

Sept. 13, 1955

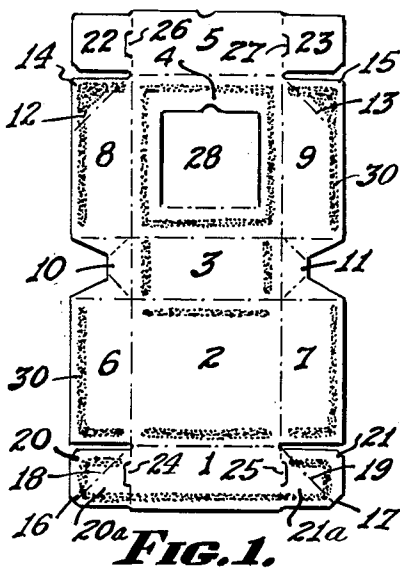
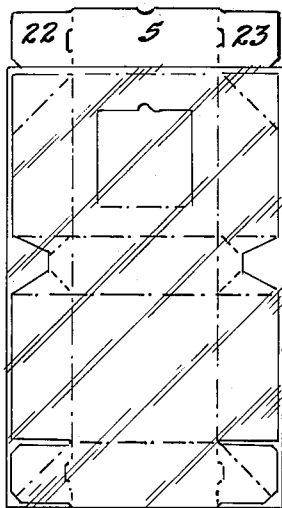
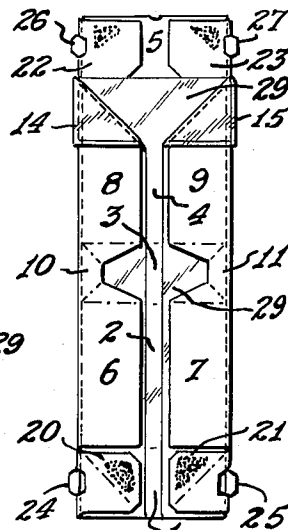
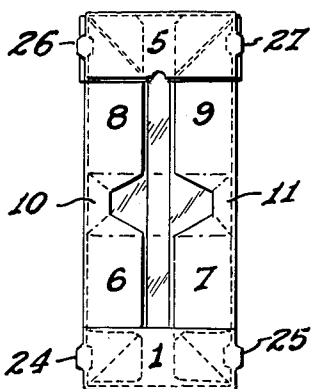
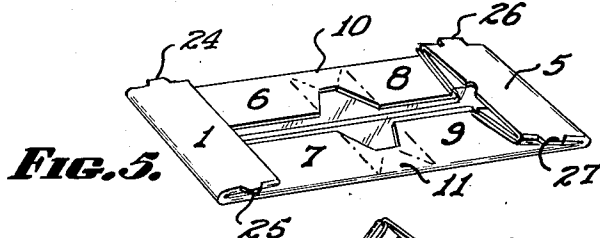
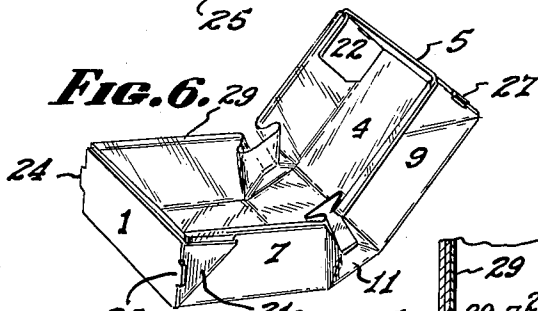
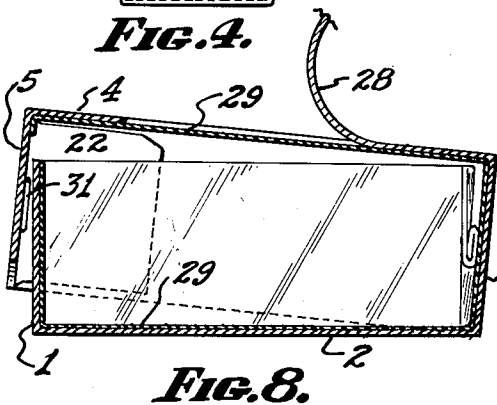
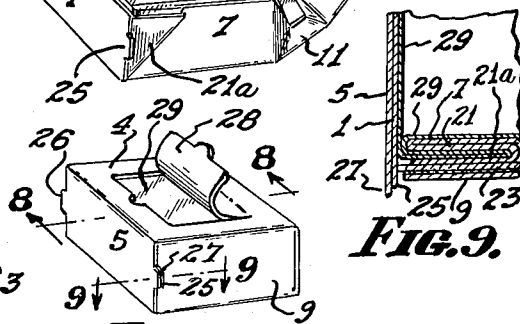
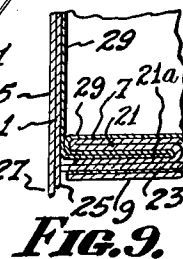
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2,717,731

