April 12, 1927. 1,624,439

H. D. SENAT

BOX

Filed July 13, 1926 3 Sheets-Sheet 1

Fig. 1.

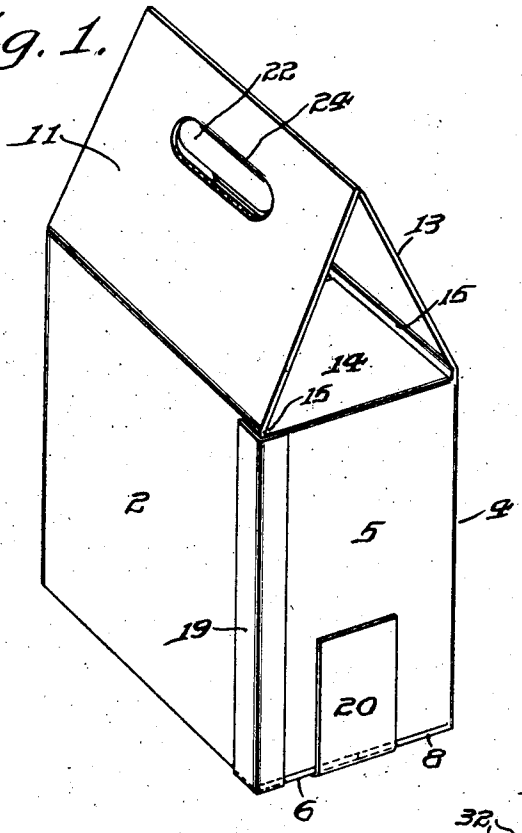


Fig. 3.

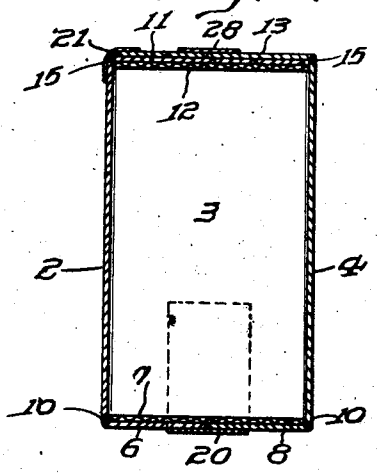


Fig. 2.

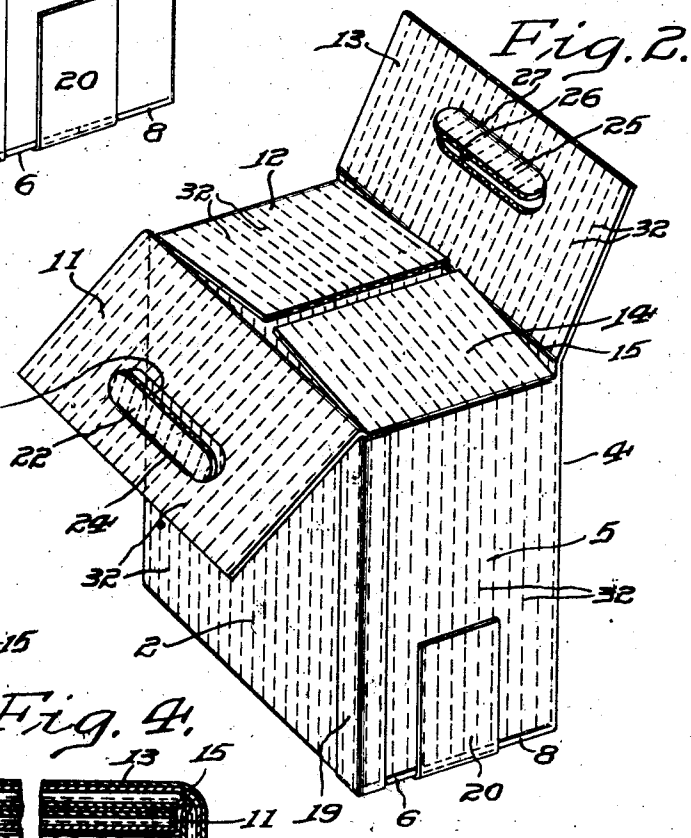


Fig. 5.

