Feb. 25, 1958 H. L. AHLERS 2,824,684

CARTON

Filed April 16, 1956 2 Sheets-Sheet 1

FIG-1

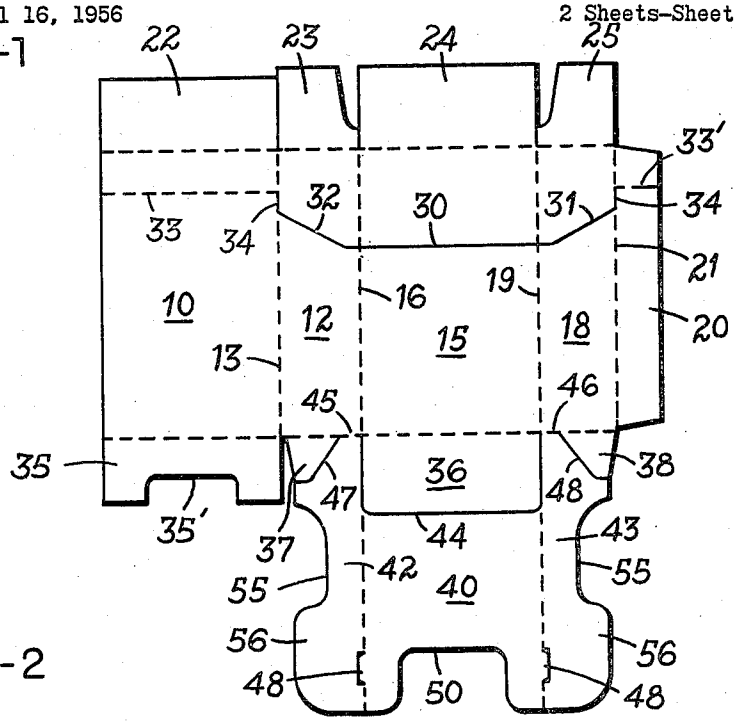
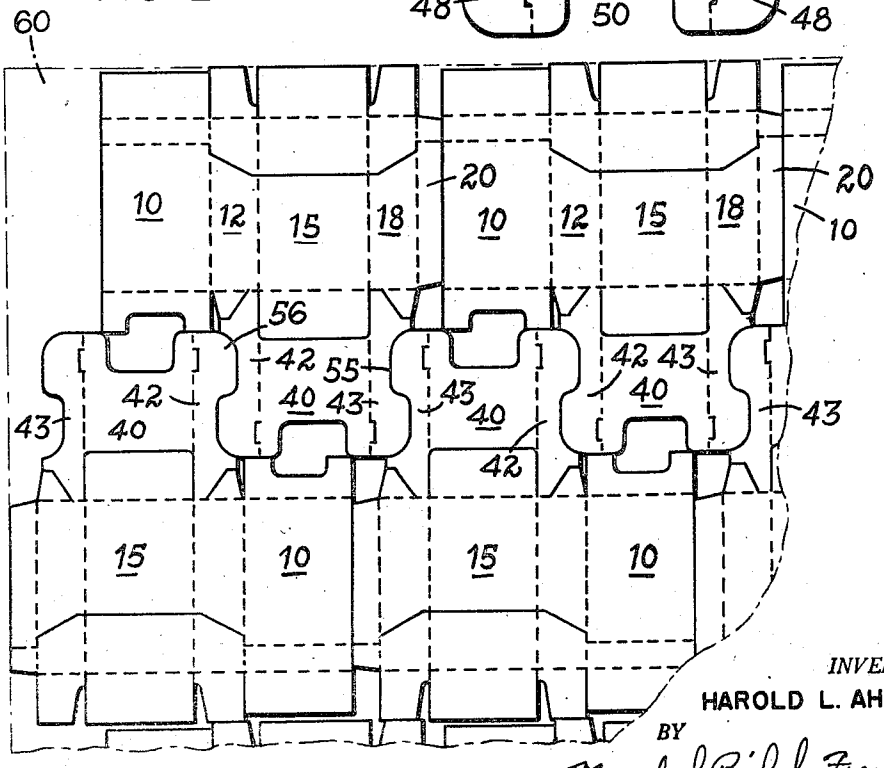


