

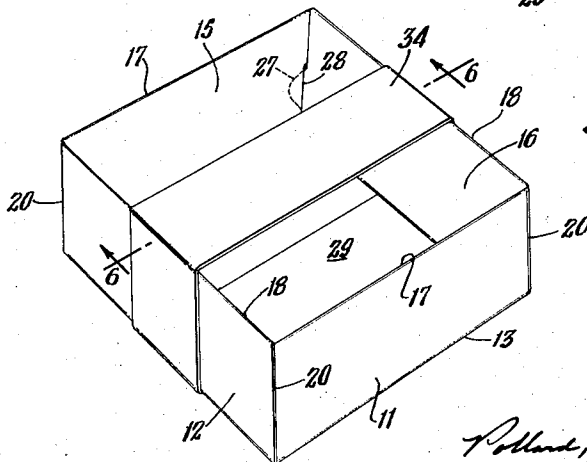
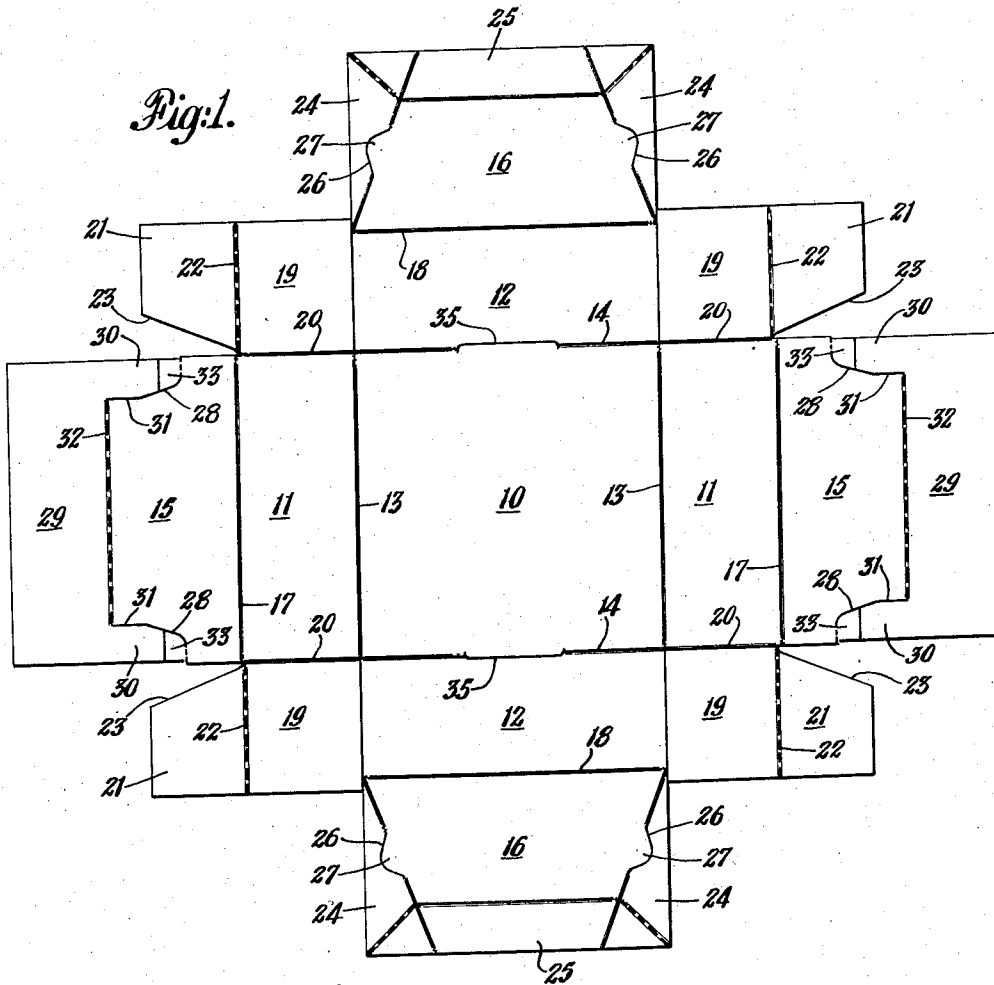
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O. W. STONE
TRAY CARTON

2,875,941

Filed Sept. 16, 1955

3 Sheets-Sheet 1



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Fig. 2.