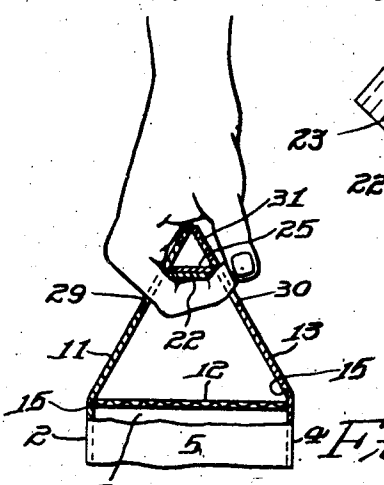
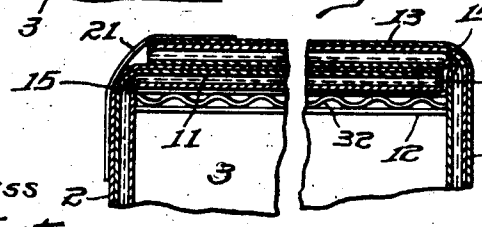


Fig. 4.



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BOX

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Fig. 6.

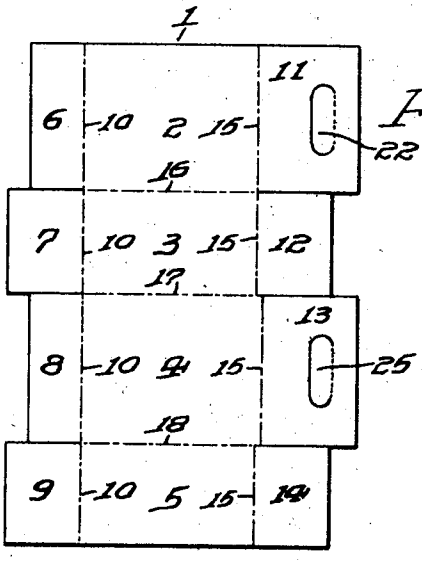


Fig. 7.

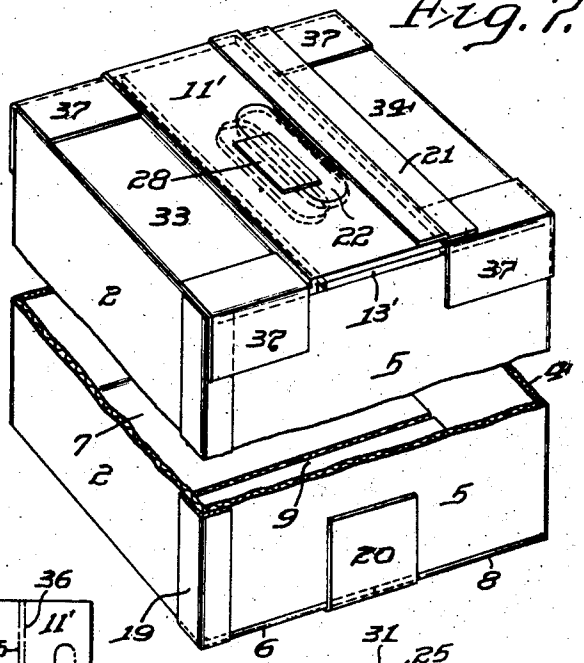


Fig. 9.

