

Nov. 8, 1932.

R. A. GROSS

1,886,879

COLLAPSIBLE PAPER BOX

Filed Jan. 11, 1929

2 Sheets-Sheet 1

Fig. 1.

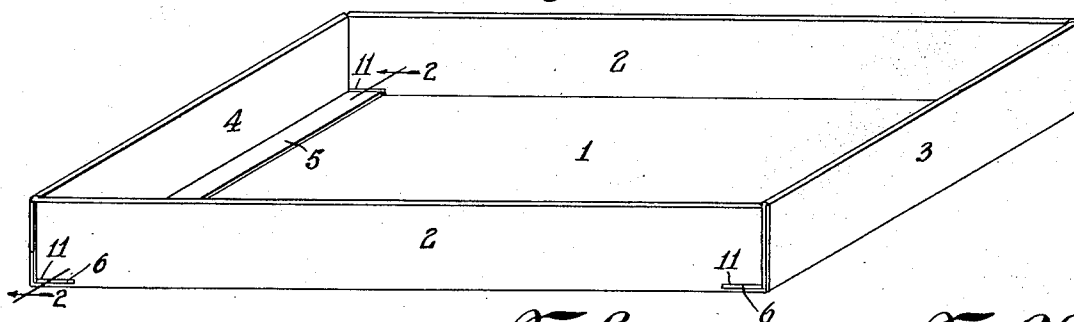


Fig. 2.

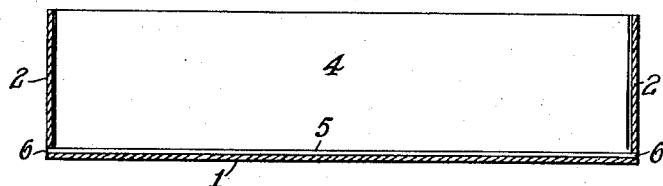


Fig. 2^a.

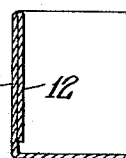


Fig. 3.

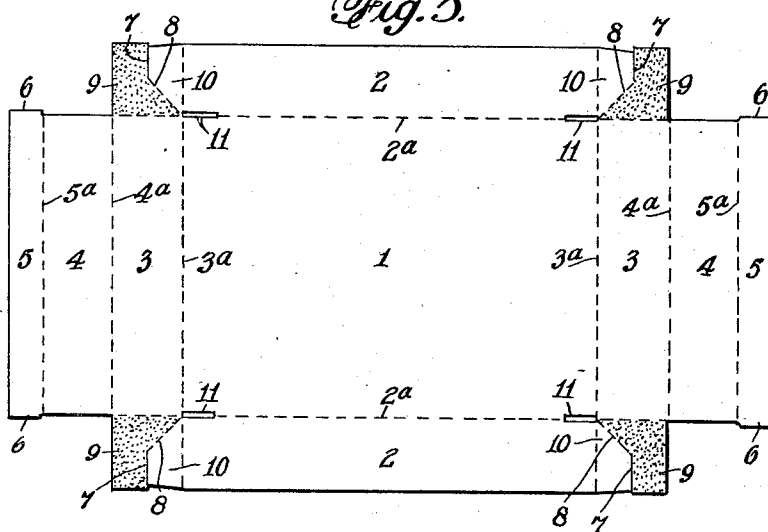
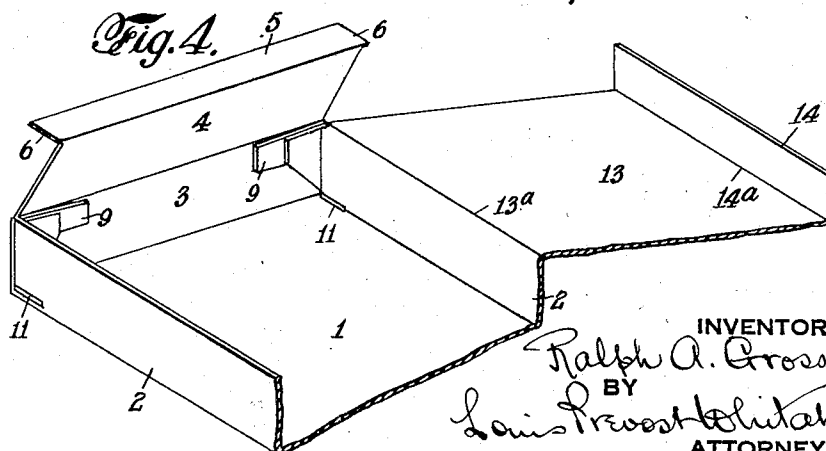


