

Oct. 3, 1933.

N. OTTINGER

1,928,792

BOX CONSTRUCTION

Filed Jan. 11, 1932

4 Sheets-Sheet 1

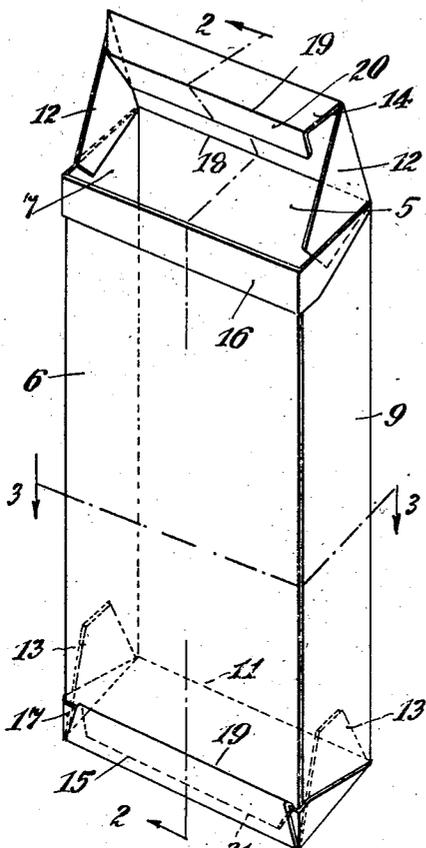


Fig. 1.

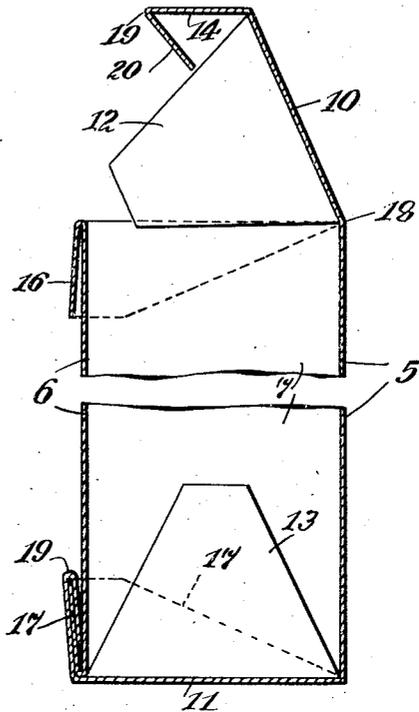


Fig. 2.

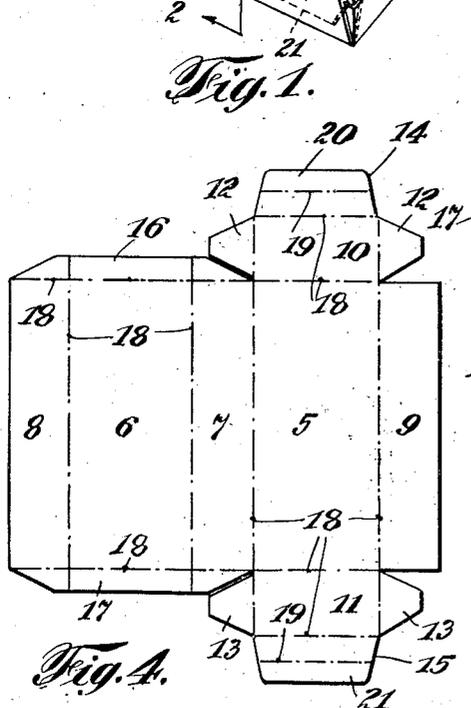


Fig. 4.

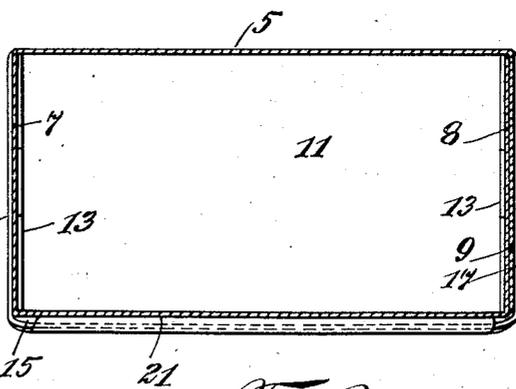


Fig. 3.

INVENTOR
Nathan Ottinger
BY *L.P. Saper*
his ATTORNEY

Oct. 3, 1933.

