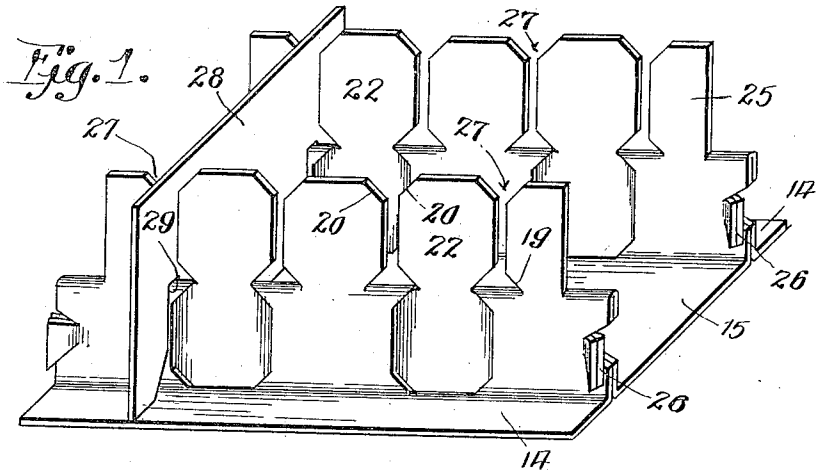
H. J. BROWN & F. B. DAVIDSON.

CRATE SEPARATOR.

APPLICATION FILED MAY 15, 1916.

1,195,183. Patented Aug. 22, 1916.

Fig. 1.



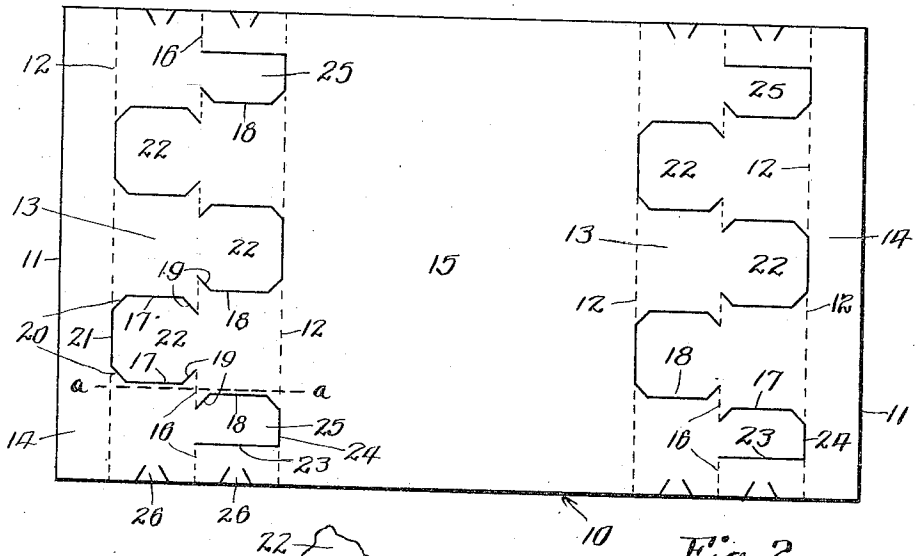


Fig. 2.

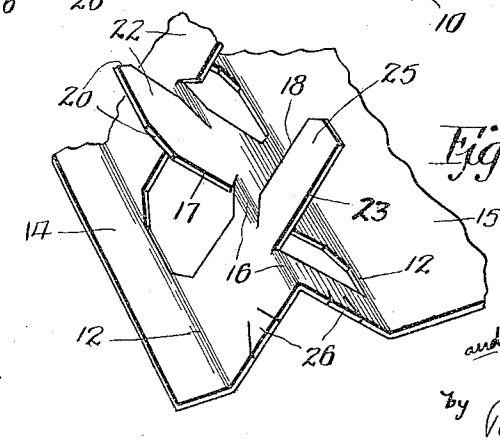


Fig. 3.

