May 13, 1930. R. A. GROSS 1,758,513

COLLAPSIBLE PAPER BOX

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Fig. 1.

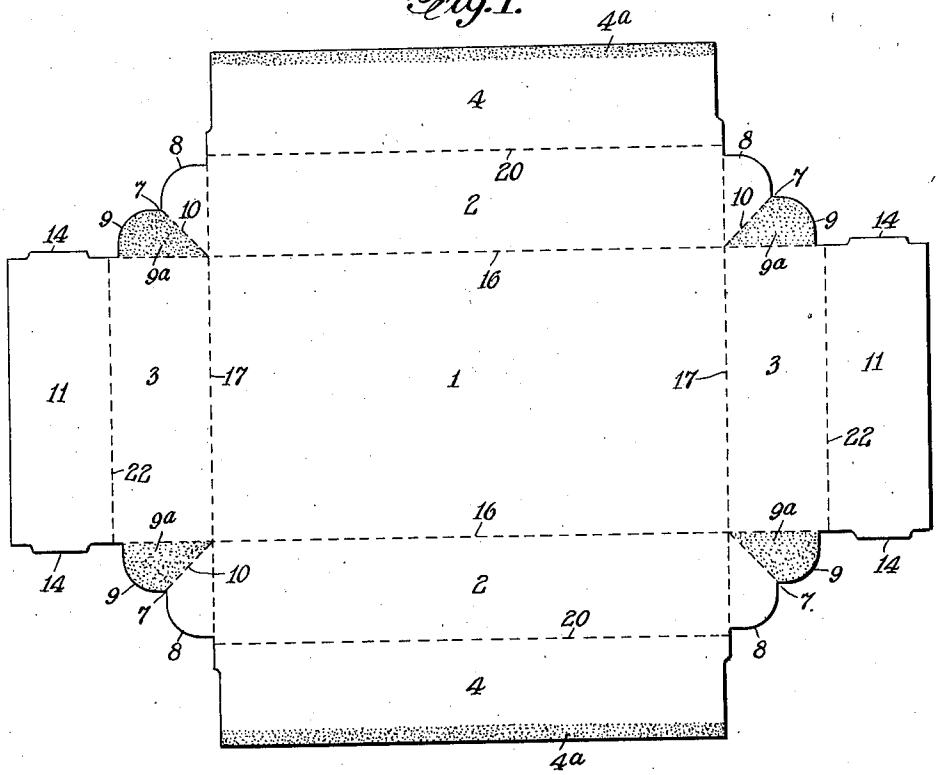
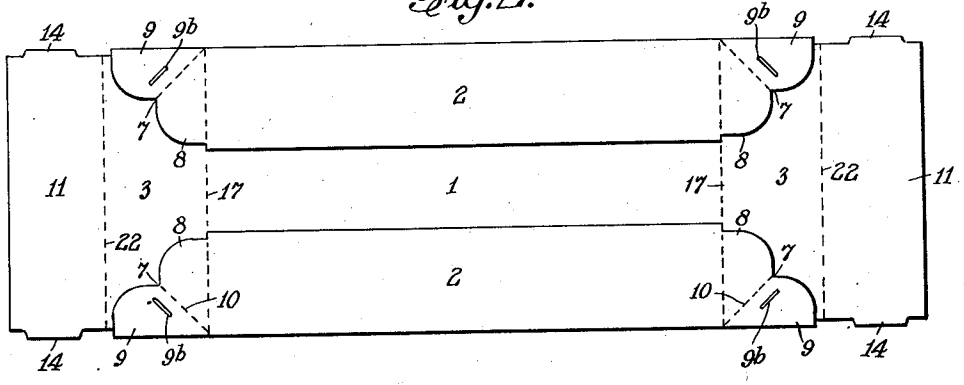


Fig. 2.



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Fig. 3.

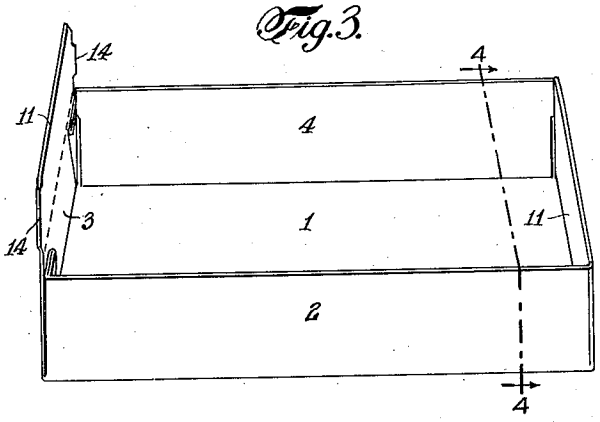


Fig. 4.

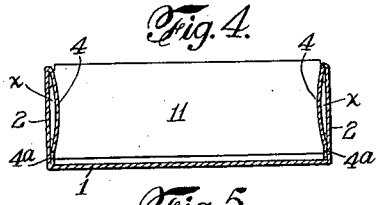


Fig. 5.

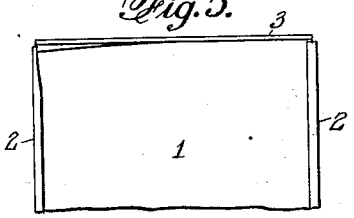


Fig. 6.

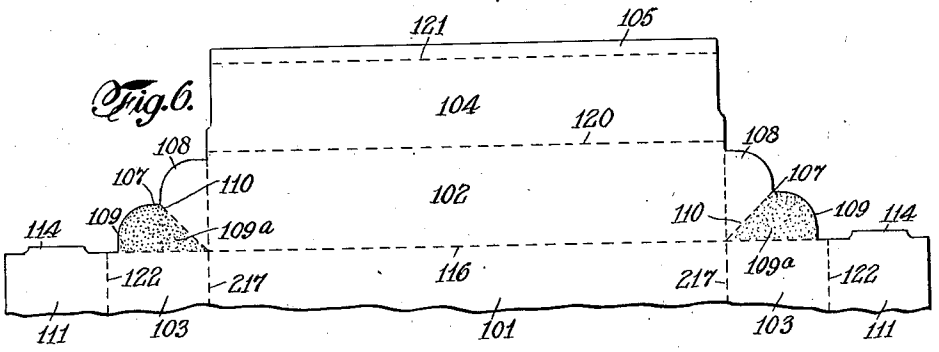


Fig. 7.