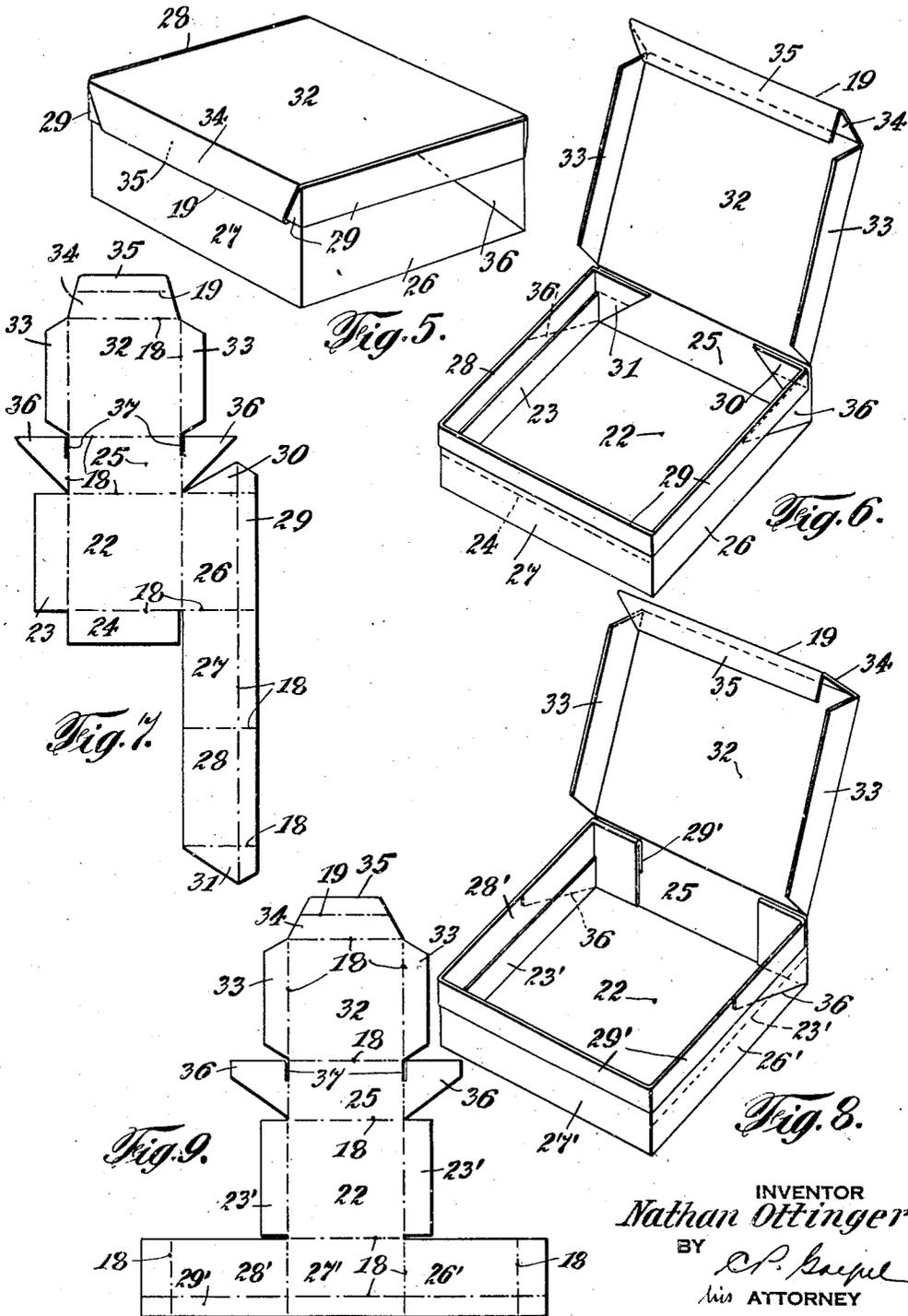
N. OTTINGER

1,928.792

BOX CONSTRUCTION

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4 Sheets-Sheet 2



INVENTOR
Nathan Ottinger
BY *R. P. Koepel*
his ATTORNEY

Oct. 3, 1933.

N. OTTINGER

1,928,792

BOX CONSTRUCTION

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4 Sheets-Sheet 3

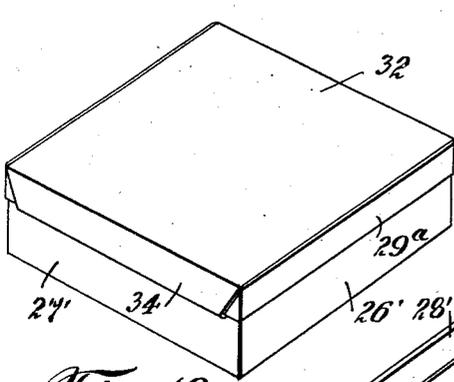


Fig. 10.