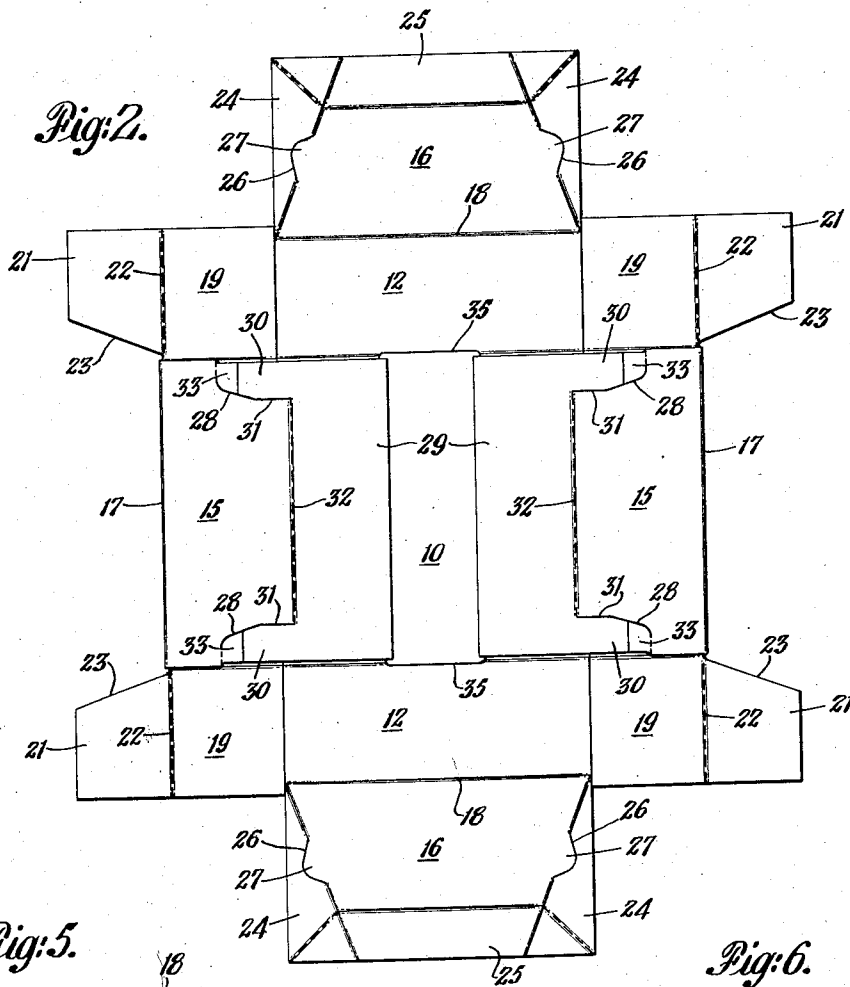


Fig. 5.

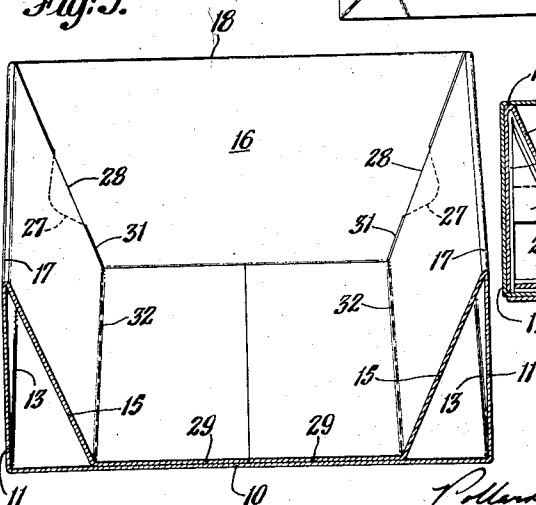
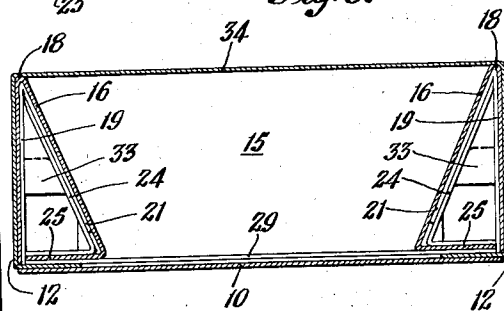


Fig. 6.