FULLY LINED HINGED LID AUTOMATIC BOX

Filed March 15, 1952

2 Sheets-Sheet 1



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FULLY LINED HINGED LID AUTOMATIC BOX

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2 Sheets-Sheet 2

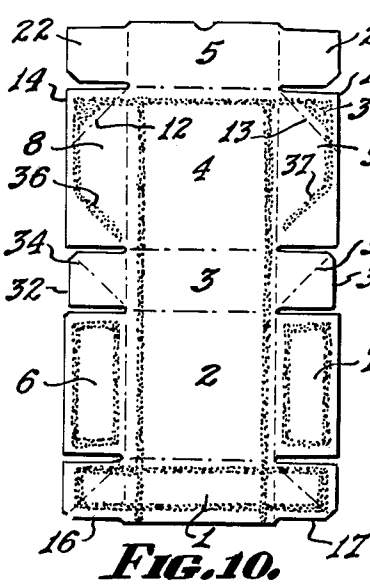


FIG. 10.

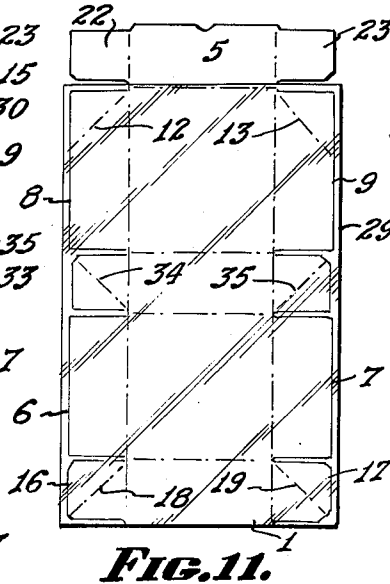


FIG. 11.

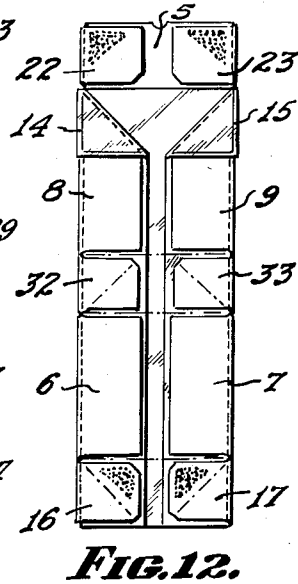


FIG. 12.

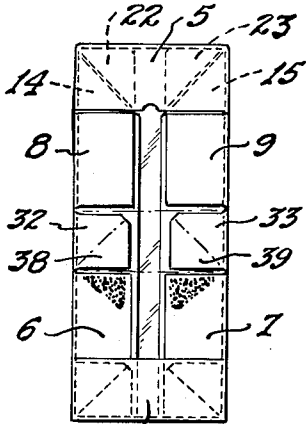


FIG. 13.

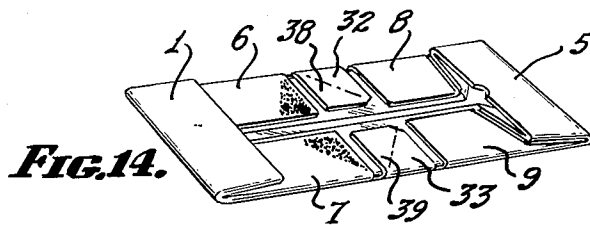


FIG. 14.

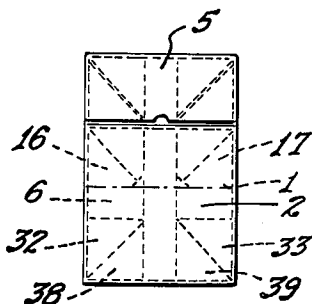


FIG. 15.