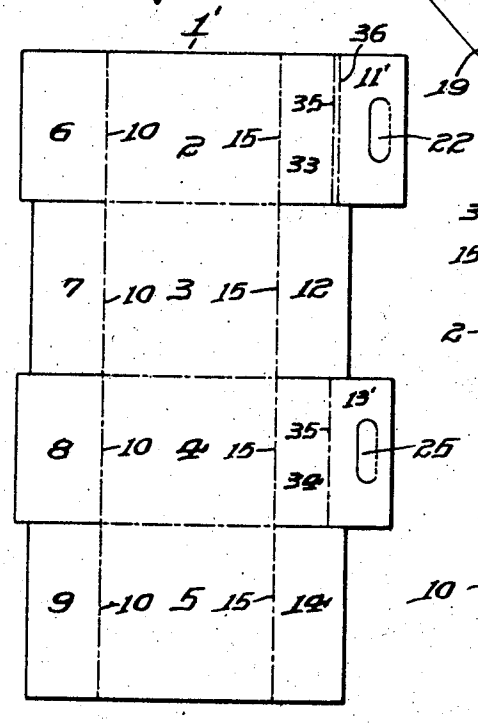
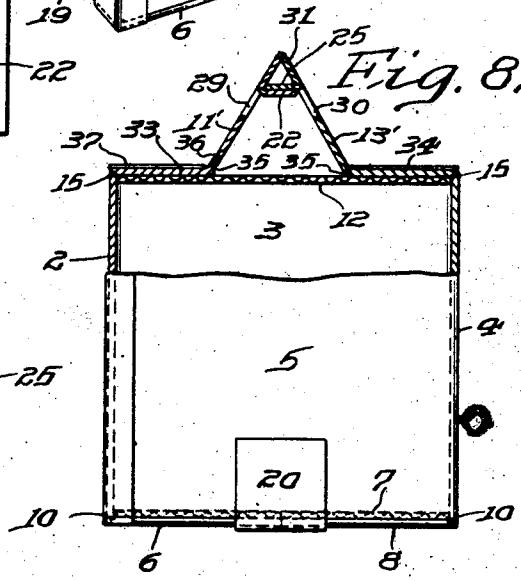


Fig. 8.



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BOX

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Fig. 10.

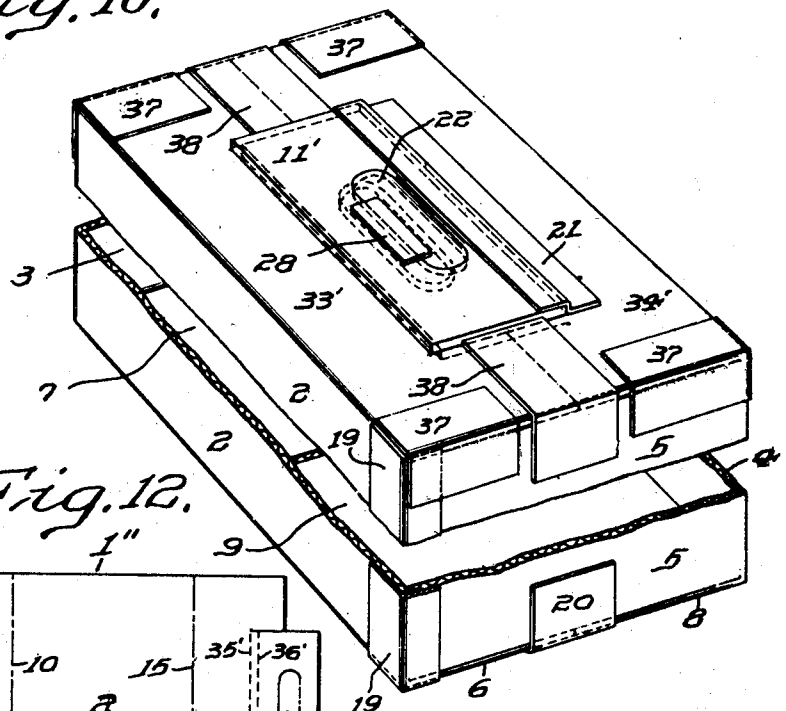


Fig. 12.