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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

HOWARD J. BROWN AND FRANK B. DAVIDSON, OF MARSEILLES, ILLINOIS, ASSIGNORS TO HOWE AND DAVIDSON COMPANY, OF MARSEILLES, ILLINOIS, A CORPORATION OF NEW JERSEY.

CRATE-SEPARATOR.

1,195,183. Specification of Letters Patent. Patented Aug. 22, 1916.

Application filed May 15, 1916. Serial No. 97,467.

To all whom it may concern:

Be it known that we, HOWARD J. BROWN and FRANK B. DAVIDSON, both citizens of the United States, residing at Marseilles, in the county of La Salle and State of Illinois, have invented new and useful Improvements in Crate-Separators, of which the following is a specification.

This invention relates to improvements in separators or partition members, adapted for use in containers or "caddies," in which biscuits, crackers, and bakery products of like character are packed, the separators being placed between the several layers of the contents, for the purpose of separating the layers and thereby avoid the breakage or damaging of the contents in handling and shipment.

Separators of the character to which the present invention relates are ordinarily constructed of relatively stiff card or fiber-board, and comprise a rectangular member which is laid flatwise upon one layer of crackers and extended between the same and the layer immediately above. Associated with the body member are a series of flanges or partition strips extending at right angles to the surface of the body member, said strips being arranged in intersecting and interlocking relation, thereby forming a crate having a plurality of compartments, designed to separate the contents of each layer and hence to further decrease the liability of breakage.

To facilitate the use of separators of the type described and the packing of containers, it has been found expedient to provide a separator which will permit of the partial assembling or building up of the separator simultaneously with the packing of each layer. It is preferable, therefore, to form the separator in such a manner that at least a part of the upright strips are integral with the body member, the remaining strips being removable. This construction therefore permits the partially assembled separator to be placed within the container and the removable strips added one by one as the contents are packed between the strips in successive rows.

The present invention embodies a novel method of forming the partition strips, and more particularly the strips which have the form of flanges, integral with the body member, the latter form being hereinafter termed flanges in order to distinguish the same from the removable strips of the separator. Separators of this general character have heretofore been made wherein the flanges have been formed by bending portions of the body member together and at right angles thereto, thus forming a flange or flanges of either a single or double thickness of the material, with locking notches or slots cut or stamped out of the material of the body member in blank form. Owing to the difficulty of cutting these notches and the time and labor required to remove the trim therefrom, it has been found that a method which forms the notches without requiring the removal of any of the material is of a material and practical advantage in the manufacture of container separators.

To the end, therefore, of accomplishing, among others, the results hereinbefore suggested, the features of this invention are directed, and an embodiment of which will now be clearly set forth, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view showing the separator as formed from the blank, and partially assembled with one of the removable strips in position; Fig. 2 is a plan view of the separator in blank form; and Fig. 3 is an enlarged detail view showing the manner in which the flange portion is cut and the parts partially folded.

Referring now to the drawings, the device embodying the features of the invention is shown (Fig. 2) in blank form, the blank consisting of a rectangular sheet 10 of material, preferably of a comparatively stiff fiber or cardboard, as has been before suggested. Intermediate the shorter or end margins 11, 11 of the blank and adjacent to each of said margins are two pairs of score lines 12, 12, extending parallel to each other and to the said end margins. The score lines of each pair are spaced apart a predetermined distance, which may be said to represent the height of the flange produced when the blank is folded. The location of the score lines is obviously determined by

the desired position of the flange of the separator, although it may be stated that the flanges may be located at any desired portion of the blank, and, furthermore, the number and relative disposition of the flanges may be varied, depending on the size or character of the separator desired. In the blank illustrated, the portions 13, 13, included between the lines 12, 12 and from which the flanges are formed, are removed inwardly from the end margins 11, thus forming the narrow end marginal portions 14, 14 and a somewhat larger central or body portion 15 intermediate the flange portions 13, 13.

As introductory to the description of the manner in which the flange portions are treated, it is to be noted that the object to be accomplished is to provide a series of locking notches in the flange having sufficient width to receive the thickness of the material of the removable strips. With this in mind the following description will be clearly understood.