FIG-2



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CARTON

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FIG-3

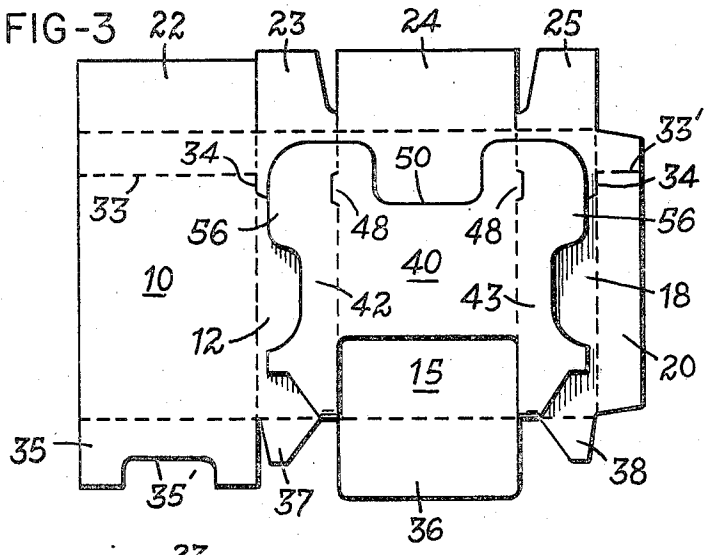


FIG-5

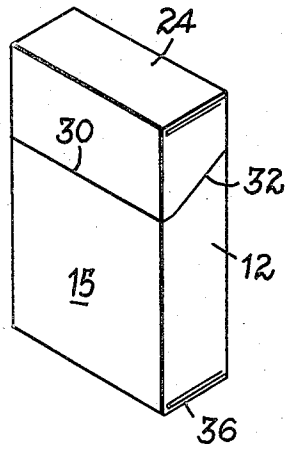


FIG-4

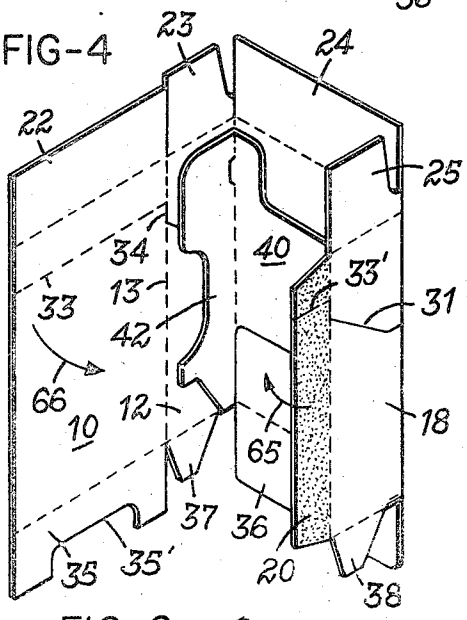


FIG-7

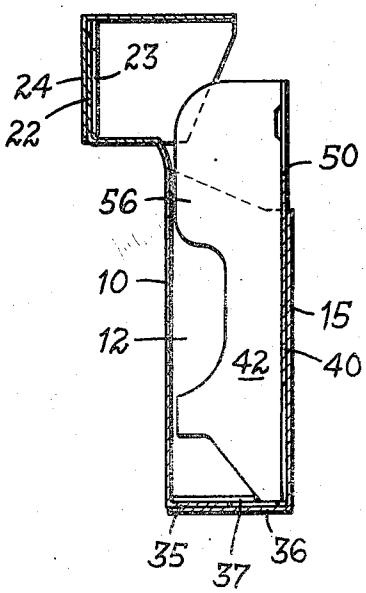
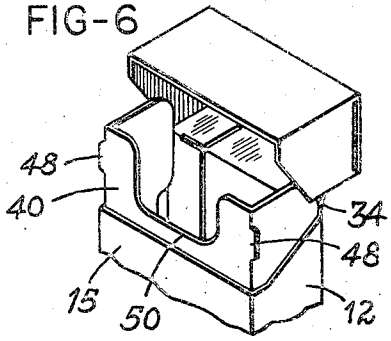


FIG-6



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2,824,684

CARTON

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Application April 16, 1956, Serial No. 578,323

5 Claims. (Cl. 229—44)

This invention relates to a carton, particularly to a carton having a reclosable lid.