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Fig. 3.

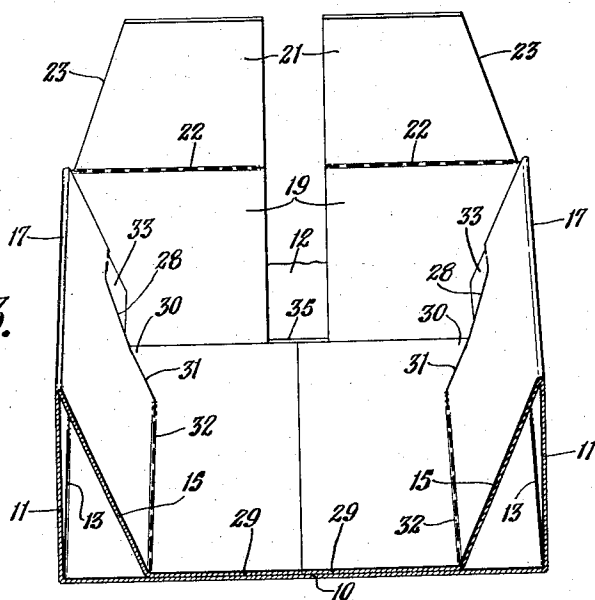
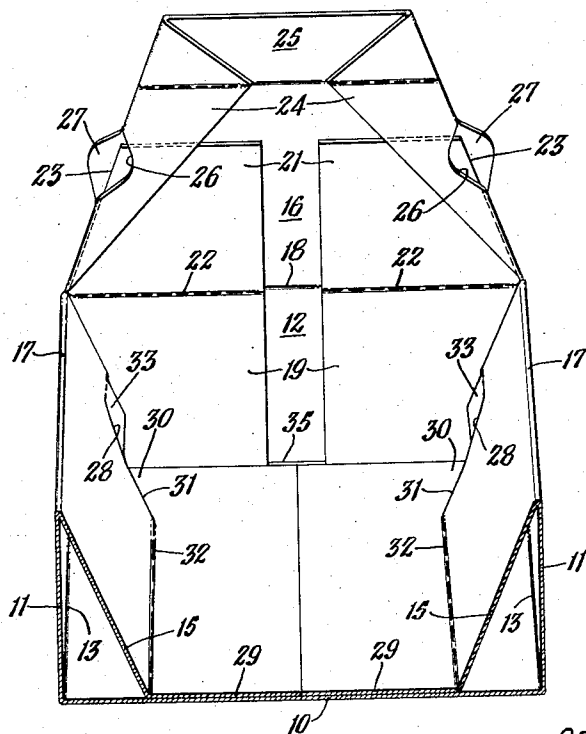


Fig. 4.



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TRAY CARTON

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Application September 16, 1955, Serial No. 534,781

5 Claims. (Cl. 229—34)

The invention relates to folding paperboard cartons, and particularly to improvements in double-walled, or hollow-walled, cartons of tray form.

Because folding cartons of this particular type are formed from complex blanks having numerous panels, extensions, flaps, etc., the manipulations involved in erecting the cartons for use are likewise somewhat complex, requiring considerable skill and dexterity to perform them. The problem is that there are so many parts of the blank to be folded this way and that, and requiring to be held just so in a partially erected state while other parts are moved into desired positions. Consequently, some degree of skill and training is required on the part of persons engaged in setting up the cartons at customers' plants—speaking, of course, of the customers of the folding carton manufacturer.

It is an object of my invention to devise a folding carton, of the type indicated, in which improved means are provided for locking certain of the panels, flaps, extensions, etc., together during erection of the carton so as to simplify the manipulations involved; further, to accomplish this end without the need for gluing or stapling parts together as an aid to such manipulations; and further, to provide greater security against unfolding of the erected carton or against any tendency for the carton walls to pull apart at the corners under stresses imposed during use and handling.