In general it may be said that the treatment of the blank consists in first providing a series of cuts or incisions in the flange portions 13, 13, which extend from each of the lines 12, 12 and at right angles thereto and terminate at a longitudinal or median line 16, bisecting each flange portion 13 and extending parallel to the score lines 12, 12. These cuts may be considered as arranged in pairs, each pair consisting of cuts 17, 18, disposed adjacent to each other in substantially parallel relation and located on opposite sides of the median line 16. These cuts are further offset laterally from each other, as shown by their relation to the dotted line *a*—*a* in Fig. 2, the amount or distance of offset being predetermined as equal to the width of the slot to be formed in the flange when the same is bent or folded into final form, as will be hereinafter described. At the ends of the cuts 17 and 18, adjacent to the median line 16, the same are provided with short oblique portions 19, 19, which terminate at said median line and are arranged at an angle of substantially 45° thereto. The oblique portions 19, 19 of each pair of cuts are, furthermore, arranged in parallel relation to each other, and as a result the lower and adjacent ends of the cuts 17 and 18 are spaced apart a distance along the line 16 considerably greater than the normal distance separating the cuts. At the outer or distant ends of the cuts 17 and 18, there are also provided short oblique portions 20, 20, which intersect said lines 12, 12 at angles of substantially 45°, it being noted, in regard to the said oblique portions, that the angle or inclination of each alternate inclined portion is reversed, and in the same manner the oblique portions 19 are reversed with respect to the median line 16. The purpose of arranging the oblique portions in the manner described will be hereinafter fully described. To complete the cutting of the flange portions, there is provided a plurality of cuts 21 extended transversely to the cuts 17 and 18 and coinciding with the score lines 12, 12. These cuts extend between the ends of two adjacent cuts 17, 17 on one side of the median line 16, and, likewise, between two adjacent cuts 18, 18 on the opposite side of said median line, and furthermore connect the ends of those oblique end portions 20, 20 of said cuts 17 and 18 which are convergent. From the arrangement of the cuts thus described it is manifest that there is formed in each flange portion 13 a plurality of rectangular shaped sections or tongues 22, having oblique corners and severed from the material along three sides, yet connected to the material of the blank along the median line 16. These tongues are arranged in staggered relation with respect to the median line 16, that is, are alternately disposed on opposite sides of said line. It will be noted also that the ends of the flange portions are treated somewhat differently from the central portion thereof, in that there is provided, midway between each of the endmost cuts 18, 18 and the adjacent end margin of the blank, a transverse cut 23, extending from the score line 12 to the median line 16 and parallel with the cut 18. These cuts are joined to the ends of the adjacent cut 18 by short longitudinal cuts 24, coinciding with the line 12 and otherwise similar to the cuts 21. In this manner narrow tongues 25 are formed, which are in reality half portions of a whole tongue such as is formed in the manner previously described. In this manner there is provided at each end of the flange a strip of material extending throughout the width of the flange portion, said strip being of sufficient width to provide a connection between the parts of the flange.

For the purpose of locking the flanges in upright position, there are provided locking tongues 26, 26 in the end margin of each flange portion, said tongues being formed by providing, at corresponding points on opposite sides of the median line, pairs of converging cuts extending a short distance inwardly from the margins, thereby giving the locking tongues a tapered contour, of decreased width at the bases thereof. The manner in which said locking notches perform their function will be hereinafter pointed out.