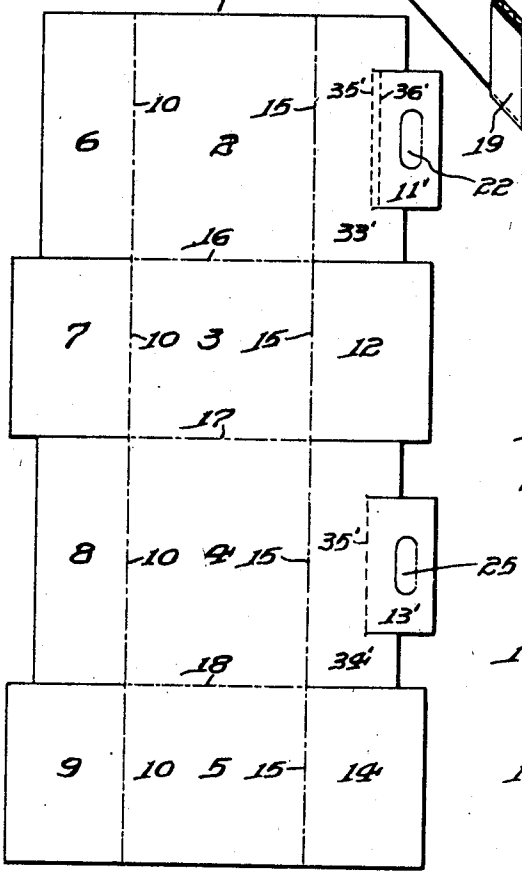
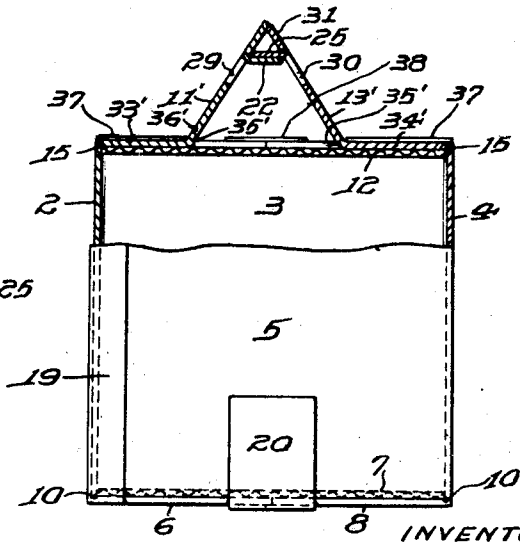


Fig. 11.



WITNESS

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Patented Apr. 12, 1927. 1,624,439

UNITED STATES PATENT OFFICE.

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BOX.

Application filed July 13, 1926. Serial No. 122,073.

My invention relates to boxes and more particularly to boxes or cartons folded up out of a suitably cut and creased or scored blank sheet of suitable strong cardboard, and in which relatively heavy objects may be securely packed and shipped and an object of this invention is to provide such a box or boxes, carton or package with a handle integral therewith and by means of which the box and its contents may be readily manually carried.

A further object of my invention is to provide a strong shipping box or carton preferably of cardboard, either plain or corrugated, in which a pair of flaps or closures are adapted to be raised or lifted from a relatively horizontal position, said flaps being provided with openings and portions adjacent said openings adapted to be bent inwardly from the flaps toward each other to form with the flaps a strong, stiff handle for carrying the package and its contents.

A further object of my invention is to provide two of the flaps on one side of the package and which close the box, or container, or package, with partially severed portions, which when brought together in a parallel relation with each other when the flaps are raised, will cooperate with the parts of the flaps between the openings and the free edges of the flaps to form a strong, rigid, tubular grip or handle, integral with the flaps and substantially triangular in cross section.

A further object of my invention is to provide a handle integral with the blanks from which the box or carton is made which is exceedingly strong and rigid and provides a comfortable grip by means of which the package and its contents may be manually carried with ease.

A further object of my invention is to construct, in the closing flaps of the box or carton, a handle composed of the box material and integral therewith, capable of withstanding strains without weakening and comprising no other material than the material of the flaps for the formation of the handle, the parts of the handle being held firmly together by the hand in supporting the package and its contents.

A further object of my invention is to provide a shipping box or crate with flaps closed during shipment and presenting no substantial projection out from the relatively plain sides of the box or carton, to retain the contents of the box within the box, said flaps being capable of being loosened or unsealed and lifted by the consignee or purchaser upon the delivery of the package to him to form a handle for manually carrying the box with comfort and ease, although the contents of the box may be heavy.

A further object of my invention is to provide the closed flaps of the cardboard carton with a truss or bridgework handle formed by folding up portions of the flaps into an abutting relationship with the flaps, when the flaps are raised to an inclined position, with their free edges substantially abutting.

Further objects of my invention will appear in the specification and claims below.

Referring now to the drawings forming a part of this specification and in which the same reference characters are employed throughout the various views to designate the same parts Fig. 1 is a perspective view of a box or carton embodying my invention.

Fig. 2 is a similar perspective view with the flaps at the top of the box opened somewhat to clearly illustrate the relative position of the flaps and the manner in which the handle is made.

Fig. 3 is a vertical sectional view of the box or carton shown in Figs. 1 and 2.

Fig. 4 is a similar vertical sectional view through the top of the box or carton illustrating the way in which a corrugated cardboard would be bent or folded to form the top flaps of the box.

