of the box are adjacent, double ply walls having outer plies 75 and 76 and inner plies 75a and 76a, respectively. Single plies 74 and 71 of two adjacent side walls (74, 75 and 71, 76) are hinged to and integral with each other and also each is hinged to and integral with another ply (73 and 72 respectively) of another of the side walls (73 and 72 respectively). The side walls will therefore be seen to comprise four rectilinearly disposed walls with a pair of the side walls being double ply, the remaining pair of the side walls being single ply, and each member of each of such pairs being adjacent to the other member of its pair.

The end wall of the cover box, made up from the panels 71–78, comprises an outer ply 77 and an inner ply 78. Each of the plies 77 and 78 is hinged to and integral with one ply on each of a twosome of opposite side walls. Thus, the ply 77 is hinged to and integral with the outer ply 75 of the double ply side wall 74, 75 and also is hinged to and integral with the single ply side wall 78 is hinged to and integral with the outer ply 76 of the double ply side wall 71, 76 and also is hinged to and integral with the single ply side wall 73.

The inner box or unit made up from the panels 71a–78a has an adjacent, upright, single ply walls 71a and 74a. The other walls of this box are adjacent, double ply walls having outer plies 75a and 76a and inner plies 75a and 76a, respectively. Single plies 71a and 74a of two adjacent side walls (71a and 74a respectively) are hinged to and integral with each other and each is hinged to and integral with another ply (72a and 73a respectively) of another of the side walls (72a and 73a, respectively). The side walls will therefore be seen to comprise four rectilinearly disposed walls with a pair of the side walls being double ply, the remaining pair of the side walls being single ply, and each member of each of such pairs being adjacent to the other member of its pair.

The end walls of the inner box or unit made up from the panels 71a–78a comprise an inner ply 77a and an outer ply 78a. Each of the plies 77a and 78a is hinged to and integral with one ply on each of a twosome of opposite side walls. Thus, the ply 77a is hinged to and integral with the inner plies of the twosome of opposite side walls 73a and 75a, and also is hinged to and integral with the single ply side wall 71a is hinged to and integral with the single ply side wall 71a. The ply 78a is hinged to and integral with the outer ply 76a of the double ply side wall 72a and 76a, and also is hinged to and integral with the single ply side wall 74a.

The width of the plies 77, 77a, 78, 77a and 78a between their hinging hinge lines is such as to cause the plies 75, 76, 75a, and 76a, respectively, in the erected condition of the structure, to snugly engage the outer side of the tube at an end thereof when the tube is erected.

Referring to FIGURES 35–38, the accompanying drawing, the container that is illustrated is not a composite container consisting of an inner box and an outer box, but rather comprises only one box, which is adapted to be combined with a suitable liner.

Again since in connection with the container shown in FIGURES 35–38 there is no cover box or inner box, as much, the reference character "a" is not used in connection with these figures to show correspondence of parts, as was done in FIGURES 1–10.

The box shown in FIGURES 35–38 has adjacent, upright, single ply side walls 81 and 82. The other walls of the box are double ply walls having inner plies 83 and 84 and outer plies 85 and 86, respectively. Single plies 81 and 84 of two adjacent side walls (81 and 84, 86 respectively) are hinged to and integral with each other and also each is hinged to and integral with another ply
of another of the side walls (82 and 83 respectively). The side walls will therefore be seen to comprise four rectilinearly disposed walls with a pair of the side walls being double ply walls and the remaining pair of the side walls being single ply walls, and each member of each of such pairs being adjacent to the other member of its pair.

An end wall of the article comprises an inner ply 87 and an outer ply 88. Each of the plies 87 and 88 is hinged to and integral with one ply of each of the two some of opposite side walls. Thus, the ply 87 is hinged to and integral with the outer ply 85 of the double ply side wall 83, 85 and also is hinged to and integral with the single ply side wall 81. The ply 85 is hinged to and integral with the outer ply 86 of the double ply side wall 84, 86 and also is hinged to and integral with the single ply side wall 82.