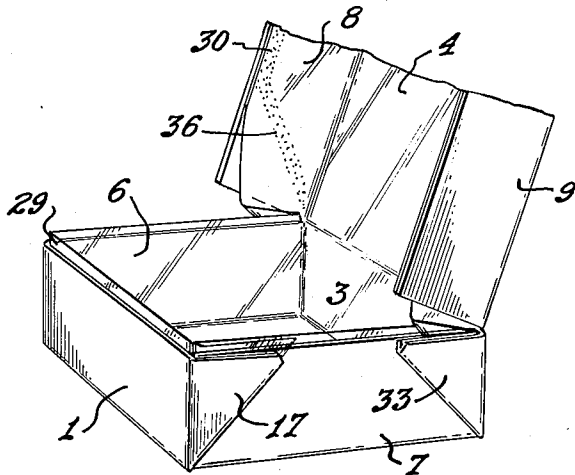


FIG. 16.

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2,717,731

FULLY LINED HINGED LID AUTOMATIC BOX

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Application March 15, 1952, Serial No. 276,736

2 Claims. (Cl. 229—14)

My invention relates to one-piece automatic hinged lid boxes, particularly adapted for frozen foods, having integrally formed top and bottom parts including side and end walls which are adapted to be collapsed so that their inner faces lie adjacent the inner faces of the bottom and top walls. Specifically, my invention is directed to certain improvements in such boxes, particularly in the construction of fully lined, liquid tight and grease proof boxes, and improved means for maintaining the top and bottom parts in the closed position.

It is an object of the present invention to provide one-piece boxes which are fully lined by means of a single sheet of lining material secured to the blank while in flat condition, the liner sheet being so positioned that it may be folded and erected concurrently with the box itself without interfering with the formation of the box blank into a knocked-down box structure.

It is a further object of my invention to provide box structures in which the lining material covers less than the full area of the blank, and yet the structure when erected is fully lined and grease proof throughout its interior. The construction thus provides all of the advantages of a fully lined blank while at the same time effecting a saving in lining material as compared to lining the entire blank.

It is a further object of my invention to provide means for the positive retention of the cover part of the filled box when the cover part is placed over the bottom part, so that it will not spring open under subsequent handling and shipping conditions, but at the same time can be readily opened and reclosed when desired. Ancillary to this objective, it is a further object of my invention to provide such means without in any way interfering with the fully lined condition of the box and without the lining in any way interfering with the cover retaining means.

It is a further object of my invention to provide the above features in a box construction in which the bottom part is completely liquid tight to the tops of the side and end walls making it particularly adaptable for frozen foods and the like by obviating leakage and seepage during freezing and thawing.

These and other objects of my invention which will be set forth hereinafter or will be apparent to one skilled in the art upon reading these specifications, I accomplish by that certain construction and arrangement of parts of which I shall now describe an exemplary embodiment. Reference is made to the drawings which form a part hereof and in which:

Figure 1 is a plan view of blank for my improved box.

Figure 2 is also a plan view of the blank illustrating the lining sheet secured in position on the blank.

Figures 3, 4 and 5 show in plan successive stages in the folding and gluing of the box.

Figure 6 is an isometric view illustrating the box in erected condition with the cover open.

Figure 7 is an isometric view of the box with the cover in closed condition, and the flap in the cover partially

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lifted so as to expose the contents of the box to view through the lining.

Figure 8 is a sectional view taken along the line 8—8 of Figure 7 with the cover of the box slightly ajar.

Figure 9 is a sectional view taken along the line 9—9 of Figure 7.

Figure 10 is a plan view of a modified form of the blank illustrated in Figure 1.

Figure 11 shows the blank of Figure 10 with a lining sheet secured in position on the blank.

Figures 12, 13, 14 and 15 show various stages in the folding and gluing of the box illustrated in Figures 10 and 11.

Figure 16 is a isometric view illustrating the box of Figures 10 and 11 in erected condition with the cover open.

The blank of Figure 1 presents a front wall 1, a bottom wall 2, a rear wall 3, a top wall 4, and a top front flap 5 in articulation in the order named. Side walls 6 and 7 are articulated to the sides of bottom panel 2; and side flaps 8 and 9 are articulated to the side edges of top wall 4. Webs 10 and 11 join and are articulated to the side and rear walls and the side flaps; and these webs have diagonal score lines as shown. The side flaps 8 and 9 are additionally provided with diagonal score lines 12 and 13 demarking triangular tabs 14 and 15. The front wall 1 is provided with articulated end tabs 16 and 17 divided by diagonal score lines 18 and 19 to provide triangular tabs 20, 20a, 21 and 21a. The top front flap 5 has articulated end tabs 22 and 23. Also, the front wall 1 is provided with tongues 24 and 25 cut from the end tabs 16 and 17, and the top front flap 5 has tongues 26 and 27 cut from the end tabs 22 and 23. If desired, the top 4 may include with a hinged cut out 28 which can be raised to view the contents of the box without disturbing the cover part.