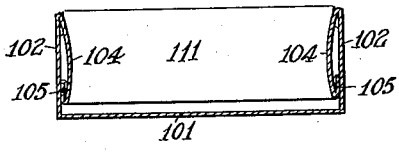


Fig. 9.

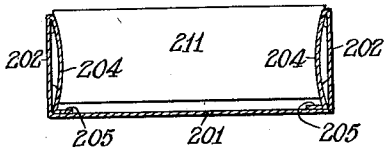
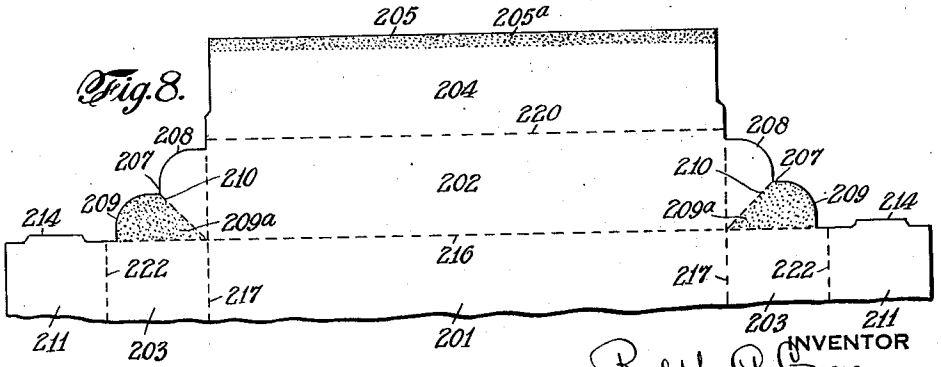


Fig. 8.



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Fig. 10.

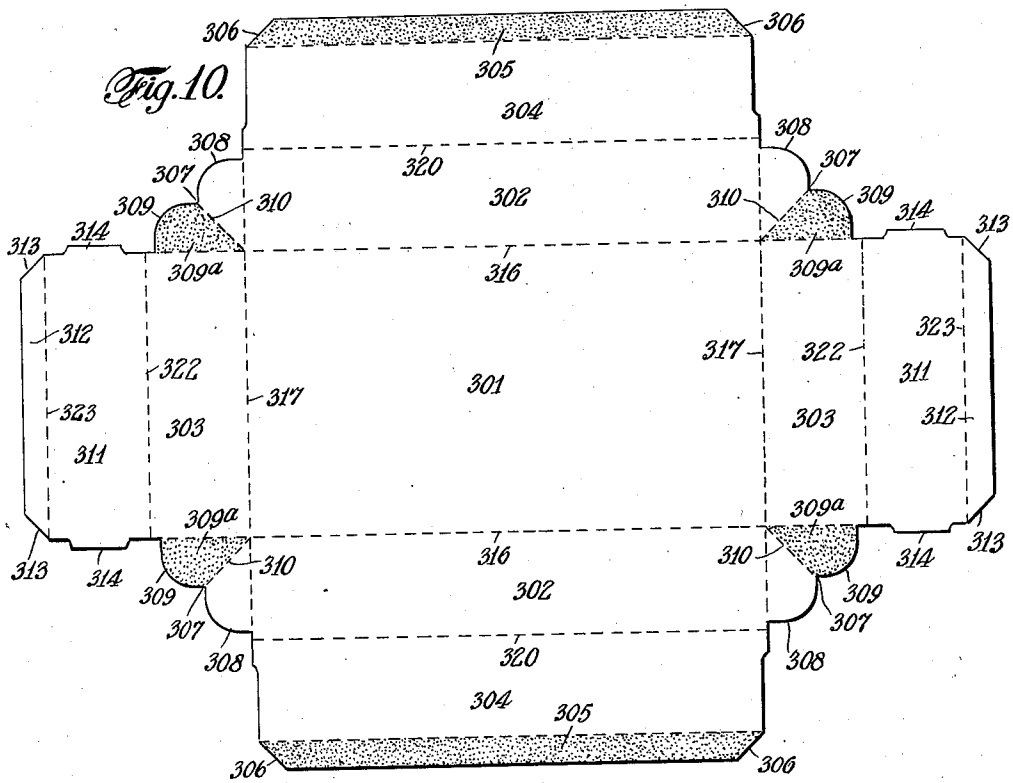


Fig. 11.