Fig. 4.



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2 Sheets-Sheet 2

Fig. 5.

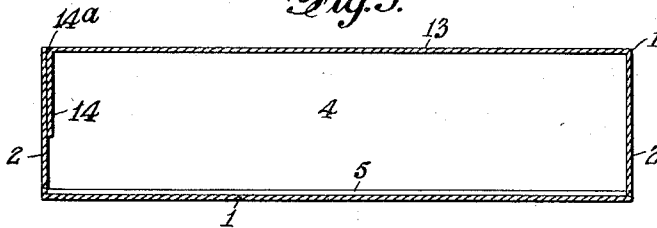


Fig. 6.

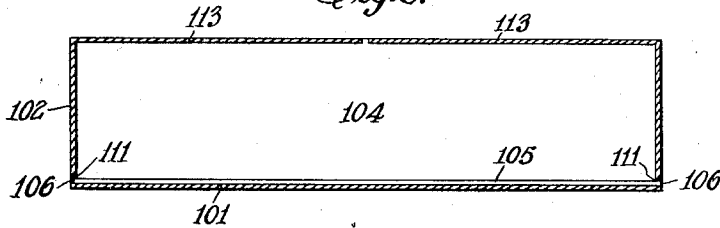


Fig. 7.

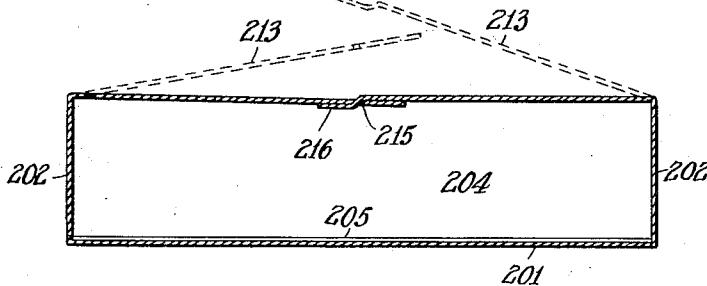


Fig. 8.

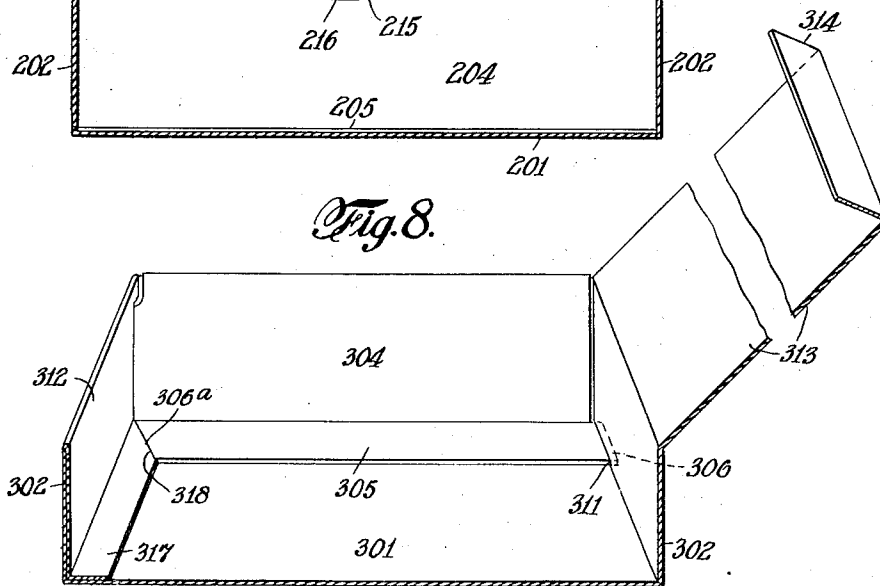
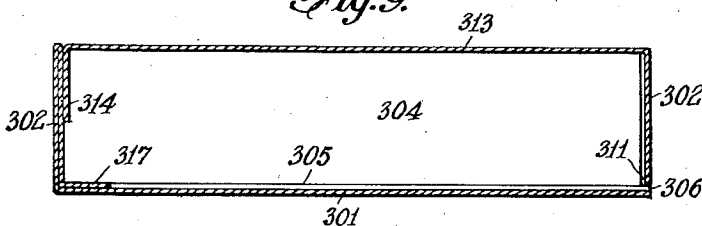