Fig. 5 is a vertical sectional view through the top of the box and the back flaps showing how the handle is formed and held together in the hand of the one carrying the box.

Fig. 6 is a view of the blank from which the box shown in Figs. 1, to 5 is made.

Fig. 7 is a perspective view of a modified construction but embodying my invention, parts being broken away to show the interior of the box or crate.

Fig. 8 is a vertical transversely sectional view of the box shown in Fig. 7.

Fig. 9 shows the blank and the manner of creasing or scoring or cutting the thing for the form of the box shown in Figs. 7 and 8.

Fig. 10 is a perspective view of a further modification of my invention as applied to a larger box part being broken away to

show an interior construction in the direction in which the corrugations of the cardboard extend.

Fig. 11 is a vertical transverse sectional view of the box, shown in Fig. 10 and Fig. 12, is a view of the blank cut and scored for making the box shown in Figs. 10 and 11.

Before describing the construction of the completed box shown in Figs. 1 to 4, inclusive, I will first refer to the blank shown in Fig. 6 composed of cardboard either plain or corrugated and cut or scored so that it may be bent up into box form.

This blank 1 comprises the four vertical side sections 2, 3, 4, and 5 which, in the finished box, form what may be termed the front, an end, the rear, and the other end respectively of the box. In the blank are also the bottom flap sections 6, 7, 8 and 9, separated from the vertical sides or wall sections by a scoring line 10. The sides of these flaps are cut from the outside of the blank inwardly to the scoring line 10, so that these bottom flaps may all be bent at right angles to the sections 2, 3, 4 and 5, respectively, along the scored line 10. The width of the sections 6 and 8 is one-half of the width of the sections 3 and 5 and the width of the sections 7 and 9 is one-half of the width of the sections 2 and 4, respectively, as will be referred to again below.

On the other side of the sections 2, 3, 4 and 5 of the blank are the top flap sections 11, 12, 13 and 14 and between them and the sections 2, 3, 4 and 5 is a scoring or crease 15. Across the sections 4 and 13 the score or crease is offset slightly to the right an extent equal to the thickness of the board out of which the blank is formed.

The width of the sections 12 and 14 is substantially equal to the width of the sections 7 and 9, that is to say their widths are one-half the width of the sections 4. The widths of the sections 11 and 13, however, are substantially equal to the widths of the sections 3 and 5.

The vertical side sections 2, 3, 4 and 5, are divided or set-off by scoring lines 16, 17 and 18, and the sides of the flaps 11, 12, 13 and 14, are substantially cut to the scoring line 15. By reason of this construction, when the blank, shown in Fig. 1, is bent along the scoring lines, 16, 17 and 18, to form a hollow tube rectangular in cross section and the adjacent edges of the sides 2 and 5 may be connected by a strip 19 of pasted cloth or paper or an adhesive tape. The bottom flaps 7 and 9 may now be bent at right angles to their respective sides 3 and 5, and their free ends will abut midway across the length of the box and then the bottom flaps 6 and 8 may be folded at right angles to their respective sides 2 and 4 and their free edges will be in abutting relationship extending across the width of the box. When so folded a suitable strip 20 may be pasted across the abutting ends of the flaps 6 and 8 and the bottom of the box will be permanently closed.

The top flaps 12 and 14 are then bent toward each other to lie in a plane at right angles to the vertical sides of the box so formed and their free edges will be in abutting relationship since the width of each of these flaps is one-half the length of the box. Thereafter the flap 11 is folded down to lie flat on and parallel to the horizontal flaps 12 and 14, and then the flap 13 is bent forwardly to lie on the top of the flap 11. A strip 21, of paper, cloth or tape may then be pasted along the free edge of the flap 13 and down on to the front vertical face or wall 2 of the box to permanently hold this flap in closed position and thereby permanently close the box after the articles to be shipped in the box have been placed therein.

As will be readily seen from the above description the top flaps 11 and 13 each extends substantially across the full width of the box and the scoring 15 between the flap 13 and the vertical wall 4, which, as above stated, was set-off a distance equal to the thickness of the board out of which the box is made, permits the flap 13 to lie flat down on the flap 11 and to be sealed in that position by the strip 21.