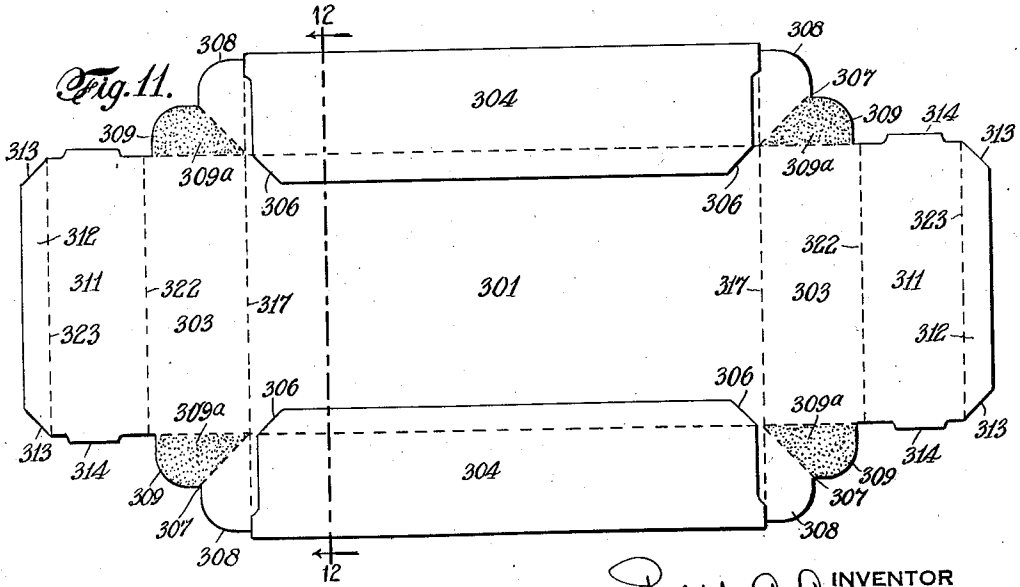
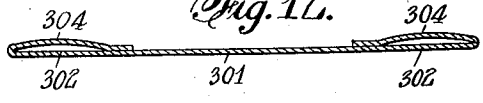


Fig. 12.



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May 13, 1930. R. A. GROSS 1,758,513

COLLAPSIBLE PAPER BOX

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Fig. 13.

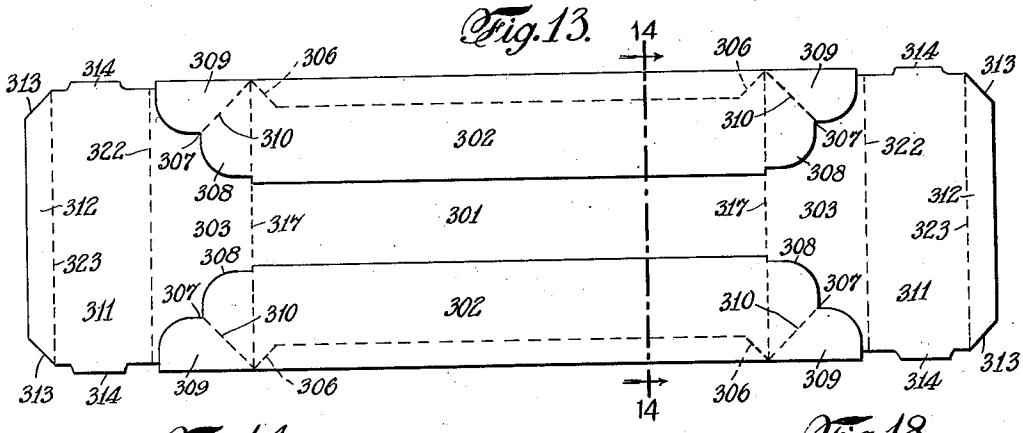


Fig. 14.

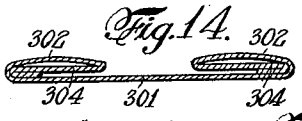


Fig. 15.

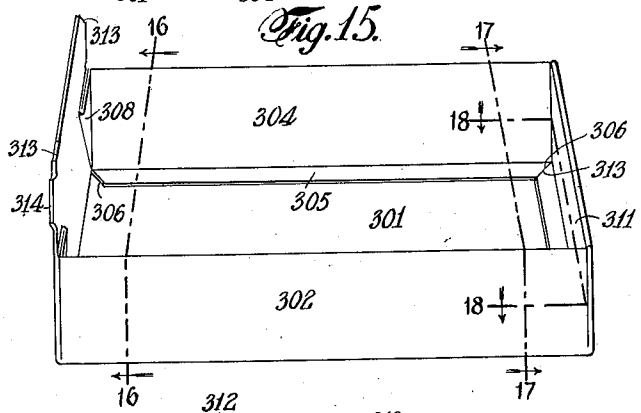


Fig. 16.

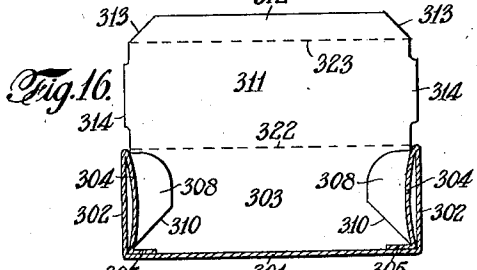


Fig. 18.

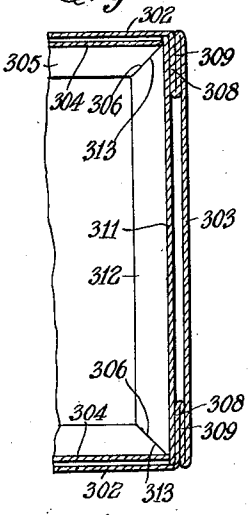


Fig. 17.

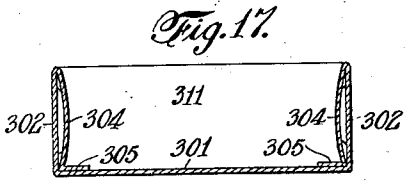
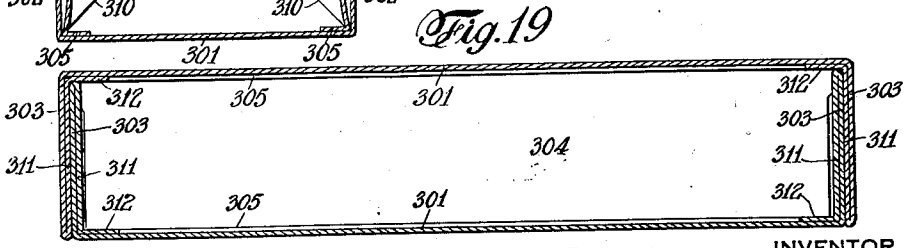


Fig. 19



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Patented May 13, 1930

1,758,513

UNITED STATES PATENT OFFICE

RALPH A. GROSS, OF LITITZ, PENNSYLVANIA, ASSIGNOR TO SIMPLEX PAPER BOX COMPANY, OF LITITZ, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA

COLLAPSIBLE PAPER BOX

Application filed March 14, 1929. Serial No. 347,096.