The carton provided by this invention is intended primarily for use in packaging cigarettes and similar rod-like articles, although this carton could be readily adapted to the packaging of other materials. Particularly, the present invention relates to a carton blank which may be readily adapted to the folding operations of the AMF 3–79 Standard Cigarette Packer such as generally shown in United States Patent 1,926,192. In this regard, reference is made to the copending application of William A. Ringler, Serial No. 542,368, filed October 24, 1955, in which application the advantages of a carton blank adaptable to the AMF 3–79 machine are set forth.

The present invention relates to such a carton blank and to certain features of the blank which provide for interlocking or nesting of a plurality of such blanks in their flat form, as cut from a sheet of material, with a minimum of space between adjacent such blanks. Such nesting of the blanks provides for the maximum utilization of material when cutting the blanks from a sheet of paperboard material or the like, with resultant economy of manufacture.

Accordingly, the primary object of this invention is to provide a blank for forming a carton having a reclosable lid and including recessed portions for receiving parts of identical such blanks in interfitting relation, and thus to provide for close interfitting or nesting of the blanks when cutting the blanks from a sheet of paperboard material or the like.

A further object of the invention is to provide such a carton blank which is adaptable to the folding operations of high speed packaging machines now in general use.

An additional object is to provide such a carton blank which is economical to manufacture, yet which provides a carton having a neat outward appearance and of stiff and sturdy construction to afford adequate protection for the contents packaged therein.

Other objects and advantages of the invention will be apparent from the following description, the accompanying drawings and the appended claims.

In the drawings:

Fig. 1 is a plan view of a carton blank in accordance with the invention;

Fig. 2 is a view of a plurality of blanks such as shown in Fig. 1, illustrating the interfitted layout of a plurality of such blanks on a sheet of material prior to cutting of the blanks from the material;

Fig. 3 is a view of the blank shown in Fig. 1 with the inner member folded onto the outer member of the blank;

Fig. 4 is a perspective view of the folded blank showing an intermediate step in the assembly thereof;

Fig. 5 is a perspective view of the completed carton;

Fig 6 is a partial perspective view of the carton in Fig. 5 with the lid moved to an open position; and

Fig. 7 is a vertical section taken through the completed carton with the lid in an open position.

Referring to the drawings, which illustrate a preferred embodiment of the present invention, a blank according to the invention is shown in Fig. 1 as including a rear panel 10 at one end thereof having an outer side panel 12 hinged to one side of panel 10 along a score line 13. An outer front panel 15 is connected to the opposite side of panel 12 along line 16, and the other outer side panel 18 is attached to the opposite side of panel 15 along line 19. A glue flap 20 is hinged at 21 to the other edge of panel 18 for adherence to rear panel 10 to retain the blank in tubular form. A series of top flaps 22, 23, 24 and 25 are independently hinged to the upper edges of panels 10, 12, 15 and 18, respectively, for forming a top wall on a carton.

The outer panels, arranged in longitudinal alignment, and which constitute the main portion or outer member of the blank in Fig. 1, are provided with slitted and scored portions for the formation of a reclosable lid on the completed carton. A slit, preferably continuous, is provided through panels 12, 15 and 18 and includes a central portion 30 extending longitudinally across front panel 15 parallel to and spaced below the upper edge thereof, and slanted or bias-cut portions 31 and 32 extending from opposite ends of slit portion 30 upwardly at an angle across panels 12 and 18, toward but spaced below the upper edges of these outer side panels. A score line 33 extends transversely of rear panel 10, spaced below the upper edge thereof and spaced somewhat above the end of slit 32 in the adjacent side panel 12, and a score line 33′ is also provided across glue flap 20, intersecting fold line 21 above the end of slit portion 31 and located on the glue flap to register with score line 33 when the blank is folded into tubular form.

Short vertically extending slits 34 connect the adjacent ends of score line 33 and slit 32 and score line 33′ and slit 31, extending along the fold lines 13 and 21, respectively. Thus, these slits and the associated score lines divide the main portion of the blank into upper and lower sections, with the parts of the blank between the upper edge thereof and the slits and score lines providing front, side, rear and top walls of a reclosable lid which is hinged to the main body of the carton along line 33. The portions of the blank below the slits and score line are foldable to provide an open top box to which the reclosable lid is integrally hinged, and the portion of the rear panel 10 below score line 33 and between the slits 34 provides a flexible connection between the lid and the remainder of the carton, distributing the flexing and bending stresses due to opening and closing movements of the lid over a wider area, and thus minimizing the tendency of the lid hinge connection to break or tear in use.