At the other end of the article, flaps 80 are integrally hinged to the plies or panels 81–88. These flaps 80 are glued or otherwise suitably adhered or fastened to form an end wall opposite to that formed by the plies or panels 87 and 88.

Plies 83 and 85 are joined by a seam or flap 89 which is integral with the ply 82 and is suitably fastened to the ply 83 by stapling or by gluing or by other suitable means. The facer plies or panels 85 and 86 are affixed to the plies 83 and 84, respectively, as by gluing or other suitable means.

The container unit thus far described is preferably augmented by a supplemental liner, such as the supplemental liner 110 shown in FIGURE 46 or the supplemental liner 111 shown in FIGURE 47. In FIGURES 35–37, the article is shown provided with the supplemental liner 110. The use of the supplemental liner 110 provides a total of three plies of paperboard on each side of the assembled article. The use of the supplemental liner 111 provides a total of two plies of paperboard on each side of the assembled article. It will be seen that whichever supplemental liner is used, the number of plies of the supplemental liner at the single ply side walls formed by the plies or panels 81 and 82 exceeds by one the number of plies of the supplemental liner at the double ply side walls 83, 85 and 84, 86.

It should be clear that for the article shown in FIGURES 35–38, the plies 81–84 constitute four adjacent rectilinear tube-forming panels, the two laterally extreme panels of the four (82 and 83) being sealed to each other by the flap 89 to provide a tube comprising the four panels. The plies 87 and 88 constitute two end-wall-forming panels, each hinged at a first edge to its own one of an adjacent pair (81 and 82) of the four tube panels 81–84. The plies 85 and 86 constitute facer panels for forming the outer plies of two walls of the unlined article which two walls' inner plies will comprise the tube panels 83 and 84. Each of the two end-wall-forming panels 87 and 88 is hinged at a second edge opposite to its above-mentioned first edge to one of the facer panels 85 and 86. The width of each of the end-wall-forming plies or panels 87 and 88 between their bounding hinge lines is just sufficient to allow the hinged edge of its associated facer panel (85 and 86 respectively) to pass over an end of the tube 81–84 and snugly engage the outer side of the tube when the tube is erected.

The blank shown in the left-hand portion of FIGURE 39 may also be made up into an article embodying some or all of the aspects of the invention. A container employing this article is shown in FIGURES 40–42.

With reference to these figures, the illustrated container again comprises only one box which is adapted to be combined with a suitable supplemental liner.

The box shown in FIGURES 40–42 has adjacent, upright, single ply side walls 102 and 103. The other walls of the box are double ply having inner plies 101 and 104 and outer plies 106 and 105, respectively. Single plies 101 and 104 of two adjacent side walls (102 and 105) are hinged to and integral with each other and also each is hinged to and integral with another ply (92 and 93, respectively) of another of the side walls (92, 96 and 93, 95 respectively). The side walls will therefore be seen to comprise four rectilinearly disposed walls with a pair of the side walls being double ply walls and the remaining pair of the side walls being single ply walls, and each member of each of such pairs being adjacent to the other member of its pair.

An end wall of the article comprises an inner ply 97 and an outer ply 98. Each of the plies 97 and 98 is hinged to and integral with the outer ply 95 of the double ply side wall 93, 95 and also is hinged to and integral with the single ply side wall 91. The ply 98 is hinged to and integral with the outer ply 96 of the double ply side wall 92, 96 and also is hinged to and integral with the single ply side wall 94.

At the other end of the article, flaps 90 are integrally hinged to the plies or panels 91–94. The flaps 90 are glued or otherwise suitably adhered or fastened to form an end wall opposite to that formed by the plies or panels 97 and 98.

The plies 92 and 93 are joined by a seam or flap 99 which is integral with the ply 93 and is suitably fastened to the ply 92 by stapling or by gluing or by other suitable means. The plies 95 and 96 are affixed to the plies 93 and 92, respectively, as by gluing or other suitable means.