My invention consists in the novel features hereinafter described, reference being had to the accompanying drawings which show several embodiments of my invention selected by me for purposes of illustration, and the said invention is fully disclosed in the following description and claims.

The principal object of my present invention is to provide an improved box made of paper or similar material which is capable of being shipped flat in knock-down form and which can be speedily set up and automatically locked in operative position for receiving the contents of the box, and my present invention is an improvement upon the construction disclosed in my former Letters Patent of the United States No. 1,690,109 dated November 6, 1928. My present application is a continuation in part of my former application for Letters Patent of the United States, filed October 8, 1927 and given Serial No. 224,859. Another object of the invention is to provide an improved box construction which may be made from a single thin sheet of paper or cardboard stock, and by the peculiar method of forming the blank and folding the box and locking the same a container is obtained which is equally as strong, if not stronger than a container formed in other ways of much heavier and more expensive stock.

Another object of the invention is to provide novel and improved means for locking the parts in set-up or contents receiving position, which effects a material saving in the cost production of the material employed in the box and also a material saving in the time required to manufacture the article, and further, it insures a positive and automatic locking of the parts in set-up position, in such manner that the locking means cannot become accidentally disengaged under any ordinary circumstances.

According to my invention the box comprises two similar collapsible members, namely a bottom and a top, the latter of which is adapted to telescope over the former, and both associated together in such manner when assembled as to reinforce each other and thereby add to the rigidity and stability of the box in use. A single box member is formed from an integral blank having a central main body constituting the top or bottom of the box, double side flaps and end flaps comprising inner and outer members, the outer side flaps and end flaps being connected by infolding corner sections, one portion of each of which is preferably permanently connected with the adjacent exterior end flap to effect automatically the erection of the side walls of the box into vertical position when the end flaps are erected into such position. The interior end flaps are provided at their ends with locking projections, and in order to insure the accurate and permanent locking engagement thereof with the end edges of the interior side flaps, the latter are rigidly secured only adjacent to the edge remote from the crease or bend where they are united to the adjacent exterior side flap, so that the interior side flaps and exterior side flaps are separated from each other slightly, and the interior side flaps curve slightly inward away from the exterior side flaps, and in the erect positions of the side members the interior side flaps are normally separated transversely of the box by a distance which is less than the transverse width of the inner end flaps taken through the end locking portions or projections thereof. It follows from this construction that as the interior end flaps are folded downwardly within the box to complete the erection thereof into set-up position, these end locking portions or projections will engage the inwardly curved or bulging portions of the interior side flaps and press them outwardly toward the exterior side flaps until said end locking projections pass the end edges of the interior side flaps when the latter will snap inwardly past the said locking portions or projections of the inner end flaps and permanently lock the box in the erected position. The relative movement of the inner side flaps with respect to the outer side flaps above referred to is similar to the relative movements of two parts of a bellows, and I term this action of the side folds a bellows action of the side walls of the box, which effects a permanent locking of the box in erected position and prevents

the possibility, under ordinary circumstances, of any accidental disengagement of the locking portions of the interior end flaps.

In the preferred form of my invention I provide the interior side flap with an additional flap or locking strip which is permanently gummed or otherwise secured to the body member constituting the bottom (or top) of the box, the interior side flaps being slightly separated from the exterior side flaps throughout their entire extent to provide this bellows action. I also provide the interior end flaps with a similar locking strip to engage the body member, the side locking strips and end locking strips being provided with beveled portions which are brought into engagement at the same time that the end locking portions of the interior end flaps snap into engagement with the end edges of the side flaps, thus providing an additional locking means for holding the box in erected position.

As each part of the completed box which is shown in assembled relation in one of the figures in section is identical with the other except as to size, a specific description of one of the parts of the box will be sufficient, and in the figures of the drawings accompanying this application which show only one of the parts, the figures may be considered to represent either the top or bottom part or member of the box.

My invention also includes certain novel features of construction and combination of parts hereinafter described and particularly pointed out in the claims.

In the drawings,

Fig. 1 is a plan view of a blank which may be employed in forming either the top or bottom member of a box embodying my invention.

Fig. 2 is a similar view of a blank after the inner side flaps have been secured adjacent to their edges, and the members of the infolding corner flaps have been secured to the adjacent exterior end flaps.

Fig. 3 is a perspective view of the box member in erected position showing one of the interior end flaps locked and the other interior end flap in unlocked position.

Fig. 4 is a section on line 4—4 of Fig. 3.

Fig. 5 is a plan view of one end of the box member in erected position, the interior end flap being purposely shown in locked position at one end and in unlocked position at the other end to illustrate the bellows action of the side wall.

Fig. 6 is a partial plan view of a slightly modified form of blank in which the interior side flaps are provided with extensions or strips, the outer faces of which are to be glued or otherwise secured to the exterior side flaps.

Fig. 7 is a section similiar to Fig. 4 of a box in erected position formed from the blank illustrated in Fig. 6.

Fig. 8 is a partial plan view of a blank similar to that shown in Fig. 6, except that the securing strips of the interior side flaps are constructed so that they can be secured to the main body (bottom or top) of the box member.

Fig. 9 is a view similar to Figs. 4 and 7 of a box constructed from the blank shown in Fig. 8.

Fig. 10 is a plan view for carrying out the preferred embodiment of my invention.

Fig. 11 is a plan view of a blank showing the interior side flaps folded upon the exterior side flaps and the locking strips of the interior side flaps secured to the body member.

Fig. 12 is a sectional view taken on line 12—12 of Fig. 11.