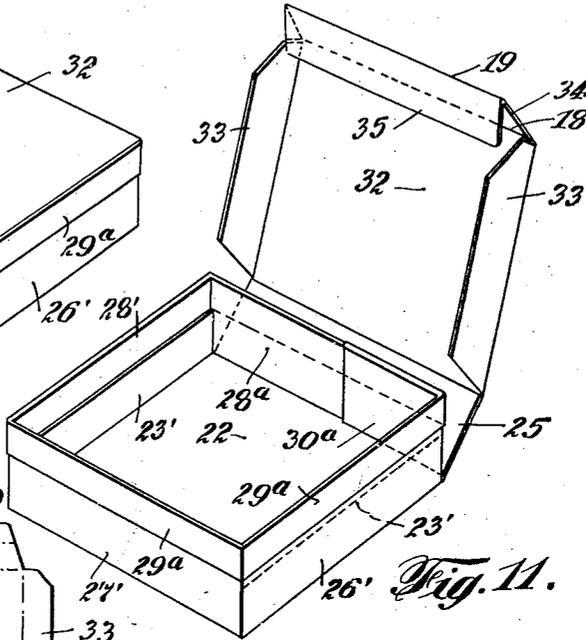


Fig. 11.

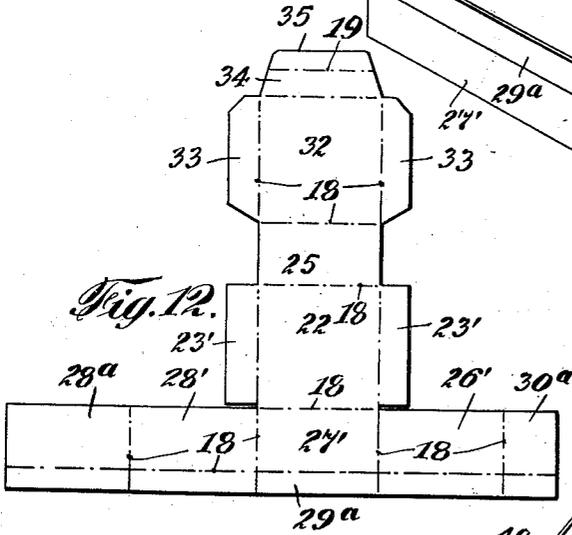


Fig. 12.

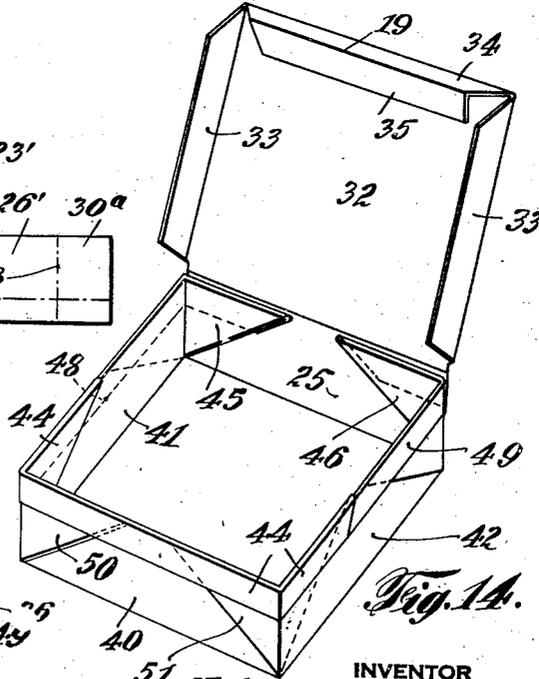


Fig. 14.

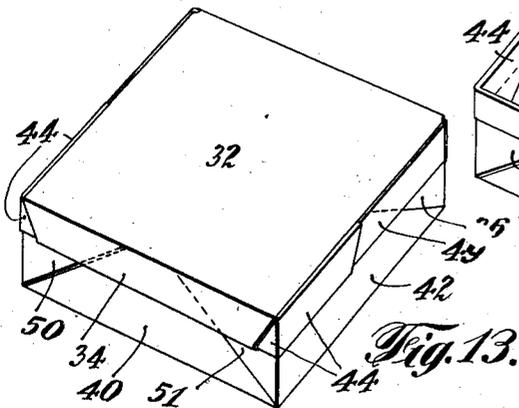


Fig. 13.