The container unit thus far described is preferably augmented by a supplemental liner, such as the supplemental liner 110 shown in FIGURE 46 or the supplemental liner 111 shown in FIGURE 47. In FIGURES 40–42 the article is shown provided with the supplemental liner 110. It will be seen that whichever supplemental liner is used, the number of plies of the supplemental liner at the single ply side walls 91 and 94 exceeds by one the number of plies of the supplemental liner at the double ply side walls 92, 96 and 93, 95.

It should be clear that for the article shown in FIGURES 40–42, the plies 94–95 constitute four adjacent rectilinear tube-forming panels, the two laterally extreme panels of the four (92 and 93) being sealed to each other by the flap 99 to provide a tube comprising the four panels. The plies 97 and 98 constitute two end-wall-forming panels, each hinged at a first edge to its own one of an adjacent pair (91 and 94) of the four tube panels 91–94. The plies 95 and 96 constitute facer panels for forming the outer plies of two walls of the unlined article which two walls' inner plies will comprise the tube panels 93 and 92. Each of the two end-wall-forming panels 97 and 98 is hinged at a second edge opposite to its above-mentioned first edge to one of the facer panels 95 and 96. The width of each of the end-wall-forming plies or panels 97 and 98 between their bounding hinge lines is just sufficient to allow the hinged edge of its associated facer panel (95 and 96, respectively) to pass over an end of the tube 91–94 and snugly engage the outer side of the tube when the tube is erected.

The blank shown in the right-hand portion of FIGURE 39 may also be made up into an article embodying some or all of the aspects of the invention. A container employing this article is shown in FIGURES 43–45.

With reference to these figures, the illustrated container again comprises only one box which is adapted to be combined with a suitable supplemental liner rather than consisting of an inner box and an outer box.

The box shown in FIGURES 43–45 has adjacent, upright, single ply side walls 102 and 103. The other walls of the box are double ply having inner plies 101 and 104 and outer plies 106 and 105, respectively. Single plies 101 and 104 of two adjacent side walls (102 and 105) are hinged to and integral with each other and also each is hinged to and integral with another ply (102 and 103 respectively) of another of the side walls (102 and 103 respectively).
The side walls will therefore be seen to constitute four rectilinearly disposed walls with a pair of the side walls being double ply walls and the remaining pair of the side walls being single ply walls and each member of each of such pairs being adjacent to the other member of its pair. And each wall of the article comprises an inner ply 108 and an outer ply 107. Each of the plies 108 and 107 is hinged to and integral with one ply of each of a twosome of opposite side walls. Thus, the ply 108 is hinged to and integral with the outer ply 106 of the double ply side wall 101, 106 and also is hinged to and integral with the single ply side wall 103. The ply 107 is hinged to and integral with the outer ply 105 of the double ply side wall 104, 105 and also is hinged to and integral with the single ply side wall 102.

At the other end of the article, flaps 109 are integrally hinged to the plies or panels 101-104. The flaps 109 are glued or otherwise suitably adhered or fastened to form an end wall opposite to that formed by the plies or panels 107 and 108.

The plies 102 and 103 are joined by a seam or flap 109 which is integral with the ply 103 and is suitably fastened to the ply 102 by stapling or by other suitable means. The plies 105 and 106 are affixed to the plies 104 and 101, respectively, as by gluing or other suitable means.

Again, the container unit thus far described in connection with FIGURES 43-45 is preferably augmented by a supplemental liner, such as the supplemental liner 110 shown in FIGURE 46 or the supplemental liner 111 shown in FIGURE 47. In FIGURES 43-45 the article is shown provided with the supplemental liner 110. It will be seen that whichever supplemental liner is used, the number of plies of the supplemental liner at the single ply side walls 102 and 103 exceeds by one the number of plies of the supplemental liner at the double ply side walls 101, 106 and 104, 105.