As seen in Figure 2, a lining sheet 29 is secured to the inner surface of the blank, preferably by strips of adhesive, such as those indicated at 30 in Figure 1. However, it will be noted that the adhesive 30 covers fully the triangular tabs 14 and 15 so as to securely bond the lining sheet to the triangular tabs, thereby preventing a loose connection between tabs 14 and 15 and end tabs 22 and 23 when the latter are infolded and secured to the former, as will be explained hereinafter. Also, it will be noted that the lining sheet covers less than the full area of the blank, terminating at one end of the blank adjacent the line of articulation between the top panel 4 and the top front flap 5, thus leaving the last mentioned flap and triangular tabs 22 and 23 uncovered. This is important since it obviates the necessity of severing the liner between the side flaps 8 and 9 and the end tabs 22 and 23 when the blank is folded and glued, which would be necessary were a full length liner to be employed. The lining sheet is rectangular and completely free of seams, cuts, or other interruptions which would destroy its imperforate character. Preferably, the lining sheet is formed of moisture-proof cellophane or others of the non-fibrous films of commerce which possess the desired proofness and are additionally transparent; although it will be obvious that any suitable material having the desired proofing characteristics may be employed if so desired.

The order of the steps in forming the finished, knocked-down box, and the mechanism by which the steps are accomplished, are not limitations upon my invention. Preferably, however, the parts of the blank are first brought to the infolded conditions illustrated in Figure 3, wherein the side walls 6 and 7 overlie the bottom wall 2, the webs 10 and 11 overlie the rear wall 3, the side flaps 8 and 9 overlie the top wall 4, the end tabs 16 and 17 overlie the front wall 1 and the end tabs 22 and 23 overlie the top front flap 5. Attendant with

the infolding of the parts just mentioned, the triangular tabs 14 and 15 formed in the side flaps 8 and 9, respectively, are reversely folded along the diagonal score lines 12 and 13 to overlie their respective side flaps, in the manner illustrated in Figure 3. With the blank in this condition, glue may be spotted on the triangular tabs 20 and 21 and on end tabs 22 and 23, the glue spots being indicated by the shaded areas in Figure 3 of the drawings.

The front wall 1 and the top front flap 5 are next infolded, bringing the structure into the condition shown in Figure 4. It will be noted that the result of this folding will be to bring about the adhesion of the adhesive coated triangular tabs 20 and 21 to the ends of side walls 6 and 7 respectively, and also, the adhesion of the adhesive coated end tabs 22 and 23 to the reversely folded, liner-covered triangular tabs 14 and 15. As mentioned earlier, the liner is secured to the tabs 14 and 15 using as large a glue area as possible so that the end tabs 22 and 23, when infolded and glued, will not pull the liner away from the tabs 13 and 14, which would tend to be the case if only narrow stripes or small spots of adhesive were applied to tabs 14 and 15. Pressure is, of course, applied to the parts until the adhesive is set.

Figure 5 is an isometric view of the box so formed in its knocked-down condition. From this condition, the box can be erected to the condition illustrated in Figure 6, simply by the user grasping the infolded front wall 1 and top front flap 5 and pulling upwardly and outwardly, thereby erecting the side and end members of both the bottom and cover parts. As will be seen in Figure 6, the bottom part of the box is fully lined throughout, the cover part is lined excepting for the inner surface of top front flap 5 and end tabs 22 and 23. These parts do not, however, interfere with the fully lined condition of the box, since in the erected and closed structure, they will lie to the outside of the front and side walls of the bottom part and hence will not be exposed to the contents of the box.

If the lining sheets were full length so as to cover the top front flap 5 and the end tabs 22 and 23, it would be impossible to initially infold the parts to the condition illustrated in Figure 3 without severing the lining between the side flaps 8 and 9 and the end tabs 22 and 23. Such a severing operation—which is difficult to perform—is unnecessary in my construction, and as explained above, the elimination of the lining from the above named parts in no way affects the fully lined condition of the finished structure. While a full length liner sheet could be used if the cover part of my box were formed in the same manner as the bottom part, there are a number of disadvantages in forming the cover part in such manner. If the cover part were so formed, there would be exposed triangular portions lying to the outside of the side flaps which would interfere with printed matter running along the sides of the finished box, and these triangular portions would also constitute obstructions tending to engage other boxes or articles with which the box might come into contact. With the particular cover construction employed in my box, the cover side walls are completely unobstructed, and in addition, the end tabs 22 and 23 serve to maintain the cover part in erected condition. Thus, my construction enables me to use what is known as the "Foldomatic" construction for the cover without sacrificing the fully lined condition of the box, and at the same time using a lesser amount of lining material than would otherwise be necessary and also avoiding cutting of the lining sheet.