So far as described the novelty of my invention resides in the off-set scoring between the flap 13 and the vertical rear wall 5, and in the widths of the flaps 11 and 13, which instead of extending one-half across the top of the box each extend substantially across the full width of the box and lie flat together when the box is closed.

In forming the blank 1 also cut, in the flap 11, a handle grip or tongue 22, somewhat oval in shape, and having opposite straight sides 23 and 24, but the edge 24 extending parallel to the free edge of the flap 11 is not severed but is merely creased or scored. The tongue 22 is severed from the flap along the opposite parallel side 23 and around the rounded ends of the oval, up to the straight edge or crease 24. The scoring is preferably on the inner side of the tongue 11. In the top flap 13 is also cut a similar tongue 25. The straight side 26 of the tongue 25 and the rounded ends being completely severed from the flap and the side 27 thereof being merely scored on the inner side of the flap 13, the scoring being also parallel to the free edge of the flap 13.

In using the box for packing and shipping articles therein these handle tongues, 22 and 25, remain in the plane of the flaps 11 and 13, respectively. The tongue 25 does not normally project above the top surface of the flap 13, and is not liable to be displaced so as to so project but to insure against the accidental lifting of the handle

tongue 25, when the package is subjected to rough handling in shipping, a strip 28 of suitable adhesive tape or a paper or fabric ribbon, may be pasted over the cut edge or side 26 of the handle flap 25. In this way, the flap 13 which safely closes the package for shipping, may be provided with my improved carrying handle without interrupting the plane surface of the closed package or carton, and without providing any structure which might interfere with the stacking of packages during shipment, or prevent the packages from being slid over flat surfaces, when desirable, in handling such packages in shipping the same.

Now, when the package and its contents are delivered to the consignee or purchaser thereof it is only necessary for him to break the sealing strip 21 along the free edge of the flap 13, and, if a sealing ribbon or tape 28 is used, to break the tongue 25 free therefrom by pushing the tongue downwardly toward the body of the box. After the flaps 11 and 13 have been slightly raised, and the free edges of the flaps 11 and 13 are then brought together in an abutting relationship as shown in Figs. 1 and 5, they will form with the top of the box, now formed by the flaps 12 and 14, substantially an isosceles triangle. The tongue 22 may be flexed inwardly around the scored side 24 as on a hinge and the tongue 25 may also be bent inwardly along the scored side 27 as on a hinge so as to bring these tongues 22 and 25 to lie flat one on the other, with the free end of the one tongue (for instance, the tongue 25) in the angle formed between the other tongue 22 and the inner surface of the flap 11 in the angle where the tongue 22 joins the flap or side 11. Then as the fingers of the purchaser or consignee are inserted through the openings 29 and 30 in the flaps 11 and 13, and formed by the pressing of the tongues 22 and 25 inwardly from the plane of said flaps 11 and 13 and the hand is closed around the triangular tubular grip 31 of the handle so formed, the package with its contents may be comfortably carried away manually to its destination.

It is to be noted that the grip 31 of the handle so formed is in reality a rigid truss or bridge-like structure; that the triangular shape of it practically fits the hand as it grips it; that the now horizontal tongues 22 and 25 provide a wide surface which does not cut into one's hand in carrying the package, and that the harder the hand of the carrying party is closed or gripped around the grip portion 31 the more rigid is the handle, because of the abutting relationship of the free edge of the tongue 25 into the angle formed by the tongue 22 and the closed flap 11.

When the box or carton is made of corrugated material, as is preferred and as is indicated in all the drawings, the corrugations 32 in the flaps 11 and 13 make these flaps very rigid in the direction of the strains imposed thereon in carrying the package with its contents, and the direction of the corrugations in the tongues 22 and 25 is such as to make these tongues very rigid in the direction in which pressure is applied thereon, by the pressure of compression within the hand of the one carrying the package.

The flaps of a box or carton provided with my improved handle, when made of ordinary cardboard, particularly if made of corrugated board, will not be distorted or flexed or torn if the contents of the package weigh as much as one hundred pounds. The strain is so evenly distributed throughout the grip 31, the flaps 11 and 13 and along the line of the scoring between the flaps 11 and 13 and their respective vertical sides 2 and 4, that the paper or board will not tear along the line of the scoring 15 even when the package is exceedingly heavy, a heavy package may be safely carried by such a handle without the rupturing of the handle or the flaps, and without jeopardy to the contents of the package or carton.