Fig. 13 is a view of the blank shown in Fig. 10 of the side flaps folded upon the main body and the corner portions adjacent to the exterior end flaps secured thereto.

Fig. 14 is a section on line 14—14 of Fig. 13.

Fig. 15 is a view similar to Fig. 3 of the box member formed from the blank illustrated in Fig. 10.

Fig. 16 is a section on line 16—16 of Fig. 15.

Fig. 17 is a section on line 17—17 of Fig. 15.

Fig. 18 is an enlarged horizontal section through one end of the box member on line 18—18 of Fig. 15.

Fig. 19 represents a longitudinal sectional view taken through the assembled box showing the top and bottom members telescoped.

In the various figures of the drawings I have somewhat exaggerated the inward bulge or bend of the interior side flaps and the separation thereof from the exterior side flaps for the purpose of better conveying the idea of the bellows action of the side flaps.

In carrying out my invention I preferably take a single sheet of paper stock as cardboard, pasteboard, or other suitable material, which can be readily cut into the desired form and creased or scored and folded. The dotted lines shown on the blanks in the various figures separating the various portions thereof indicate the lines of folding, and I preferably crease or indent the blank along these lines by pressure instead of scoring or partially cutting through the blanks as is sometimes done, as this latter method, namely scoring, has a tendency to weaken the blank and the general structure, whereas creasing or indenting along the lines of fold tends to compact the fibres of the sheet material, and if anything, adds to the strength of the box at these points.

In the embodiment of my invention shown in Figs. 1 to 5 inclusive, I employ a blank illustrated in Fig. 1 comprising a body portion, 1, exterior side flaps, 2, 2, separated therefrom by scores or creases, 16, and end

flaps, 3, 3, separated from the body portion by scores or creases, 17, 17. The side flaps, 2, 2, are provided at their outer edges with interior reinforcing side flaps, 4, separated therefrom by scores or creases, 20, and conveniently cut away slightly at their ends to form the end locking edges, 15. The exterior end flaps, 3, 3, are provided at their outer edges with interior end flaps, 11, 11, separated from the adjacent flaps, 3, by scores or creases, 22, each end of each interior end flap being provided with an end locking portion, 14. The adjacent ends of the exterior side and end flaps, 2, 3, are connected by integral corner portions preferably scalloped or indented as indicated at 7, and divided by a diagonal score, 10, to form substantially triangular infolding corner portions, 8 and 9. It will be understood that the blank is preferably formed integrally throughout as shown, and means are provided for securing the interior side flaps, 4, adjacent to their extreme outer or remote edges only, as by gumming the inner face of each of the flaps, 4, adjacent to its outer or remote edge, as shown at 4^a in Fig. 1 for example, and I also provide means for permanently securing each of the corner flaps, 9, to the adjacent exterior end flap, 3, which may be accomplished by gumming the face thereof as indicated at 9^a. I wish it understood, however, that I do not limit myself to securing these parts by means of gumming, as they may be secured in any other desired way.

For convenience in shipping the boxes in flat or knock-down form, the exterior side flaps, 4, of the blank are preferably folded over on the line, 20, upon the adjacent interior side flaps, 2, and in this instance the interior side flaps are secured along their remote edges as indicated at 4^a, to the interior side flaps, by means of the gummed portion shown or otherwise. The reinforced side flaps so connected are then folded on the lines, 16, over upon the main body, 1, and at the same time the corner portions are carried over on to their adjacent end portions in the manner shown in Fig. 2, and the corner sections, 9, are united to the adjacent end sections by means of gumming (9^a) or otherwise. For example in Fig. 2 I have shown the corner sections, 9, secured to the adjacent end flaps, 3, by staples, 9^b, which may be used with or without the gum indicated at 9^a, or may be disposed with in favor of gumming if preferred. With the blank partially folded as indicated in Fig. 2, it is in convenient form for shipment and at the same time it can be instantly erected into contents receiving condition and locked.

As shown in Figs. 4 and 5, for example, the inner side flaps, 4, are secured only adjacent to their extreme or remote edges, indicated at 4^a, so that there is a separation between the inner and outer side flaps, which is clearly illustrated in somewhat exaggerated form in Fig. 4, leaving a space indicated at x between the two flaps. The interior side flaps, 4, are therefore supported adjacent to their top and bottom edges when in the erect position, and the intermediate portions between their longitudinal edges bulge or curve inwardly to a certain extent, but are capable of yieldng outwardly or toward the exterior side flap, 2, the two walls acting like a bellows.

To erect the partially folded blank shown in Fig. 2 into the contents receiving form, it is only necessary to take the blank in both hands with the palm in engagement with the end flaps, and by pressure exerted by the two hands toward each other the end flaps will be raised into position perpendicular with the body portion, and by reason of the connection between the outer end flaps and outer side flaps effected by the corner sections, 8, 9, the side flaps will be automatically raised into perpendicular position, as shown in Fig. 3, the corner sections, 8, 9, folding upon each other and upon the end sections as shown at the left in Fig. 3, and the box can be instantly locked in the erected position by turning down the exterior end flaps, 11, upon the lines or creases, 22, with the thumbs until the locking portions, 14, engage the inwardly extending yielding portions of the interior side flaps, 4, which will yield outwardly toward the exterior side flaps and permit the locking portions, 14, to be carried past the end edges of the said interior side flaps when the latter will instantly snap inward and securely lock the inner end flaps in the position shown at the right in Fig. 3, thus holding the box firmly and permanently locked against any possibility of accidental displacement of the engaged locking portion under ordinary circumstances of use. In order to make the operation clear, I have shown in Fig. 3 at the left one of the interior end flaps before it is bent down and locked, and in Fig. 5 I have shown one of the interior end flaps locked at one end, the other end at the left in Fig. 5 being in the position which it occupies immediately before locking, in which it is pressing the yielding inwardly bent portions of the adjacent inner side flap, 4, outwardly just before the locking portion, 14, snaps into place. It will be understood, however, that in practice the action of erecting and locking the box in erected position is practically instantaneous, and the locking will ordinarily occur substantially simultaneously at all four corners of the box. If it does not, a slight pressure of the thumb against the inner end flaps at any corner will complete the locking. The box can be restored to the flat or knock-down condition if this should be desirable, by taking hold of the central portions of the inner end flaps and pulling them inwardly so as to disengage the locking portions, 14, from

the inwardly curved inner side flaps, but this will not ordinarily occur accidentally.