INVENTOR
Nathan Ottinger
BY *C. P. Koppel*
his ATTORNEY

Oct. 3. 1933.

N. OTTINGER

1,928,792

BOX CONSTRUCTION

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4 Sheets-Sheet 4

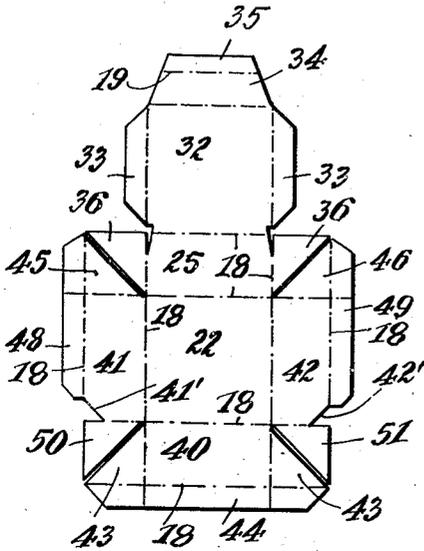


Fig. 15.

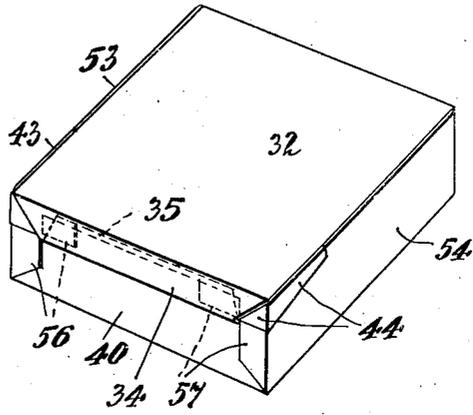


Fig. 16.

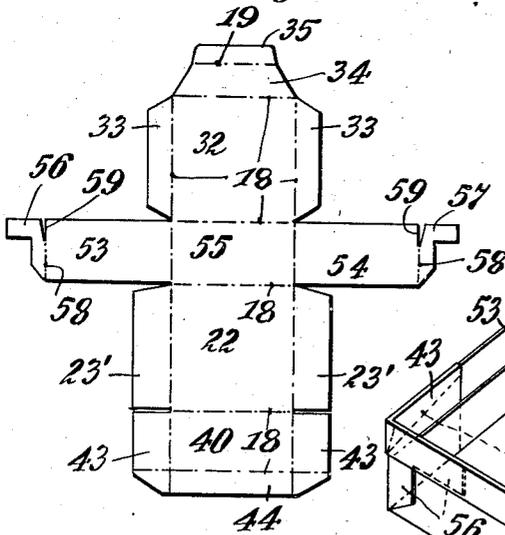


Fig. 18.

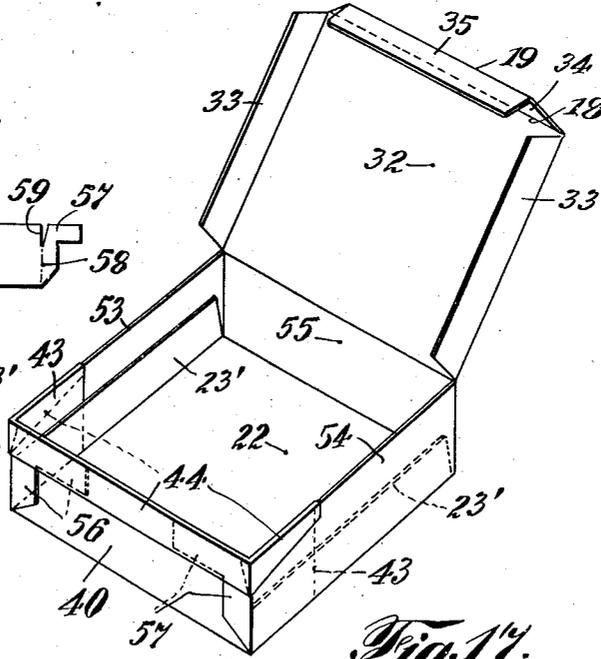


Fig. 17.

INVENTOR
Nathan Ottinger
BY *A. Haupt*
his ATTORNEY

UNITED STATES PATENT OFFICE

1,928,792

BOX CONSTRUCTION

Nathan Ottinger, New York, N. Y.

Application January 11, 1932. Serial No. 585,829

6 Claims. (Cl. 229—45)

This invention relates to box constructions, and has for its general object and purpose to provide a box of the type generally used by retail merchants, wholesalers or manufacturers for the packaging of various commodities, which is provided with an easily and quickly manipulable means for securely closing the box, the box construction and the improved closure means entirely eliminating the use of adhesives, staples, or other fastening or securing means for the parts thereof.