In Figs. 7, 8 and 9 the box or carton sections 2, 3, 4, 5, 6, 7, 8, 9, 12 and 14 bear exactly the same relation to the finished box that the corresponding parts in Fig. 1 to 6 inclusive do, the only change being in the dimensions or portions of the box and in the scoring 15 which may extend in a straight line entirely across the blank 1′ at the tops of the vertical wall sections 2, 3, 4 and 5, as clearly indicated in Fig. 9. The top closing flaps 33 and 34 however need not and preferably do not extend across the full width of the top of the box. Both flaps 33 and 34 are preferably provided with an aligned scoring 35 and one of the flaps (as for instance flap 33) is provided with an additional scoring 36, spaced from the scoring 35 by the width of the thickness of the board out of which the blank is formed. When this blank 1′ shown in Fig. 9 is folded into box, formed in exactly the manner above described in connection with the embodyment of my invention shown in Figs. 1 to 6, and the adjacent free edges of the sides 3 and 5 are secured together by the adhesive strip 19, and the abutting end of the bottom flaps 6 and 8 sealed together by the bottom strip 20 as previously described, the box is closed by folding down first the flaps 12 and 14 to a horizontal position with their free ends abutting, and then folding down the flap 34 to lie horizontally on the flaps 12 and 14. Thereafter the section 11′ is bent upwardly about the scoring 35 as a hinge and the flap 33 as a whole is folded down about the scoring 15 as a hinge so that the part between the scoring 35 and the scoring 15 of

the flap 33 lies flat against the flaps 12 and 14. Then the scoring 36 permits the free end 11′ of the flap 33 to be bent downwardly to overlie the portion 13′ of the flap 34. These handle portions 11′ and 13′ are provided with the handle flaps 22 and 25 exactly like the handle flaps of the previously described construction and I prefer to make these handle sections 11′ and 13′ of substantially the same size and proportions as the flaps 11 and 13, previously described, except perhaps to length if the box be longer than the box of Fig. 1, for I prefer to have them as long as the box shown in Fig. 7.

In this second modification, however, I prefer to fix the flaps 33 and 34 securely in a horizontal position when the contents are packed in the box and the box is closed by strips 37 of suitable tape extending along the sides of the flaps 33 and 34 between the scorings 15 and 35 thereof. I also preferably seal the free edge of the handle 11′ down flat against the free edge of the handle 13′ by a strip of tape 21, as previously described. When this package is delivered the receiver breaks the sealing strip 21, and lifts the handle portions 11′ and 13′ into the position shown in Fig. 8 and then bends the handle flaps 22 and 25 inwardly, towards each other as above described. The strips 37 securely hold those portions of the flaps 33 and 34 between the handle section 11′ and the vertical wall 2 and between the handle section 13′ and the vertical wall 4 in a horizontal position, to enable a carrier to raise the handle sections or flaps 11 and 13′ and form the handle 31 to make it easy to carry the box and its contents.

In the modification shown in Figs. 10 to 12 inclusive I have shown a construction which is adapted for a box or carton in which it is desirable to have the handle in or on a large or wide side or face of the box. In this case the length of the handle need not be as long as the full length of the box. Referring first to the blank 1″ shown in Fig. 12, the sections 2, 3, 4, 5, 6, 7, 8, 9, 12 and 13, all bear the same relation to the other parts of the box, except as to exact size, that they do in the forms of my modifications previously described. The flap 33′ is substantially like the flap 33 in the previously described construction, except that the width of the major portion thereof is preferably made equal to one-half the width of the section 3 and the width of the major portion of the section 34′ is similarly made equal to one-half of the width of the section 3 so that when the box is folded and the top flaps 33′ and 34′ are closed the free edges of the said flaps 33′ and 34′ will be in an abutting relation except as to the handle portions 11′ and 13′. In the flap 33′ between the handle portion 11′ and the main or major portion of the flap, are provided double scorings 35′ and 36′ and between the handle portion 13′ and the major portion of the flap 34′ is a single scoring 35′ in alignment with the score 35′ in the flap 33′.