In some instances I have found it convenient to provide the interior side flaps with an outer marginal strip which can be gummed or otherwise secured to the adjacent exterior side flaps. Such a construction is shown for example in Figs. 6 and 7, in which the parts are given the same numerals as in Figs. 1 to 5 with the addition of 100. In this instance the side flaps, 104, are provided with integral marginal strips, 105, which may be gummed on their lower faces, the gum therefore not appearing in Fig. 6. The marginal strip, 105, is folded upon the inner side flap, 104, on the line or crease, 121, and the flap, 104, is folded on the line, 120, upon the flap, 102, and the strip 105, is securely gummed to the flap, 102, as clearly shown in Fig. 7, so as to hold the inner and outer side flaps separated and to provide the locking action hereinbefore described. In this connection it is immaterial whether the inner side flap, 104, is of the same width as the outer side flap, 105, or not. The construction and operation of the box is otherwise exactly as hereinbefore described.

In Figs. 8 and 9 I have shown another slight modification in which the parts corresponding to those shown in Figs. 1 to 5 are given the same reference numerals with the addition of 200. In this case the blank is constructed substantially as shown in Fig 6 except that the interior side flaps, 204, are made of the same (or very slightly greater) width as the exterior side flaps, 202, and a marginal strip indicated at 205, is in this instance gummed on its upper face, as indicated at 205^a. In this instance the interior side flaps, 204, are folded upon the exterior side flaps, 202, and the marginal strips are gummed, (or otherwise secured) to the body portion, 201, as clearly shown in Fig. 9, so that when the side flaps are erected the inner side flaps will curve inwardly away from the outer side flaps, 202, as clearly shown in Fig. 9, to provide the previously described bellows action of the side flaps and lock the portions, 14, of the end flaps, 211, in the manner previously described. The construction of the blank and the operation in erecting the box is otherwise exactly the same as hereinbefore described.

In Figs. 10 to 18 inclusive, I have shown the preferred form of my improved box in which the parts corresponding with those illustrated in Figs. 1 to 5 are given the same numerals with the addition of 300. In this form of my invention the interior side flaps indicated at 304, are provided with marginal portions, 305, conveniently gummed on their upper faces for attachment to the main body, 301, in the manner described with reference to Figs. 8 and 9, but in addition these marginal strips are provided at each end with locking edges indicated at 306, which are preferably beveled (for example at an angle of 45 degrees). In addition the interior end flaps indicated at 311, are provided with marginal locking strips, 312, separated from the adjacent end flaps by a line or crease, 323, and having their ends provided with beveled portions, 313, (preferably at an angle of 45 degrees). The blank is otherwise constructed as previously described with reference to Figs. 1 to 5 and operates in the same manner. In making up the blanks for shipment the interior side flaps, 304, with their marginal strips, 305, are first folded over upon exterior side flaps, 302, and the marginal strips, 305, are gummed or otherwise secured to the main body, 301, as shown in Figs. 11 and 12, the inner and outer side flaps being slightly separated from each other as clearly indicated in Fig. 12. The side flaps are then folded over upon the main body as indicated in Fig. 13, and the corner sections, 309, are permanently secured to the exterior end flaps, 303, in a manner similar to that previously described and illustrated in Fig. 2. A cross section of the blank in this knockdown condition is shown in Fig. 14, in which the bellows feature of the side walls formed by the inner and outer side flaps will be clearly seen. The box is erected in substantially the manner as previously described and as illustrated in Fig. 15. The side walls will be automatically raised into perpendicular position with respect to the body, 301, by the erection of the end flaps, and the inner end flaps are folded down into the box over the infolded corner sections, 8, 9, which will bring the marginal locking strips, 312, of the inner end flaps into contact with the main body, 301, and the locking portions, 314, into contact with the yielding inwardly curved portions of the inner side flaps, 304. As the inner end flaps are forced by the thumb into locking position, the locking projections, 314, will press the yielding portions of the inner side flaps outwardly toward the outer side flaps in the manner previously described and will snap into locking position against the end edges of the inner side flaps. At the same time the beveled or mitred portions, 313, of the marginal locking strips, 312, will pass over and drop into engagement with the corresponding beveled portions, 306, of the marginal portions, 305, of the inner side flaps which are secured to the body member, thus doubly locking the inner end flaps and doubly securing the box in the erected or contents receiving position. In Fig. 15 I have shown the box locked at one end, to the right, and it will be seen that the end marginal portions, 313, will have been bent on the line or crease, 323, so that said marginal portion lies upon the main body with its beveled ends in locking engagement with the beveled portions of the marginal side strips, 305, while the locking portions, 314, are in engagement with

the end edges of the inner side flaps. The bellows action of the inner side flaps is clearly illustrated in the sectional views Figs. 16, 17 and 18. When both of the inner end flaps have been folded into this position, and as previously stated the infolding of both the inner end flaps will be simultaneously effected, the box will be very securely locked against all possibility of accidental displacement, while it can be restored to the knock-down condition if this should be desired by lifting the end marginal locking strips, 312, out of engagement with the side marginal strips, 305, and pulling the inner end flaps inwardly to disengage their locking portions from the inner side flaps.