At the bottom of rear panel 10 a bottom flap 35 is articulated, and is provided with a cut-away or relieved portion 35′ at its free end. A second bottom flap 36 is articulated to the lower edge of panel 15, and partial bottom side flaps 37 and 38 are hinged to a major portion of the lower edges of side panels 12 and 18. An inner member including an inner front panel 40 and inner side panels 42 and 43 extends from the lower edge of the outer member. A continuous slit 44 separates flap 36 from all adjacent portions of the inner member, and the inner side panels are integrally hingedly connected to the outer member along fold lines 45 and 46 separating outer and inner side panels 12 and 42, and outer and inner side panels 18 and 43, respectively. Slits 47 and 48 separate the inner side panels from the bottom side flaps 37 and 38, and thus the entire inner member is foldable as a unit into superposition upon the outer member. The height of the inner panels is such that they extend across the slits in the outer front and side panels and terminate slightly beneath the upper edges of

these panels, as shown in Fig. 3. Portions of the fold lines separating inner front panel **40** from the inner side panels **42** are slit and offset somewhat adjacent the outer edge of the blank, to provide tabs **48** extending outwardly from opposite sides of panel **40**. These tabs serve to retain the lid of the carton in its normally closed position as will presently be described. Also, the free edge of inner front panel **40** is provided with a central cut-away portion **50** which affords an access opening in the completed carton.

Blanks in accordance with the invention are particularly adapted for arrangement in their flat form, as cut from a sheet of material, for interlocking or nesting with each other to minimize the amount of material wasted when cutting such blanks from a sheet of paperboard material or the like. Thus, the present invention provides for the maximum utilization of such material with resultant economy of manufacture. In order to provide for such interlocking or nesting the free sides of the inner side panels are formed with recesses **55** therein defining full width portions at the ends of the inner panels including projecting parts **56** which are arranged to overlie the slits in the outer side panels in the folded form of the blank as shown in Fig. 3. Recesses **55** are complementary in dimension to projecting parts **56**, and thus the recesses of one such blank will receive the projecting parts of another such blank laid out in inverted form beneath the first blank.

The interlocking or nesting arrangement is illustrated in Fig. 2, wherein one corner of a sheet **60** of paperboard material or the like is indicated by the dot-dash lines, and wherein a plurality of the blanks such as shown in Fig. 1 are arranged in the interlocking or nesting relation provided by the invention. It will be apparent upon inspection of Fig. 2 that the area of sheet material between adjacent blanks and not forming a part of any blank is slight in comparison of the overall area of the sheet. The interlocking arrangement thus provides for maximum utilization of the sheet material and thereby reduces the overall cost of manufacture of the blanks.

The carton blank of this invention is particularly adapted to the folding operations of the AMF 3–79 cigarette packing machines, such as set forth in the above identified copending application of William A. Ringler. With the inner member panels superimposed onto corresponding outer panels, as shown in Fig. 3, the blank may be folded into open tubular form about a rectangular tubular mandrel such as embodied in these machines, with a series of only four folds providing for complete tubing of the blank. Thus, referring to Fig. 4, the inner and outer side panels are folded about the sides of the mandrel, substantially at right angles to the front panels as shown in Fig. 4. A suitable adhesive is applied to the outer surface of glue flap **20**, as indicated by the stippled portions in Fig. 4, and the glue flap is folded over as indicated by arrow **65** substantially at right angles to the adjacent side panels. The rear panel **10** is then folded along line **13**, as indicated by arrow **66**, to complete the tubing of the blank and provide for adherence of the free edge of the rear panel to the glue flap.

The top and bottom walls of the carton are formed in the usual manner, as described in the above identified copending application, to complete the assembly of the carton as shown in Fig. 5. With the lid open, as illustrated in Figs. 6 and 7, access to the contents is readily provided by the recess **50**, and tabs **48** extend against the side walls of the lid to provide a frictional resistance to opening and closing movements thereof, tending to retain the lid in its closed position. Furthermore, the upper edges of front panel **40**, particularly at the connections thereof with the upper edge of inner side panels **42** and **43** which form the upper front corners of the open top box portion of the carton, extend within the lid substantially to the top wall thereof and intersect the path of movement of the front wall of the lid. This arrangement of the parts requires that a certain amount of intentional pressure be exerted to swing the lid between its open and closed positions.