Summary

My invention comprises, in its general arrangement, a folding paperboard carton having a bottom panel and inner and outer side and end wall panels, and which includes an end wall construction in which elements attached to the outer side walls are held by folding locking flaps on the adjacent inner end wall so that the side walls are held erect during the operation of folding the inner end wall to its erected position, and so that all of the elements are securely locked against separation at the corners without gluing or stapling, and without the use of fussy interlocking tabs with hooked ends, etc. The elements attached to the outer side walls include end flaps adjoining the ends of the outer side wall panels and folding inside the adjacent outer end wall panel, and end flap extensions adjoining the end flaps and overlying the inner end wall panel. The folding locking flaps engage the edges of these end flap extensions in a manner to produce the several new and improved results described.

Other objects and advantages will appear as the description proceeds.

Description

With reference to the accompanying drawings, I shall now describe the best mode contemplated by me for carrying out my invention.

In the drawings:

Fig. 1 is an inner face view of the blank from which my improved tray carton is formed.

Fig. 2 is a similar view showing the first folding step in erecting the carton.

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Fig. 3 is a top perspective view of one end of the carton showing a second erecting step in which the side walls are fully erected and a pair of end flaps adjoining the ends of the outer side wall panels are folded into what is to be the plane of the outer end wall panels.

Fig. 4 is a view similar to Fig. 3, illustrating a third erecting step in which the end flaps are held in erected position by locking flaps on the adjacent inner end wall, which locking flaps engage extensions of the end flaps.

Fig. 5 is a top perspective view of one end of the carton, fully erected.

Fig. 6 is a central vertical cross-sectional view of the erected carton taken on line 6—6 of Fig. 7.

Fig. 7 is a top perspective view of the erected carton.

The preferred construction illustrated comprises a bottom panel 10, outer side wall panels 11, 11 and outer end wall panels 12, 12 adjoining the bottom panel along fold lines 13, 13 and 14, 14, respectively, defining the edges of the bottom panel. Inner side wall panels 15, 15 and inner end wall panels 16, 16 adjoin the outer side and end wall panels along fold lines 17, 17 and 18, 18, respectively, defining the upper edges of the carton. End flaps 19, 19, 19, 19 adjoin the ends of outer side wall panels 11, 11 at fold lines 20, 20, 20, 20 which define the corners of the erected carton. These end flaps fold inside the adjacent outer end wall panel 12. End flap extensions 21, 21, 21, 21 adjoin the end flaps along fold lines 22, 22, 22, 22 which are substantially in line with fold lines 17, 17 as formed in the blanking and scoring operation (see Fig. 1). Each end flap extension 21 has a diagonal edge 23.

When the end flap extensions have been brought into a position overlying the adjacent inner wall panel (Fig. 4), locking flaps 24, 24 at the ends of the adjacent inner end wall panel fold around edges 23, 23 of the end flap extensions, locking end flaps 19, 19 firmly in erected position both during and after folding of the adjacent inner end wall panel inwardly and downwardly to complete erection of the carton. This, in effect, makes a unitary sub-assembly of the several parts of the end wall construction, viz. end wall panels 12 and 16, end flaps 19, 19 and flap extensions 21, 21 facilitating the remaining operations for setting up the carton for use, and yielding the other desirable results which have been mentioned hereinabove.

Each inner wall panel 16 has an extension 25 folding over the locking flaps 24, 24, or folding over to hold the locking flaps in locking position. Arcuate cuts 26 form locking projections 27 in the respective locking flaps for engagement with edges 28 of the respective inner side walls 15 to hold the inner end wall in erected position with the end wall extension 25 snugged against the base of the adjacent end flaps 19, 19 (Fig. 6).

The inner side wall panels 15 preferably have extensions 29 overlying the bottom panel and meeting to predetermine the inward slope of the inner side wall panels. This slope is further predetermined by the tabs 30 formed by cuts 31 extending from the ends of fold lines 32 of the extensions 29. These tabs abut against the bases of the outer side wall panels when the carton is erected. Tabs 33 are formed so as to bend away to permit engagement of locking projections 27 with edges 28 of the inner side walls in the manner already referred to.