Fig. 9.



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UNITED STATES PATENT OFFICE

RALPH A. GROSS, OF LITITZ, PENNSYLVANIA, ASSIGNOR, BY MESNE ASSIGNMENTS, TO
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COLLAPSIBLE PAPER BOX

Application filed January 11, 1929. Serial No. 331,842.

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.

My invention consists in a knock-down box formed of paper or cardboard stock from a suitable blank and capable of being shipped and stored while flat, and quickly erected into operative position and securely locked when it is desired to use the box. My invention also enables me to provide the box with cover portions which may be formed integrally with one or both of its opposite side flaps, and may be so constructed as to add to the rigidity of the box when desired, or may be used as an interior cover, to protect the contents and carry advertising matter, or otherwise take the place of the lace paper or other separate inserts now employed, and reduce the cost of the box by saving the labor required to cut and attach said inserts.

In the accompanying drawings,

Fig. 1 is a prospective view of one embodiment of my invention.

Fig. 2 is a sectional view of Fig. 1 on line 2-2 thereof.

Fig. 2a is a similar view showing a slight modification.

Fig. 3 is a plan view of the blank for forming the box shown in Fig. 1.

Fig. 4 is a perspective view of one end of the box when partially erected and showing an integral cover flap attached to one side flap.

Fig. 5 is a sectional view of the erected box illustrated in Fig. 4.

Fig. 6 is a similar view showing a slight modification in which both side flaps are provided with cover flaps.

Fig. 7 is a similar view showing another modification in which the cover flaps are overlapped and secured together to reinforce the box.

Fig. 8 is a perspective view of a portion of a box showing another slight modification.

Fig. 9 is a sectional view of the same.

The preferred form of my invention is il-

lustrated in Figs. 1, 2 and 3, of which Fig. 3 shows a blank from which the box is made and which may be paper, cardboard, or other sheet stock, of the required or desired thickness and stiffness. In its simplest form this blank comprises a rectangular main body portion, 1, provided with side flaps, 2, 2, separated from the main body by scores or creases, 2^a. The main body is also provided with end flaps, 3, 3, separated from the main body by the scores or creases, 3^a, and each end flap is provided at its outer edge with an interior end flap, 4, substantially co-extensive with the adjacent end flap and separated by the score or crease, 4^a. At the outer edge of each of the interior end flaps is a narrow locking flap, 5, separated by the score or crease, 5^a, from the adjacent interior end flap and provided at each end with laterally projecting locking portions, indicated at 6, 6 of substantially the same cross section as the flap 5. The adjacent ends of the side and end flaps, 2, 3, are connected by integral corner portions, which are slit inwardly to the center from one edge, as indicated at 7, and are scored from the inner edge of the slit to the adjacent corner of the main body, as indicated at 8, thus forming infolding corner portions, 9 and 10 respectively. In this instance each of the side flaps, 2, is provided, at each end adjacent to the junction of the side flap with the main body, with the longitudinal slot, indicated at 11, of the proper size and shape to receive and fit upon the locking projection, 6, of the locking flaps, 5, when the box is erected.