More particularly, it is an important feature of the invention to provide a box constructed of cardboard or similar material of requisite weight and wall thickness, having a body provided at one open end thereof with an exterior fold which extends upon at least three angular related walls of the box body to provide an inwardly opening pocket across one of said walls, and a closure means for said open end of the box body also composed of cardboard, and having a locking or holding part foldable into said pocket and closely confined between the body wall of the box and said pocket-forming fold.

It is also an additional object of the invention to provide a box construction of this character which may be very inexpensively produced from a single die stamped blank with a minimum waste of material.

An additional object of the invention is to provide one of the foldable parts of the box blank which constitutes the rear wall of the box body with relatively foldable wings or extensions which are adapted to extend upon the outer surfaces of opposite side walls of the box, and have one of their edges inserted upwardly between said wall and the exterior pocket-forming fold extending along the upper edge of said side wall.

Also another object of the invention is to provide improved means for securely locking the rear ends of the opposite side walls of the box with the bottom and rear wall thereof.

A further general object of the invention is to provide a one-piece foldable cardboard box of such construction that a comparatively large number of the box blanks may be compactly assembled and bound together in a package of relatively small dimensions, said blank, when folded with the parts in proper interlocked relation and the box cover closed, producing a very rigid and substantial box structure, which is very neat in appearance and which may be used as a container for commodities of considerable weight, without liability of the separation or collapse of the box contents.

With the other and other objects in view, the invention consists in the improved box construction, and in the form, construction and relative arrangement of its several parts, as will be hereinafter more fully described, illustrated in the accompanying drawings and subsequently incorporated in the subjoined claims.

In the drawings wherein I have illustrated several simple and practical embodiments of the invention, and in which similar reference characters designate corresponding parts throughout the several views,—

Figure 1 is a perspective view of the cardboard box embodying the essential features of my present invention in one practical form thereof, in which a separate closure means is provided for each end of the box body;

Fig. 2 is a longitudinal sectional view taken substantially on the line 2—2 of Fig. 1, an intermediate portion of the box body being broken away;

Fig. 3 is a horizontal sectional view on an enlarged scale taken on the line 3—3 of Fig. 1;

Fig. 4 is a plan view of the die stamped cardboard blank from which the box is formed;

Fig. 5 is a perspective view illustrating a modified embodiment of my invention;

Fig. 6 is a similar view, the cover of the box being shown in open position;

Fig. 7 is a plan view of the blank from which the box shown in Figs. 5 and 6 is produced;

Fig. 8 is a perspective view similar to Fig. 5 showing another form of the box construction.

Fig. 9 is a plan view of the blank of the box shown in Fig. 8;

Figs. 10 and 11 are perspective views of another alternative construction showing the box with the cover in closed and open positions respectively;

Fig. 12 is a plan view of the blank of the latter form of box;

Figs. 13 and 14 are perspective views similar to Figs. 10 and 11 illustrating still another embodiment of the invention;

Fig. 15 is a plan view of the blank of the box shown in Fig. 14;

Figs. 16 and 17 are perspective views similar to Figs. 13 and 14 of a further alternative form of the invention, and

Fig. 18 is a plan view of the blank of the box shown in Fig. 17.

Referring in detail to the drawings, and for the present more particularly to Figs. 1 to 4 thereof, the box as therein illustrated, may of course be produced in any suitable dimensions

for a desired predetermined capacity. The box, together with the closure means therefor, is preferably produced from a one-piece die stamped blank of paperboard of suitable weight and thickness. As shown in Fig. 4 of the drawings, the blank includes sections 5 and 6 which form the opposite front and back walls of the box, an intermediate section 7 forming one of the side walls and the sections 8 and 9 adapted to overlap upon each other to form the other side wall of the box body. At opposite ends of the back wall 5, the integral extensions 10 and 11 respectively are provided and form closures for the ends of the box body. Opposite side edges of these extensions 10 and 11 are provided with the integral tapering wings 12 and 13 respectively, and between these wings each extension 10 and 11 has a flap 14, 15 respectively. At opposite ends of the sections 6, 7 and 8, the relatively foldable parts 16 and 17 respectively are formed.

The several parts above described are adapted to be folded relative to each other along scores of suitable depth formed in one side of the blank, as indicated by the broken lines 18. Also the flaps 14 and 15 are each foldable along the broken lines 19, so that the free ends of said flaps constitute locking tabs 20 and 21 to hold the respective closure sections 10 and 11 in tightly closed position, as will be presently explained.

