July 30, 1957 J. H. HERRICK 2,800,840

METHOD OF MAKING CORRUGATED LINED BOX BLANKS

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Fig. 1.

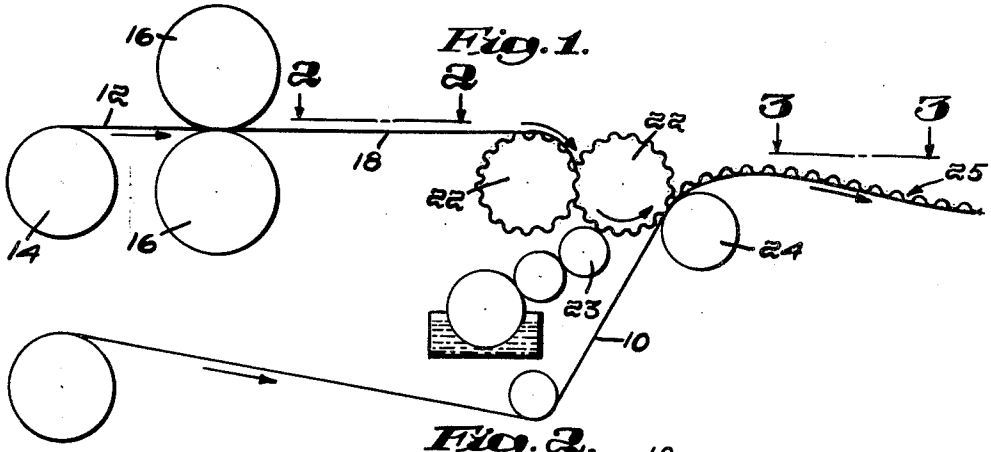


Fig. 2.

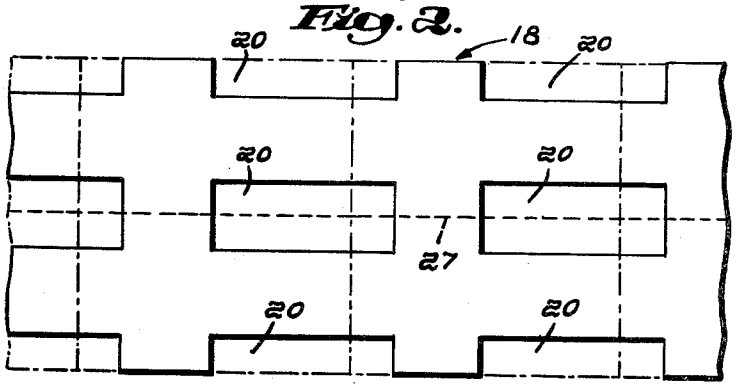
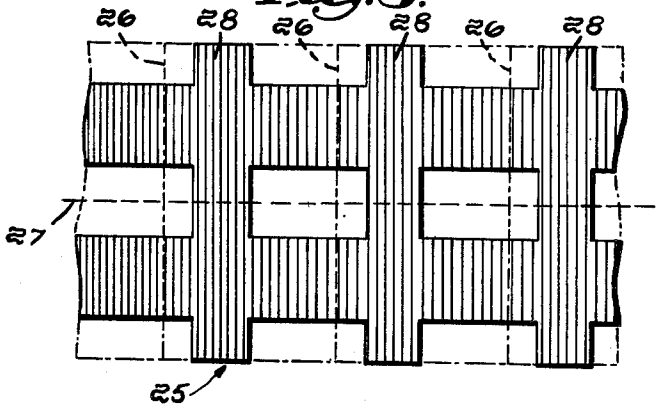


Fig. 3.



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Fig. 4.

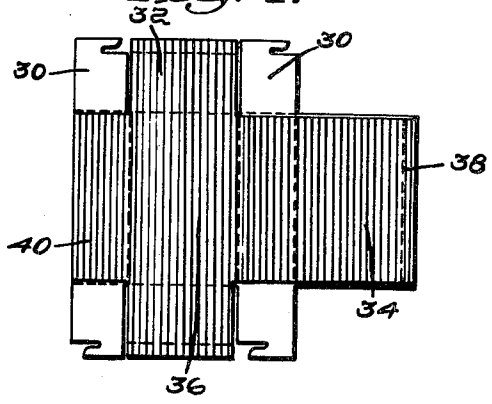
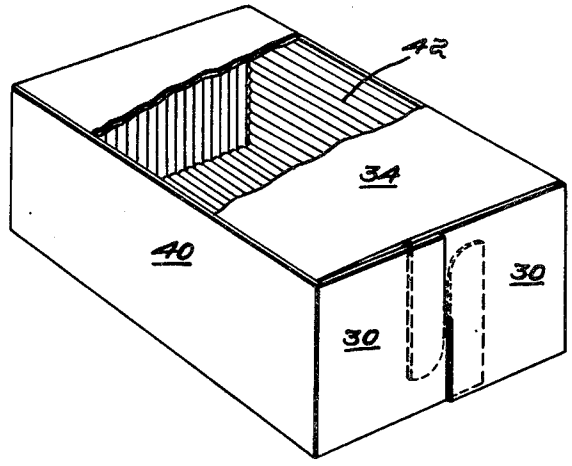


Fig. 5.