It will thus be seen that when the box is in erected position as shown in Fig. 1, for example, the locking projections, 6, exactly fit and fill or close the slots, 11, in the side walls, without distending or distorting the side walls or any part or portion thereof outwardly, so that the true rectangular form of the box is preserved without any distortion, and the outer end faces of the locking portions, 6, lie in the plane of and in effect form part of the exterior faces of the side walls, and do not mar the appearance of the finished box, and do not interfere with telescoping

of one part of the box over the other, in the telescopic form.

I prefer to fold over the side pieces on the scores, 2^a, so that they lie upon the main body, 1, which of necessity will carry the corner portions over upon the main end flaps, 3, and I also prefer to permanently unite the parts, 9, of the corner portions to the end flaps, 3, either by adhesive material or otherwise, and in Fig. 3 I have shown the parts, 9, gummed for this purpose, as indicated in dots in Fig. 3. This leaves the blank in flat form so that it can be readily shipped and stored in flat condition, while the permanent union of the parts, 9, with the end flaps facilitates the erection of the box into operative position when it is desired to use it, as the raising of the end flaps into vertical position will automatically raise the side flaps into vertical position, as will be readily understood, the corner portions folding in against the adjacent end flap, 3, in the manner illustrated in Fig. 4, for example. To complete the erection of the box the interior end flaps, 4, are folded downward over the infolded corner portions (see Fig. 4) which will carry the locking flaps, 5, into contact with the main body, 1, of the box, which may be the bottom of the box or the top of the cover as the case may be, and the locking portions, 6, 6, will be inserted in the slots, 11, as clearly shown in Fig. 1, thus locking the box against any possible accidental collapse thereafter. It will be understood that when the box is formed as indicated in Figs. 1, 2 and 3 for example, it will be used as one member of a telescoping box, in a well known way, that is to say, that where a closed box is desired it is only necessary to make the blanks in two sizes, one slightly larger than the other, so that one box member can be telescoped over the other.

It will be seen that my improved box is extremely simple in construction and at the same time it will be permanently locked in the erected position, and the end portions being formed by the main and interior end flaps, 3, 4, the latter enclosing the infolded corner portions and the whole being locked together by the interengagement of the parts, 6, with the slots, 11, a very firm and substantial box is provided even though the stock is comparatively light. Where the box is to be used as a telescope box, each of the side flaps, 2, can be provided with an additional interior flap, 12, to be folded down to any desired extent, and if desired, adhesively or otherwise secured to the inner faces of the side flaps, as shown in Fig. 2a for example.

I contemplate, however, the provision in connection with the box illustrated in Figs. 1, 2 and 3, of integral cover flaps which will be very desirable from the standpoint of cost and will make a perfectly satisfactory box

for many purposes. In Figs. 4 and 5 for example, I have shown one of the side flaps, 2, provided with integral cover flap, 13, which is substantially co-extensive with the main body, 1, and will therefore extend over the entire top of the box. This cover flap is separated by the side flap, 2, by the score or crease, 13^a, and the folding over of the material at this crease or score will effectively stiffen the connected side piece, 2. In order to correspondingly stiffen the other side piece, 2, I contemplate providing the cover flap with a reinforcing flap, 14, separated from the cover flap, 13, by the score or crease, 14^a, and the folding of the material at this score or crease will stiffen the free edge of the cover flap, and when the cover is placed in closed position, the reinforcing flap, 14, will fit snugly against the inner face of the opposite side flap, 2, thus both sides of the box are stiffened when the box is erected and closed, so that a very satisfactory box and closure may thus be made from a single blank of sheet material with a minimum of cost for labor, and even when the material is thin and moderately pliable the resulting box will be found to have sufficient rigidity for the purposes for which it is intended.

I wish it understood at the same time that I may use the cover flap, 13, either with or without the reinforcing flap, 14, when the box is intended to be used as part of a telescopic box, in which case the other member may be made as shown in Fig. 1 for example a telescope over the box and cover illustrated in Figs. 4 and 5.