In setting up the box blank, it is only necessary to first bend or fold the part 16 upon the outer sides of the sections 6, 7 and 8. These sections and the section 9 are then folded relative to the section 6 or along the score lines 18 to provide a rectangular structure closed on all sides. The section 9 folds on the outer side of the section 8, the ends of the section 9 being flexed and positioned between the external folds 16 at one of their ends, and the section 8. Thus the parts 5, 6, 7, 8 and 9 are retained in their proper angular relation to each other.

The wings 12 are now folded inwardly and the section 10 folded relative to the section 5 over one open end of the box body, said wings 12 entering said open end and fitting closely against the inner surfaces of the side wall sections 7 and 8 respectively. It will of course be evident that the fold 16 which extends across the outer sides of the box walls 6, 7 and 9 is free or unattached along its lower edges. The parts of this fold extending across the side wall sections 7 and 9 thus holds the intermediate section of the fold extending across the wall 6 in close relation to the latter wall, without the use of adhesives, metal fasteners or tabs or extensions inserted through slots in the box walls.

In order to securely close the end of the box, the locking flap 20 is folded inwardly and upwardly against the outer face of the front wall 6 of the box and into the pocket formed between said wall and the fold 16 on the end thereof. Thus the inner part of the extension 14 or 15 is retained in closely superimposed relation over the fold 16 or 17, and the enclosures 10 and 11 are thus closely confined and held in position over the open ends of the box body, the wings 12 exerting a resilient outward bearing pressure against the side walls of the box body. This completes the secure and effective closure of the ends of the box, preventing the entrance of dust, dirt or water to the interior thereof or the possible accidental release of any of the contents of the box.

It will be evident from the above description, that in view of the extension of the pocket-forming folds across the three walls of the box body

at its opposite ends, when the cover securing flaps are interlocked therewith, a very rigid and substantial box structure is produced, which will be highly resistant to externally applied forces tending to cause its collapse. At the same time, it will be noted that I wholly avoid the use of the usual interlocking tabs and slots, metal fasteners, adhesives or any other supplementary or auxiliary securing means of any kind for the several parts of the box blank. Also, it will be further apparent that with the provision of such closure means for the open ends of the box, the complete and secure closure of the box ends may be very rapidly effected by exceedingly simple manipulations of the parts of the closure.

In Figs. 5, 6 and 7, I illustrate a somewhat different form of box in which the blank includes a rectangular section 22 forming the bottom of the box having the relatively foldable parts 23 and 24 extending at right angles to each other along two of its edges and the foldable part 25 extending along another edge thereof to form the back wall of the box body. Along the other edge of the section 22, a comparatively long extension is integrally connected comprising the three relatively foldable parts 26, 27 and 28 respectively. At their outer edges these parts are provided with a continuous fold 29 adapted to be folded upon the outer sides thereof and corresponding to the folds 16 or 17 of the construction first described. The free ends of the sections 26 and 28 have the relatively foldable triangular shaped flaps 30 and 31 respectively.

With the rear wall section 25, the cover section 32 of the box is integrally connected and is provided at opposite side edges with the foldable wings 33 and between these wings with the extension 34 having the foldable locking flap 35. At opposite ends of the rear wall section 25, the relatively foldable triangular shaped wings 36 are integrally connected therewith, the material being slitted as at 37 at the juncture of the wings 36 with section 25.

In setting up the box blank above described, the parts 23, 24, 25 and 26 are first bent upwardly along the score lines to positions in right angular relation to the box bottom 22, it being understood of course that the part 29 has first been outwardly folded on the parts 26, 27, 28. Parts 27 and 28 are then folded relative to each other and the part 26 to extend across the outer sides of the parts 23 and 24 and above the latter. The wings 30 and 31 are then bent to extend inwardly upon the inner side of the rear section 25 and the wings 36 are then sufficiently flexed to permit the upper end portions thereof to be inserted between the fold 29 and the opposite side wall sections 26 and 28, thus retaining the rear wall section 25 in its erect position. The box may now be securely closed in a similar manner to the construction previously explained by folding the cover 32 downwardly over the open top of the box body and then inserting the locking flap upwardly into the lower open side of the pocket formed between the fold 29 and the front wall 27 of the box.

The construction shown in Figs. 8 and 9 is similar to that last described, except that the bottom section of the box blank is provided on its opposite side edges with the relatively foldable parts 23' and the elongated part of the box blank comprising the wall sections 26', 27', and 28' extends across the front edge of the box bottom, the front wall section 27' being integrally connected therewith. These sections 26', 27', 28' are of course also provided with the outwardly folded pocket-

forming part 29', and otherwise the blank is of the same construction as last described and the parts thereof are relatively folded in a similar manner and interlocked with each other to provide the box or receptacle.