The carton blanks provided by the invention are also adaptable to use in a number of other high speed packaging machines. For example, the blanks of Fig. 3 can be assembled into flat folded tubular form for shipping and/or storage, and in this form the blanks are adaptable to use in high speed packaging machines which erect the flat tubed blank, form the bottom wall thereon, fill the erected carton, and finally form the top wall from the top flaps thereof. The flat tubing of the blanks can be performed by high speed glue and folding machines which apply a suitable adhesive to glue flap **20**, fold the glue flap and adjacent side panels over onto the front panels, and then fold the rear panel **10** onto the glue flap for adherence thereto.

The carton provided by this invention is preferably formed from relatively stiff paperboard stock and thus is resistant to crushing and affords ample protection to cigarettes during normal handling. Such protection is necessary in present day packaging operations with cigarettes, since many brands of cigarettes incorporate filters or other special tips which tend to break away from the remainder of the cigarette when the package is crushed or bent. Also, since the outer panels of the cartons are continuous across the slits **30**, **31** and **32** there is no problem of registry between the adjacent portions of the carton body and the lid when it is desired to print upon the outer surface of the blanks.

The present invention therefore provides a carton having a reclosable lid which is simple and economical to manufacture and assemble, and which is particularly adaptable to use with high speed folding and packaging machines now in general use. Thus, this invention provides a carton which is readily adaptable to present day packaging operations.

While the form of article herein described constitutes a preferred embodiment of the invention, it is to be understood that the invention is not limited to this precise form of article, and that changes may be made therein without departing from the scope of the invention which is defined in the appended claims.

What is claimed is:

1. A unitary carton blank for forming a carton of the character described, comprising the combination of an outer member including outer rear, front and side panels and a glue flap arranged in longitudinal alignment for assembly into open tubular form, flaps on the upper and lower edges of said outer panels for forming top and bottom walls on the assembled said carton, an inner member including inner front and side panels of substantially the same width and length as the corresponding outer front and side panels, said inner side panels being connected on one side to opposite sides of said inner front panel, the other sides of said inner side panels defining peripheral parts of blank, means defining an integral folding connection between the lower ends of at least one of said outer panels and one of said inner panels providing for folding of said inner member onto said outer member prior to folding of the latter into tubular form to enfold said inner member within said outer member, and said inner side panels having recesses formed in said other sides thereof of a width equal to substantially one-half the full width of said inner side panels defining full width portions at the ends of said inner panels farthest from said folding connection, said full width portions having a length substantially equal to the length of said recesses providing for reception of the projecting parts of such full width portions on similar blanks within the recesses on other similar such blanks to form an interlocking pattern of a plurality of said blanks on a sheet of material.

2. A unitary carton blank for forming a carton of the character described, comprising the combination of an

outer member including outer rear, front and side panels and a glue flap arranged in longitudinal alignment for assembly into open tubular form, flaps on the upper and lower edges of said outer panels for forming top and bottom walls on the assembled said carton, an inner member including inner front and side panels extending below the lower edge of said outer member, said inner panels being of substantially the same width and length as the corresponding outer front and side panels, said inner side panels being connected on one side to opposite sides of said inner front panel, and other sides of said inner side panels defining peripheral parts of said blank, means defining an integral folding connection between the lower ends of said outer side panels and adjacent ends of said inner side panels providing for folding of said inner member onto said outer member prior to folding of the latter into tubular form to enfold said inner member within said outer member, and said inner side panels having recesses formed in said other sides thereof of a width equal to substantially one-half the full width of said inner side panels defining full width portions at the ends of said inner panels farthest from said folding connection, said full width portions having a length substantially equal to the length of said recesses providing for reception of the projecting parts of such full width portions on similar blanks within the recesses on other similar such blanks to form an interlocking pattern of a plurality of said blanks on a sheet of material.