When the box of Figure 6 is closed to the position of Figure 7, the top front flap 5 overlies the front wall 1 with the tongues 26 and 27 on the front flap 5 in alignment with the tongues 24 and 25 on the front wall 1, the latter tongues lying in the openings in the end tabs 22 and 23 created by the displacement of the tongues

26 and 27. Thus, as can be seen in Figure 8, the tongue 26 will provide an opening 31 in end tab 22 into which the tongue 24 of the bottom part will fit. A like opening is created in end flap 23 by tongue 27. It is desirable to make the tongues 24 and 25 on the front wall 1 slightly smaller than the tongues 26 and 27 on the top front flap so that the openings produced by the latter pair of tongues will readily receive the tongues 24 and 25 on the front wall. Also, when assembling the box, it is preferable to have the outermost edges of the triangular tabs 14 and 15 lie along the base of the openings, such as the opening 31, to assure proper engagement of the tongues 24 and 25 with the cover part.

It will be apparent that if the lining sheet 29 covered the top front flap 5 and the articulated end tabs 22 and 23, the openings formed by the tongues 26 and 27 would be covered from the inside by the lining sheet and it would not be possible for the tongues 24 and 25 of the bottom part to engage in the openings in the end tabs 22 and 23 to lock the parts in closed condition. Thus, again, it becomes important to terminate the lining sheet short of the top front flap and parts articulated thereto. Otherwise, the desired locking effect could not be obtained.

In addition to fully lining the box, the lining sheet also provides a convenient window for the box where the top wall 4 is provided with a hinged cut-out 28. As can be seen in Figures 7 and 8, the cut-out 28 may be lifted to afford a view of the contents and then replaced.

In Figures 10 through 16 of the drawings, I have illustrated a modification of my invention in which the webs 10 and 11, which join and are articulated to the side walls, rear wall and side flaps, are replaced by end tabs similar to the end tabs 16 and 17. Thus, with reference to Figure 10 of the drawings, wherein the parts corresponding to the parts of the blank illustrated in Figure 1 have been given like reference numerals for purpose of simplicity, end tabs 32 and 33 are articulated to opposite ends of the rear wall 3, and the end tabs 32 and 33 are diagonally scored at 34 and 35. As before, the lining sheet 29 is secured to the inner surface of the blank by stripes of adhesive 30, but in this instance the stripes of adhesive on the side flaps 8 and 9 are diagonally disposed, as at 36 and 37 to facilitate the opening of the lid portion of the erected box, as will be explained more fully herein-after. Also, as will evident from the drawings, the lining sheet is not adhered to the end flaps 34 and 35.

As seen in Figures 12 and 13, the parts of the blank are infolded and adhesively secured in the same manner as the blank illustrated in Figures 1 and 2. However, in order to secure the triangular tab proportions 38 and 39 (Figure 13) to the adjacent ends of side walls 6 and 7, it is necessary to fold the infolded blank along the line of articulation between bottom wall 2 and rear wall 3. Before doing this, suitable spots of adhesive, as seen in Figures 13 and 14, are applied to the side walls 6 and 7 in position to contact the triangular tab portions 38 and 39, whereupon the blank is infolded and assumes the condition illustrated in Figure 15. This folding causes the triangular tabs 38 and 39 of ends tabs 32 and 33 to be adhesively secured to side walls 6 and 7.

The erected and open box is shown in Figure 16. It will be noted that the end tabs 32 and 33 secure the rear wall 3 tightly against the ends of side walls 6 and 7. This is of particular advantage where loose pieces, such as salted nuts, for example, are to be packed in the box. In order for the lid of the box to be fully opened, it is necessary to glue the lining sheet covering the side flaps 8 and 9 along the diagonal glue line 36 and 37, rather than glue the lining up to the end edges of the side flaps. As will be evident from Figure 16, as the lid of the box is opened, the portions of the lining lying beyond the diagonal glue stripes 36 and 37 will pull away from the side flaps 8 and 9 thus allowing the lid to swing fully open. If the lining were adhered to side flaps all the way to their ends, there would not be sufficient free lining

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material in the folds of the end tabs 32 and 33 to permit the lid to be swung open. The necessary additional free lining material is therefore provided by freeing a portion of the lining covering the side flaps 8 and 9. This condition, however, in no way affects the fully lined condition of the box since in the erected structure, the side flaps 8 and 9 lie to the outside of side walls 6 and 7.