In Figs. 10, 11 and 12, I show another alternative construction in which the blank is formed to provide an additional relatively foldable section 28a connected with the free end of the section 28', which is of sufficient length to extend across the entire width of the box along the inner surface of the rear wall 25 thereof. In this construction, the other side wall section 26' has a relatively short foldable extension 30a. The outwardly foldable pocket-forming part 29a extends continuously along the sections 26', 27', 28', 28a and 30a and the fold part 29a at the free end of the section 28a is adapted to be received within the folded part 29a carried by the section 30a extending inwardly from the other side wall of the box. Thus, when the cover is in closed position, it will be evident that in this construction, the sections 28a and 25 of the box blank provide a reinforced rear wall of double thickness. In this construction, the locking wings at the ends of the rear wall previously referred to may be omitted, since the section 30a is of sufficient length to produce adequate frictional resistance between the nested fold parts 29a of the box blank to resist internal pressures tending to force the opposite side walls outwardly and cause the collapse of the box.

Figs. 13, 14 and 15 illustrate still another construction in which the front and opposite side wall sections of the box blank 40, 41 and 42 respectively are not directly connected with each other and are independently foldable with respect to the corresponding edges of the bottom wall section of the box. The front section 40 is provided at its opposite ends with relatively foldable triangular shaped extensions 43, said extensions and the wall 40 having the continuous pocket-forming fold 44. The side walls 41 and 42 at their rear ends are provided with similar relatively foldable triangular extensions 45, 46 respectively, said extensions and the box walls having the pocket-forming folds 48 and 49. At the other or front ends of the side wall sections 41, 42, the inwardly foldable locking tabs 50 and 51 respectively are provided. The rear wall and cover section of the box blank in this construction are substantially the same as that illustrated in Fig. 7 of the drawings.

In setting up the parts of the box blank as last described, the side wall sections 41, 42 are first raised to erect positions relative to the bottom section of the box. The front wall 40 with the extensions 43 and fold 44 first folded relative to said wall is then raised to an upright position and the pocket-forming folds 48 and 49 on the forward end portions of walls 41, 42 are received within the ends of the pocket forming fold 44 on the extensions 43. The front end edges of walls 41, 42 are obliquely cut as indicated at 41', 42', beyond the folds 48, 49 to facilitate this nesting of the latter folds within the ends of the fold 44. The end wings on the rear wall section of the box body are then flexed and inserted upwardly into the pockets formed by folds 48, 49 on the opposite side walls of the box in the same manner as described in connection with the construction shown in Figs. 5, 6 and 7. This construction also provides a very strong and durable box or container of this type.

In Figs. 16, 17 and 18, there is illustrated another alternative construction in which the front wall section of the box blank is provided with the relatively foldable end extensions and the outwardly folded pocket-forming part similar to that shown in Fig. 15, except that said extensions are of rectangular form instead of triangular. In this case, the box bottom is provided as in the construction shown in Figs. 9 and 12 with the relatively narrow upwardly foldable sections along its side edges, and the side wall sections 53, 54 of the box blank are formed as integral extensions of the rear wall section 55 thereof. Each of these side walls at its free end is provided with a part of substantially L-shaped form, as indicated at 56, 57 respectively, which is foldable relative to the side wall along the score line 58, a V-shaped notch 59 being cut in the material at the upper end of this score line.

In setting up the parts of this box blank, after the foldable side portions connected with the bottom section have been raised to erect positions, the front wall and end sections thereof with its pocket-forming fold on the outer side thereof are then arranged relative to the box bottom with the said end sections extending inwardly upon the outer sides of the vertically disposed parts connected with the bottom of the box, as clearly seen in Fig. 17 of the drawings. The rear wall 55 is now moved to an upright position and side walls 53, 54 are folded inwardly, the extensions 57 of these side walls being folded relative thereto upon the outer side of the front wall of the box and the horizontal parts thereof flexed to permit of their insertion upwardly into the pocket formed by the exterior fold along the upper edge of this front wall.

When this box is closed, the locking flap on the box cover is folded upwardly within the pocket-forming fold on the front wall of the box, and under the horizontal parts of the extensions 57 on the side walls thereof. Thus these side walls are securely locked in proper relation to the front wall of the box and against downward movement relative thereto at their forward ends, whereby said extensions 57 would be disengaged from the pocket-forming fold.