Where the box is to be used as a member of a telescoping box, I may find it convenient to provide both of the side flaps with cover flaps, as indicated at 113, 113, in Fig. 6; in which the other portions of the box shown, corresponding with those illustrated in the preceding figures are given the same numbers with the addition of 100, and the cover flaps may extend to a greater or less extent across the box and may meet centrally or at any other point transversely thereof.

In Fig. 7 in which corresponding parts are given the same reference numerals as in Figs. 1, 2 and 3 with the addition of 200, I have shown the separate cover flaps, 213, 213, overlapping, and in such case the overlapping portions may be provided with interlocking means for example, such as a slot indicated at 215, in one of the cover flaps to be engaged by a tongue, 216, formed on the other in a well known way. When either of the forms of box shown in Figs. 6 and 7 is used as a part of a telescoping box, the cover flaps, 113 and 213 will take the place of the lace paper or other inserts commonly used in boxes for candy, etc., which are separately formed and pasted or otherwise secured to the box, and as material is usually cheaper than labor an economy of manufacture will be effected by

using these cover flaps which may also carry advertising matter.

In Figs. 8 and 9, I have shown another modification of my improved box in which the corresponding parts to those illustrated in Figs. 1, 2 and 3 are given the same reference numerals with the addition of 300. In this figure the end locking flaps, 305, are each provided at one end only with the locking projection indicated at 306, to engage slots, 311, in the adjacent side flap, 302, while the other end of each locking flap, 305, is provided with a different form of interlocking means to engage a part connected with the opposite side flap, 302. In this particular instance I have shown the said opposite end of the locking flap, 305, provided with a beveled portion, 306^a, which engages a beveled portion, 318, on a locking flap, 317, formed at the outer end of an interior side flap, 312, similar to that shown in Fig. 2^a, and which reinforces that side of the box. Where this construction is used I prefer to secure the necessary reinforcement of the other side of the box by providing it with a cover flap, as indicated at 313 for example, which may or may not be provided with the reinforcing flap, 314.

I do not claim herein the integral or unitary cover shown in some of the figures of the drawings, in connection with my improved box, as this is covered by another application for Letters Patent of the United States filed by me November 11th, 1930 and given Serial No. 494,831, which application is a continuation in part of this application, as to all matters common to both.

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

1. A knockdown box comprising a blank having a main body, integral side flaps and end flaps, and infolding corner sections, integral with the adjacent side and end flaps, and diagonally creased to fold upon themselves and upon the adjacent end flaps, at least one of said side flaps being provided at each end with a horizontal rectangular locking slot adjacent to the junction with the main body and extending inwardly from the end flap, and each end flap being provided with a coextensive interior end flap to fold upon the adjacent infolding corner portions, and provided at its outer edge with a locking flap to engage the main body in the erected position, each of said locking flaps being provided at at least one end thereof, with a rectangular locking projection of a length equal to the length of the slot and of a cross section substantially equal to the cross section of one of said slots, and completely fitting the same without distorting any portion of the side flap containing said slot, and being provided at its opposite end with locking means for interlocking with a part connected with the opposite side flap.

2. A knockdown box comprising a blank having a main body, integral side flaps and end flaps, and infolding corner sections, integral with the adjacent side and end flaps, and diagonally creased to fold upon themselves and upon the adjacent end flaps, each of said side flaps being provided with a horizontal rectangular locking slot adjacent to each end thereof, and adjacent to the junction of the side flap with the main body and extending inwardly from the end flap, and each of said end flaps being provided with an interior end flap coextensive therewith to fold down over the infolding corner portion, and having at its outer edge a locking flap for engaging the main body in the erected position of the box, said locking flaps being provided at each end with rectangular locking projections of a length equal to the length of the slots and of a cross section substantially equal to the cross section of said slots to fit said slots without distorting any part of the side flaps, said locking projections being of such width that when in engagement with their coacting slots, the outer edges of said projections will lie substantially in the planes of the outer faces of said side flaps.

In testimony whereof I affix my signature.

RALPH A. GROSS.