It should be clear that for the article shown in FIGURES 43-45, the plies 101-104 constitute four adjacent rectilinearly formed panels, the two laterally extreme panels of the four (102 and 103) being seams to each other by the flap 109 to provide a tube comprising the four panels. The plies 107 and 108 constitute two end-wall-forming panels, each hinged at a first edge to its own one of an adjacent pair (102 and 103) of the four tube panels 101-104. The plies 105 and 106 constitute face panels for forming the outer ply of the inner unlined article which two walls' inner plies will comprise the tube panels 104 and 101. Each of the two end-wall-forming panels 107 and 108 is hinged at a second edge opposite to its above-mentioned first edge to one of the face panels 105 and 106. The width of each of the end-wall-forming plies or panels 107 and 108 between their bounding hinge lines is just sufficient to allow the hinged edge of its associated face panel (105 and 106 respectively) to pass over an end of the tube 101-104 and snugly engage the outer side of the tube when the tube is erected.

The appended claims the term "end-wall-forming panel" is to be understood to refer to panels which of themselves are essentially the same form as the end wall which they make up and the non-referring to panels which form an end wall only by combination with other co-planar panels. Thus, it follows that the term "end-wall-forming panel" as used for example in claim 3 does not refer to panels comprised of the flaps 30, 30, 40, 40, 90 or 100. In the appended claims the term "double panel" is to be understood to include either a liner panel or a face panel.

The invention is not restricted to the slavish inclusion of every detail of the above description, which has been given merely by way of example with the intent of most clearly setting forth the teaching of the invention.

What is claimed is:

1. A paperboard container comprising two telescoped rectangular units each having a closed end and an open end, the closed ends of the units being at opposite ends of the container, each unit comprising the following: four rectilinearly disposed side walls, an end wall at the closed end of the unit, a pair of the side walls being double ply and the remaining pair of the side walls being single ply, each member of each of the pairs being adjacent to the other member of its pair, one ply of each side wall being hinged to and integral with one ply of at least one adjacent side wall, with single plies of two adjacent side walls each being hinged to and integral with the other and each also being hinged to and integral with another ply of another of the side walls, said another ply and another side wall being different for each of said single plies, the end wall being double ply, the plies of the end wall each being hinged to and integral with one ply on each of a twosome of opposite side walls, the twosome of opposite side walls with which one of the end wall plies is so hingedly and integrally associated comprising different side walls than the twosome of opposite side walls with which the other of the end wall plies is so hingedly and integrally associated, each of said two plies being hinged to and integral with one side wall and a double ply side wall, and the ply of each double ply side wall which is hinged to and integral with one ply of at least one adjacent side wall being the outer ply of that double ply side wall, and the ply of each double ply side wall with which an associated end wall ply is hingedly and integrally associated being the inner ply of that double ply side wall and being unattached to any other ply whereby each such inner side wall ply and its associated end wall ply may be collapsed inwardly when the two telescoped units are separated; the two telescoped units together comprising a container having four combined side walls of triple ply and two opposite double ply end walls.

2. A container unit of rectangular form having a closed end and an open end and four side walls, a pair of the side walls being double ply and the remaining pair of the side walls being single ply, each member of each of the pairs being adjacent to the other member of its pair, one ply of each side wall being hinged to and integral with one ply of at least one adjacent side wall, with single plies of two adjacent side walls each being hinged to and integral with another ply of another side wall, said end wall being double ply, the plies of the end wall each being hinged to and integral with one ply on each of a twosome of opposite side walls, the twosome of opposite side walls with which one of the end wall plies is so hingedly and integrally associated comprising different side walls than the twosome of opposite side walls with which the other of the end wall plies is so hingedly and integrally associated, each of said twosomes of opposite side walls comprising a single ply side wall and a double ply side wall, and the ply of each double ply side wall which is hinged to and integral with one ply of at least one adjacent side wall being the inner ply of that double ply side wall, and the ply of each double ply side wall with which an associated end wall ply is hingedly and integrally associated being the outer ply of that double ply side wall.