From the foregoing description considered in connection with the accompanying drawings, the construction, manner of use and various advantages of the several disclosed embodiments of the invention will be clearly understood. It will be evident that in each of the constructions referred to, by reason of the fact that the entire box, together with the closure means therefor, is produced from the single die stamped blank, a box of this kind can be manufactured on a quantity production basis at very small cost. Also, in certain of the illustrated constructions, there is very little waste of material and the several parts or sections of the box blank may be very easily and quickly folded or set up in their proper relative positions. By the particular means which I provide for securing the cover of the box in closed position, said cover is securely held without supplementary fastening means of any kind and against accidental opening, and operates in conjunction with the body walls of the box, to provide a very rigid structure offering the necessary resistance to internal or external pressures tending to cause collapse of the box structure.

While I have herein shown and described several practical examples of my present improvements, it is nevertheless to be understood that the

essential features thereof might also be incorporated in various other alternative structural forms, and I accordingly reserve the privilege of resorting to all such legitimate changes in the form, construction and relative arrangement of the various parts as may be fairly embodied within the spirit and scope of the appended claims.

I claim:

1. A paper board box comprising a polygonal shaped body, at least three angularly related walls of said body at an open end thereof having a continuous outwardly turned fold to provide a pocket extending across one of said walls, the free edge of the fold at the open side of said pocket being normally retained in closely contiguous relation to the face of said wall by the portions of the fold which extend upon the other box walls, and an integrally formed closure for the open end of the box directly connected to another of the box walls independently of said fold and having a flap to overlie the pocket-forming section of said fold and provided with a relatively flexing tab insertable into said pocket to releasably secure the closure in its closed position.

2. A paper board box comprising a single blank cut to provide relatively foldable sections forming a polygonal shaped box and cover therefor, at least three of the body wall sections having a continuous outwardly turned fold at an open end of the box providing a pocket extending across each of said walls, another body wall section having parts at its opposite ends foldable against the outer sides of two of the first named sections, and insertable into the pockets thereon, and a cover section for the box having a flap to overlie the pocket on the other of said first named wall sections and provided with a relatively foldable tab insertable into said pocket to releasably secure the cover section in closed position.

3. A paper board box comprising a single blank cut to provide relatively foldable sections forming a bottom, front, rear and side walls for the box body, and a cover section integral with said rear wall, said front and side walls having a continuous outwardly turned fold providing a pocket extending across each of said walls at the open end of the box body, said rear wall having parts at its opposite ends foldable against the outer sides of the side walls and insertable into the pockets thereon, and the cover section of the box having a flap to overlie the pocket on the front wall of the box and provided with a relatively foldable tab insertable into the pocket thereon to releasably secure the cover section in closed position.

4. A paper board box comprising a single blank

cut to provide a bottom, front, rear and side walls for the box body, said side and front walls being integrally connected and the side walls having relatively foldable parts at their free ends adapted to extend inwardly upon the rear wall of the box, said front and side walls and the extensions of the latter having a continuous outwardly turned fold to provide pockets extending across said front and side walls at the open end of the box body, said blank also including a cover section integrally connected with the rear wall section and foldable relative thereto, parts integral with the ends of the rear wall section, said parts along one of their edges being partially separated from the rear wall to permit flexing of said parts and the insertion of the same into the pockets on the side walls of the box body, said cover section having a flap to overlie the pocket on the front wall of the box and provided with a relatively foldable tab insertable into said pocket to releasably secure the cover section in closed position.

5. A paper board box comprising a blank having relatively foldable sections to provide a box body including a bottom, front, rear and opposite side walls, said front wall having an external fold extending along its upper edge to form a downwardly opening pocket, each of the side walls having an inwardly foldable part at its forward end extending upon the outer side of the front wall and into said pocket, and a cover for the box having a flap along one edge to overlie the wall of said pocket and provided with a relatively flexing tab also adapted to be inserted upwardly into said pocket to releasably retain the cover in closed position.

6. A paper board box comprising a blank having relatively foldable sections to provide a box body including a bottom, front, rear and opposite side walls, said front wall having an external fold extending along its upper edge to form a downwardly opening pocket, each of the side walls having an inwardly foldable part at its forward end extending upon the outer side of the front wall, and provided with a horizontally extending portion disposed within one end of said pocket, and a cover for the box having a flap along one edge thereof to overlie the wall of said pocket and provided with a relatively flexing tab adapted to be inserted upwardly into said pocket and between the front wall of the box and said horizontal portions of the parts connected with the side walls; to thereby retain said side walls in their erect positions and releasably secure the cover in its closed position.

NATHAN OTTINGER.

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