It will be understood as to all embodiments of my invention that the upper and lower members of the box are constructed in the same manner except that the blank for the upper member is sufficiently larger than that for the bottom member, to permit the upper member to be telescoped over the lower member as illustrated for example in Fig. 19. It will also be seen that when both members of the box are in the assembled relation as therein shown the side and end walls will have four thicknesses of material. In the construction illustrated in Figs. 8 and 9 in which the inner side flaps are provided with marginal portions secured to the bottom or top, the box members are additionally reinforced at the joints between the side walls and body, and in the form shown in Figs. 10 to 18 for example, each box member is reinforced at the joints between the main body and the side walls and end walls. It follows, therefore, that even if relatively thin or inferior material is used, a very substantial and satisfactory box is provided which can be shipped flat and be instantly erected and locked in contents receiving position. It will be also seen that where the marginal portions are provided on the inner side flaps and inner end flaps, they serve a double purpose of providing an additional lock and at the same time reinforcing the box member at the junctions of the side and end walls of the body portion. It will be understood that the blanks may be printed or colored or decorated in any suitable manner while in the flat form.

What I claim and desire to secure by Letters Patent is:—

1. A knock-down box unit comprising a body portion and inner and outer side and end flaps secured thereto, the inner side flaps being secured adjacent to their remote edges to other portions of the box, and providing yielding portions between their longitudinal edges separated from the exterior side flaps and movable toward and from the same, said inner end flaps being provided at their ends with locking portions to engage said yielding portions of the inner side flaps to interlock with the end edges thereof to lock the box unit in erected position.

2. A knock-down box unit comprising a body portion and inner and outer side and end flaps secured thereto, the inner side flaps being secured adjacent to their remote edges to other portions of the box, and providing yielding portions between their longitudinal edges separated from the exterior side flaps and movable toward and from the same, said inner end flaps being provided at their ends with locking portions to engage said yielding portions of the inner side flaps to interlock with the end edges thereof to lock the box unit in erected position, said outer side and end flaps having their adjacent ends connected for automatically erecting the side flaps when the end flaps are connected.

3. A knock-down box unit comprising a body portion and inner and outer side and end flaps secured thereto, the inner side flaps having marginal strips folded with respect thereto and secured to other portions of the box, said inner side flaps having yielding portions between their longitudinal edges movable toward and from the outer side flaps, and said inner end flaps being provided at their ends with locking portions for engaging said yielding portions and constructed to interlock with the end edges thereof.

4. A knock-down box unit comprising a body portion and inner and outer side and end flaps secured thereto, the inner side flaps having marginal strips folded with respect thereto and secured to other portions of the box, said inner side flaps having yielding portions between their longitudinal edges movable toward and from the outer side flaps, and said inner end flaps being provided at their ends with locking portions for engaging said yielding portions and constructed to interlock with the end edges thereof, and integral corner portions connecting said outer side and end flaps and operative to automatically erect said side flaps when the end flaps are erected.

5. A knock-down box unit comprising a body portion and inner and outer side and end flaps secured thereto, the inner side flaps being of substantially the same width as the outer side flaps, and having marginal strips folded with respect thereto and secured to the main body adjacent to its junction with the contiguous outer side flaps, said inner side flaps having flexible portions between their longitudinal edges separated from the contiguous outer side flaps and movable toward and from the same, and said inner end flaps being provided at their ends with locking portions to engage the flexible portions of the adjacent inner side flaps and to interlock with the end edges thereof.

6. A knock-down box unit comprising a body portion and inner and outer side and

end flaps secured thereto, the inner side flaps being of substantially the same width as the outer side flaps, and having marginal strips folded with respect thereto and secured to the main body adjacent to its junction with the contiguous outer side flaps, said inner side flaps having flexible portions between their longitudinal edges separated from the contiguous outer side flaps and movable toward and from the same, and said inner end flaps being provided at their ends with locking portions to engage the flexible portions of the adjacent inner side flaps and to interlock with the end edges thereof, and integral corner portions connecting said outer side and end flaps and constructed to fold upon each other and upon the adjacent outer end flaps, the corner sections contiguous to said outer end flaps being permanently secured thereto to automatically erect said side flaps when said end flaps are erected.

7. A knock-down box unit comprising a body portion, outer side and end flaps integral therewith and foldable with respect thereto, each of said outer side and end flaps having an interior flap integral therewith and foldable thereon, each of said interior side flaps having a marginal strip integral therewith and foldable with respect thereto and permanently secured to the main body adjacent to its junction with the contiguous outer side flap, said inner side flaps having inwardly curved flexible portions between their longitudinal edges separated from the contiguous outer side flaps and movable toward and from the same, and said inner end flaps being provided with locking portions at their ends to engage the said flexible portions of the side flaps and interlock with the end edges thereof.

8. A knock-down box unit comprising a body portion and outer side and end flaps connected therewith, inner side flaps having their longitudinal edges permanently secured with respect to the exterior side flaps, and having yielding intermediate portions separated from the exterior side flaps and movable toward and from the same, the exterior end flaps being provided at their outer edges with interior side flaps foldable thereupon and of greater length transversely of the box than the distance between the flexible portions of the inner side flaps when erected, the end portions of said inner end flaps being constructed to engage said flexible portions of the inner side flaps and interlock with the end edges thereof.

9. A knock-down box unit comprising a body portion and outer side and end flaps connected therewith, inner side flaps each having one longitudinal edge secured to the outer edge of the contiguous outer side flap and the other edge secured adjacent to the line where said outer side flap is connected with the main body, the portions of said inner side flaps between said edges being separated from the adjacent outer side flap and movable toward and from the same, each of the outer end flaps being provided at its outer edge with an inner end flap having end locking portions separated from each a greater distance than the distance between the intermediate portions of the inner side flaps when in erected position for engaging the same and interlocking with the end edges thereof.