3. A collapsible and erectable container box comprising four side walls with one of the side walls being double ply, of the four side walls two being laterally extreme panels of the four being seamed to each other to provide a tube comprising the four panels, two end-wall-forming panels, each of the two end-wall-forming panels being integrally hinged at a first edge at one end of said tube to its own one of an adjacent pair of said side walls, the two inner plies of two side walls of the container unit the inner plies of which two side walls are formed by the two side panels not included in the previously specified
pair of tube panels, each of the two end-wall-forming panels being hinged at a second edge opposite to said first edge to its own one of said two face panels.

4. A paperboard container comprising two telescoped rectangular units each having a closed end and an open end, the closed ends of the units being at opposite ends of the container, each unit comprising the following: four rectangularly disposed side walls, an end wall at the closed end of the unit, a pair of the side walls being double ply and the remaining pair of the side walls being single ply, each member of each of the pairs being adjacent to the other member of its pair, one ply of each side wall being hinged to and integral with one ply of at least one adjacent side wall, with single plies of two adjacent side walls each being hinged to and integral with the other and each also being hinged to and integral with another ply of another of the side walls, said another ply and another side wall being different for each of said single plies, the end wall being double ply, the plies of the end wall each being hinged to and integral with one ply on each of a twosome of opposite side walls, the twosome of opposite side walls with which one of the end wall plies is so hinged and integrally associated comprising different side walls than the twosome of opposite side walls with which the other of the end wall plies is so hinged and integrally associated, each of said twosomes of opposite side walls comprising a single ply side wall and a double ply side wall, and the ply of each double ply side wall which is hinged to and integral with one ply of at least one adjacent side wall being the inner ply of that double ply side wall, and the ply of each double ply side wall with which an associated end wall ply is hinged and integrally associated being the outer ply of that double ply side wall.

5. A paperboard container comprising two telescoped rectangular units each having a closed end and an open end, the closed ends of the units being at opposite ends of the container, each unit comprising the following: four rectangularly disposed side walls, an end wall at the closed end of the unit, a pair of the side walls being double ply and the remaining pair of the side walls being single ply, each member of each of the pairs being adjacent to the other member of its pair, one ply of each side wall being hinged to and integral with one ply of at least one adjacent side wall, with single plies of two adjacent side walls each being hinged to and integral with the other and each also being hinged to and integral with another ply of another of the side walls, said another ply and another side wall being different for each of said single plies, the end wall being double ply, the plies of the end wall each being hinged to and integral with one ply on each of a twosome of opposite side walls, the twosome of opposite side walls with which one of the end wall plies is so hinged and integrally associated comprising different side walls than the twosome of opposite side walls with which the other of the end wall plies is so hinged and integrally associated, each of said twosomes of opposite side walls comprising a single ply side wall and a double ply side wall.

References Cited in the file of this patent

UNITED STATES PATENTS

Re. 21,287 Jonas --------------- Dec. 5, 1929
930,114 Adams ---------------- Aug. 3, 1909
1,367,378 Gruenberg -------------- Feb. 1, 1921
2,057,428 Newson ---------------- Apr. 14, 1936
2,549,595 Props ----------------- Feb. 6, 1951
2,702,662 Crawford -------------- Feb. 22, 1955
2,759,651 Dowd ---------------- Aug. 21, 1955
2,761,610 Welshenbach ----------- Sept. 4, 1956

FOREIGN PATENTS

642,997 Germany ---------------- Mar. 20, 1937
UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,118,587

Charles D. Welshenbach

It is hereby certified that error appears in the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 18, line 5, after "pairs" strike out "of".

Signed and sealed this 9th day of June 1964.

(SEAL)
Attest:

ERNEST W. SWIDER
Attesting Officer

EDWARD J. BRENNER
Commissioner of Patents