Referring now to Figs. 1 and 3, the manner of forming the separator will be described. The blank is set up by bending the same along the score lines 12, 12 and along the median line 16, in the manner shown in Fig. 3, to the final position of Fig. 1, in which the narrow marginal flange 14 and the central

body portion 15 are brought into the same plane and at right angles to the upright flanges formed by the flange portions 13. The formation of the flanges is accomplished by bending or folding the portions thereof on opposite sides of the median line 16 flatwise against each other, and in so doing the several tongues are brought into substantially the same plane and into alinement with each other, the same being arranged side by side along and projecting above the median, or what is now the central fold line 16 in uniformly spaced relation, thereby forming a series of locking notches 27 (Fig. 1) along the upper edge of each flange. It is of importance to note further the relation of the several margins formed by the cuts in the blank before and after the blank has been folded. In the first place, the margins formed by each pair of cuts 17 and 18 now become the vertical margins of said locking slots or notches 27 (Fig. 1), which extend downwardly from the upper margins of the flange to the central fold line 16, said vertical margins thereof being spaced apart an amount sufficient to admit the thickness of the material of the removable strips. As shown in Fig. 1, a removable strip 28 (one of which is illustrated) preferably consists of a single thickness of material, and is provided along one longitudinal margin and adjacent to the ends thereof with locking notches 29, 29, adapted to interfit with the locking notches of the flanges, in the usual manner. After the folding of the blank, the oblique portions 20 at the outer ends of the cuts 17 and 18 of the blank now form the margins of the flared or tapered entrances or openings at the upper ends of each of the locking notches, whereas the oblique portions 19 at the base of the tongues coöperate to form triangular shaped openings at the lower end of the notches. The purpose of providing the last mentioned oblique cuts in the blank is to supply sufficient of the material between the bases of the tongues to form hinges or connecting members, capable of being scored and folded without breaking. As a result, therefore, the durability of the separator is greatly increased, whereas otherwise the tongues would be joined together by a very small amount of material, easily broken, and hence produce a weakness that would scarcely withstand any degree of usage. It is also obvious that the formation of the tongues necessarily produces a series of apertures in the lower portion of the flanges and below the tongues, when the blank is folded into completed form. By reason of the arrangement of the tongues, however, these apertures are entirely closed or covered by imperforate portions of the flange which extend between the apertures and which are arranged so that each aperture registers with and is completely closed by one of said intermediate imperforate portions. It follows, therefore, that the flange is practically of a single thickness of material, except for the slight overlapping of the margins of the imperforate portions and said apertures, and at the extreme end portions of the flanges, which, as hereinbefore described, are of double thickness to afford the necessary increased strength. In order to provide for the double thickness of material at the ends of the flange, a portion of the material at each end is sacrificed which otherwise would project above the central fold line of the flange. This, then, accounts for the narrow tongues at each end of the flange and also for the open space between the narrow tongues and the ends of the flanges. The provision of the double thickness of material at the flange ends further permits the use of the particular form of locking means employed, namely, the marginal tongues 26, which are formed in the end margins of the flanges and disposed in registering relation, thus when the flange is folded the locking is accomplished by simply bending the tongues laterally, as shown in Fig. 1, one of the tongues entering the complementary notch formed by the other tongue, thus securely connecting the ends of the flange together. The separator thus assembled is now ready to be placed in a container and further built up, in the course of the packing, by adding further cross strips of the kind hereinbefore described.

The advantages of a separator constructed in the manner described are particularly appreciated by the manufacturers of articles of this character, first, because the flange is formed entirely by a series of cuts, which eliminates the slotting of the sheets, a process which hinders the rapid and efficient manufacture of the devices, for the reason that unnecessary time and labor must be expended in severing and removing the trim or waste material from the slots. In addition, it is extremely difficult to cut narrow slots in material of the character used for the making of these devices, particularly when the efficiency of production demands the formation of a considerable number of blanks at a single operation. A further advantage derived from the construction embodying the features of the invention, is the great saving of material. This is due to the absence of any waste material such as is necessitated by the removal of trim, and, furthermore, from the fact that the flange, although formed by bending one part upon another, may be said to be of but one thickness of material, thus the amount of stock which is allowed to form the flange portions of the blank need only be one-half the width ordinarily provided to form a flange requiring two thicknesses of material. The saving in the cost of material is at once

evident for the reason that the size of the original sheets from which the blanks are formed is considerably reduced in dimensions, hence the saving alone in the amount of material required is considerable.

The features of our invention are obviously applicable to uses other than those specifically illustrated and described, and for that reason it is not desired to limit the scope of the invention, except in so far as expressly set forth in the appended claims.