3. A blank for forming a carton of the character described including a lid as an integral part thereof, comprising an outer member including outer rear, front, and side panels, a glue flap at one side of said outer member adapted for adhering to the other side thereof to retain said outer member in open tubular form, flaps extending from the upper and lower edges of said outer panels for forming top and bottom walls on said carton, said outer front and side panels having transverse slits therein spaced below the upper edges thereof defining with the upper edge of said outer member wall portions for a reclosable lid on the assembled carton, said rear panel having a transverse score line spaced below the upper edge thereof for providing a hinged connection between the lid and the remainder of the carton, an inner member including inner front and side panels of substantially the same width and length as the corresponding outer front and side panels, said inner side panels being connected on one side to opposite sides of said inner front panel, the other sides of said inner side panels defining peripheral parts of said blank, an integral hinged connection between said inner and outer members providing for folding of said inner member panels into superposition on said outer front and side panels extending across said slits prior to folding of the blank into tubular form for enfolding said inner member within said outer member, said inner side panels having recesses of a width equal to substantially one-half the full width of said inner side panels formed in the free side edges thereof defining full width portions at the ends of said inner panels farthest from said hinged connection, said full width portions being adapted to extend over the slits in said outer side panels, and said recesses being complementary in dimension to the projecting parts of said full width portions providing for interfitting of a full width portion on one blank within a recess of an adjacent identical such blank in cutting the blanks from a sheet of material.

4. A carton blank comprising an outer member including a series of outer panels providing front, side and rear panels connected to each other along parallel fold lines, a glue flap extending from one side of said series of outer panels for adhering to the free edge of the panel at the other side of said series to retain said outer panels in tubular form, end flaps extending from the upper and lower ends of said outer panels for providing top and bottom walls on the assembled carton, said outer front and side panels having a slit therethrough spaced from the upper ends thereof to separate portions of said outer front and side panels from the remainder of said outer member for providing a lid on the assembled carton, an outer rear panel having a score line extending from the end of said slit in the side panel connected to said rear panel and transversely of said rear panel spaced below the upper end thereof to provide a hinged connection between said lid and the remainder of the assembled carton, an inner member including inner front and side panels of substantially the same width and length as the corresponding outer front and side panels, said inner side panels being connected on one side to opposite sides of said inner front panel, the other sides of said inner side panels defining peripheral parts of said blank, an integral hinged connection between said inner member and said outer member at an end of at least one of said outer panels providing for folding of said inner member into superposition upon said outer member along a fold line extending substantially at right angles to said fold lines between said outer panels, said inner member and said hinged connection being dimensioned to provide for extension of portions of said inner panels across said slit in the superimposed folded position of said inner member, and said inner side panels having recesses of a width equal to substantially one-half the full width of said inner side panels formed in the free side edges thereof intermediate the ends thereof defining full width portions at the ends of said inner panels farthest from said hinged connection, said full width portions having a length substantially equal to the length of said recesses providing for reception of the projecting parts of such full width portions on similar blanks within the recesses on other similar such blanks to form an interlocking pattern of a plurality of said blanks on a sheet of material.

5. A blank for forming a carton of the character described comprising an outer member divided into outer rear, side, front, and side panels connected in that order, a glue flap extending from the free side of the last mentioned side panel and adapted for adherence to the free side of said rear panel within the assembled carton, said outer front and side panels having transverse slits therein defining lid forming walls between said slits and the upper edges of said outer member, said rear panel having a transverse score line spaced below the upper edge thereof for providing an integral hinged connection between the lid and the remainder of the carton, an inner member including inner front and side panels of substantially the same width and length as the corresponding outer front and side panels, side edges of said inner side panels defining peripheral parts of said blank, an integral hinged connection between the lower edges of said outer side panels and said inner side panels providing for folding of said inner member onto said outer member, said inner front and side panels being dimensioned to extend across the slits in said outer front and side panels onto said lid forming walls, and said inner side panels having recesses of a width equal to substantially one-half the full width of said inner side panels formed in the free side edges thereof defining full width portions at the ends of said inner panels farthest from said hinged connection, said full width portions being adapted to extend over the slits in said outer side panels, and said recesses being complementary in dimension to the projecting parts of said full width portions to receive such parts of identical said blanks and provide for interfitting of a plurality of such blanks in cutting the blanks from a sheet of material.

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U. S. DEPARTMENT OF COMMERCE

PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. 2,824,684 February 25, 1958

Harold L. Ahlers

It is hereby certified that error appears in the printed specificati of the above numbered patent requiring correction and that the said Lette Patent should read as corrected below.

Column 4, line 57, after "parts of" insert --said--; column 5, line for "and other" read --the other--.

Signed and sealed this 20th day of May 1958.

(SEAL)

Attest:

KARL H. AXLINE

Attesting Officer

ROBERT C. WATSO

Commissioner of Patent