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METHOD OF MAKING CORRUGATED LINED BOX BLANKS

John H. Herrick, Wellesley, Mass., assignor to Bestpak Inc., Natick, Mass., a corporation of Massachusetts

Application July 5, 1955, Serial No. 519,687

1 Claim. (Cl. 93—36.6)

This application is a continuation-in-part of my co-pending application Serial No. 250,154, filed October 6, 1951, now abandoned.

The invention relates to a novel and rapid method of making foldable box blanks each having a continuous corrugated protective liner and scored on fold lines on which the blank is foldable to fully enclosed box form with the corrugated liner disposed at and forming the interior walls of the folded box, the liner thus providing a continuous protection for packaged delicate products and surfaces that would otherwise become broken or damaged. Lined folded boxes of this nature have heretofore commonly required the insertion of a separate corrugated liner, the box and liner being constructed and inserted in separate operations. The primary object of my invention resides in the continuous novel production of a scored box blank having a continuous corrugated protective liner so disposed at one face that it forms the complete and continuous interior walls of the folded box and furthermore embodies non-lined closure flap portions adapted to fold into flat surface contact with the plane exterior wall face of the box, thus producing superior corrugated lined cartons more rapidly and economically than has been heretofore possible and eliminating substantial packaging operations heretofore required.

These and other features of the invention will be best understood and appreciated from the following description of preferred embodiments thereof selected for purposes of illustration and shown in the accompanying drawings, in which—

Fig. 1 is a diagrammatic view of a method of making prelined box blanks in accordance with my invention,

Fig. 2 is a plan view taken on line 2—2 of Fig. 1 and showing the die cut liner web,

Fig. 3 is a plan view taken on line 3—3 of Fig. 1 and showing the corrugated face of the combined liner and backing sheet webs,

Fig. 4 is an inner plan view of a completed blank, and

Fig. 5 is a perspective view of the folded box, partially broken away.

In accordance with my invention as illustrated in the drawings, the foldable blanks are constructed by combining a backing sheet web **10** with a liner web **12**. The entire operation is performed in one simple continuous feeding of the two webs together and during which the liner web is die cut to shape and then corrugated and brought into adhesive contact with the backing sheet web, the resulting composite web being thereafter severed and scored into foldable box blanks.

The liner web **12** is drawn from a roll **14** and passed between cutting die rolls **16** which pre-cut the liner web to the design required for cooperating with the backing web **10** to produce the desired prelined blanks. The pre-cut web **18**, with the waste at **20** eliminated, is passed between corrugating rolls **22**, the web being pre-cut to allow for the length shrinkage of the web produced by corrugating. The bottom face of the web **18** is adhesively coated at **23** and then joined in face to face contact to the backing web **10** beneath an impression roll **24** that firmly presses the webs into adhesive contact against the adjacent corrugating roll **22**. As illustrated in Fig. 1 the adhesive is applied only to the tops or apices of the corrugations where they come into contact with the backing web **10**, thus conserving on the amount of adhesive required and leaving the corrugations of the combined webs **25** free for effecting maximum cushioning and holding protection against the packaged product.

The webs **10** and **12** are of a width to make two or more rows of blanks, two rows being illustrated at opposite sides of the broken line **27** in Figs. 2 and 3. The combined webs **25** are cut transversely at **26** into sheets **28** each containing a plurality of blanks. The sheets **28** are then die cut at **27** and along lines producing the individual blanks illustrated in Fig. 4. This operation severs each individual blank from the sheet and cuts the blank along the full lines shown in Fig. 4 and fold creases the blanks along the broken lines shown in Fig. 4. The webs can be fold creased and die cut at **26** and **27** and along said full lines in a single continuous operation if desired.

When the resulting blank shown in Fig. 4 is folded to box form (Fig. 5) the plane faced corner flaps **30** of the blank interlock at each end of the box and engage in surface contact the plane outer faces of the end walls **32** and the corrugated sheet provides a continuous protective liner **42** covering the entire inwardly facing walls of the box. The cover panel **34** folds over the bottom panel **36** and the cover tuck **38** engages within and against the end side wall **40** of the blank.

It will now be apparent that I have produced more economically and in rapid continuous operation a superior corrugated liner protective blank adapted to be conveniently folded to box form and eliminating substantial packaging operations heretofore required.

Having thus disclosed my invention what I claim as new and desire to secure by Letters Patent is:

In a method of making foldable box blanks each scored along fold lines on which the blank is adapted to fold to fully enclosed rectangular box form and each embodying a plane backing sheet having a one-piece corrugated liner adhesively affixed to one face thereof solely in the area forming the interior walls of the folded box and having predetermined marginal areas not covered by the liner and forming plane closure flap sections adapted to fold into flat surface contact with the plane exterior wall face of the box, the steps of continuously feeding longitudinally in open width a non-corrugated liner sheet web, continuously removing from the traveling web predetermined areas of such size and location as will be disposed outside of the first named area when the web is corrugated, continuously corrugating the resulting web transversely thereof, continuously applying a coating of adhesive to the apices of the corrugations at one face of the corrugated web, continuously feeding a plane backing sheet web into face to face contact with said adhesive coated apices and over the openings left by removal of said predetermined areas, and severing the combined webs into blanks adapted to be folded into boxes with the corrugated web of each blank forming a continuous interior protective wall within the folded resulting box and with the areas of the backing sheet disposed over said openings forming plane closure flaps adapted to fold into flat surface contact with the plane exterior wall face of the box.

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