It will be apparent that both of the lined structures described above will be completely liquid tight up to the tops of the walls due to the fact that a single, uncut sheet of lining material covers the bottom of the box and all of the walls. In addition, all interiorly exposed portions of the box are covered by the lining which, if of grease-proof character, will render the entire interior of the structure grease-proof.

It will be apparent to the skilled worker in the art that modifications in my invention may be made without departing from the spirit of the invention as hereinbefore described. It will also be understood that my boxes may be varied as to both size and shape. The terms used herein and in the claims which follow, such as "end" walls, "front" and "back" walls, and the like, have been adopted as a matter of convenient terminology to distinguish walls from each other, but do not imply matters of relative dimensions.

Having described my invention in certain exemplary embodiments, what I claim as new and desire to secure by Letters Patent is:

1. In a one-piece knocked-down hinged lid box formed from a rectangular blank and fully internally lined with an imperforate rectangular liner confined to the rectangular outline of the box blank and of lesser area than the box blank, comprising a bottom part having a bottom panel, front and rear and side wall panels articulated to said bottom panel, and diagonally scored end tabs articulated to the ends of said front wall panel, a cover part having a top member articulated to the rear wall panel of said bottom part, front and side wall members articulated to said top wall member, said front wall member having end flaps articulated to the ends thereof and said side wall members being diagonally scored at their ends adjacent said last named end flaps to define triangular corner portions, foldable flap members articulated to the ends of the rear panel of said bottom part for the adjacent end edges of the side walls of the bottom and top parts, and an imperforate rectangular sheet of lining material completely covering the inner surface of said bottom part and the top and side wall members only of said top part, the edges of said lining sheet coinciding on three sides with the edges of the box blank and terminating on the fourth side along the line of articulation between the top wall member and the front wall member of the top part, said blank being folded with the diagonally scored end tabs of the bottom part in adhesive engagement with the side wall panels of the bottom part and the end flaps of the cover part in adhesive engagement with the triangular corner portions of the cover side wall members, thereby providing a structure which, when the top part is closed over the bottom part, presents planar external wall surfaces and is fully internally lined employing the minimum rectangular area of lining material.

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2. In a one-piece knock-down hinged lid box formed from a rectangular blank and fully internally lined with an imperforate rectangular liner confined to the rectangular outline of the box blank and of lesser area than the said box blank, comprising a bottom part having a bottom panel, front and rear and side wall panels articulated to the bottom panel, diagonally scored end tabs articulated to the ends of said front wall panel, and tongues projecting outwardly from the ends of said front wall panel and formed in said end tabs, a cover part having a top member articulated to the rear wall panel of said bottom part, front and side wall members articulated to said top wall member, said front wall member having end flaps articulated to the ends thereof and said side wall members being diagonally scored at their ends adjacent said last named end flaps to define triangular corner portions, tongues projecting outwardly from the ends of said front wall member, said tongues being formed in said end flaps and defining, when said end flaps are folded relative to said front wall member, openings adapted to receive the projecting tongues carried by the front wall panel of said bottom part, foldable connecting members articulated to the ends of the rear wall of said bottom part for joining together the adjacent end edges of the side walls of said bottom and cover parts, and an imperforate rectangular sheet of lining material completely covering the inner surface of said bottom part and the top and side wall members only of said top part, the edges of said lining sheet coinciding on three sides with the edges of the blank and terminating on the fourth side along the line of articulation between the top wall member and the front wall member of said top part, said blank being folded with the diagonally scored end tabs of said bottom part in adhesive engagement with the side wall panels of said bottom part and said end flaps of said cover part in adhesive engagement with the triangular corner portions of the side wall members of the cover part, thereby providing a structure which, when the top part is closed over the bottom part, presents planar exterior wall surfaces and is fully internally lined using the minimum rectangular area of lining material, and in which the tongues on the end of the front wall panel of the bottom part engaged in the openings in the top part without interfering with the fully lined condition of the box and without the lining interfering with the engagement of the tongues in the openings.

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