The manner of erecting the carton will be further comprehended by reference to Figs. 2 to 5, inclusive, illustrating the preferred sequence of steps in setting up the carton for use. First, the inner side wall panels 15 with their extensions 29 are folded flat against the outer side wall panels and bottom panel as in Fig. 2. Next, the side walls are erected and end flaps 19 turned inwardly as in Fig. 3. Then the end walls are raised and locked by means of locking flaps 24 as in Fig. 4, and finally the

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locked inner end wall panel assemblies are folded inwardly and downwardly while turning extensions 25 under against the bottom and outer end wall panels, springing the locking projections 27 behind edges 28 to complete the erection and locking of the carton walls as in Fig. 5. With use of the construction I have described, the several steps can be more or less independently performed because of the sequential locking action provided, making it much easier to set up the carton without seeming to be "all thumbs," as the saying goes.

The carton so constructed can be used as an open tray, or may if desired be provided with a flanged cover, or the contents may be held in place by a separate paperboard band 34 (Figs. 5 and 6) having its ends tucked into slots formed by cuts 35, 35 at fold lines 14, 14 (Fig. 1).

The terms and expressions which I have employed are used in a descriptive and not a limiting sense, and I have no intention of excluding such equivalents of the invention described, or of portions thereof, as fall within the purview of the claims.

I claim:

1. A folding paperboard carton comprising a bottom panel, outer side and end wall panels adjoining said bottom panel along fold lines defining the edges of said bottom panel, inner side and end wall panels adjoining said outer side and end wall panels along fold lines defining the upper edges of the carton, end flaps attached to the ends of said outer side wall panels and folding inside of the adjacent outer end wall panel, end flap extensions adjoining said end flaps and overlying the adjacent inner end wall panel, and locking flaps at the ends of said adjacent inner end wall panel which are folded around the adjacent side edges of said end flap extensions to hold them against said adjacent inner end wall panel whereby the end flaps are held firmly in erected position inside the adjacent outer end wall panel both during and after folding of the adjacent inner end wall panel inwardly and downwardly to complete erection of the carton.

2. A folding paperboard carton according to claim 1, in which said adjacent inner end wall panel has an extension folding over said locking flaps.

3. In a folding paperboard carton according to claim 1, in which all of said inner side and end wall panels slope inwardly from top to bottom at the same angle to the bottom.

4. A folding paperboard carton comprising a bottom panel, outer side and end wall panels adjoining said bottom panel along fold lines defining the edges of said bottom panel, inner side and end wall panels adjoining said outer side and end wall panels along fold lines defining

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the upper edges of the carton, end flaps adjoining the ends of said outer side wall panels and folding inside of the adjacent outer end wall panel, end flap extensions adjoining said end flaps and overlying the adjacent inner end wall panel, said end wall extensions having the edges adjacent the side panels sloped inwardly, and locking flaps at the ends of said adjacent inner end wall panel, said locking flaps being in the form of triangles with the slope of the hypotenuse of each triangle corresponding to the slope of the edge of the end flap extension, said locking flaps being folded around edges of said end flap extensions to hold them against their adjacent inner end wall panel whereby the end flaps are held firmly in erected position both during and after folding of the adjacent inner end wall panel inwardly and downwardly to complete erection of the carton, the slope of said hypotenuse also corresponding to the slope of the adjacent end wall when the carton is in its finally erected form.

5. A folding paperboard carton comprising a bottom panel, outer side and end wall panels adjoining said bottom panel along fold lines defining the edges of said bottom panel, inner side and end wall panels adjoining said outer side and end wall panels along fold lines defining the upper edges of the carton, and flaps adjoining the ends of said outer side wall panels and folding inside of the adjacent outer end wall panel, end flap extensions adjoining said end flaps and overlying the adjacent inner end wall panel folding around edges of said end flap extensions to hold them against said adjacent inner end wall panel whereby the end flaps are held firmly in erected position both during and after folding of the adjacent inner end wall panel inwardly and downwardly to complete erection of the carton, said adjacent inner end wall panel having an extension folding over to hold said locking flaps in locking position, said extension in the completed carton overlying a portion of the bottom panel and contacting the outer end wall panel to predetermine the inward slope of said inner end wall panel, and said locking flaps having cut-outs to form locking projections on said inner end wall for engagement with edges of the inner side wall to hold the inner end wall in erected position with said end wall extension snugged against the base of the adjacent end flaps.

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