In closing the top of this box the flaps 12 and 14 of the top are first brought to a horizontal position and their free edges will abut in the manner previously described. Then the flap 34′ with the handle portion 13′ lying flat in the plane of the flap 34′ is brought to a horizontal position to lie in the flaps 12 and 14. Then the handle flap 11′ may be bent upwardly at right angles to the flap 33′ about the scoring 35′ as a hinge and then the flap 33′ is brought to a horizontal position about the scoring 15 as a hinge. At this time the free end of the handle flap 13′ will be in substantially abutting relationship with respect to the flap 33′ along the scoring line 35′. Then the handle portion 11′ may be bent over or around the scoring line 36′ as about a hinge and brought to a horizontal position to lie flat against the handle portion 13′ as shown in Fig. 10. The sealing strip 21 may now be applied to bind the free edge of the flap 11′ down flat against the top of the flap handle 13′. Sealing strips 37 may be secured along the edges of the top flaps 33′ and 34′ as previously described and an additional sealing strip 38 may be secured across the abutting edges of the top flaps 33′ and 34′ on both sides of the sections 11′ and 13′.

To carry this package it is only necessary to break the sealing strip 21, raise the portions 11′ and 13′ bringing them to an inclined position, to form an isosceles triangle with the top of the carton, shown in Fig. 11, and bend inwardly the tongues 22 and 25, in the same manner as has been previously described, and as is shown in Fig. 11.

In all the embodiments of my invention, as above described, the carrying handle is formed of the very material out of which the box itself is made, and is integral therewith; the grip 31 is a rigid hollow truss like structure which distributes the weight substantially evenly throughout the full width of the handle; the handle does not objectionally protrude upwardly from the plane of the closing flaps so long as the package is sealed, and the handle portions 11′ and 13′ may swing on the scorings as on a hinge to bring the free edges thereof into an abutting relationship to form a rigid triangular structure which does not tend to collapse even when the contents of the box are quite heavy.

The cost of constructing a box provided with my integral carrying handle is not substantially greater than that of making a box without such handle, and the convenience of it for certain purposes, as for instance, in carrying such comparatively heavy articles

as dry battery cells, six or twelve bottles of ginger ale, or a set of books, are so manifest that nothing need be added to this description to demonstrate the utility and desirability of a box provided with my invention.

Having thus described my invention, what I claim and desire to protect by Letters Patent of the United States, is:

1. A shipping box of stiff folded cardboard material having two top flaps respectively hingedly secured to opposite edges of the opening into said box to swing on parallel axes, said flaps each being substantially as wide as said opening into said box so that when they are closed they will lie flat one on the other and the top flap will provide a smooth uninterrupted surface for said box, each of said flaps being provided with an elongated hand opening near and extending substantially parallel to the free edge of its flap, the edge of said hand opening nearest the free edge of the flap being provided with a stiff tongue normally lying flat within and filling said opening and flexibly connected to said edge of said hand opening, the width of the tongues in the two flaps being alike and such that when the free edges of the said flaps are brought together the free ends of either of said tongues may be first forced inwardly out of the plane of its flap and its free edge brought into abutting relationship with the opposite flap, and retained in the angle formed by the opposite flap and the tongue connected therewith, and the other tongue may be similarly forced inwardly to lie flat against the underside of the first tongue with its free edge below the outer surface of the opposite flap.

2. A shipping box of stiff folded cardboard material having two flaps respectively hingedly secured to opposite sides of said box to swing on parallel axes, said flaps when closed lying flat one on the other, each of said flaps being provided with an elongated hand opening near and extending substantially parallel to the free edge of its flap, the edge of said hand opening nearest the free edge of the flap being provided with a stiff tongue normally lying flat within and filling said opening and flexibly connected to said edge of said hand opening, the width of said tongues in the two flaps being alike and such that when the free edges of said flaps are brought together the free ends of either of said tongues may be first forced inwardly out of the plane of its flap and its free edge brought into abutting relationship with its opposite flap and retained in the angle formed by the opposite flap and the tongue connected therewith and the other tongue may be similarly forced inward to lie flat against the underside of the first tongue with its free edge below the opposite surfaces of the opposite flap.

In witness whereof, I have hereunto set my hand this 12th day of July, 1926.

HERBERT D. SENAT.