10. A knock-down box unit comprising a body portion and inner and outer side and end flaps secured thereto, the inner side flaps being of substantially the same width as the outer side flaps, and having marginal strips folded with respect thereto and secured to the main body adjacent to its junction with the contiguous outer side flaps, said inner side flaps having flexible portions between their longitudinal edges separated from the contiguous outer side flaps and movable toward and from the same, and said inner end flaps being provided at their ends with locking portions to engage the flexible portions of the adjacent inner side flaps and to interlock with the end edges thereof, said side marginal strips being provided with locking edges at their opposite ends, and said inner end flaps being provided with marginal locking strips to engage the main body and having their ends provided with locking edges to engage the locking edges of said side marginal strips.

11. A knock-down box unit comprising a body portion and inner and outer side and end flaps secured thereto, the inner side flaps being of substantially the same width as the outer side flaps, and having marginal strips folded with respect thereto and secured to the main body adjacent to its junction with the contiguous outer side flaps, said inner side flaps having flexible portions between their longitudinal edges separated from the contiguous outer side flaps and movable toward and from the same, and said inner end flaps being provided at their ends with locking portions to engage the flexible portions of the adjacent inner side flaps and to interlock with the end edges thereof, and integral corner portions connecting said outer side and end flaps and constructed to fold upon each other and upon the adjacent outer end flaps, the corner sections contiguous to said outer end flaps being permanently secured thereto to automatically erect said side flaps when said end flaps are erected, said side marginal strips being provided with locking edges at their opposite ends, and said inner end flaps being provided with marginal locking strips to engage the main body and having their ends provided with locking edges to engage the locking edges of said side marginal strips.

12. A knock-down box unit comprising a body portion and outer side and end flaps in-

tegral therewith, inner side flaps integral with the outer edges of the outer side flaps and foldable thereupon, and having their remote edges provided with marginal strips permanently secured to the main body adjacent to its junction with the outer side flaps, said inner side flaps curving inwardly and providing yielding portions separated from the outer side flaps between their longitudinal edges, said marginal strips having beveled locking edges at their opposite ends, inner end flaps integral with the outer edges of the outer end flaps, and provided with marginal strips for engaging the main body, said strips having beveled locking edges at their ends to engage the locking edges of said side marginal strips, infolding corner portions integral with the adjacent outer side and end flaps, the corner portions contiguous with the outer end flaps being permanently secured thereto to automatically erect the side flaps when the end flaps are erected, said inner end flaps being provided at each end with locking portions for engaging the yielding portions of the inner side flaps and interlocking with the end edges thereof.

13. A knockdown box unit comprising a body portion, side and end flaps secured thereto, integral reinforcing members secured to the side flaps, the longitudinal dimensions of which are less than the same dimensions of the side flaps, said reinforcing members having their free inner edge secured to other portions of the box but providing yielding portions between their longitudinal edges separated from the side flaps, a bellows connection between the side and end flaps, means carried by the end flaps for engaging the ends of the reinforcing members and the bellows connection to hold the side and end flaps perpendicular to the body, and coacting elements on the reinforcing members and the aforesaid means to lock said means and members against movement when the box is in operative position.

14. A knockdown box unit comprising a body portion, side and end flaps foldably connected thereto, foldable corner connections between said side and end flaps, integral reinforcing members on said side flaps having locking extensions, said reinforcing members folded upon the side flaps but having portions intermediate their longitudinal edges separated from the side flaps, the locking extensions thereof being secured to the body and foldable upon the line of fold between the body and the side flaps, and extensions on the end flaps foldable over the corner connections and carrying means arranged to lockingly engage with the reinforcing members of the side flaps and locking extensions thereof to lock the side and end flaps perpendicular to the body.

15. In a knockdown box unit, a body, side and end flaps foldably connected thereto, foldable corner connections between said side and end flaps, a portion of each of which is secured to the end flaps, reinforcing members carried by the side flaps and folded thereupon and secured at their free marginal edges to a portion of the box but having the part intermediate its longitudinal edges free of said side flaps and spaced therefrom, and locking members foldable upon the end flaps and having means coacting with the reinforcing members to lock the side and end flaps perpendicular to the body, said locking members foldable over the corner connections.

16. In a knockdown box unit, a body, side and end flaps foldably connected thereto, foldable corner connections between said side and end flaps, a portion of each of which is secured to the end flaps, reinforcing members carried by the side flaps and folded thereupon and secured at their free marginal edges to a portion of the box but having the part intermediate its longitudinal edges free of said side flaps and spaced therefrom, locking members foldable upon the end flaps and having means coacting with the reinforcing members to lock the side and end flaps perpendicular to the body, said locking members foldable over the corner connections, and supplemental locking means carried by the locking members and the reinforcing members coacting to hold the locking members in folded position over the corner members.

17. A knockdown box unit comprising a body, side and end flaps foldably secured thereto, foldable corner connections between said side and end flaps, a portion of each of which is secured to the end flaps, reinforcing members on the side flaps shorter than said side flaps throughout a portion of their width, said reinforcing members having locking extensions, which with the reinforcing members are folded upon but spaced from the side flaps and have their free marginal edges secured to the body, locking members carried by the end flaps and foldable thereupon over the corner connections and having locking projections arranged to engage the ends of the reinforcing members, and locking extensions carried by the locking members and arranged to coact with the extensions on the reinforcing members to provide a supplemental lock for holding the locking members and the end flaps perpendicular to the body.

18. A knockdown box unit comprising a body portion, main side and end flaps, foldable corner connections between said side and end flaps, auxiliary side and end flaps connected to and foldable upon the main side and end flaps, certain of said auxiliary flaps adapted to enclose said corner connections when folded upon a main flap and provided with lateral extensions to engage the end edges of other of said auxiliary flaps, certain of said auxiliary flaps having their outer

marginal edges only secured to a portion of the box, and extensions on said auxiliary side and end flaps having mitered ends arranged to abut when the main and auxiliary flaps are perpendicular to the body to lock said side and end flaps against movement and to hold the box in operative position.

In testimony whereof I affix my signature.

RALPH A. GROSS.