We claim as our invention:

1. A partition strip, comprising a blank of sheet material and provided with tongues projecting from a margin thereof and spaced apart to form a locking notch, one of said tongues being cut from the material of the blank and folded into alinement with the other of said tongues.

2. A partition strip, comprising a blank of sheet material folded to provide two sections, each section being provided with a tongue cut from the opposite section, said tongues projecting from the margin formed by the line of fold and spaced apart to form a locking notch.

3. A partition strip, comprising a blank of sheet material folded along a score line and provided with tongues each cut from the material on the opposite side of said score line, said tongues being provided with corresponding transverse edges arranged in spaced relation and forming the margins of a locking notch, when said tongues are brought substantially into the same plane in the folding of said blank.

4. A partition strip formed from a blank of sheet material, having a plurality of tongues cut from said blank and arranged in staggered relation along, and alternately disposed on opposite sides of, a longitudinal score line, said tongues being spaced apart laterally to form a series of notches therebetween, when said strip is folded upon itself along said score line.

5. A partition strip, comprising a blank of sheet material provided with tongues cut from the material in staggered and spaced relation on opposite sides of a score line, said tongues being brought into alinement and forming between them a series of transverse notches when the blank is folded upon itself along said score line, the base portions of said tongues being decreased to provide an added amount of material intermediate said base portions of said tongues.

6. A partition strip, comprising a blank of sheet material, provided with tongues cut from the material on opposite sides of a score line and arranged in staggered relation to provide a series of marginal notches in the strip, when the same is folded upon itself along said score line, each of said tongues being provided with convergent oblique margins terminating at score line, to provide hinge members intermediate the base portions of said tongues.

7. A partition strip, comprising a blank of sheet material, provided with a plurality of tongues cut from the material and arranged in staggered and spaced relation along a longitudinal score line, the corresponding transverse margins of said tongues forming the edges of a notch, when said blank is folded along said score line, said transverse margins being provided with oblique end portions to provide a flared opening at the outer end of the notch and an increased amount of material intermediate the base portions of said tongues.

8. A partition strip, comprising a blank of sheet material adapted to be folded along a longitudinal score line and having a plurality of tongues cut from the material and arranged in staggered relation on the opposite sides of said line, said tongues being spaced apart along said score line to form a series of marginal notches, when said blank is folded, and locking means for retaining the strip in folded position.

9. A partition strip, comprising a blank of sheet material foldable along a longitudinal score line and having intermediate the ends a plurality of tongues cut from the material on opposite sides of said score line, said tongues being arranged in staggered relation and spaced apart laterally to form a series of notches, when said blank is folded, and locking means at the ends of the strip for retaining the same in folded position.

10. A partition strip, comprising a blank of sheet material, having a plurality of tongues cut from the blank and alternately disposed on opposite sides of a score line, said tongues being spaced apart and forming a series of marginal notches, when said blank is folded, and interlocking tongues and notches formed in an end portion of said strip on opposite sides of said score line, for retaining said strip in folded position.

11. A separator formed from a blank of sheet material having a body portion and an upright flange, the latter comprising a portion of the blank folded upon itself along a score line and provided with tongues cut from the material on opposite sides of said score line and arranged in staggered relation, said tongues being adapted to extend along the upper edge of said flange in spaced relation, to form marginal notches, when said blank is folded.

12. A separator, formed from a blank of sheet material and having a body portion and a flange at right angles to said body portion, said flange comprising a portion of the blank folded upon itself along a central score line and provided with a plurality of tongues cut from the material and arranged

in staggered relation on opposite sides of said score line, said tongues being brought into alinement along the upper edge of said flange and forming a series of transverse marginal notches between them in the folding of said blank.

In testimony that we claim the foregoing as our invention, we affix our signatures in the presence of two witnesses, this 5th day of May, A. D. 1916.

HOWARD J. BROWN.
FRANK B. DAVIDSON.

Witnesses:
LEROY E. BENTLEY,
G. C. DAVIDSON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."